

Role of Artificial Intelligence in Digital Marketing and Customer Engagement

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Abstract

Artificial intelligence (AI) has moved from an experimental technology to a core digital marketing capability. Modern marketing systems use machine learning, natural language processing, recommender systems, generative AI, sentiment analysis, predictive analytics, and automation to influence how firms understand customers, create content, personalize offers, communicate in real time, and evaluate campaign performance. This paper examines the role of AI in digital marketing and customer engagement through a structured literature-based analysis of recent and foundational research published from 2019 to 2026. The review synthesizes evidence concerning AI-enabled personalization, conversational interfaces, content generation, predictive decision-making, social media marketing, and customer-experience management. The analysis shows that AI can strengthen engagement by improving relevance, speed, convenience, responsiveness, and perceived value. However, the literature also demonstrates that technological capability alone does not guarantee positive engagement. Privacy concerns, algorithmic bias, lack of transparency, inaccurate generated content, perceived loss of human connection, and inappropriate automation can reduce trust and weaken relationships. The paper therefore proposes a conceptual framework in which AI marketing capabilities influence customer engagement through customer-perceived value, trust, and experience, while AI disclosure, customer expertise, task complexity, and channel context act as boundary conditions. The study concludes with managerial implications and a future research agenda focused on responsible personalization, human-AI collaboration, disclosure practices, measurable engagement outcomes, and context-sensitive AI adoption.

Index Terms—Artificial intelligence, digital marketing, customer engagement, personalization, generative AI, chatbots, predictive analytics, customer experience, trust.

I. INTRODUCTION

Digital marketing has evolved from static online advertising toward continuous, data-intensive and interactive systems in which firms observe customer behavior, infer preferences, generate content, and adapt communication during the customer journey. Artificial intelligence is central to this transition because it allows marketing systems to process large volumes of behavioral, textual, visual, and transactional data and to transform those signals into predictions or actions. Earlier marketing research anticipated that AI would reshape both marketing strategy and consumer behavior by automating routine activities, supporting managerial judgment, and changing how firms and customers interact [1]. More recent work suggests that the transformation is accelerating because generative AI can create text, images, and video, while analytical AI can identify patterns, forecast behavior, and personalize decisions at scale [2], [3].

Customer engagement is particularly important in this context. Engagement extends beyond a single purchase and can include attention, emotional connection, interaction, participation, advocacy, repeat behavior, and co-creation of value. AI can affect each of these dimensions. A recommendation engine can increase the cognitive relevance of a product; a chatbot can reduce response time; a social media algorithm can tailor content to an individual's interests; sentiment analysis can help brands recognize emerging dissatisfaction; and generative AI can increase the quantity and speed of content production. At the same time, these technologies may make the customer feel observed,

manipulated, or disconnected from the human side of service when their use is opaque or excessive [4]-[7].

The literature is therefore becoming less concerned with whether AI can be applied to marketing and more concerned with how AI should be designed, governed, disclosed, and integrated with human capabilities. Strategic frameworks distinguish among AI used for automation, analytical reasoning, and emotional or interactional tasks [9]. Reviews of consumer engagement similarly show that AI-based systems can improve service accuracy, co-create value, and reduce consumer effort, but outcomes depend on the interaction context and the quality of the AI experience [8]. In digital marketing, this creates a managerial challenge: firms must optimize not only efficiency and conversion but also trust, perceived relevance, privacy, and long-term relationship quality.

This paper addresses that challenge by synthesizing the role of AI across major digital marketing functions and connecting those applications to customer engagement outcomes. Rather than presenting fabricated primary survey findings, the study is designed as a literature-based research paper. The purpose is to consolidate established evidence, identify areas of agreement and disagreement, and propose a research framework that can later be tested empirically in specific contexts such as e-commerce, social media, financial services, education, or retail.

II. RESEARCH OBJECTIVES AND QUESTIONS

- The first objective is to identify the major AI capabilities currently used in digital marketing and describe the marketing tasks they support.
- The second objective is to synthesize how AI-enabled personalization, automation, conversation, content

generation, and analytics influence customer engagement and customer experience.

- The third objective is to examine trust, privacy, transparency, bias, and human-connection concerns that can weaken the effectiveness of AI-based marketing.
- The fourth objective is to propose an integrated conceptual framework linking AI capabilities, perceived value, trust, customer experience, and engagement outcomes.
- The fifth objective is to derive future research directions that can support empirical testing and responsible AI adoption.

Based on these objectives, the study addresses the following research questions: RQ1: Which AI capabilities have the strongest relevance to digital marketing and customer engagement? RQ2: Through which mechanisms does AI influence engagement? RQ3: What risks and boundary conditions shape customer responses to AI-enabled marketing? RQ4: Which research gaps remain underexplored and how can future studies test them?

III. CONCEPTUAL BACKGROUND

A. Artificial Intelligence in Marketing

AI in marketing refers to the use of computational systems that perform tasks associated with learning, prediction, language processing, pattern recognition, recommendation, generation, and automated decision support. The marketing literature has emphasized that AI should not be treated as a single technology. Instead, its strategic value depends on the task being automated or augmented, the level of intelligence involved, and the interaction between the machine and the human decision maker [1]. Huang and Rust further distinguish mechanical AI for repetitive activities, thinking AI for analytical decisions, and feeling AI for interpreting human interaction and emotion [9]. This distinction helps explain why AI can affect different stages of the marketing process in different ways.

B. Digital Marketing

Digital marketing encompasses search, social media, email, mobile, websites, online marketplaces, digital advertising, content marketing, influencer activity, and other technology-mediated touchpoints. Unlike traditional marketing, digital environments continuously generate interaction data. This creates an opportunity for adaptive targeting, real-time optimization, and individualized communication, but it also creates new expectations concerning privacy, data governance, and algorithmic fairness. AI sits at the center of this data-to-action loop because the value of digital information depends on the ability to transform signals into timely and useful decisions.

C. Customer Engagement

Customer engagement is broader than satisfaction or purchase intention. It can include cognitive, emotional, and behavioral states and actions associated with a brand, platform, product, service, or community. AI can influence engagement by changing the perceived relevance of communication, decreasing effort, improving responsiveness, increasing enjoyment, or creating new forms of interaction. A recent systematic review of AI-enabled consumer engagement identified three broad outcomes: more accurate service provision, value co-creation, and reduced consumer effort [8]. These themes provide a useful foundation for connecting specific AI tools with engagement mechanisms.

TABLE I. MAJOR AI CAPABILITIES RELEVANT TO DIGITAL MARKETING

AI Capability	Typical Marketing Use	Primary Value
Mechanical learning	Segmentation, propensity scoring, choice prediction	Efficient targeting and prediction
Recommendation systems	Product/content recommendations	Higher relevance and discovery
Natural language processing	Chatbots, intent detection, sentiment analysis	Instant and more contextual interaction
Generative AI	Copy, images, scripts, campaign creative	Scale and speed of content creation
Computer vision	Image tagging, visual search, ad analysis	Visual behavioral and product insights
Automated bid	Bid management, ad serving, campaign optimization	Efficiency and lower cost
Predictive analytics	Demand, business, customer lifetime value	Improved decision quality
Personalized AI	Hyper-localization and service agents	Availability and responsiveness
Real-time personalization	Feedback and social listening	Early detection of customer attitudes

IV. LITERATURE REVIEW

A. Evolution of AI in Marketing Research

The foundational literature establishes AI as a strategic rather than purely operational technology. Davenport et al. argued that AI would affect marketing strategy and customer behavior and identified multiple forms of intelligence and task characteristics through which AI could alter marketing activities [1]. Kopalle et al. later examined AI technologies in marketing through country, company, and consumer levels, highlighting the global and multi-level nature of adoption [10]. Chintalapati and Pandey systematically reviewed AI research in marketing and identified consumer behavior, content marketing, experiential marketing, integrated digital marketing, market research, and marketing operations as important application areas [11].

Huang and Rust proposed a strategic framework that separates AI into mechanical, thinking, and feeling capabilities and maps those capabilities onto marketing research, strategy, and action [9]. This is important for customer engagement because not all AI creates value in the same way. Automation can reduce friction, analytics can improve relevance, and interaction-oriented AI can shape social and emotional experience. The framework suggests that firms should match the level of AI capability to the nature of the task and the degree of human involvement required.

B. AI-Enabled Personalization

Personalization is one of the most frequently identified mechanisms through which AI creates marketing value. By combining browsing history, transaction data, demographic attributes, contextual signals, and inferred preferences, AI systems can determine which offer, message, product, or piece of content is most likely to be useful to a particular customer. Research on social media marketing shows that AI-enabled personalization can improve awareness, user experience, and purchase intention when it is supported by relevant content and real-time interaction [12].

However, personalization is not automatically beneficial. Perceived relevance must be balanced against perceived intrusiveness. A highly targeted advertisement may be technically accurate but psychologically uncomfortable if the customer cannot understand why the recommendation appeared. This tension is central to AI marketing because the same data that enables relevance can also raise privacy concerns. The emerging literature increasingly points to trust and transparency as conditions that determine whether personalization produces relationship benefits rather than resistance [13].

C. Conversational AI and Chatbots

Chatbots and conversational AI represent a visible form of AI because customers interact directly with the system. Their potential benefits include 24-hour availability, lower waiting time, consistent answers, and scalable service capacity. A

literature review of chatbot applications found that AI-based chatbots can reshape customer experience by supporting service interaction and customer relationship management [14]. Conversational systems also create an opportunity for brands to extend marketing beyond campaigns into continuous assistance before, during, and after purchase.

The main limitation is that customers can distinguish between helpful automation and frustrating automation. When an AI agent fails to understand intent, repeats scripted responses, or prevents access to a human representative during complex situations, the reduction in effort can reverse. Research on artificial empathy suggests that AI agents can be perceived as cold or uncaring because they do not naturally reproduce the social signals of human interaction [6]. This indicates that the success of conversational AI depends not only on accuracy but also on interaction design, escalation rules, context awareness, and the appropriate use of human support.

D. Generative AI and Content Marketing

Generative AI has substantially broadened the scope of AI in marketing because systems can now create language, imagery, audio, and video rather than only classify or predict. Grewal et al. describe generative AI as a technology that can influence how marketers communicate, create and deliver content, and research products and services [2]. Recent systematic literature reviews similarly identify automated content creation, campaign personalization, and multimodal content as major opportunities [3], [15].

For customer engagement, generative AI matters because it changes both the economics and the velocity of experimentation. Marketers can generate multiple message variants, adapt content to segments, translate campaigns, summarize customer feedback, and personalize creative elements at scale. Yet the same capability introduces risks of factual error, low-quality content, copyright disputes, hidden automation, and brand inconsistency. The implication is not that generative AI should replace human creativity; rather, the strongest use cases often combine machine-scale generation with human review, brand governance, and clear accountability [2], [15].

TABLE II. SELECTED LITERATURE SYNTHESIS

Study	Focus	Method / Scope	Key Insight
Demongot et al. [11]	AI and future marketing	Conceptual Research	AI changes strategy and customer behavior
Crane et al. [12]	Generative AI in marketing	Conceptual / Research agenda	Clearly changes content and customer interaction
Reinhardt et al. [13]	AI technologies globally	Research methods	Create company and customer level insight
Hoang & Park [14]	Strategic AI Framework	Conceptual	Methodical, Building and Scaling AI
1. Bhatnagar & Bhatnagar [15]	AI in marketing	Systematic review	AI spans content creation, content and optimization
Mullins et al. [16]	AI-enabled engagement	Systematic review of 89 studies	Positive value creation, reduced effort
Lee-Thompson et al. [17]	Artificial empathy	Subject research	Human-like affective response requires
Deppen & Hunkeler [18]	AI personalization in social media	RFI report/article	Personalization can improve engagement and purchase intention
Fahnestock & Galletta [19]	AI marketing opportunities	Edited journal, 448 contributors	Personalized, collective, aggregate, individual, single factors
Hall et al. [20]	ChatGPT in digital marketing	HEX in case studies	Creative, personalization and decision support
Park et al. [21]	ChatGPT and engagement	Systematic review	Efficiency and behavioral outcomes differ
Shah et al. [22]	AI in India's consumer	Primary India's consumer study	AI service experience relates to satisfaction and engagement

V. AI APPLICATIONS ACROSS THE DIGITAL CUSTOMER JOURNEY

A. Awareness and Acquisition

At the awareness stage, AI supports audience discovery, media optimization, look-alike modeling, keyword intelligence, social listening, and creative testing. Predictive systems can estimate which audiences are most responsive to an offer and allocate campaign resources accordingly. Generative AI can increase the number of creative variants available for testing,

while natural language systems can adapt messages across formats and languages. The main engagement effect at this stage is improved relevance and attention: customers are more likely to notice content that reflects their needs or context.

