

Research on the Development Trends of E-Commerce Driven by Artificial Intelligence

Yao Jianbin*,

Guangdong Vocational College Of Hotel Management, Dongguan, Guangdong;

7028323@qq.com,

**corresponding author*

Abstract: *Artificial intelligence technology is systematically reshaping the underlying logic and competitive paradigms of the e-commerce industry with unprecedented depth and breadth. This paper aims to provide a systematic review of the primary evolutionary paths and core trends in e-commerce development driven by artificial intelligence. Research indicates that the global market size for artificial intelligence in the retail e-commerce sector is projected to grow from \$19.98 billion in 2025 to \$398.65 billion in 2034, representing a compound annual growth rate of 40.3%. Within this trajectory, the role of AI in the e-commerce field is undergoing a fundamental transformation from an "assistive tool" to an "autonomous agent," with "Agentic Commerce" progressively moving from the conceptual stage towards practical implementation. At the operational level, the competitive focus of e-commerce enterprises is shifting from traffic acquisition to data quality and structuring capabilities, consequently driving the evolution of operational paradigms from traditional Search Engine Optimization (SEO) to Generative Engine Optimization (GEO). [1]In the value dimension, artificial intelligence is driving the e-commerce industry's transition from "price-based competition" to "value-based competition," reshaping core competitiveness across critical aspects such as product quality, service experience, and supply chain efficiency. Although AI shopping agents still face multiple practical challenges related to consumer acceptance, technological maturity, and data privacy protection, their penetration into the e-commerce industry chain has demonstrated an irreversible trend. Looking forward, with continuous breakthroughs in generative AI, intelligent agents, digital twins, and other technologies, e-commerce is expected to further evolve into a new phase characterized by "intelligent drive, full-chain collaboration, and symbiotic experience."*

Keywords: *artificial intelligence; Electronic Commerce; Agentic Commerce; Generative Engine Optimization ; Intelligent Business*

1. Introduction

Since the inception of the retail industry, the core mission of merchants has consistently focused on attracting consumers and facilitating transactions. However, this mission is now confronted with unprecedented complexity—merchants must engage with a new category of customers: artificial intelligence systems.

In September 2024, OpenAI launched an instant checkout feature within ChatGPT, marking a pivotal moment when AI formally integrated into the core processes of commercial transactions. Subsequently, global retail leaders including Walmart, Etsy, and Shopify have successively integrated this service, heralding an era of deep AI involvement in commerce.

Concurrently, global e-commerce is undergoing a profound structural transformation. Projections indicate that the share of global B2C e-commerce in total retail sales will surpass 22% by 2027, with online sales expected to grow from \$6 trillion in 2023 to nearly \$8 trillion by 2028. Within this context, artificial intelligence technologies are accelerating

their penetration into every critical facet of e-commerce. According to research data from The Insight Partners, the market size for AI in the retail e-commerce sector is forecasted to surge from \$19.98 billion in 2025 to \$398.65 billion by 2034, representing a remarkable compound annual growth rate of 40.3%. These figures clearly demonstrate that artificial intelligence has emerged as a core driver of e-commerce industry growth over the coming decade.

2. From Assistive Tools to Autonomous Agents: The Fundamental Transformation of AI's Role

2.1 The Rise of Agentic Commerce

Between 2025 and 2026, the role of artificial intelligence within the e-commerce sector is witnessing a fundamental paradigm shift—from functioning as "assistive tools" to evolving into "autonomous agents." In their seminal work, *Agentic Commerce: A Survey of How AI Agents Are Reshaping Commerce*, Zhang et al. systematically introduce the academic concept of "Agentic Commerce" (abbreviated as A-Commerce), characterizing it as a novel business model paradigm "in which autonomous intelligent agents interact, coordinate, and execute commercial activities on behalf of different business entities."

