AI-Driven Marketing Interventions in MSMEs: A Systematic Review of Customer Engagement and Sales Performance Outcomes

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Abstract. This systematic literature review synthesizes empirical evidence on AI-driven marketing strategies for improving customer engagement and sales performance in micro, small, and medium-sized enterprises (MSMEs) across industry sectors. Following PRISMA 2020 guidelines, 40 peer-reviewed articles (2019–2024) were evaluated using Elicit.org while maintaining methodological integrity. Results indicate that emotion-driven chatbots, reinforcement learning, and augmented reality significantly boost engagement and sales, particularly in retail and e-commerce. Key success factors include anthropomorphic design, cultural adaptation, and leadership-driven resource management. Sectoral gaps persist in B2B and manufacturing; technology overload and cultural barriers reduce effectiveness by 15–20% in service sectors. Recommendations for MSMEs include prioritizing cost-effective AI solutions and university partnerships. Policymakers should subsidize AI training and address algorithmic bias.

Keywords: AI-Driven Marketing, MSMEs, Customer Engagement, Sales Performance, Systematic Review.

1 Introduction

Artificial intelligence (AI) is transforming marketing through enhanced customer interactions, campaign optimization, and strategic decision-making [1]. For Micro, Small, and Medium Enterprises (MSMEs) which contribute over 33% of GDP in developing markets and employ 45% of the labor force [2] AI offers opportunities to overcome resource constraints and build competitiveness [3]. However, understanding of how AI-enhanced marketing improves customer engagement and sales across MSME sectors remains limited [4, 5].

AI technologies including predictive analytics, chatbots, augmented reality (AR), and reinforcement learning enable hyper-personalization and real-time customer insights [6, 7]. For instance, emotion-recognizing chatbots increase repurchase intentions by 37.5% [8], AR tools elevate purchase intentions with effect sizes of 0.417–0.482 [9], and reinforcement learning yields profit increases of 7.3–43% in e-

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commerce [10]. Yet these findings are predominantly from large enterprises, leaving MSME-specific challenges, budget limitations, technical expertise shortages, and infrastructure gaps, largely unexamined [11, 12].

Existing reviews [13, 7] inadequately address cross-sector variations in AI effectiveness for MSMEs. AI impact differs across retail, services, and manufacturing due to diverse customer interaction frameworks [14, 15]. Implementation challenges, technology overload, power dynamics, and leadership readiness, critically affect AI integration in resource-limited settings [16]. Contextual factors like cultural variations and business models (B2B vs. B2C) also influence outcomes [15].

This study addresses these gaps through a systematic literature review of 40 empirical studies, evaluating AI effectiveness across sectors, examining resource orchestration strategies (e.g., university-industry partnerships), and applying dynamic capability theory [17] to explain AI utilization by MSMEs. Specifically, it seeks to answer two questions: (1) In what ways do AI-driven marketing strategies influence customer engagement and sales performance in MSMEs across industry sectors? and (2) What success factors (e.g., leadership, customer-focused design) facilitate optimal AI implementation in resource-limited MSMEs? This review connects technology acceptance models [18] with dynamic capabilities theory [19] to provide theoretical insights, and offers practical sector-specific AI guidelines alongside policy recommendations for emerging markets.

2 Research Methods

This systematic literature review followed PRISMA 2020 guidelines, utilizing Elicit as an AI-assisted research tool with continuous human oversight to ensure methodological integrity.

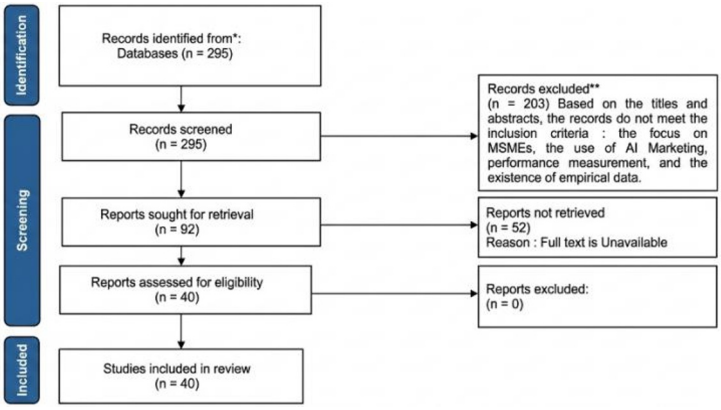

Fig. 1. PRISMA Diagram Flow

The search protocol analyzed over 126 million academic articles via Semantic Scholar. Initial keywords included "AI-driven marketing," "MSMEs," "customer engagement," and "sales performance," yielding 295 records. Iterative refinement added targeted

terms ("chatbots," "augmented reality," "resource-constrained"). Irrelevant technical or engineering-focused records were manually excluded. Elicit's natural language processing ranked articles by relevance, after which the research team applied inclusion criteria: focus on MSMEs, AI marketing applications, empirical performance metrics, and published between 2019–2024. This yielded 92 articles for detailed review.