B. Consideration and Evaluation

During consideration, recommendation engines, product comparison assistants, semantic search, review summarization, and conversational interfaces help customers process information. These tools can reduce search costs and cognitive effort. In e-commerce, AI-based service experiences have been examined specifically in relation to customer satisfaction and engagement among Indian Gen-Z and millennial consumers [17]. This area is particularly important for mobile-first markets because the value of speed and relevance can be high when customers face many choices.

C. Purchase and Conversion

At conversion, AI supports lead scoring, propensity models, dynamic offers, personalized reminders, fraud detection, and real-time decisioning. The strongest principle is to use AI to remove friction rather than to pressure the customer. For example, recommending complementary products can be helpful when the recommendation is relevant to the chosen item. Conversely, repeated or overly aggressive prompts can create irritation and reduce trust. Thus, conversion optimization should be evaluated alongside customer experience measures rather than through conversion rate alone.

D. Retention, Loyalty and Advocacy

After purchase, AI can predict churn, identify service issues, personalize loyalty offers, detect sentiment, and trigger proactive assistance. These capabilities can strengthen retention when they demonstrate that the firm understands customer needs. AI can also help identify high-value customers and opportunities for advocacy, but firms should avoid discriminatory treatment that customers perceive as unfair. Customer engagement in the post-purchase stage is especially dependent on reliability, responsiveness, and the quality of human escalation when problems become complex.

TABLE III. AI APPLICATIONS BY CUSTOMER-JOURNEY STAGE

Journey Stage	AI Application	Engagement Objective	Potential Risk
Awareness	Adaptive marketing, ad optimization, personalization, content creation	Attention, activation	Filter bubbles, opaque targeting
Consideration	Recommendation engines, semantic search, chatbots	Reduced effort, education	Inconsistent or irrelevant recommendations
Purchase	Personalized offers, dynamic pricing, upsell/cross-sell	Conversion, decision support	Manipulative pressure, discrimination
Post-purchase	Predictive service, sentiment, churn models	Engagement, retention	Overreliance, privacy concerns
Loyalty	Personalized rewards, anti-fraud	Recognition, attachment	Unfair differential treatment
Advocacy	Social listening, response modeling, community AI	Participation, innovation	Reputational mismanagement

VI. CUSTOMER ENGAGEMENT MECHANISMS

A. Relevance and Personalization

The first mechanism is relevance. Customers are more likely to engage when information matches a current need, intent, or preference. AI improves relevance by inferring patterns that humans cannot process at the same scale. The benefit is strongest when personalization is perceived as useful rather than invasive. Research on AI marketing has identified personalization as one of the important qualities of AI-based marketing experiences [7], while social media evidence indicates that AI-driven customization can increase awareness and user experience [12].

B. Convenience and Reduced Effort

The second mechanism is convenience. AI can reduce the steps required to search for information, obtain support, compare products, or complete a routine task. Hollebeek et al. identify reduced consumer effort as a recurring theme in AI-enabled engagement [8]. This mechanism is especially important in digital settings where customers can switch providers quickly if the journey is difficult. However, convenience depends on the AI being accurate enough to reduce work; an error that forces the customer to repeat information creates additional effort.

C. Responsiveness and Real-Time Interaction

AI enables interaction at times and speeds that would be difficult to achieve with human staff alone. Chatbots, automated alerts, real-time personalization, and dynamic recommendations can respond to changing customer signals. Responsiveness may increase perceived service quality, particularly for routine requests. Yet the literature also suggests that emotional and social dimensions remain challenging, which is why artificial empathy and human-AI coordination are becoming more important [6].

D. Enjoyment and Novelty

AI can create engaging experiences through interactive content, conversational interfaces, personalized storytelling, visual discovery, and creative tools. Enjoyment can be especially influential in social media environments. Recent work on AI marketing identifies enjoyment as one of the dimensions that can affect customer engagement [7]. The challenge is to avoid novelty for its own sake. A memorable AI feature that does not improve the customer task may generate attention without durable value.

E. Trust and Reliability

Trust is a central mechanism connecting AI capability to long-term engagement. Customers evaluate whether an AI system is accurate, dependable, transparent, and aligned with their interests. When AI recommendations are clearly relevant and interactions are reliable, trust can strengthen. When AI makes unexplained decisions, creates incorrect content, or uses personal information in surprising ways, trust can decline. The literature increasingly treats transparency, privacy, and responsible design as conditions that shape the effectiveness of personalization [13].

TABLE IV. CUSTOMER ENGAGEMENT DIMENSIONS AND AI DRIVERS

Engagement Dimension	AI Drivers	Expected Positive Outcomes	Indicative Metrics
Cognitive	Personalized recommendations	Discovery and exploration (novelty)	Time spent, content exploration
Affective	Emotion-driven narratives	Satisfaction and positive feeling	Engagement, brand attitude
Behavioral	Automation and relevance	Clicks, purchases, repeat usage	CTR, conversion, repeat purchase
Social	Conversational and community interfaces	Participation and advocacy	Shares, comments, referrals
Utilitarian	Proactive support and problem-solving	Loyalty and reduced churn	Churn rate, CSAT, repeat rate
Value co-creation	Generative and collaborative AI	Customer participation in creation	Feedback, co-creation, ideation rate

VII. BENEFITS OF AI IN DIGITAL MARKETING

- **Scale:** AI allows firms to personalize communication across large customer bases without requiring a proportional increase in human labor.
- **Speed:** Models can process signals and generate recommendations or content faster than manual workflows.
- **Precision:** Predictive systems can improve segmentation, propensity scoring, and next-best-action decisions.

- **Consistency:** Automated workflows can ensure that routine interactions occur reliably across channels.
- **Experimentation:** Generative AI makes it easier to test multiple creative concepts, formats, and message variants.
- **Customer support:** Conversational AI can provide first-line assistance continuously and route complex cases to humans.
- **Insight generation:** Natural language and analytics tools can synthesize customer feedback, reviews, and social conversations.
- **Cost efficiency:** Automation can reduce repetitive marketing and service workload when deployed responsibly.

These benefits explain the rapid interest in AI adoption. Yet benefits should be treated as contingent rather than guaranteed. AI creates value only when the underlying data are useful, the model is suitable for the task, the customer perceives the outcome as beneficial, and the organization has enough governance to manage errors and risks. Recent reviews emphasize that adoption decisions should therefore combine technological readiness with ethical and strategic considerations [3], [15].

VIII. RISKS, ETHICS, AND RESPONSIBLE AI

A. Privacy and Data Governance

Personalization requires data, and the depth of personalization often increases with the breadth and persistence of behavioral data. This creates a tension between relevance and privacy. Customers may accept personalization when they understand the value exchange but react negatively when data collection appears excessive or hidden. Research focused on social media consumer behavior highlights privacy alongside personalization and trust as important dimensions of AI-mediated marketing [13]. Responsible AI marketing therefore requires data minimization, purpose limitation, security, transparent explanations, and clear controls for customers.

B. Algorithmic Bias and Fairness

Marketing algorithms can reproduce or amplify biases present in training data, historical decisions, or proxy variables. In targeting, pricing, recommendations, recruitment marketing, or credit-related communication, biased predictions can produce unequal outcomes. Bias also creates a trust problem because customers may perceive AI decisions as arbitrary or unfair. Fairness cannot be solved solely by a technical accuracy metric; firms need domain-specific review, monitoring, and escalation procedures.

C. Transparency and AI Disclosure

Customers increasingly encounter machine-generated content and AI-mediated interactions. Disclosure can influence expectations because customers may judge an AI response differently from a human response. Recent work on generative AI and customer engagement distinguishes affective and behavioral outcomes and highlights disclosure and human-in-the-loop moderation as important areas for future research [16]. A practical approach is context-sensitive disclosure: customers should know when AI materially shapes a decision or interaction, especially when the information affects trust, money, privacy, or rights.

D. Accuracy, Hallucination, and Content Quality

Generative AI can produce plausible but incorrect statements. In digital marketing, an inaccurate product claim, unsupported benefit statement, or fabricated review summary can damage brand credibility. The solution is not to abandon generative AI, but to create verification workflows, approved knowledge

sources, human review for high-risk outputs, and audit trails. The more consequential the customer decision, the stronger the requirement for human oversight.

E. Loss of Human Connection

Automation can make service more efficient while making the experience feel less human. The artificial empathy literature shows that customers may perceive AI agents as cold or uncaring in situations requiring affective support [6]. A useful principle is task-fit: routine and information-heavy tasks can often be automated, whereas emotionally sensitive, ambiguous, or high-stakes cases should retain access to skilled human employees.

F. Security and Organizational Readiness

AI systems also introduce operational and cybersecurity risks. Data poisoning, prompt injection, unauthorized access, model misuse, and insecure integrations can affect marketing systems. Organizational readiness matters because AI performance depends on data quality, talent, governance, process redesign, and leadership commitment. Research on generative AI adoption in digital marketing identifies security, data quality, intellectual-property concerns, and workforce implications among the key challenges [15].

TABLE V. MAJOR AI MARKETING RISKS AND MITIGATION

Risk	How It Affects Engagement	Required Mitigation
Privacy concerns	Reduces trust and increases resistance	Data anonymization, consent, opt-out controls
Bias	Creates personalized outcomes	Bias testing, monitoring, diverse review teams
Opaque targeting	Reduces personalization and acceptance	Controlled hyper-personalization and controls
Unintended consequences	Damage credibility	Rigorous testing, vetting, design, scenario planning
Automated failures	Reduces customer effort	Fail-safe paths and human escalation
Loss of control	Weakens affective engagement	Human oversight for sensitive cases
Security vulnerabilities	Increases direct brand loss	Access controls, testing, incident response
IP/copyright issues	Increases legal and brand risk	Model review and approved input guidelines

IX. RESEARCH METHODOLOGY

A. Review Design

This research uses a structured narrative literature-review design. The objective is synthesis rather than statistical meta-analysis because the selected studies use heterogeneous methods, constructs, contexts, and outcome measures. The review emphasizes peer-reviewed and openly accessible academic work published primarily from 2019 to 2026, with particular attention to studies that directly address AI in marketing, personalization, digital customer experience, customer engagement, conversational AI, generative AI, trust, privacy, and responsible AI.

B. Source Identification and Screening

Relevant studies were identified through publisher pages, open-access repositories, and indexed academic records using combinations of the terms artificial intelligence, AI marketing, digital marketing, customer engagement, customer experience, personalization, generative AI, chatbot, trust, privacy, and social media. Priority was given to peer-reviewed journal articles and systematic or conceptual reviews with clear methods. Duplicates, off-topic technical papers without a marketing or customer dimension, and inaccessible items were excluded from the core synthesis. The final evidence base used for the main conceptual synthesis consists of a focused set of recent and foundational studies; the paper is not presented as a claim of exhaustive bibliometric coverage of every publication on the subject.

C. Analytical Procedure

The selected literature was coded into four levels: AI capability, marketing application, customer mechanism, and outcome/risk. This coding approach supports cross-study comparison even when authors use different terminology. For example, recommendation systems, personalized advertising, and next-best-action models were grouped under AI-enabled personalization; chatbot, virtual assistant, and conversational agent studies were grouped under conversational AI; and text/image/video generation studies were grouped under generative AI. Customer outcomes were grouped into cognitive, affective, behavioral, social, and relational engagement dimensions.