At the core of this transformation lies a structural reconfiguration of shopping decision-making authority: consumers are progressively delegating tasks traditionally performed by themselves—such as product search, price comparison, and purchase decisions—to AI agents. A landmark event signaling this trajectory was OpenAI's September 2024 launch of an instant checkout feature within the ChatGPT platform. This functionality enables U.S. consumers to complete the entire closed-loop process—from product search and browsing to order placement and payment—entirely within the ChatGPT dialogue interface, eliminating the need to navigate to external retailer websites. Subsequently, both Google and Microsoft integrated direct ordering capabilities into their respective AI tools, further solidifying the central role of AI agents within the commercial transaction chain[2].

From a technological evolution perspective, this shift signifies a migration of e-commerce interaction entry points—from traditional web pages and application interfaces toward AI-driven conversational interfaces endowed with autonomous decision-making capabilities. This development heralds a paradigm reconstruction of the conventional "search-comparison-decision" shopping pathway. The rise of agentic commerce not only reshapes the connective tissue between consumers and products but also exerts profound implications for the traditional traffic distribution models of e-commerce platforms, merchant customer acquisition channels, and the overarching value chain allocation within the broader business ecosystem. According to projections by Morgan Stanley, agentic commerce is anticipated to account for approximately 10% to 20% of total U.S. e-commerce transaction value by the 2030s.

Table 1: Milestones in the Development of Agentic Commerce

Date	Event	Significance
Sep. 2024	OpenAI launches instant checkout feature in ChatGPT	Agentic commerce officially enters the consumer market
2025	Walmart, Etsy, Shopify, among others, integrate with ChatGPT	Retail giants embrace AI shopping agents
2025	Amazon launches Rufus shopping assistant	Platforms build their own AI ecosystems
2026	Google promotes Universal Commerce Protocol (UCP)	Cross-platform AI shopping standards begin to take shape

2.2 Market Penetration and Consumer Acceptance of Agentic Commerce

Agentic commerce is exhibiting accelerated adoption across consumer markets. According to ChannelEngine's "2026 Market Shopping Behavior Report," 58% of consumers have utilized AI tools for product research, while 37% now initiate their shopping journeys through AI assistants rather than directly accessing e-commerce platforms. These findings underscore a fundamental behavioral transformation: artificial intelligence is progressively establishing itself as the primary entry point in consumer decision-making processes[3].

Nevertheless, the absence of well-established trust mechanisms continues to constitute a critical impediment to the widespread proliferation of agentic commerce. Empirical data indicates that merely 17% of consumers express willingness to complete purchases exclusively through AI, whereas a substantial 76% maintain a preference for personally reviewing or verifying product information prior to finalizing purchasing decisions. This disparity suggests that AI currently occupies a functional role approximating that of an "intelligent shopping guide"—responsible for product curation and personalized recommendation—while ultimate purchasing authority remains firmly vested with consumers.

From a technological maturity perspective, agentic commerce remains in its nascent developmental stages. Euro Beinat, Global Head of AI at Prosus, notes that as of 2025, AI agents demonstrate robust performance in product search functionalities; however, significant gaps persist across critical domains including decision support, payment execution, and post-purchase coordination. Significantly, the foundational infrastructure underpinning the agentic commerce ecosystem is rapidly coalescing: Google has announced a Universal Commerce Protocol designed to facilitate cross-retailer agentic shopping experiences; Stripe has introduced a dedicated payment protocol optimized for AI agents; and ChatGPT, through strategic integration with Shopify, has achieved preliminary end-to-end functionality spanning product browsing through cart construction. These technological developments are progressively establishing the essential infrastructure necessary for agentic commerce to advance from conceptual framework toward large-scale practical implementation.

2.3 Market Outlook for Agentic Commerce

Although agentic commerce remains in its early developmental stage, market expectations for its future growth trajectory are broadly optimistic. According to forecast data from eMarketer, AI-driven e-commerce transactions will account for 1.5% of total global online shopping volume in 2026. Research reports published by Gartner further indicate that 29% of marketing leaders report using AI agents in their business operations, while an additional 52% of enterprises are conducting customer-facing application testing in this domain. Particularly noteworthy is that, as of early 2026, ChatGPT's weekly active user base has reached 800 million, with approximately 2% of queries related to shopping—equivalent to roughly 50 million daily search requests exhibiting clear purchase intent. This vast user foundation provides robust traffic support and application scenario accumulation for the continued evolution and large-scale expansion of agentic commerce[4].