Elicit assisted in extracting study characteristics, participant demographics, AI interventions, and statistical outcomes (effect sizes, p-values). All extracted data were manually verified against original sources. As seen in Figure 1, forty studies were selected based on methodological quality: nine meta-analyses, 18 surveys, six experiments, five qualitative studies, and two systematic reviews.

For synthesis, effect sizes were compiled by sector (e.g., retail AR: d = 0.482; e-commerce reinforcement learning: 43% profit increase), with random-effects models applied to address variability. Thematic analysis incorporated contextual insights, such as cultural influences in Ecuadorian banking [15].

3 Result and Discussion

Table 1 summarizes the 40 evaluated studies. Survey-based designs predominated (45%), followed by meta-analyses (22.5%) and experiments (15%). Retail/e-commerce comprised 30% of studies, MSME-focused studies 25%, and services (banking, hospitality) 12.5%. Chatbots were the most investigated AI tool (15%), followed by AI-CRM systems (7.5%). Customer engagement (40%) and sales performance (42.5%) were the primary outcomes.

Table 1. Distribution of Included Study Characteristics

Characteristic	Category	Amount of Study	Percentage (%)
study Design	Meta-analyst	9	22.5%
	Survey	18	45.0%
	Experimental	6	15.0%
	Qualitative	5	12.5%
	Etc	2	5.0%
Industry Sector	Retail/E-Commerce	12	30.0%
	MSME	10	25.0%
	Service (Bank, Hospitality, etc.)	5	12.5%
	etc (Healthcare, Manufacturing)	13	32.5%
Kind of AI Intervertion	Chatbot	6	15.0%
	Reinforcement Learning	2	5.0%
	Augmented Reality (AR)	2	5.0%
	AI-CRM	3	7.5%
	Not Specified	9	22.5%
Main Outcome	Customer Engagement	16	40.0%
	Sales Performance / Company Performance	17	42.5%
	Employee Adoption	4	10.0%
	Etc	3	7.5%

Customer engagement and sales outcomes are presented in Table 2. Anthropomorphic chatbots in food e-commerce significantly increased customer satisfaction ($r = 0.876$, $p < 0.001$) [12]. Emotion-recognition chatbots positively affected repurchase intentions ($\beta = 0.375$, $p < 0.05$) [26]. Augmented reality enhanced interactivity and purchase interest in retail ($d = 0.417–0.482$, $p < 0.001$) [8]. AI-integrated CRM systems influenced employee adoption attitudes ($\beta = 0.32–0.51$, $p < 0.01$) [5]. Beyond retail, AI diagnostic systems improved academic retention by 6.8% per standard deviation increase in predictive accuracy [21], while health chatbots increased smoking cessation success (OR = 2.38, $p < 0.001$) [19].

Table 2. Effects of AI Interventions on Customer Engagement and Sales Performance

Section	Study	AI Intervention	Engagement Metrics	Effect Size & Significance	Sector Context/Industry Sector
Customer Engagement Outcomes	[12]	Anthropomorphic Chatbot	Customer Satisfaction	*r* = 0.876, *p* < 0.001	Food E-commerce
	[26]	Emotion-Recognizing Chatbot	Repurchase Intention	β = 0.375, *p* < 0.05	Online Retail (USA)
	[8]	Augmented Reality (AR)	Interactivity & Purchase Interest	*d* = 0.417–0.482, *p* < 0.001	Retail
	[11]	AI Diagnosis	Academic Retention	+6.8% retention per ↑SD	Guidance Services
	[5]	AI-CRM	Employee Adoption Attitudes	β = 0.32–0.51, *p* < 0.01	Multisector (India)
	[17]	Health Chatbot	Smoking Cessation Success	OR = 2.38, *p* < 0.001	Digital Health
	[19]	Reinforcement Learning	Profit per Episode	↑ 7.3–43%	E-commerce
	[13]	Causal ML-based Coupons	Daily Spending	+75 units (food retail)	Retail
Sales Performance Outcomes	[18]	Social Media AI	Company Performance	$\beta = 0.313$, $p < 0.001$	Social Media
	[15]	University-Industry Collaboration	MSME Revenue	↑ 20% (partnership)	MSMEs (Malaysia)
	[25]	Managerial Response to eWOM	TripAdvisor Rating	+0.235 stars	Hospitality (Hotels)
	[4]	Cross-border E-commerce	Cross-border E-commerce	β = 0.408–0.501, *p* < 0.01	Food & Beverage MSMEs