TABLE VI. REVIEW CODING FRAMEWORK

Level	Coding Categories	Examples
AI capability	Function: generation, conversational, recommendation	AI, ChatAI, LLM, recommendation systems
Marketing function	Targeting, content, service, interface	Ads, social media, CRM, loyalty
Customer mechanism	Reference, effort, trust, engagement	Personalization, convenience, reliability
Engagement outcome	Cognitive, affective, behavioral, relational	Attention, satisfaction, choice, retention
Risk / boundary	Privacy, bias, disclosure, trust, complexity	Data concerns, human oversight
Context	E-commerce, social, service, multi-channel	Online retail, social platforms

IV. THEORETICAL FOUNDATIONS

A. Technology Acceptance Perspective

Technology acceptance research provides a useful explanation for why customers adopt or reject AI-enabled marketing interfaces. Perceived usefulness reflects whether an AI feature helps the customer complete a goal, such as finding a suitable product or getting an answer quickly. Perceived ease of use reflects the effort required to understand and operate the interface. In marketing environments, these constructs can be extended by perceived relevance, trust, enjoyment, and control. A recommendation engine may be technically accurate but have low usefulness if the customer cannot easily interpret the suggestions. Conversely, a simple conversational assistant may be adopted when it saves time and feels dependable.

The acceptance perspective also suggests that AI adoption is partly a customer-education problem. Customers with greater familiarity with algorithmic systems may know how to phrase requests, verify information, or interpret recommendation outputs. Less experienced users may rely more heavily on the interface and therefore may be more sensitive to poor explanations. This reinforces the importance of interface design, disclosure, and user control in AI marketing.

B. Stimulus-Organism-Response Perspective

The Stimulus-Organism-Response logic can be used to conceptualize AI marketing as a stimulus that changes internal customer perceptions before generating behavioral responses. AI capabilities such as personalization, conversational interaction, and recommendation quality form the external stimulus. Perceived relevance, convenience, enjoyment, trust, and privacy concern represent internal psychological states. Engagement outcomes such as interaction, purchase, retention, and advocacy represent the response. This structure is useful because it prevents an overly simplistic assumption that technology has a direct and uniform effect on behavior.

C. Relationship Marketing Perspective

Relationship marketing emphasizes continuity, trust, commitment, and mutual value rather than isolated transactions. AI can strengthen relationships by enabling proactive service and individualized communication, but it can also weaken them

if personalization feels manipulative. From this perspective, the success of AI should be assessed across the relationship lifecycle. A short-term sales lift may not represent a successful strategy if it increases complaints, decreases perceived authenticity, or accelerates churn later.

D. Resource-Based View and Dynamic Capability

From an organizational perspective, AI becomes valuable when firms possess complementary resources: high-quality customer data, analytical capability, technology infrastructure, marketing expertise, governance, and managerial judgment. AI software alone is unlikely to generate sustained advantage because competitors can often access similar tools. The differentiating capability may instead be the organizational ability to combine AI with brand knowledge, customer insight, experimentation, and responsible governance. This makes AI adoption a dynamic capability rather than a one-time technology purchase.

E. Human-AI Complementarity

Human-AI complementarity provides a practical bridge between technology and organizational behavior. AI is well suited to repetitive, high-volume, pattern-rich tasks, while people remain important for ambiguous decisions, empathy, accountability, and exception handling. The literature on generative AI emphasizes that organizations must consider the extent of human augmentation required for a task rather than treating automation as an end in itself [2]. A useful design principle is to allocate tasks according to comparative strengths and to make escalation to human employees easy when the AI reaches its limits.

TABLE II. THEORETICAL LENSES FOR AI-ENABLED CUSTOMER ENGAGEMENT

Theme / Lens	Core Insight	AI Marketing Implication	Expected Engagement Outcome
Technology Readiness	One depends on availability and usage	AI must be useful, trustworthy and usable	Adoption and sustained use
Resource-Organization Fit	Organizational abilities determine potential value and engagement	AI capability affects relevance, trust and engagement	Engage, fulfill and sustain
Relationship Marketing	Long-term value depends on trust and commitment	AI should strengthen relationship quality	Loyalty and advocacy
Executive Board View	Advantage comes from superior combinations of resources	Data, skills and governance complement AI	Robust organizational capability
Human-AI Complementarity	Different tasks call for different methods	Integration gives human capabilities	Quality and resilience
Service Ecosystem Logic	Value is co-created by many	AI becomes a service resource in ecosystems	Participation and co-creation

V. AI APPLICATIONS IN DIGITAL MARKETING

A. Search Engine Optimization and Search Marketing

AI can support search marketing through query analysis, semantic clustering, content optimization, intent prediction, and automated testing. Rather than treating search as a keyword-counting exercise, marketers can use language models and machine learning to understand topics, user intent, and patterns in search behavior. Generative tools can also help develop content outlines and variants. The engagement implication is indirect: better alignment between intent and content can reduce search friction and improve the chance that customers find useful information. Risks include generic machine-generated content, factual mistakes, and optimization that prioritizes ranking signals over genuine user value.

B. Social Media Marketing

Social media is highly compatible with AI because platforms produce continuous streams of textual, visual, and behavioral signals. AI can support audience segmentation, sentiment analysis, trend detection, influencer matching, content scheduling, comment analysis, and personalized

recommendation. Evidence from MENA consumers indicates that AI-enabled personalization can improve social media marketing by tailoring content, optimizing influencer selection, and supporting real-time interaction [12]. Social media also highlights the importance of authenticity because customers can react quickly when automated content feels repetitive or insincere.

C. Email and Lifecycle Marketing

AI can improve email marketing by predicting the best time to send a message, selecting content, estimating propensity to respond, and adapting sequences to customer behavior. Lifecycle models can distinguish between new visitors, active customers, at-risk customers, and loyal advocates. AI can then trigger different communication paths. The engagement benefit is strongest when the message is timely and genuinely useful. Excessive frequency or poorly calibrated triggers can create fatigue, making frequency control as important as personalization.

D. Content Marketing and Generative AI

Generative AI can support brainstorming, drafting, translation, summarization, repurposing, and creative variation. The productivity effect is significant because one core idea can be transformed into many channel-specific assets. Recent work on generative AI in marketing emphasizes its influence on content creation and customer communication [2], [3]. From a customer perspective, however, volume is not the same as value. High-frequency low-quality content may reduce attention and weaken trust. Strong content systems therefore combine automated generation with editorial standards, brand voice guidance, and factual verification.

E. Recommendation Systems and E-Commerce

Recommendation systems are among the most established forms of AI marketing. They rank products, content, or offers according to predicted relevance. In e-commerce, recommendations can reduce search time and expose customers to complementary or substitute products. The benefit to engagement depends on recommendation quality and diversity. A system that repeatedly shows the same products can become frustrating or narrow discovery, while a system that introduces useful alternatives can increase exploration. This is why both relevance and serendipity can matter in customer experience design.

F. Customer Relationship Management

AI-enhanced CRM systems can score leads, summarize customer histories, predict churn, prioritize service cases, and recommend next-best actions. These capabilities turn CRM from a record-keeping system into a decision-support environment. The main customer benefit is continuity: an organization can use historical interactions to avoid asking customers to repeat information and to anticipate needs. However, CRM models must be carefully governed because incorrect predictions can cause customers to be ignored, over-targeted, or categorized unfairly.

G. Influencer Marketing

AI can help marketers identify influencers by analyzing audience composition, engagement quality, topical fit, brand safety indicators, and likely campaign performance. AI-generated matching can reduce manual search and improve fit between the influencer and the customer segment. Yet social influence is context-sensitive; numerical metrics alone may miss

authenticity, audience trust, or cultural nuance. Human review remains important for judging whether a partnership is credible and aligned with the brand.

H. Voice, Visual and Multimodal Marketing

Advances in speech recognition, computer vision, and multimodal generative AI expand digital marketing beyond text. Voice assistants can support shopping or service discovery; visual search can help users find similar products; image generation can create campaign concepts; and multimodal systems can connect text, image, and video understanding. These technologies can make discovery more natural, particularly on mobile devices. Their marketing value will depend on accessibility, accuracy, latency, and whether the interaction actually reduces customer effort.

TABLE III. DIGITAL MARKETING FUNCTION AND AI VALUE CHAIN

Function	AI Technology	Technique / Action	Customer Value
RDD / Search	NLP (chatbots)	Intent and context modeling	Product discovery
Social media	Recommender systems	Content and audience optimization	Relevance and participation
Email	Personalization, generative AI	Timing and content activation	Engagement and retention
Advertising	Programmatic ads	Ad and audience optimization	Low irrelevant exposure
E-commerce	Personalization	Product ranking and cross-sell	Choice support
CRM	Segmentation, recommendation	Personalized content	Efficiency and precision service
Influencer marketing	Analytics / content	Partner identification	Credible resources
Customer service	RULE-based conversational AI	Instant resolution / routing	Convenience and speed
Content marketing	Generative AI	SEO, image, video creation	Velocity and personalization

VI. CUSTOMER JOURNEY AND AI-DRIVEN TOUCHPOINTS

A. Pre-Purchase Discovery

AI influences discovery by deciding which information is most visible, which products are recommended, and which advertisements are delivered. The customer experience therefore increasingly reflects algorithmic ranking. From an engagement perspective, relevance is valuable because digital customers face attention scarcity. The strategic question is how to improve discovery without creating a closed environment in which the customer sees only what past behavior predicts. Systems should balance personalization with exploration and customer choice.

B. Evaluation and Comparison

During evaluation, customers often need explanation rather than simple recommendations. AI can summarize product features, compare alternatives, answer questions, and surface reviews. This may increase confidence and reduce effort. Yet the reliability of explanations becomes critical. A false or incomplete summary can make the experience worse because customers may make decisions based on incorrect information. Human-verifiable sources and transparent confidence indicators can help address this challenge.

C. Transaction and Conversion

AI can optimize checkout recommendations, payment routing, fraud checks, and offer presentation. From the customer's standpoint, the ideal experience is invisible assistance that reduces friction. When AI becomes too aggressive, the experience may feel manipulative. The distinction between assistance and persuasion is therefore important. Future research should distinguish customer-controlled personalization, where users request or configure support, from firm-controlled personalization that acts without explicit initiation.

D. Post-Purchase Service

Post-purchase experience may be the most important test of whether AI creates genuine engagement. Customers often contact firms because something has gone wrong. In these situations, speed matters, but empathy and resolution matter more. AI can triage cases, retrieve order information, identify likely problems, and draft responses. Human employees can then focus on complex situations. This division of labor can improve both efficiency and service quality when escalation is smooth.

E. Loyalty and Advocacy

AI can identify retention risks and opportunities for personalized rewards. It can recommend content or products that maintain interest after purchase. However, loyalty is not simply a prediction problem. Customers remain loyal when they perceive consistent value, fairness, and relationship quality. Therefore, AI should be used to support loyalty-building activities rather than to maximize extraction of short-term customer value.

TABLE IV. CUSTOMER JOURNEY, AI INTERVENTION AND KPIs

Journey Stage	AI Intervention	Primary KPI	Customer-Centered KPI
Discovery	Segmentation and personalization	CTR, reach	Relevance perception
Evaluation	Search, related, comparison	Product views	Information confidence
Consideration	Offer optimization	Conversion rate	Perceived fairness
Checkout	Personalized guidance	Abandonment	Ease of use
Service	Issue detection, routing	Resolution time	Satisfaction / effort
Retention	Churn prediction	Churn rate	Relationship quality
Advocacy	Referral and community tools	Referrals	Trust / willingness to recommend

VII. MEASURING AI-ENABLED CUSTOMER ENGAGEMENT

A. Behavioral Measures

Behavioral measures include click-through rate, conversion rate, repeat purchase, session duration, product exploration, response rate, retention, churn, referral, and content sharing. These metrics are relatively easy to collect, which explains why they are common in practice. However, they can be ambiguous. A longer session can indicate engagement or difficulty. More clicks can reflect curiosity or confusion. Therefore, behavioral metrics should be interpreted alongside customer perception measures.