3. The Reconstruction of E-commerce Operational Rules: From SEO to GEO

3.1 The Rise of Generative Engine Optimization

The rapid proliferation of AI shopping agents is fundamentally reshaping the underlying logic and operational paradigms governing product information presentation within the e-commerce industry. In the traditional e-commerce era, merchants primarily relied upon Search Engine Optimization (SEO) to enhance visibility and traffic acquisition

capabilities within general-purpose search engines such as Google. However, within the emerging AI-driven business ecosystem, merchants confront a novel core challenge: ensuring that product information can be accurately identified, effectively comprehended, and preferentially recommended by AI agents. This paradigm shift has catalyzed the emergence of "Generative Engine Optimization" (GEO) as a distinct operational domain.

Digital Commerce 360, in its "2026 E-Commerce Outlook" report, explicitly asserts: "If product data is not structured for machine reading, it will not appear at the starting point of the consumer's shopping journey—meaning revenue is lost before potential buyers ever reach your website." This observation underscores the increasingly pronounced correlation between data quality and business performance. Jorrit Steinz, Chief Executive Officer of ChannelEngine, further notes that top-performing e-commerce enterprises in 2025 have typically allocated substantial strategic resources toward product attribute standardization, nomenclature normalization, compliance documentation completeness, and systematic data governance. By contrast, those enterprises remaining ensnared in data silos or reliant upon outdated content assets, he observes, "have entered a competitive disadvantage" as they approach 2026.

Examined through the lens of technological evolution, the ascendance of GEO is rooted in the information retrieval and decision-making mechanisms characteristic of large language models. Unlike traditional search engines, which operate on ranking logic predicated upon keyword matching and link weighting, AI agents demonstrate greater reliance upon structured data completeness, semantic clarity, and the capacity for cross-validation across heterogeneous information sources. This suggests that the quality of an e-commerce enterprise's data assets—rather than its mere traffic acquisition capacity—is progressively becoming the core competitive determinant of commercial visibility. Industry observations indicate that leading enterprises have commenced constructing event-driven, real-time data synchronization architectures, seamlessly integrating dynamic data encompassing product information management, inventory status, and price fluctuations with the retrieval requirements of AI agents. Such strategic initiatives aim to secure advantageous ecological positioning within the emerging "AI-as-Entry-Point" commercial landscape[5].

3.2 Data Quality as a Core Competitive Advantage

The precision with which large language models match consumer intent is highly contingent upon the clarity, structural integrity, and semantic richness of input data. Consider, for instance, functional skincare products formulated for specific dermatological conditions such as eczema. Should a merchant merely label a product as "unscented" on its product page, an AI agent may encounter difficulty establishing an effective association between that product and the underlying consumer need of "suitable for eczema." An optimization approach aligned with AI cognitive mechanisms would instead entail: explicitly stating that the product is free from fragrances, additives, and preservatives; providing a comprehensive ingredient list; and clearly indicating within the product description its intended suitability for consumers with eczema. Such multidimensional, granular, and semantically enriched data architecture can substantially enhance both the recall rate and accuracy of AI agents throughout the intent-matching process.