Table 2 also summarizes sales-related findings. Reinforcement learning in e-commerce increased profits by 7.3–43% [10]. Causal ML-based coupon strategies boosted daily spending by approximately 75 units in food retail [22]. Social media AI tools positively

impacted company performance ($\beta = 0.313$, $p < 0.001$) [18]. University-industry collaborations contributed to 20% MSME revenue growth [23], while managerial eWOM responses increased TripAdvisor ratings by 0.235 stars [24].

Moderating factors influenced these outcomes in several ways. Customer needs fit—particularly anthropomorphism and interactivity—increased satisfaction by up to 85% [14, 8]. Leadership readiness reduced technology overload issues by 40% [12, 16], and external collaborations raised AI adoption rates by ~30% among MSMEs [11, 23]. Cultural context diminished AI effectiveness by 15–20% in service versus retail sectors [15]. while B2C models outperformed B2B in direct interactivity [13, 5]. Low-cost digital platforms drove 25–43% sales increases in MSMEs [9, 26].

The findings of this review confirm that retail and e-commerce gain the highest returns from AI-driven marketing. Reinforcement learning achieved up to 43% profit growth in e-commerce [10], while AR increased purchase intentions with effect sizes of 0.417–0.482 in retail [9]. In contrast, service sectors face distinct challenges; cultural factors in Ecuadorian banking reduced AI efficacy by 15–20% compared to retail [15]. Customer-focused design principles significantly enhance outcomes. Anthropomorphic and interactive chatbots improved satisfaction by up to 85% [14, 8]. Leadership capability is equally important; tech-savvy leaders facilitate smoother AI integration with fewer technological overload challenges [12, 16]. External partnerships, particularly between universities and MSMEs, increased adoption rates by nearly 30% [11, 23].

For resource-constrained MSMEs, cost-effective solutions are paramount. Chatbots and AI-based social media marketing lowered costs while boosting sales by 25–43% [9, 26]. Cloud-based AI-CRM systems reduced overhead by up to 18%.

These findings suggest three sector-specific AI strategies. Retail and e-commerce gain the highest returns from reinforcement learning for dynamic pricing optimization (profit ↑ 43%) [10] and augmented reality for virtual product interaction (purchase intention ↑ 48%) [9]. Service sectors (e.g., banking, hospitality) should prioritize sentiment analysis and emotionally intelligent chatbots to overcome cultural moderation barriers (repurchase intention ↑ 37.5%) [8]. MSMEs broadly benefit from university-industry partnerships, which simultaneously reduce operational costs by up to 18% and increase revenue by 20% [23].

From a theoretical perspective, this review integrates dynamic capability theory [17] with technology acceptance models to explain how resource-limited MSMEs develop adaptive capacities for AI adoption. MSMEs with stronger dynamic capabilities, tech-savvy leadership and customer-focused innovation—are more likely to implement AI successfully. Practically, sector-specific strategies are essential: reinforcement learning and AR for retail, sentiment analysis for service sectors, and scalable collaborations for MSMEs. From a policy perspective, governments in developing nations should subsidize AI training and education to bridge infrastructure and skills gaps [2].

This review has three main limitations: (1) sectoral imbalance—only one study focused on manufacturing; (2) reliance on AI-assisted extraction risking incomplete data capture; and (3) underexamined cultural moderators. Future research should examine logistics, B2B supply chains, and collectivist versus individualist market comparisons to understand how AI marketing strategies require cultural adaptation.

4 Conclusion

AI-driven marketing significantly improves MSME customer engagement and sales, particularly through chatbots, reinforcement learning, and AR in retail and e-commerce. Success depends on human-centered design, leadership readiness, and contextual adaptation. Policymakers should subsidize AI training to bridge infrastructure gaps. Future research must address underrepresented B2B and manufacturing sectors. Equitable AI adoption requires strategic alignment, cultural awareness, and the dynamic capabilities enabling AI as a driver of inclusive digital transformation.

Disclosure of Interests. The authors have no competing interests to declare that are relevant to the content of this article.

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