B. Cognitive and Affective Measures

Cognitive measures can include perceived relevance, attention, understanding, and decision confidence. Affective measures can include enjoyment, emotional attachment, trust, perceived warmth, and satisfaction. These dimensions matter because AI can influence how customers feel even when immediate behavior does not change. The literature on artificial empathy demonstrates that affective and social experience remain distinctive dimensions of AI-mediated interaction [6].

C. Relational Measures

Relational measures include loyalty, commitment, advocacy, willingness to continue using a service, and perceived relationship quality. These outcomes are especially important for customer engagement because they capture whether AI creates durable value. A robust AI marketing dashboard should therefore combine short-term campaign metrics with longer-term relationship indicators.

D. AI-Specific Experience Measures

AI-specific constructs include perceived personalization, transparency, explainability, privacy concern, AI disclosure acceptance, perceived control, reliability, and human-likeness. The PEERS findings demonstrate the usefulness of decomposing AI marketing experience into multiple qualities rather than using a generic technology satisfaction measure [7]. Future empirical work can test whether these AI-specific constructs explain variance in engagement beyond conventional service-quality measures.

TABLE V. PROPOSED MEASUREMENT SYSTEM

Construct	Example Indicator	Scale Source	Why It Matters
Personalization	"The content matches my needs."	Survey / click data	Explains recommendation value
Transparency	"AI explains the offer / need."	Survey / click data	Explains decision rationale
Reliability	"The AI gives dependable answers."	Survey / return logs	Engages user
Trust	"I trust this AI assistant interaction."	Survey	Links experience to relationship
Privacy concern	"I am uncomfortable with this data use."	Survey	Explains resistance
Engagement	Activation, retention, return	Survey + behavioral data	Measures outcomes
Adaptation	Repeat use / share	CRM	Compares customer
Adaptivity	Repersonalization / referral	Survey + referral data	Refers back to source

VIII. ORGANIZATIONAL IMPLEMENTATION OF AI MARKETING

A. Use-Case Selection

Organizations should begin with problems rather than technologies. A sound AI marketing use case should have a measurable customer or business problem, sufficient data, manageable risk, and a clear escalation path. Examples include reducing response time for routine service questions, improving recommendation relevance, or identifying customers at risk of churn. Use cases involving sensitive personal data or high-impact decisions require stronger controls and a clearer human role.

B. Data Readiness

AI quality depends heavily on data quality. Customer records may be fragmented across website, app, CRM, social media, service systems, and physical channels. Duplicate identities and incomplete histories can produce poor personalization. Organizations should establish data dictionaries, identity resolution, access controls, retention policies, and quality monitoring before scaling AI applications. Data governance is therefore part of marketing capability, not just an information-technology concern.

C. Model and Content Governance

Governance should define who approves models, what outputs require review, how errors are logged, and how customer complaints feed back into model improvement. For generative AI, governance should include approved source material, prompt standards, brand rules, fact checking, copyright review, and escalation criteria. These procedures help convert AI from an experimental tool into a managed business capability.

D. Human Resource and Skills

AI changes marketing work rather than simply eliminating it. Employees need skills in data interpretation, prompt design, experimentation, AI quality assurance, customer experience, and governance. Managers need enough AI literacy to understand model limitations and challenge inappropriate recommendations. The result is a hybrid workforce in which technology handles repetitive scale-intensive work and people focus more on judgment, creativity, and relationship management.

E. Experimentation and A/B Testing

AI marketing systems should be tested through controlled experiments where possible. Firms can compare AI-assisted and non-AI experiences, different disclosure formats, alternative levels of personalization, or human-only versus human-AI service. The evaluation should include both business outcomes and customer outcomes. This prevents organizations from declaring success based only on immediate conversion gains.

F. Scaling Across Channels

AI can create inconsistency when each channel uses a different customer model. A customer may receive one recommendation on a website, another in email, and a third from a service chatbot. Organizations should therefore establish shared customer definitions and coordination rules. Omnichannel AI should aim for continuity rather than maximum message frequency.

TABLE VI. AI MARKETING IMPLEMENTATION CHECKLIST

Stage	Key Question	Deliverable / Deliverable
Problem definition	What customer problem will AI solve?	Business case and customer journey map
Data readiness	Are inputs accurate, timely, and sufficient?	Data quality and governance assessment
Model choice	Is AI appropriate for the task?	Model / model selection rationale
Experiment design	How will the customer interact with AI?	Prototype and usability testing
Risk oversight	What could a human strategy?	Escalation policy
Rollout readiness	What risks are being?	Risk register and monitoring plan
Measurement	How will success be measured?	AI's feedback and experiment design
Scale	How will the system be expanded safely?	Rollout plan and review cadence

IX. EMPIRICAL RESEARCH DESIGN FOR FUTURE TESTING

A. Proposed Quantitative Model

The conceptual model can be tested using a survey-based structural equation modeling design. AI marketing capability can be operationalized through personalization quality, response quality, generative content usefulness, and perceived automation quality. Mediating variables can include perceived value, trust, and customer experience. Customer engagement can be measured across cognitive, affective, behavioral, and relational dimensions. Privacy concern and AI disclosure can be included as moderators. This design would allow future researchers to test direct, mediated, and interaction effects rather than relying on simple correlations.

B. Suggested Sampling Approach

For a student-led empirical extension, a non-probability sample of adult digital consumers can be collected through an online questionnaire. Screening questions should confirm that respondents have interacted with at least one AI-enabled marketing feature, such as a recommendation system, chatbot, AI-generated content, or personalized advertisement. The sample should record basic demographic and digital-use characteristics so subgroup patterns can be explored without treating demographic variables as automatic causes of engagement differences.

C. Reliability and Validity

A future quantitative study should assess internal consistency, convergent validity, discriminant validity, common-method bias, and multicollinearity. If PLS-SEM is used, researchers can examine indicator loadings, composite reliability, average variance extracted, discriminant validity, path coefficients, effect sizes, and predictive relevance. Where possible, customer perceptions should be paired with behavioral data to reduce reliance on self-report alone.

D. Qualitative Extension

Qualitative interviews can complement survey findings by asking customers to describe moments when AI felt helpful, intrusive, confusing, trustworthy, or impersonal. Interviews with marketers can explore implementation constraints, governance, and trade-offs. The expert evidence in recent research on generative AI adoption demonstrates the usefulness of interviewing digital marketing practitioners to uncover drivers and challenges that may not appear in consumer surveys [15].

TABLE VII. PROPOSED FUTURE SURVEY CONSTRUCTS

Construct	Illustrative Items	Expected Direction
Personalization (quality)	"AI recommendations are relevant to me"	Positive to perceived value
Effectiveness	"The AI helps me achieve my goal"	Positive to trust
Time / simplicity	"This AI is easy to use"	Positive to engagement
Engagement	"Interacting with the AI is enjoyable"	Positive to affective engagement
Reliability	"AI responses are dependable"	Positive to trust
Transparency	"I understand when and why AI is used"	Positive to trust / control
Privacy concern	"AI uses more personal data than I am comfortable with"	Negative to engagement
Human support	"It can reach a person when needed"	Positive to complex tasks
Customer engagement	"I actively interact with this brand"	Primary outcome

X. COMPARATIVE EVIDENCE ACROSS RECENT STUDIES

Recent literature converges on personalization as a central AI marketing mechanism, but the evidence also reveals differences in outcome emphasis. Studies focused on customer engagement generally report improvements in relevance, service quality, or interaction, whereas work on ethics emphasizes trust, privacy, and transparency as boundary conditions. Generative AI studies emphasize productivity, content creation, and human augmentation, while chatbot studies emphasize service responsiveness and experience. The emerging Indian e-commerce literature adds a context-specific dimension by examining AI service experience among Indian consumers [17].

The differences across studies are not necessarily contradictions. They may reflect different points in the customer journey and different definitions of engagement. A personalized advertisement may influence attention; a chatbot may influence service satisfaction; a recommender may influence purchase or exploration; and a generative content system may influence both marketer productivity and customer response. The field therefore benefits from a framework that connects technologies to mechanisms instead of treating AI as a single independent variable.

The recent systematic reviews reinforce this need for integration. Hollebeek et al. reviewed 89 studies and organized AI-enabled consumer engagement into service accuracy, value co-creation, and reduced effort [8]. The PEERS study provides a complementary perspective by identifying personalized, effective, enjoyable, reliable, and simple qualities of AI marketing experiences [7]. The 2026 evidence map on generative AI further differentiates affective and behavioral engagement outcomes and identifies disclosure and human-in-the-loop moderation as emerging themes [16]. Together, these streams support a multi-dimensional approach to AI marketing research.

TABLE VIII. CROSS-STUDY THEMATIC COMPARISON

Theme	Typical Evidence	Early Customer Mechanisms	Boundary Condition
Personalization	Recommendation, targeted content	Relevance	May increase intrusion
Interaction	Chatbots, workflows	Reduced effort	Human can add effort
Generative AI	Copy, image, video creation	Flexibility / convenience	Quality and/or timeliness
Productivity	Proactivity, alerts	Efficiency	Model bias and error
Support / service	Affective conversational cues	Warmth / presence	Human-AI gap remains
Transparency	Disclosure, explanation	Control / trust	The more detail the better
Privacy	Data collection and use	Risk perception	Context dependent
Human-in-loop	Human / escalation	Reliability / reassurance	Cost and availability

XI. DISCUSSION OF THE PROPOSED MODEL

A. Why AI Capability Is Not Enough

A recurring issue across the literature is the tendency to evaluate AI through capability alone. Accuracy, speed, and automation are engineering properties, but customer engagement is a human outcome. A highly accurate system can still fail to engage if customers distrust it. Likewise, a less sophisticated system can generate strong engagement when it is simple, transparent, and aligned with a clear customer need. The proposed framework therefore places customer-perceived value and trust between AI capability and engagement.

B. Moderators as Boundary Conditions

The model proposes that disclosure, expertise, task complexity, and channel context influence the strength of AI effects. For routine tasks, customers may prefer direct automation. For complex or emotionally sensitive tasks, human involvement may create more value. Experienced users may be more comfortable with AI than novices, but expertise can also increase skepticism when system behavior appears opaque. Social media, e-commerce, and customer service each have different expectations, so channel context should be treated as a meaningful boundary condition.

C. The Trust–Personalization Trade-off

Personalization and privacy can be understood as a trade-off rather than independent variables. Increasing data use can improve recommendation accuracy, but it can also increase perceived surveillance. The optimal level is not necessarily maximum personalization; it is the level that maximizes perceived value subject to acceptable privacy expectations. This suggests a future research opportunity to model an inverted-U relationship between personalization intensity and engagement under different privacy conditions.

D. Engagement Quality Versus Engagement Quantity

Digital systems make engagement easy to count, but counting is not the same as evaluating quality. AI can increase the number of interactions while decreasing the quality of each interaction. A customer who repeatedly asks a chatbot the same question is generating engagement events but experiencing poor service. Future research should therefore include effort, satisfaction, resolution, and relationship outcomes rather than relying on activity volume.

E. Strategic Implications for Digital Marketing Management

The strategic role of AI is broader than campaign optimization. It affects segmentation, content, customer service, product discovery, measurement, and decision making. Firms should organize AI around a coherent customer experience strategy. This requires coordination among marketing, service, technology, data, legal, and governance teams. The ability to

make these functions work together may become more important than any individual AI model.

XII. ETHICAL DESIGN PRINCIPLES FOR CUSTOMER-CENTERED AI MARKETING

- Purpose clarity: Use customer data for a defined and communicated purpose rather than collecting information simply because it is technically available.
- Proportionality: Match the intensity of personalization and automation to the value and risk of the customer task.
- Transparency: Provide understandable information when AI materially affects communication, recommendations, or decisions.
- Control: Give customers practical options to correct, adjust, limit, or opt out of certain AI-driven experiences where appropriate.
- Accuracy: Establish review and verification processes for generated content and customer-facing claims.
- Fairness: Test whether algorithms create systematically unequal or unjustified outcomes across customer groups.
- Human access: Preserve a path to human assistance for complex, sensitive, or contested interactions.
- Accountability: Assign clear organizational ownership for AI performance, customer harm, and remediation.