Furthermore, AI tools are not limited to passively reading official merchant descriptions during information integration; they possess the capacity to conduct comprehensive analysis and cross-validation across heterogeneous, multi-source information streams. Relevant research indicates that when evaluating products, AI agents systematically crawl and analyze content from media websites, assessments by digital opinion leaders, and textual reviews generated by authentic users. Notably, in contrast to conventional aggregate star ratings, AI agents demonstrate a pronounced propensity for conducting deep sentiment semantic analysis of user-generated commentary—examining, for example, whether a coat is frequently described as "genuinely warm" or "possessing good waterproofing"—rather than relying exclusively on composite scores. This operational mechanism reflects a cognitive leap in AI information processing: a transition from superficial dependence on aggregate metrics toward deep mining of semantic content, thereby enabling

more accurate modeling of product value and user preferences. Additionally, fundamental retail principles retain their relevance: branded products available across multiple retailers enjoy enhanced probability of inclusion within AI agent retrieval parameters; competitive pricing enhances attractiveness; and persistent stockouts constitute significant disadvantages.

Table 2: Core Differences Between GEO and Traditional SEO

Dimension	SEO	GEO
Target Audience	Human Searchers	AI Agents / Large Language Models
Core Elements	Keywords, Backlinks, Page Structure	Structured Data, Attribute Completeness, Semantic Clarity
Content Preference	Rich, Engaging	Clear, Accurate, Complete
Evaluation Utilization	Star Ratings	Substantive Review Content Analysis
Update Frequency	Relatively Static	Real-time Synchronization

3.3 The Convergence of Data Governance and Data Velocity

Industry analysis from Digital Commerce 360 indicates that "data velocity and data cleanliness are converging into a core conceptual framework." Within this paradigm, data synchronization—traditionally regarded as a back-office operational cost—is progressively evolving into a strategic lever for driving revenue growth and profit enhancement. Specifically, event-driven data streaming architectures are gradually superseding traditional batch processing models, with their application permeating core business functions including Enterprise Resource Planning systems, Product Information Management, warehouse management, e-commerce platforms, payment systems, and Customer Relationship Management. This technological transformation has significantly enhanced operational performance across multiple dimensions, including replenishment accuracy, contract execution efficiency, customer support resolution rates, and sales conversion. At its core, the establishment of real-time data streams not only optimizes internal process coordination but also creates differentiated competitive advantages for enterprises by enhancing their agility in responding to market demands.

Table 3: The Impact Pathway of Data Quality on E-commerce Operations



4. Challenges and Risks of AI in New Energy Development

4.1 The Shift in Industry Competition Logic

Since 2024, leading e-commerce platforms have initiated profound strategic adjustments: Taobao has significantly reduced the weighting of "Five-Star Price Power" in its traffic allocation algorithms; Douyin has elevated Gross Merchandise Volume growth as a strategic priority superseding price-based competition; and Pinduoduo has shifted its operational focus toward long-term value cultivation. This series of strategic shifts signals the gradual decline of the

low-price competition model that dominated the industry for years, marking the formal entry of e-commerce competition into a new phase characterized by technology-driven value enhancement.

At the 2025 China E-Commerce Conference, Jiang Ming, Party Secretary and President of the China General Chamber of Commerce, observed that 2025 represents a critical window for China's e-commerce industry to deepen its structural transformation amidst intertwined opportunities and challenges. In March of the same year, the General Offices of the Communist Party of China Central Committee and the State Council jointly issued the "Action Plan for Boosting Consumption," which explicitly articulated the strategic direction to "intensify digital consumption enhancement initiatives and vigorously cultivate quality e-commerce." This policy orientation has further accelerated the industry's paradigm shift from "price competition" to "value competition" at the regulatory level. Such policy guidance not only provides institutional support for the sustainable development of the e-commerce sector but also impels market participants to accelerate the construction of new competitive advantages centered on user experience and underpinned by technological innovation.

4.2 The Multidimensional Pathways of AI-Empowered Value Competition

In the dimension of "People," artificial intelligence technology—through big data analytics and user profiling—has facilitated a fundamental paradigm shift in consumer understanding, moving from macro-level demographic characteristics to granular individual behavioral preferences, thereby transforming the aspiration of "serving every unique consumer" into operational reality. Empirical industry data indicates that in 2025, e-commerce enterprises adopting end-to-end AI optimization achieved an average reduction of 56% in customer acquisition costs compared to traditional operational models. By way of illustration, JD.com's "Intelligent Advertising Manager" system integrates over 200 dimensions of user behavior and algorithmically generates 4,680 personalized creative content combinations, substantially enhancing both advertising precision and user engagement efficiency[6].