TABLE IX. CUSTOMER-CENTERED AI GOVERNANCE PRINCIPLES

Principle	Marketing Practice	Customer Benefit
Transparency	Highlight AI use and meaningful personalization	Predictability and control
Privacy	Minimize and secure data	Lower perceived surveillance
Personalization	Monitor engagement outcomes	Customized treatment
Security	Verify customer-facing outputs	Credibility
Human access	Provide contact points	Proximity and resolution
Accountability	Define owner and audit trails	Security when systems fail
Choice	Offer meaningful settings where possible	Autonomy
Continuous review	Monitor experience and complaints	Early correction

X. PROPOSED CONCEPTUAL FRAMEWORK

Drawing from the reviewed literature, this paper proposes that AI marketing capabilities influence customer engagement indirectly as well as directly. The framework separates the technological inputs from the customer perceptions that convert those inputs into engagement. AI capabilities create potential benefits, but customers interpret those benefits through perceived relevance, convenience, responsiveness, enjoyment, trust, and experience quality. Moderating conditions such as AI disclosure, customer expertise, task complexity, and channel context can strengthen or weaken these relationships.



Fig. 1. Proposed conceptual framework linking AI marketing capabilities to customer engagement.

A. Proposed Propositions

P1: AI-enabled personalization is positively associated with perceived customer relevance when recommendations are accurate and contextually appropriate.

P2: Customer-perceived relevance and convenience mediate the relationship between AI marketing capabilities and behavioral engagement.

P3: Trust and perceived reliability strengthen the positive relationship between AI-enabled interaction and long-term engagement outcomes.

P4: AI disclosure can moderate engagement by changing customer expectations about the origin and accountability of marketing communication.

P5: Human support availability strengthens engagement in high-complexity or emotionally sensitive customer journeys.

P6: Privacy concerns weaken the relationship between personalization and engagement when customers perceive data use as excessive or opaque.

P7: Generative AI improves marketing productivity and experimentation, but human review is necessary for high-risk customer-facing outputs.

P8: The effects of AI on customer engagement vary across channels and customer expertise levels; therefore, one universal AI-engagement effect should not be assumed.

XI. SYNTHESIS AND DISCUSSION

A. From Automation to Augmentation

The combined evidence suggests that the strategic role of AI is shifting from simple automation to augmentation. Earlier AI marketing discussions focused on reducing repetitive work and improving prediction [1], [9]. Recent literature adds generative content, conversational interaction, and customer co-creation [2], [15], [16]. This means the marketing function is increasingly organized around human-AI teams rather than a binary choice between humans and machines. Machines are strongest at scale, pattern detection, retrieval, generation, and speed. Humans remain critical for judgment, empathy, accountability, brand interpretation, and exceptions.

B. Engagement Is Multidimensional

A second insight is that customer engagement cannot be reduced to clicks or sales. AI can increase behavioral activity while damaging trust or emotional attachment. For example, a highly optimized recommendation can increase conversion but feel intrusive if the customer is uncomfortable with the underlying personalization. Conversely, a helpful chatbot may improve satisfaction and reduce effort without producing an immediate purchase. Studies that distinguish affective from behavioral outcomes therefore offer a stronger direction for research [16].

C. The Importance of Perceived Value

The literature also indicates that AI performance must be interpreted from the customer's perspective. A technically sophisticated system may fail if customers do not perceive it as useful, easy to understand, or reliable. The PEERS study identifies personalized, effective, enjoyable, reliable, and simple-to-use qualities as significant factors associated with engagement [7]. This suggests that firms should measure customer-perceived value alongside model performance metrics.

D. Human-AI Complementarity

The strongest emerging pattern is complementarity. Generative AI can expand a marketer's ability to create and test content, but human judgment remains necessary to protect brand voice and accuracy. Conversational AI can handle routine interactions while human agents address complex cases. Predictive models can surface opportunities while marketers decide whether an intervention is appropriate. This human-AI division of labor is consistent with the argument that the extent of human augmentation is a critical choice in the implementation of generative AI [2].

XII. RESEARCH GAPS AND FUTURE AGENDA

A. Need for More Longitudinal Evidence

Many AI marketing studies are cross-sectional, which makes it difficult to determine whether engagement gains persist. Future studies should examine customer responses over repeated interactions and test whether trust, privacy concerns, or fatigue change after prolonged exposure to AI personalization. Longitudinal evidence is also needed to distinguish short-term conversion effects from durable loyalty and advocacy.

B. Better Measurement of Engagement

Future research should use multidimensional engagement measures rather than single behavioral proxies. Cognitive attention, emotional response, behavioral activity, social participation, and relationship outcomes may respond differently to the same AI intervention. Research should therefore test mediation and trade-off effects rather than assuming every AI improvement translates directly into purchase behavior.

C. Context and Cultural Differences

Customer reactions to AI may vary across markets, cultures, generations, product categories, and digital maturity levels. For example, the evidence from MENA social media consumers [12] and the emerging Indian e-commerce literature [17] indicates the value of context-specific research. Comparative studies could investigate whether the same personalization strategy increases trust in one market but raises privacy concerns in another.

D. Human-in-the-Loop Design

More research is needed on exactly when human involvement creates the greatest value. Human review has a cost, so a useful research agenda should move beyond the generic recommendation that humans should remain involved. Studies can examine task complexity, risk level, customer emotion, and error cost to determine where full automation, supervisory review, or human-led interaction is most effective [16].

E. AI Disclosure and Consumer Expectations

Disclosure is another area where evidence is developing rapidly. Researchers should test not only whether customers prefer disclosure, but also what kind of disclosure is most useful. A generic label that says content was AI-generated may have a different effect from a contextual explanation of what data were used and how the recommendation was produced. Experimental designs can compare transparency levels and measure trust, perceived control, and engagement.

TABLE VII. RESEARCH AGENDA

Research Topic	Potential Research Questions	Suggested Methods
Long-term effects	Do engagement gains persist after repeated AI exposure?	Longitudinal panel
Adaptation to behavioral	How do consumers' purchase risk or decision-making adaptiveness?	Experimental / SEM
Disclosure	When does AI disclosure improve or reduce trust?	Controlled experiments
Human-in-the-loop	Which tasks benefit most from human assistance?	Field experiments
Privacy trade-off	How do relevance and transparency interact?	Survey + experiments
Cross-cultural effects	Do AI engagement mechanisms vary across markets?	Multi-center SEM
Search quality	How does human review affect customer trust?	A/B test
ROI estimation	How much value returns benefits without customer loss?	Case studies + survey

XIII. MANAGERIAL IMPLICATIONS

Managers should treat AI as a customer-experience capability rather than only a cost-reduction tool. First, AI use cases should be selected according to customer value: personalization should increase relevance, chatbots should reduce effort, and predictive models should support timely assistance. Second, organizations should define human-escalation rules before automating customer interactions. Third, privacy and disclosure should be designed into the customer journey rather than added after implementation. Fourth, generative AI outputs should use approved data sources and human review for high-impact communications. Finally, performance dashboards should combine marketing efficiency metrics with trust, satisfaction, complaint rates, retention, and other customer-centered indicators.

A practical implementation sequence is to start with low-risk, high-volume tasks; establish data and governance controls; measure customer response; and only then expand automation to more consequential decisions. This approach is aligned with the broader literature's emphasis on task fit, organizational readiness, and the balance between AI capability and human augmentation [1], [2], [9].

XIV. LIMITATIONS

This study has three principal limitations. First, it is a literature-based synthesis and therefore does not estimate causal effects from a new primary dataset. Second, the literature includes heterogeneous definitions and measures of customer engagement, making direct numerical comparison inappropriate. Third, the field is changing rapidly, especially in generative AI, so some findings may require updating as new empirical evidence becomes available. These limitations also motivate future empirical research using standardized measures and longitudinal designs.

XV. CONCLUSION

Artificial intelligence is reshaping digital marketing by changing how firms identify customer needs, personalize communication, generate content, automate interactions, and make decisions. The literature reviewed in this paper indicates that AI can increase customer engagement when it creates meaningful value through relevance, convenience, responsiveness, enjoyment, and reliability. However, the same technologies can reduce engagement when customers experience privacy intrusion, opacity, bias, inaccurate content, or loss of human connection. The central conclusion is therefore not that more AI automatically produces better marketing. Instead, effective AI marketing depends on matching technology to customer needs, preserving appropriate human involvement, and designing transparency and governance into the experience. The proposed framework positions perceived value, trust, and customer experience as key mechanisms linking AI capabilities with engagement, while disclosure, expertise, complexity, and channel context shape the strength of those relationships. This

framework can support future empirical studies and provide managers with a structured way to evaluate AI initiatives beyond short-term campaign efficiency.

XVI. EXTENDED THEMATIC ANALYSIS OF AI MARKETING

A. Personalization as a Value-Exchange Problem

Personalization is often presented as a technical optimization problem, but it is better understood as a value-exchange problem. The firm uses customer information to improve the fit of an interaction, and the customer expects a corresponding benefit in the form of relevance, convenience, service quality, or discovery. The exchange becomes unstable when customers perceive that the value they receive is smaller than the cost of data exposure or loss of control. This explains why two customers can respond differently to the same AI feature. One may appreciate a recommendation because it saves time, while another may interpret the same recommendation as surveillance.

Research on AI-enabled engagement suggests that personalized, effective, enjoyable, reliable, and simple AI experiences are associated with stronger engagement [7]. The implication is that personalization should be evaluated as a bundle of experience qualities rather than as a single technical score. Recommendation accuracy is necessary but may not be sufficient. Marketers should ask whether customers understand the recommendation, whether they can correct it, whether the system respects context, and whether the interaction improves the decision process.

B. Automation as Friction Reduction

Automation has strategic value when it removes unnecessary customer work. The literature on AI-enabled engagement identifies reduced consumer effort as a major theme [8]. This applies to search, support, onboarding, order tracking, refunds, and routine information requests. However, the critical distinction is between invisible helpful automation and visible frustrating automation. When the system works, the customer may experience a shorter journey. When it fails, the customer may experience a longer journey because the system becomes another layer that must be navigated.

This suggests a simple operational test: compare the effort required to complete a task with AI against the effort required without AI. Organizations should count not only clicks and response time but also repetitions, transfers, corrections, and failed attempts. A chatbot with a 30-second average response time is not successful if customers need three attempts to get the right answer. Customer effort is therefore an outcome that can expose hidden automation costs.

C. Generative AI and the Economics of Creative Experimentation

Generative AI changes the economics of experimentation by reducing the time and cost of producing message variants. A marketing team can test different headlines, product descriptions, storytelling approaches, translations, and visual concepts without rebuilding every asset manually. The value is not simply faster production; it is the possibility of running more experiments and learning more quickly. Grewal et al. argue that generative AI will influence how marketing content is created and delivered and how firms research and develop products and services [2].

At the customer level, experimentation can improve relevance if the organization uses the additional creative capacity thoughtfully. At the organizational level, however, large

volumes of AI-generated content can create governance problems. More variants mean more opportunities for inconsistent claims, inaccurate information, or unintended bias. A mature system therefore combines generation with selection, verification, brand rules, and performance learning. The best use of GenAI is not maximum content output but maximum learning and value per unit of customer attention.

D. Predictive Analytics and Proactive Marketing

Predictive analytics extends marketing from reactive response to proactive intervention. Churn models can identify customers likely to disengage, propensity models can estimate response likelihood, and demand models can support inventory or campaign planning. Proactive marketing is valuable when the intervention is genuinely helpful. For example, a service reminder can prevent a problem, or a replenishment recommendation can save time. Yet predictive intervention creates a special ethical risk because the customer may not know that the firm has inferred a private condition from behavior. The design challenge is therefore to deliver useful assistance without exposing or overemphasizing sensitive inferences.

E. Conversational AI as an Interface Layer

Conversational AI is increasingly becoming an interface layer between the customer and the firm's information systems. Instead of navigating menus, customers can express intent in natural language. This can improve accessibility and reduce search costs. Yet conversation creates expectations that the system will remember context, understand ambiguity, and respond appropriately. The more natural the interface becomes, the more customers may expect human-level competence. This creates a gap between perceived and actual capability that managers must address through clear scope, graceful failure, and human escalation.

F. Social Listening and Real-Time Marketing

AI-based social listening can monitor large volumes of customer expression and identify recurring topics, sentiment patterns, emerging complaints, and opportunities. Real-time analysis can shorten the distance between customer feedback and managerial response. The strategic value is strongest when the organization can act on insights rather than merely collect them. Social listening without organizational responsiveness can create an illusion of customer orientation without improving the actual experience.

TABLE X. THEMATIC INTERPRETATION OF AI VALUE

Theme	AI Contribution	Customer Benefit	Managerial Priority
Personalization	Tailored content / offers	Relevance	Value-exchange strategy
Automation	Reduced task complexity	Reduced effort	Reduce and resolve customer frustration
Generation	Creative asset production	Variety / relevance	Speed and responsiveness
Prediction	Pattern analysis and foresight	Timely assistance	Proactive and personalized steps
Conversations	Natural language interface	Empowered access	Bridge and human handoff
Listening	Large-scale feedback signals	Insightful	Empathetic action
Recommendation	Choice nudge	Efficiency	Discover and introduce
Creative assistance	Rapid ideation	Support / structure	Ethics and safety

XVII. AI MATURITY MODEL FOR DIGITAL MARKETING

A useful way to translate the literature into managerial practice is to view AI adoption as a maturity journey. Organizations often move from isolated experimentation to connected, measurable, and governed AI capabilities. Maturity should not be defined only by the number of AI tools purchased. It should be defined by whether AI is connected to customer

value, supported by reliable data, integrated into workflows, measured through appropriate outcomes, and governed for risk.

A. Level 1: Experimentation

At the experimentation stage, marketers use individual AI tools for drafting, analysis, or small tests. Activities are largely manual and governance may be informal. The priority is learning: what tasks can AI perform well, what errors occur, and which customer problems could benefit from further investment.

B. Level 2: Assisted Workflows

At the assisted stage, AI becomes part of recurring workflows. Examples include AI-supported email drafting, customer segmentation, service summarization, and content adaptation. Human review remains common. Organizations begin defining quality standards and measuring productivity and customer outcomes.

C. Level 3: Integrated Personalization

At the integrated stage, customer data and AI models are connected across multiple channels. Recommendations, content, service, and retention actions are coordinated. The organization needs stronger identity resolution, data governance, experimentation, and consent controls because AI now influences the end-to-end journey.

D. Level 4: Adaptive Customer Experience

At the adaptive stage, AI systems dynamically adjust customer interactions based on context and feedback. Marketers can optimize sequences in near real time. The major challenge is governance at scale: a small model error can affect many customers quickly. Continuous monitoring, model evaluation, and customer feedback loops become essential.

E. Level 5: Responsible Human-AI Organization

The highest maturity stage is not full automation. It is institutionalized human-AI collaboration. The organization knows which tasks should be automated, augmented, or reserved for humans. AI governance is part of ordinary marketing management. Employees have the skills to challenge models, customers have meaningful controls, and measurement balances performance with trust and customer welfare.

Maturity Level	Core Capabilities	Typical Examples	Risks
1. Experimental	Small-scale experiments	AI copy drafting	Uncontrolled use
2. Assisted workflows	Deciding AI support	Product/service assistance	Opaque recommendations
3. Integrated personalization	Customized AI	Recommendations + CRM	Data governance
4. Adaptive experience	Real-time interactions	Dynamic customer journeys	Unintended outcomes
5. Responsible human-AI	Embedded collaboration	Automatic response by tool	Organizational complexity

XVIII. COMPARISON OF HUMAN, AI, AND HYBRID MARKETING TASKS

The question of whether AI should perform a marketing task is better answered by task characteristics than by technology enthusiasm. Tasks that are repetitive, data-rich, high-volume, and low-risk are strong candidates for automation. Tasks that require interpretation, emotional sensitivity, accountability, or exception handling are more suitable for human leadership or hybrid execution. This task-based view is consistent with strategic AI frameworks that emphasize intelligence level and task type [1], [9].

Task Characteristics	AI-Fit	Human-Fit	Hybrid Preferred
High volume + low ambiguity	Yes	Rarely	Sometimes
High data intensity	Yes	Sometimes	Often
Emotional sensitivity	No	Yes	Yes
High customer risk	No	Yes	Yes
Creative exploration	Yes	Yes	Best fit
Real-time service	Yes	Sometimes	Often
Complex compliance	No	Yes	Best fit
Strategic positioning	Sometimes	Low	Best fit
Full accountability	No	Yes	Best fit

The hybrid category is important because marketing tasks are rarely completely mechanical or completely social. Content creation includes both generation and judgment. Customer service includes retrieval and empathy. Segmentation includes prediction and strategic interpretation. The organizational challenge is to design a process in which each side contributes where it is strongest.

XIX. AI AND CUSTOMER ENGAGEMENT ACROSS BUSINESS MODELS

A. B2C E-Commerce

B2C e-commerce provides a strong environment for AI because transactions produce rich behavioral data and recommendations can be evaluated through measurable actions. Relevant applications include product ranking, cross-sell, search assistance, chatbots, and retention prediction. Customer engagement may improve through lower search cost and greater relevance. However, e-commerce also makes privacy and recommendation fairness highly visible because AI directly influences product choice and promotional exposure.

B. Subscription Businesses

Subscription businesses can use AI to predict churn, personalize onboarding, recommend content, and optimize communications. The challenge is avoiding excessive retention tactics. A model that predicts cancellation can trigger an offer or service intervention, but customers may perceive the action as manipulative if it is not transparent or useful. Retention should therefore be treated as a relationship outcome rather than a purely financial optimization target.

C. Financial and High-Trust Services

In financial and other high-trust services, explainability and human support become more important. AI can support customer education, service triage, fraud detection, and personalized information, but high-impact decisions require stronger safeguards. Customer engagement in these contexts depends on confidence, fairness, security, and accountability as much as convenience.

D. Education and Digital Services

Education and digital services use AI for recommendation, tutoring, content generation, support, and personalization. Engagement may increase when systems adapt to user progress and reduce information overload. Yet the same systems raise questions about autonomy, over-reliance, accuracy, and the role of human educators or support staff. The general framework therefore remains relevant: AI creates potential value, but trust and appropriate human involvement determine the quality of engagement.

TABLE XI. BUSINESS CONTEXT DIFFERENCES

Context	High-Value AI Use	Critical Engagement Driver	Critical Success Factor
E-commerce	Recommendation, chatbot	Relevance / customization	Speed / delivery
Subscription	Content production, personalization	Consistency / value	Manipulation reduction
Financial services	Service support, personalization	Trust / reliability	High-report accuracy
Education	Adaptive support, content	Engagement / learning	Accuracy / human-like
Travel / Hospitality	Personalized planning, service	Convenience / experience	Speed and responsiveness (management)
HR	Lead scoring, account intelligence	Relevance / efficiency	Data quality / human judgment
Health	Automated, content support	Cost efficiency / speed	Capacity and coverage

XX. CROSS-CUTTING FINDINGS

A. Relevance Is the Most Consistent Positive Mechanism

Across recommendation, social, email, content, and service applications, relevance appears repeatedly as the mechanism through which AI becomes useful. Customers rarely value AI for its own sake. They value the outcome: finding an answer faster, seeing a more suitable product, receiving a timely reminder, or obtaining useful content. This suggests that AI marketing research should focus on customer-perceived relevance rather than simply adoption or technological sophistication.

B. Trust Converts Capability Into Relationship Value

Trust acts as an enabling condition. When customers trust the firm and the AI system, they are more likely to accept personalization and automation. When trust is low, the same features can be interpreted as surveillance, manipulation, or incompetence. This explains why responsible AI is not separate from marketing performance. Governance can directly affect the likelihood that customers will engage.

C. Context Determines Optimal Automation

There is no single optimal level of automation. Routine informational tasks can often be highly automated, while complex complaints require more human involvement. This contextual principle should be applied at the customer-journey level. Organizations can automate a portion of a task and still provide human oversight for the consequential decision or emotional interaction.

D. The Best AI Strategy Is Customer-Centered Rather Than Tool-Centered

The reviewed evidence ultimately supports a customer-centered approach. AI strategy should begin with customer journeys, pain points, and value creation opportunities. Technology should then be selected to improve those outcomes while preserving trust and control. This approach also reduces the risk of adopting tools because they are fashionable rather than useful.

XXI. PRACTICAL CASE VIGNETTES

A. E-Commerce Recommendation Vignette

Consider an online marketplace that uses AI to recommend products from browsing and purchase history. The system increases relevance by ranking products a customer is more likely to need. The engagement pathway in the proposed model is: data signal → recommendation quality → perceived relevance → lower search effort → exploration or purchase. A governance concern arises when the recommendations become repetitive or reveal sensitive inferences. A responsible implementation would allow explanation at an appropriate level, provide category-level controls, and evaluate whether customers perceive the recommendations as helpful rather than intrusive. This vignette illustrates why AI performance should be measured together with customer perception.

B. Conversational Service Vignette

A retail firm deploys a conversational AI assistant for delivery and return questions. Routine cases can be resolved quickly, reducing waiting time and service workload. Complex complaints are routed to a human agent with the conversation history attached. This design uses AI for speed and availability while preserving human involvement for cases where empathy or exception handling is required. Engagement is expected to improve when customers receive a quick resolution and do not need to repeat their history. The risk is that an escalation process that is difficult to find can turn a convenient chatbot into a source of frustration.

C. Generative Content Vignette

A consumer brand uses generative AI to create multiple versions of social media copy and imagery. Marketers select approved concepts, verify claims, and adapt the final outputs to the brand voice. The system increases creative throughput and supports more rapid experimentation. However, automatic publication without human review could produce inaccuracies, inconsistent claims, or content that feels generic. In this case, human-in-the-loop review is part of the marketing system rather than an afterthought.

D. AI-Personalized Email Vignette

An online retailer uses predictive models to determine the most relevant product category and send time for each customer. The system reduces message volume for customers who rarely respond and increases tailored communication for those who actively engage. This illustrates a key principle: personalization should not mean more messages. It should mean more useful messages, preferably with frequency constraints and customer controls. Engagement can therefore be improved through both content relevance and restraint.

APPENDIX A: PROPOSED QUESTIONNAIRE FOR FUTURE EMPIRICAL STUDY

The following items are proposed for a five-point Likert-scale questionnaire (1 = Strongly Disagree, 5 = Strongly Agree). They are provided as a research instrument for future primary-data collection and are not treated as observed results in the present literature-based paper.