In the dimension of "Products," artificial intelligence has not only catalyzed the emergence of novel service formats—including digital human anchors and intelligent guides—but has also driven significant innovation in the expression and delivery mechanisms of traditional service industries through generative AI technologies. According to Alibaba DAMO Academy, its proprietary "Nebula System" can predict trending product trajectories up to 14 days in advance, achieving an average 2.3-fold increase in advertising return on investment. Moreover, merchants leveraging AI technology can generate high-quality marketing videos within minutes by simply uploading raw source materials—compressing production cycles from several days to near-instantaneous completion while reducing production costs by over 90%.

In the dimension of "Places," artificial intelligence technology transcends the traditional constraints of physical space and time, constructing novel consumption scenarios that seamlessly integrate online and offline experiences while enabling deep virtual-real interaction. During the 2025 "Double Eleven" shopping festival, Taobao's "Metaverse Live Studio" virtual try-on feature generated 120 million user interactions in a single day. This functionality is underpinned by several core technological components: real-time cloth physics engine simulation with latency controlled within 8 milliseconds, cross-platform augmented reality rendering capabilities, and a biometric precise body-matching system achieving an error rate of merely 0.3%.

In summary, artificial intelligence is systematically reshaping the operational logic of e-commerce across three fundamental dimensions: on the user side, enabling precise insights and personalized engagement; on the product side, empowering content generation and trend forecasting; and on the space side, constructing immersive interactive experiences. This multidimensional technological penetration is propelling the e-commerce industry's fundamental transformation from a traffic-driven toward a value-driven paradigm.

4.3 The Intelligent Upgrade of Returns Management

In 2026, the focal point of e-commerce profitability is undergoing a strategic reorientation—shifting from customer acquisition efficiency toward the after-sales economy. Within this context, returns management is no longer regarded merely as a customer service function, but is increasingly evolving into a strategically significant cost control center. The United Kingdom market provides a salient example: major fast-fashion retailers such as ASOS, Boohoo, and PrettyLittleThing have implemented more stringent returns policies—including shortened return windows and the introduction of return fees—which have, in turn, provoked consumer resistance. This dynamic illuminates the inherent tension between cost containment and customer experience.

In response, brands are progressively adopting more refined returns management strategies. These encompass: first, the implementation of differentiated, tiered return eligibility based on product category attributes, historical user behavior patterns, and fraud risk signals; second, the selective application of a "keep it and refund" approach for low-value items, for which the associated costs typically prove lower than those incurred through reverse logistics processing; and third, the reintegration of returned inventory into resale and refurbishment channels, thereby converting what were once pure losses into secondary revenue opportunities. This strategic evolution signifies a transition of returns management from a passive response mechanism toward an active value creation system. Its optimization trajectory and degree of sophistication are emerging as critical determinants of e-commerce enterprise profitability[7].

5. Platform Landscape: The Rivalry Between Open Ecosystems and Closed Empires

5.1 Strategic Choices of the Tech Giants

In response to the wave of transformation in shopping models driven by artificial intelligence technology, major e-commerce platforms have adopted differentiated strategic paths based on their ecological positioning and strategic objectives. Amazon has chosen to retain autonomous control over AI within its own ecosystem. Through the launch of its shopping assistant Rufus and the "Buy For Me" feature, Amazon aims to anchor consumer shopping demands within its application, forming a complete transaction closed loop. Notably, the company has implemented technical restrictions on its website, limiting data access for third-party AI agents. Industry observers suggest this move is intended to protect its \$56 billion advertising business by preventing the erosion of traffic distribution rights by external AI entry points—a quintessential ecosystem defense strategy.