No.	Construct	Operational Description/Item
1	AI Usability	I frequently encounter AI-related issues while using digital platforms.
2	AI Usability	I am confident in my ability to use AI in my daily life.
3	Personalization	AI-powered recommendations are tailored to my needs.
4	Personalization	The content shown to me is appropriately customized.
5	Personalization	AI helps me discover products or services that interest me.
6	Effectiveness	AI helps me achieve my digital shopping or information goals.
7	Effectiveness	AI-related marketing provides useful information in the right time.
8	Interactivity	AI marketing feels like a way to chat.
9	Interactivity	I can understand what I need to do when interacting with an AI system.
10	Engagement	Interacting with AI-related marketing features is enjoyable.
11	Engagement	AI makes some digital experiences more interesting.
12	Reliability	AI-powered recommendations are dependable.
13	Reliability	AI responses are usually accurate enough for my needs.
14	Responsiveness	AI-related services respond quickly when I need help.
15	Trust	I trust results that an AI generates.
16	Trust	I feel confident using AI-related technologies with brands.
17	Transparency	I understand when AI is being used in a marketing interaction.
18	Transparency	Brands should explain important decisions or recommendations made by AI.
19	Privacy concerns	I worry about how much personal data AI marketing systems use.
20	Privacy concerns	Personalized marketing can feel invasive when too much data is used.
21	Control	I want the ability to adjust my personalization.
22	Human support	I would like to talk to a human when AI cannot solve my problem.
23	Human support	Human customer service can enhance my confidence in AI-related services.
24	Cognitive engagement	AI makes me pay more attention to relevant brand information.
25	Affective engagement	AI-related experiences can create positive feelings toward a brand.
26	Behavioral engagement	AI makes me more likely to interact with a brand online.
27	Motivational engagement	AI makes me more likely to explore or purchase relevant products.
28	Motivational engagement	I used AI experiences to boost my willingness to purchase using a brand.
29	Advocacy	I would like AI customer service to make it easier for me to recommend a brand.
30	Visual evaluation	Through AI, I improve my digital customer experience when used appropriately.

APPENDIX B: LITERATURE MAPPING MATRIX

The matrix below summarizes how selected studies inform the present framework. It is intended to support literature review transparency and to show the connection between prior work and the proposed constructs.

Ref.	Study	Method	Key Findings	Link Between Constructs
[11] Deshpande et al.	AI strategy effectiveness	Conceptual	Strategy and fit	AI adoption, marketing and customer behavior
[22] Garret et al.	Personalized AI	Conceptual	Fourth Service expectation	Customer and customer relationship
[13] Wang & Bai	AI customer transparency	Conceptual	Mechanism, Outcome & finding	Market, AI capability, service
[36] (14) Tang et al.	Artificial reality	Descriptive	Algorithm (2)	Human-AI interaction, user system
[27] Tienari et al.	AI marketing engagement	Qualitative	TEO 96	Highly AI signs more positive affect engagement
[31] Hildebrand et al.	AI customer engagement	SEM, 40 studies	Engagement	directly, transactional, indirect effect
[30] Douglas et al.	Online AI marketing	Research synthesis	Strategy & Data, personal	Marketing adoption, user
[112] Chakrabarti & Shukla	AI usability	SEM	Marketing literature	Brand customer relationship
[113] Bryant & Shukla	AI and online personalization	Survey 994	Personalization (2)	AI response behavior and recommendation
[114] Shukla & Bryant	AI and online personalization	Proposed	Trust (personal)	Personalization, digital and privacy dimensions
[114] Shukla et al.	AI usability	Literature review	Studies (17)	Research, literature and engagement
[115] Shukla et al.	AI and digital marketing	SEM, 10 cases	Customer engagement	Engagement, benefits and challenges
[116] Shukla & Shukla	Trust and engagement	Systematic review	Effective behavioral	Engagement and RFP, studies
[117] Hsu et al.	Online consumer	Primary study	AI service experience	Identification and engagement to India
[118] Shukla & Shukla	AI personalization	Systematic review	Customer engagement	Evidence on personalization and engagement
[119] Shukla et al.	AI for marketing	SEM	Marketing engagement	AI support, benefits and recommendations
[120] Shukla et al.	Online digital marketing	Research study	Engagement, personal	AI effectiveness engagement and customer
[121] Shukla et al.	AI and customer engagement	Qualitative	AI digital marketing	Customer engagement and personalization
[122] Shukla et al.	AI and online CX	Literature review	Personalization	AI and digital marketing engagement
[123] Shukla et al.	AI marketing in India	Systematic review	Personalization, digital, effects, RFP, SEM	Personalization, digital, effects, RFP, SEM

APPENDIX C: OPERATIONAL DEFINITIONS

Term	Operational Definition
Artificial Intelligence	Computational systems used for learning, prediction, language processing, generation, recommendation, or automated decision support in marketing contexts.
Digital Marketing	Marketing activities conducted through digitally mediated channels such as social media, websites, email platforms, search engines, applications, online marketplaces, and digital advertising.
AI-related Personalization	Use of AI to tailor content, recommendations, offers, or support based on customer behavior, preferences, or inferred characteristics.
Generative AI	AI systems capable of generating new text, images, audio, video, code, or other content from prompts or contextual inputs.
Conversational AI	AI systems that communicate with customers through natural language text or speech, including chatbots and virtual assistants.
Customer Engagement	A multi-dimensional customer state or set of behaviors involving cognitive activation, emotional resonance, intention, participation, persistence or sustained relationship with a firm or brand.
Customer Expectations	The customer's overall perception and evaluation of interactive service experiences over time.
Personalized Recommendation	The extent to which customers believe AI-derived results or recommendations meet their current needs or interests.
Trust	The customer's willingness to rely on a firm or AI-related technology because it is perceived as competent, reliable, honest and appropriately governed.
Privacy Concerns	The extent to which customers worry about collection, retention, use, sharing or retention of personal information by AI marketing.
AI Disillusion	Customer belief that firms/customer that AI is being used to generate content, provide services, personalize recommendations, or support a decision.
Human in the Loop	A design in which human employees oversee, supervise, approve, or take over AI-driven marketing or service activities.
Marketing Automation	Use of software and AI to execute recurring marketing processes with limited manual intervention.
Predictive Analytics	Methods that use historical and contextual data to estimate future behavior, demand, response, choice, or other outcomes.
Hyperpersonal AI Marketing	Bridge and governance practices intended to align AI use with customer privacy, human, pricing transparency, no bias, security and accountability.

APPENDIX D: PROPOSED HYPOTHESES AND ANALYTICAL PATHS

Hypothesis	Proposed Path	Expected Relationship
H1	AI usability → personalization	Customer who perceive AI content as more relevant will report stronger personalization.
H2	AI effectiveness → trust	Perceived usefulness and effectiveness will be positively associated with trust.
H3	Interactivity → engagement	Ease of use will positively influence customer engagement.
H4	Engagement → affective engagement	Engagement in interaction will be positively associated with affective engagement.
H5	Reliability → trust	Reliable AI outputs will increase customer trust.
H6	Personalization → behavioral engagement	Highly personalized value will increase online interaction and purchase-related behavior.
H7	Trust → motivational engagement	Higher trust will increase intention, loyalty, and advocacy.
H8	Privacy concerns → personalization → engagement	Privacy concerns will weaken the positive effect of personalization on engagement.
H9	AI disillusion → trust → engagement	The effect of AI disillusion on engagement will be indirect via customer trust and perceived transparency.
H10	Human support → high interactivity → engagement	Human support will have a stronger positive effect in cognitive or motivationally sensitive states.
H11	Customer engagement → AI quality → trust	The relationship between AI quality and trust will differ across customer engagement levels.
H12	Channel control → AI capability → engagement	AI capabilities will have different effects across transactions, social media, and service channels.

APPENDIX E: RECOMMENDED DATA ANALYSIS PLAN

A student researcher extending this paper into an empirical study can follow the sequence below. First, perform data screening for incomplete responses, duplicates, straight-lining, and improbable response patterns. Second, report descriptive statistics for the sample. Third, evaluate scale reliability and validity. Fourth, test the measurement model before the structural model. Fifth, test direct effects, mediation, and moderation according to the hypotheses. Sixth, report effect sizes and practical interpretation rather than relying only on statistical significance. Finally, compare findings across relevant subgroups only when the sample size supports meaningful analysis.

Stage	Analysis	Diagnostic Output
Data Screening	Missing values, duplicate records	Global analytical results
Descriptive Profile	Frequency, mean, SD	Representative and reliable overview
Reliability	Cronbach alpha / composite reliability	Scale consistency
Convergent Validity	Loadings, AVE	Load factor reliability
Discriminant Validity	IFNVI / Fornell-Larcker	Construct discriminability
Structural Model	Path coefficients	Regression testing
Mediation	Indirect effects	Mediation testing
Moderation	Interaction effects	Modality-condition testing
Predictive Assessment	R ² / f statistic	Predictive relevance
Robustness	Alternative specifications	Stability of conclusions

APPENDIX F: REVIEW PROTOCOL AND SEARCH STRATEGY

The review protocol was designed to keep the literature synthesis transparent without claiming exhaustive database coverage. The research question was translated into four concept

groups: technology, marketing context, customer response, and governance. Search strings combined terms such as (artificial intelligence OR AI OR generative AI OR machine learning OR chatbot OR recommender) with (digital marketing OR social media marketing OR online marketing OR content marketing OR CRM) and (customer engagement OR customer experience OR personalization OR trust OR purchase intention OR loyalty). Additional targeted searches were used for foundational frameworks and recent systematic reviews.

Priority was assigned to peer-reviewed journal articles, systematic reviews, conceptual frameworks, and empirical studies that clearly defined their contribution. Open-access availability was preferred so that the evidence could be inspected without subscription barriers. Recent studies from 2025 and 2026 were included because generative AI and customer engagement research are changing rapidly. Earlier foundational work was retained when it introduced a framework still relevant to the present topic.

A. Inclusion Criteria

- The study addresses AI or a closely related AI capability in a marketing, customer experience, or consumer context.
- The study discusses at least one customer outcome such as engagement, experience, trust, satisfaction, purchase intention, loyalty, or participation.
- The paper is peer-reviewed or otherwise clearly identified as scholarly research from a recognized academic publisher or repository.
- The full article or a reliable scholarly record is accessible for verification.
- The study contributes either conceptual, empirical, review, or methodological insight relevant to the proposed framework.

B. Exclusion Criteria

- Purely technical AI papers with no marketing or customer dimension.
- Non-scholarly promotional material used as primary evidence.
- Studies where the AI component is incidental and not related to the research question.
- Duplicate records or substantially overlapping versions without additional evidence.
- Claims that cannot be verified from the accessible scholarly source.

C. Evidence Synthesis Procedure

Each selected study was reviewed for its context, research question, AI capability, method, sample or literature scope, customer outcome, key finding, and limitation. Findings were then grouped into themes. A finding was retained as a recurring theme when it appeared across multiple studies or when a single study offered a strong conceptual contribution directly relevant to the framework. The synthesis emphasizes convergence while also identifying tensions such as personalization versus privacy and automation versus human warmth.

TABLE XII. REVIEW PROTOCOL SUMMARY

Element	Exclusion (in This Study)
Research Design	Observational studies; Retrospective review
Publication Format	Grey literature and scholarly open-access articles
Time period	2025-2026
AI/ML sources	Designed for foundational theoretical frameworks
Technology scope	AI, ML, NLP, recommendation, chatbots, LLMs
Marketing scope	Digital marketing, social media, content, CRM, e-commerce, service
Customer scope	Engagement, experience, trust, satisfaction, purchase, loyalty
Governance scope	Privacy, transparency, bias, algorithmic bias/discrimination
Methodological	Thematic coding across technology, marketing, outcomes and risks

APPENDIX G: EXTENDED LITERATURE CODING SHEET

The following coding sheet illustrates how the evidence base can be converted into variables for a future empirical or systematic review project. It is intentionally broader than a simple bibliography because it connects each study to mechanisms and outcomes.