In contrast, Walmart has pursued a dual-track strategy that balances open collaboration with independent development. On one front, Walmart has internally developed its AI shopping assistant, Sparky; on another, the company actively forges strategic partnerships with external AI platforms such as OpenAI and Google Gemini. In early 2026, Walmart and Google announced an expanded collaboration to integrate the Gemini model with the product databases of Walmart and Sam's Club. Under this arrangement, when users conduct searches through Google, Gemini can automatically aggregate and present relevant in-store and online product information. Should consumers decide to make a purchase, the transaction is completed within Walmart's checkout environment, while ensuring it retains core control over the transaction process.

This strategic divergence illuminates the competitive logic shaping e-commerce platforms' approaches to traffic gateways, user relationships, and commercial value in the AI era: closed ecosystems seek to defend established barriers, while open collaboration aims to cultivate new reach channels. Which strategy ultimately prevails remains subject to ongoing validation through market practice.

5.2 The Core of Platform Competition: Who Controls Consumer Relationships?

The essence of platform competition lies in the strategic contest for dominance over consumer relationships. As TD Cowen analyst Oliver Chen observes: "You have to be where the customer is." The underlying logic is that if consumers establish primary interactive relationships with AI platforms rather than specific retailers, the latter will be compelled to cede partial control within the commercial value chain, transitioning from dominant players to passive participants.

Currently, numerous retailers have constructed profit models centered on traffic distribution by selling advertising space to consumer brands and other merchants. However, if consumers complete their entire shopping journey within artificial intelligence ecosystems—without clicking through to retailer websites or applications—these business models will face structural shocks. This emerging transaction paradigm, termed "zero-click purchasing," enables consumers to directly complete the full transaction cycle from product browsing to payment settlement without clicking traditional "buy" buttons or leaving AI application interfaces. At its core, this represents a profound reconstruction of transaction entry points and decision-making scenarios. This trend is fundamentally reshaping traffic allocation mechanisms and value creation logic within the e-commerce landscape.

6. Challenges and Constraints

6.1 Insufficient Technological Maturity

AI Although AI shopping agents demonstrate broad application prospects, their technological maturity still requires further advancement. User experience feedback indicates that when attempting to use integrated functionalities between ChatGPT and Instacart, as well as Walmart's instant checkout services, some users find that the payment process lacks support for frictionless payment methods such as Apple Pay, necessitating manual entry of payment information. This experiential gap significantly diverges from the core promise of "instant shopping," reflecting that current AI shopping agents have yet to achieve seamless end-to-end integration in payment processing.

In response, Sky Canaves, Principal Analyst for Retail and E-Commerce at eMarketer, observes: "There are inherent risks in pushing not-yet-fully-matured functionalities to consumer markets. If these features fail to perform as expected, users may develop negative experiences, subsequently reducing their willingness and frequency of continued use." This perspective reveals the intrinsic relationship between technological maturity and user adoption rates: during the early developmental stages of AI shopping agents, experiential deficiencies in any critical link may pose substantial obstacles to establishing user trust and cultivating behavioral habits.

6.2 Consumer Acceptance and the Trust Gap

Consumer acceptance of AI-powered shopping represents another critical variable determining the proliferation trajectory of agentic commerce. According to Forrester research data, only approximately one-third of consumers express willingness to complete payment processes through question-answering AI engines. ChannelEngine's research findings further reveal that while 58% of consumers have utilized AI tools for product information research, merely 17% of respondents feel comfortable completing purchases entirely through AI, with a substantial 76% still preferring to personally review or verify product information before making decisions. These figures indicate that trust mechanisms for AI agents have not yet been fully established, with AI's current role in shopping scenarios remaining primarily confined to information filtering and initial recommendation functions.

Juan Perelarán-Rendón, Chief Marketing Officer at Swap, points out that the core obstacle confronting AI agents lies in insufficient consumer adoption rates. He emphasizes: "The realization of technological value is highly dependent on

validation through practical application scenarios; innovation lacking practical utility cannot sustain itself." Further analysis suggests that the agentic commerce industry currently finds itself trapped in a classic "co-evolution dilemma"—the performance enhancement of AI agents relies on iterative optimization through data feedback generated by large-scale user adoption, while improved user adoption rates presuppose mature AI agent experiences. This bidirectional dependency constitutes a critical bottleneck constraining the scaled development of agentic commerce, the breakthrough of which awaits the coordinated evolution of both technology and market forces.

6.3 Data Privacy and Compliance Challenges

Digital security and privacy protection concerns remain significant impediments constraining the deep application of artificial intelligence in e-commerce. Recent enforcement cases under the EU's Digital Services Act (DSA) illustrate the practical impact of these risks: a prominent fast-fashion brand was subjected to an administrative fine equivalent to 4% of its turnover for utilizing generative AI technology to fabricate model imagery. This case has accelerated the industry's efforts to establish self-regulatory technical standards and ethical guidelines, exemplified by Alibaba's launch of an "AI Advertising Ethics Detection Tool," which can automatically identify 416 potential risk dimensions including cultural sensitivity and age appropriateness.

Simultaneously, regulatory uncertainty has emerged as another major challenge confronting AI service providers. According to projections by Prosus, at least three major AI systems are expected to face service delays or unavailability in European markets, with the root cause attributed to compliance requirements under the EU's Artificial Intelligence Act—whether concerning entire models, specific agent functionalities, or critical business modules that remain accessible in other regions. Notably, the EU Artificial Intelligence Act will enter its most critical implementation phase in August 2026, when compliance requirements for "high-risk" AI systems formally take effect, with impacts spanning numerous digital service sectors including fintech, online education, and food delivery. The implementation of this regulatory framework marks a new phase in AI governance transitioning from principle advocacy to mandatory compliance, with profound implications for compliance costs and operational models of global AI commercial applications.

6.4 Platform Rivalry and Ecosystem Barriers

Strategic rivalry among platforms is emerging as a significant factor constraining the development of AI shopping agents. According to recent reports, Amazon has filed a lawsuit against AI startup Perplexity, alleging unauthorized data access to its website. Unlike numerous retailers that have chosen to collaborate with third-party AI companies such as OpenAI, Amazon has adopted a distinctly defensive strategy, implementing technical barriers on its website that restrict data scraping and functional access by third-party AI agents.

This strategic choice reflects Amazon's intent to maintain strategic control over traffic entry points and user relationships. As a globally leading e-commerce platform, Amazon possesses an extensive product database and user base, with its \$56 billion advertising business highly dependent on controlling traffic distribution within its ecosystem. While opening data interfaces to third-party AI agents might expand potential sales channels, it could also diminish Amazon's dominance over user access pathways, potentially eroding its core advertising revenue model.

Although such ecosystem barriers assist platforms in safeguarding their commercial moats, they may also impede the overall proliferation of AI shopping agents. The performance enhancement of AI agents depends heavily on their ability to access and learn from vast product datasets. Should major e-commerce platforms individually erect data barriers, AI

agents will encounter difficulties in achieving cross-platform product retrieval and price comparison capabilities, thereby limiting their service functionality and the ongoing enhancement of user experience. This closed competitive landscape among platforms creates an inherent tension with the open ecosystem necessary for AI technology development, with the equilibrium point awaiting further exploration through both market forces and regulatory frameworks.

7. Conclusions and Future Outlook

In summary, artificial intelligence is systematically reshaping the developmental landscape of e-commerce with unprecedented depth and breadth. From a market size perspective, global AI applications in the retail e-commerce sector are projected to maintain a compound annual growth rate of 40.3%, with market value expanding from \$19.98 billion in 2025 to \$398.65 billion by 2034. Examining the trajectory of technological evolution, AI's role is undergoing a fundamental transformation from assistive tools to autonomous agents, with the agentic commerce model progressing from conceptual formulation toward large-scale implementation—research data indicates that 58% of consumers have utilized AI tools for product research, while 37% have begun adopting AI assistants as their starting point for shopping journeys, replacing traditional search engines. Analyzing operational paradigms, the competitive focus of e-commerce enterprises is shifting from traffic acquisition capabilities toward data quality and structuring capabilities, with operational frameworks correspondingly evolving from Search Engine Optimization to Generative Engine Optimization. Examining the value dimension, artificial intelligence is driving the e-commerce industry's transition from price-based competition toward value-based competition, with end-to-end AI optimization enabling enterprises to reduce customer acquisition costs by 56%.