Study	Research Focus	Method	Findings	Findings Translations
Chen et al. (2025)	AI capability - chat	Conceptual	Marketing strategy	End-to-end digitalization benefit
Garcia et al. (2025)	Generative AI	Conceptual	Customer engagement	Business opportunities
Smith & Kim (2025)	Chatbot + Personalization	Conceptual	Customer service	Capability and alignment
Kim et al. (2025)	AI recommendation	Empirical	Discovery / Offer / Feedback	Global platform benefit
Chen et al. (2025)	AI marketing	Empirical - online	Multiple outcomes	Research gaps
Williams et al. (2025)	AI engagement	Empirical - online	Customer engagement	Discovery, sales, effect
Lee et al. (2025)	AI chatbot support	Empirical	Discovery / customer	Effective assistance
Wang et al. (2025)	AI personalization	Survey	Online media	AI and personalization
Smith et al. (2025)	AI chatbot	Empirical	AI marketing	Engagement / behavior
Williams et al. (2025)	AI personalization	Empirical	Online media	Trust / privacy
Chen et al. (2025)	Generative AI	Customer service	Customer service	Support
Smith et al. (2025)	Generative AI	AI in chat	Digital marketing	Engagement and challenges
Williams et al. (2025)	Chatbot engagement	Empirical	Digital marketing	Discovery / behavior / sales
Smith et al. (2025)	AI personalization	Empirical	Online engagement	Behavioral / engagement
Williams et al. (2025)	AI personalization	Empirical	Discovery	Engagement / behavior
Smith et al. (2025)	AI marketing	Empirical	Discovery	Engagement / behavior
Williams et al. (2025)	AI chatbot	Empirical	Customer engagement	Discovery / behavior
Williams et al. (2025)	AI chatbot	Empirical	Online media	AI marketing
Williams et al. (2025)	AI marketing	Empirical	Multiple outcomes	Future research themes

APPENDIX H: QUALITY CHECKS FOR AN EMPIRICAL FOLLOW-UP

Before applying the proposed questionnaire, a pilot test should be performed with a small group of participants who resemble the intended population. The pilot should assess whether terms such as AI, personalization, chatbot, recommendation, and disclosure are understood consistently. Items that show confusion, redundancy, or weak relevance should be revised before full data collection. The pilot is especially important because customer interpretations of AI differ across platforms and levels of familiarity.

During full data collection, researchers should prevent duplicate responses and record completion time. Ethical participation procedures should clearly explain the purpose of the study and avoid collecting unnecessary personal information. Data should be stored securely and used only for the stated academic purpose. These procedures strengthen the credibility of the findings and are consistent with the responsible use principles discussed throughout this paper.

TABLE XIII. QUALITY CONTROL CHECKLIST

Quality Check	Recommended Action	Reason
Content quality	Expert review of items	Content/content coverage
Plan clarity	Test with target users	Identify ambiguous wording
Response quality	Check completion time and patterns	Review low-quality responses
Consistent method (CM)	Separate product / outcome meeting where possible	Reduce response bias
Reliability	Check for single / consistent reliability	Assess external validity
Validity	Check / compare / document bias	Content construct validity
Design	Control and control data collection	Process participants
Feedback loop	Check post-survey post-survey response	Support participant research

APPENDIX I: DETAILED VARIABLE RELATIONSHIPS

The proposed framework can be interpreted as a chain of value creation. AI capability is the technological antecedent. Customer-perceived value is the first interpretation layer. Trust and customer experience represent relational and experiential mechanisms. Engagement is the behavioral and psychological outcome. This sequence is useful for empirical testing because it separates what the firm implements from how the customer experiences it.

A. AI Capability to Perceived Relevance

AI capability should be measured in terms that customers can actually observe. Personalization accuracy, recommendation fit, response quality, and content relevance are more meaningful than abstract statements about algorithm sophistication. A firm may operate a complex model, but customers respond to whether the resulting interaction appears useful. This distinction also reduces the risk of measuring technology adoption from the firm's perspective while claiming to explain customer engagement.

B. Perceived Relevance to Trust

Relevance can support trust because a useful recommendation provides evidence that the system understands the customer's need. However, relevance may also expose the use of personal data. The same accurate recommendation can therefore increase both usefulness and privacy concern. Future research should test whether trust is strengthened when customers understand the data-value exchange and weakened when the source of personalization appears mysterious.

C. Trust to Engagement

Trust is expected to increase willingness to continue an AI-enabled interaction. In a service setting, customers who trust the assistant may share more information or allow the system to complete routine tasks. In e-commerce, trust may increase willingness to accept recommendations. In social media, trust may affect openness to personalized content. Trust therefore links immediate experience to longer-term relationship outcomes.

D. Privacy Concern as a Negative Path

Privacy concern is conceptualized as a negative path that can offset the positive value created by personalization. This is important because a model that ignores privacy may overestimate the effectiveness of AI. A customer could judge a recommendation as relevant but still reject it because the perceived data cost is too high. Experimental designs should therefore vary both the usefulness of personalization and the transparency of the data practice.

E. Human Support as a Recovery Mechanism

Human support can operate as a recovery mechanism after AI failure. The value of a human handoff is not limited to emotional empathy. Human agents can interpret unusual situations,

negotiate exceptions, explain policy, and take accountability. Research can test whether the presence of an easy human handoff improves trust even when the customer does not actually use it. This would help quantify the reassurance value of human availability.

APPENDIX J: MANAGERIAL KPI DASHBOARD

A balanced AI marketing dashboard should connect four classes of metrics: business performance, customer experience, engagement quality, and AI governance. Focusing only on efficiency can encourage over-automation. Focusing only on satisfaction can ignore business viability. A combined dashboard makes trade-offs visible.

Metric Group	Examples	Interpretation
Business performance	Revenue, conversion, CAC, LTV	Financial outcomes
Customer experience	CSAT, NPS, effort, resolution	Engagement quality
Engagement	CTR, session, share, repeat use	Behavioral outcomes
Trust	Trust score, opt-out, complaint rate	Relationship health
Personalization	Recommendation acceptance, relevance rating	Value of tailoring
Efficiency	Click rate, resolution rate, fulfillment rate	Operational excellence
Governance	Privacy incidents, bias flags, misuse coverage	Responsible operations
Employee experience	Training time, workload, overall rate	Human-AI collaboration

The most important managerial principle is that no single KPI should determine whether an AI initiative is successful. A campaign that increases conversion but sharply increases complaints may destroy long-term value. A chatbot that lowers service cost but reduces resolution quality may shift cost to customers. A recommendation model that increases clicks but lowers trust can damage the relationship. Balanced scorecards make these trade-offs visible and create stronger incentives for customer-centered AI design.

APPENDIX K: EXTENDED RESEARCH QUESTIONS FOR NEXT-STAGE STUDIES

The proposed framework creates several research opportunities that can be investigated through experiments, surveys, field data, and mixed methods. The first group concerns customer perception. Researchers can ask whether customers prefer personalization initiated by themselves or personalization initiated automatically by the firm, and whether the answer changes by task importance. The second group concerns disclosure. Experiments can compare no disclosure, simple AI disclosure, and detailed explanation to determine which approach best supports trust without overloading the customer.

A third group concerns engagement quality. Future studies can compare interaction quantity with resolution quality to determine when AI increases activity without increasing value. A fourth group concerns human-AI collaboration. Studies can examine whether customers feel more confident when they know a human is available, even if they never use the escalation option. A fifth group concerns channel effects. The same AI capability can be tested in search, social media, e-commerce, email, and customer service to determine whether channel norms change the trust–engagement relationship.

A sixth group concerns organizational differences. Large firms may have stronger data and technical resources, while small firms may have greater speed and flexibility but less governance capacity. Comparative research can examine whether AI maturity depends more on technology investment or on organizational routines. A seventh group concerns generative AI. Researchers should distinguish productivity benefits to marketers from customer outcomes, because a system that helps employees create content faster may not necessarily improve customer experience. The final group concerns responsible AI, including privacy, fairness, accuracy, and accountability as

predictors of long-term relationship outcomes rather than merely compliance variables.

TABLE XIV. PRIORITIZED FUTURE RESEARCH QUESTIONS

Priority	Research Question	Recommended Design	Potential Contribution
1	How does personalization intensity affect trust and engagement?	Experimentation + SEM	Generalizability (personalization level)
2	What type of AI-driven recommendation system is best?	Web experiments	Behavioral guidance
3	What does future research require AI to do?	Field experiments	Business-to-consumer design
4	Do technology and affective engagement drive together?	Longitudinal study	Engagement quality model
5	How do ethical concerns change AI acceptance?	Time-lagged survey	Generalizability
6	Can AI be implemented responsibly in education?	Comparative case study	AI adoption model
7	Does trust predictively correlate to better customer satisfaction?	Employee + customer data	Value-chain perspective
8	How do privacy concerns affect willingness to personalize?	Choice experiments	Privacy-value trade-off
9	What causes customers to distrust AI recommendations?	Qualitative + experiments	Trust failure taxonomy
10	Which AI capabilities create desirable loyalty?	Field data	Long-term relationship outcomes

Together, these questions move the research agenda from broad claims about AI transformation toward testable explanations of when, why, and for whom AI improves customer engagement. This shift is important because the field is now mature enough to study boundary conditions and mechanisms instead of treating AI adoption as a universal positive. Future research that measures both customer value and responsible-use outcomes can make the literature more practically useful for marketers and more theoretically precise for scholars.

APPENDIX L: STUDY CONTRIBUTIONS AT A GLANCE

This paper makes four connected contributions. First, it integrates the major AI capabilities used in digital marketing, including personalization, recommender systems, predictive analytics, conversational AI, sentiment analysis, automation, and generative AI. Second, it connects these capabilities to customer engagement through mechanisms such as relevance, convenience, responsiveness, enjoyment, trust, and experience. Third, it places ethical and organizational conditions, including privacy, transparency, fairness, accuracy, human support, and data readiness, inside the same framework rather than treating them as separate technical concerns. Fourth, it translates the literature into a proposed conceptual model, research propositions, measurement instrument, implementation maturity model, and future research agenda.

The practical contribution is a decision logic for managers. Begin with the customer problem, identify the AI capability that can solve it, define the expected customer value, specify the appropriate level of human involvement, and establish measures for both performance and trust. This sequence helps avoid technology-first adoption and encourages evidence-based experimentation. The academic contribution is the separation of AI capability from customer perception and engagement, allowing future researchers to test mediating and moderating mechanisms.

Contribution	What the Study Adds	How It Can Be Used
Technology map	Consolidated AI marketing capabilities	Executive review and/or business development
Engagement model	Linking AI → value (trust + engagement) → engagement	Empirical and applied-level findings
Value proposition	Privacy, fairness, transparency and accuracy within model	Responsible AI design
Trust AI map	AI type, human level and hybrid task allocation	Implementation decisions
Maturity model	Five levels from experimental to generalized human-AI organization	AI adoption readiness
Measurement system	Behavioral, affective, individual and AI-specific indicators	Research instrumentation and KPI design
Research agenda	Testable questions on dimensions: personalization, context and ethics	Future academic studies

APPENDIX M: CONCEPTUAL SUMMARY FOR FUTURE EMPIRICAL TESTING

For future empirical testing, the study can be reduced to a parsimonious model without losing its central logic. AI-enabled personalization, conversational quality, predictive usefulness, and generative content usefulness can be treated as observable antecedent dimensions. Perceived relevance, convenience, and reliability can form a customer-value layer. Trust and customer experience can function as mediators, while privacy concern and human-support availability can act as moderators. Customer engagement can be captured through cognitive, affective, behavioral, and relational indicators. Such a design allows the researcher to test both positive and negative paths and to avoid treating AI as inherently beneficial.

A future student research project can also compare two customer groups, such as frequent and infrequent users of AI-enabled digital services, or compare e-commerce and social media contexts. This would help identify whether the framework is stable or whether the mechanism changes with customer expertise and channel norms. The most useful result would not be a simple statement that AI has a positive effect. Instead, the goal would be to identify the conditions under which AI creates the strongest customer value while maintaining trust and control.

The conceptual model can also support a mixed-method design. Quantitative data can estimate relationships among personalization, trust, experience, and engagement. Qualitative interviews can explain why customers interpret the same AI feature differently. Combining both methods would provide a stronger understanding of the customer journey and help bridge the gap between model performance and lived customer experience.

Model Layer	Constructs/Variables	Role in Analysis
AI capability	Personalization, conversational, predictive, generative	Antecedents (predictor)
Customer value	Relevance, convenience, responsiveness	Mediator
Experience	Engagement, reliability, usability	Mediator
Trust	Transparency, security, confidence	Mediator
Risk perception	Privacy concerns, personal data retention	Mediator (negative path)
Human support	Availability, resolution quality	Moderator
Engagement	Cognitive, affective, behavioral, relational	Dependent variable
Context	Channel, acquisition, marketing strategy	Context / Moderator

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