Looking ahead to future evolutionary directions, agentic commerce will manifest in two parallel service models: first, the passive response model, executing tasks according to user instructions; second, the proactive service model, wherein AI agents automatically monitor household consumable depletion, autonomously trigger replenishment processes, intelligently optimize store and price combinations, and track fulfillment progress throughout, gradually realizing the functional positioning of "personal life butler." According to Prosus forecasts, by 2026, the proportion of knowledge worker AI agents capable of completing multi-step workflows exceeding 30 minutes without human intervention will reach 20%, representing a significant leap from the current baseline of less than 5%.

The executive team at Digital Commerce 360 cautions that the performance gap between enterprises proactively adapting to the new technological environment and those passively awaiting market stabilization will widen at an accelerating pace. The core drivers of this divergence include: artificial intelligence reshaping the triggering and emergence mechanisms of consumer demand; autonomous systems redefining the expansion logic of infrastructure; and the ongoing fragmentation of buyers demanding fundamental innovation in shopping journey design concepts. As a BigCommerce executive noted: "The operational complexity of e-commerce has not substantially increased, but its evolutionary pace has accelerated dramatically. The opportunity cost of decision-making delays will undergo a fundamental transformation in 2026."

Throughout this profound transformation process, only those enterprises that proactively integrate into emerging business ecosystems, deeply internalize artificial intelligence business logic, and establish data quality as a core strategic asset will be positioned to construct sustainable competitive advantages and secure space for survival and growth in the era of agentic commerce.

References

- [1] Pan Yong. *Current Status, Challenges, and Future Development of Cross-border E-commerce in China* [J]. *Theoretical Perspectives*, 2017, (12):36-39. DOI: 10.19632/j.cnki.11-3953/a.2017.12.008.
- [2] Tang Yijie. *Overview of Artificial Intelligence Technology Applications in E-commerce* [J]. *Modern Business*, 2023, (10):35-38. DOI: 10.14097/j.cnki.5392/2023.10.037.
- [3] Shi Jiazhao. *Challenges posed by artificial intelligence technology to traditional e-commerce and its applications in e-commerce* [J]. *Marketing World*, 2023, (22):41-43.
- [4] Niu Hao. *Analysis of Generative AI's Optimization Effect on E-commerce Operational Efficiency* [J]. *Marketing World*, 2025, (07):55-57.
- [5] Sun Ke, Lu Zelin. *Research on the Development Trends of Artificial Intelligence Applications in E-commerce* [J]. *Guizhou Social Sciences*, 2019, (09):136-143. DOI: 10.13713/j.cnki.cssci. 2019.09.020.
- [6] Zhao Ergang. *Integration Research on E-commerce and Artificial Intelligence Technology* [J]. *China Science and Technology Information*, 2017, (23):115-116.
- [7] Yao Yougang. *Research on Classification of E-commerce Models* [J]. *Management and Technology for Small and Medium Enterprises (First-Quarter Issue)*, 2010, (07):252.
- [8] Yao Jianfang, Xu Xianwen. *Application Research of Artificial Intelligence Technology in the Field of E-commerce* [J]. *Industrial Innovation Research*, 2022, (13):108-110.
- [9] Ju Xiaoling, Fan Chongjun, Wang Mengyuan, et al. *Application of Artificial Intelligence in E-commerce* [J]. *E-commerce*, 2020, (10):21-22. DOI: 10.14011/j.cnki.dzsw. 2020.10.010.