

AI-Powered Omnichannel Retail: Transforming Consumer Experience

By

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AI-powered tools are reshaping key areas of retail management. As a manager or executive in the retail industry, staying ahead in an increasingly AI-driven market is critical to optimizing operations, enhancing customer engagement, and driving revenue growth. This retail sector industry analysis explores how artificial intelligence (AI) is revolutionizing omnichannel retail, integrating physical stores, e-commerce, mobile apps, and social media into a seamless customer experience. Machine learning recommendation engines personalize shopping experiences, predictive analytics improve demand forecasting and inventory management, and AI chatbots enhance customer service (Beatrice, 2023; Chaudhary, 2023).

In brick-and-mortar stores, AI optimizes staffing, monitors foot traffic patterns, and streamlines checkout with cashier-less technology. As shown in Figure 1, consumers list long lines and checkout frustration as top in-store pain points, issues that AI technologies are now directly addressing. Figure 1 further illustrates how AI-powered tools are already showing a positive impact. Consumers express high confidence in automation's ability to improve these pain points (Guha et al., 2021; Retail Tech, 2023).

Mobile commerce and social shopping channels are further enhanced by AI-powered tools that

deliver real-time, personalized promotions and integrate influencer marketing within shoppable content (Moore, Bulmer, & Elms, 2022). Figure 2 depicts how mobile-first customers favor brands using AI to personalize app interactions, reinforcing the importance of this channel. AI's role in predictive supply chain optimization also allows retailers to minimize delays, improve inventory accuracy, and reduce costs (Just-style.com, 2024). However, implementation presents challenges, including data privacy concerns, high adoption costs, and employee resistance. As AI reshapes operations,

customer engagement, and decision-making, key questions guide this investigation:

What are the advantages of adopting AI in modern retail environments compared to traditional methods?

What does the rise of AI in omnichannel retail reveal about the future relationship between retailers and consumers?

Do the advantages of AI adoption outweigh the potential drawbacks for modern retailers?

By addressing these questions, this analysis offers retail managers and executives actionable insights to harness AI's potential, overcome implementation challenges, and transition toward a more data-driven, customer-centric model.

An exploration of how AI transforms retail to maximize benefits and minimize challenges across the omnichannel retail consumer journey.

Keywords: AI adoption, machine learning models, artificial intelligence transformation, omnichannel retail disruption, consumer behavior shifts, enhanced consumer experience.

This article is presented as an Industry Analysis per the Muma Business Review template. The boundaries of the retail industry in this analysis are defined both geographically and conceptually. Geographically, the article adopts a global scope, drawing on international examples and research to reflect how AI-driven omnichannel strategies are emerging across major retail markets in North America, Europe, and Asia. Conceptually, the analysis focuses on consumer-facing retail sectors that operate across physical stores, e-commerce platforms, mobile applications, and social media channels. This includes fashion, grocery, beauty, electronics, and general merchandise retailers while excluding B2B wholesale, purely marketplace-only intermediaries, and service-only industries such as hospitality or financial services. This clarified scope ensures that the insights presented remain directly relevant to retailers integrating AI across multiple consumer touchpoints.

The retail industry is undergoing a profound transformation as artificial intelligence (AI) reshapes how businesses interact with consumers across every channel. Omnichannel retail has shifted from a competitive advantage to a strategic necessity. Retailers must now integrate digital platforms, physical stores, mobile applications, and social media into one fluid and personalized customer journey. Rising consumer expectations for convenience, speed, and customization drive this evolution. AI is the engine making this integration possible (Kotler, 2024).

AI supports the entire omnichannel ecosystem by enabling automation, data-driven personalization, and real-time decision-making. Each touchpoint, from e-commerce storefronts to in-store checkout systems, benefits from intelligent tools that analyze consumer behavior and adapt offerings accordingly (Pillarisetty & Mishra, 2022). As Calvo, Franco, and Frassetto (2023) emphasize, the key to a successful omnichannel strategy is the seamless integration of AI capabilities that anticipate needs and deliver relevance at scale. Here, we examine how AI is reshaping the digital retail environment, from personalized product recommendations to dynamic pricing and search optimization.

Overview of Retail Touchpoints

E-Commerce and Online Marketplaces

AI enhances digital commerce through personalized product suggestions, dynamic pricing, and intelligent search. Chatbots assist with customer inquiries while fraud detection algorithms protect sensitive transactions (Pillarisetty & Mishra, 2022).

Brick-and-Mortar Stores

While digital growth continues, physical locations remain vital. AI optimizes store layout, predicts foot

Methodology

This industry analysis is based on an integrative literature review that synthesizes academic research, industry reports, and practitioner-oriented sources to examine how artificial intelligence is transforming omnichannel retail. To ensure transparency and rigor, sources were identified through a structured search process using databases including Google Scholar, ScienceDirect, Emerald Insight, ProQuest, and industry platforms such as RetailCustomerExperience.com, Just-Style, and FashTech Journal. Search terms included combinations of “artificial intelligence,” “omnichannel retail,” “customer experience,” “automation,” “supply chain,” and “retail technology,” focusing on publications from 2021 to 2025 to capture the most recent developments.

Sources were screened based on their relevance to consumer-facing retail, clarity of AI application, and contribution to understanding omnichannel strategy. Scholarly sources were prioritized for theoretical grounding and empirical validity, while practitioner reports and case studies were included to illustrate real-world implementation and emerging trends. Once selected, sources were coded into thematic categories, such as personalization, automation, supply chain optimization, customer engagement, and ethical considerations, to identify cross-cutting patterns and divergences.

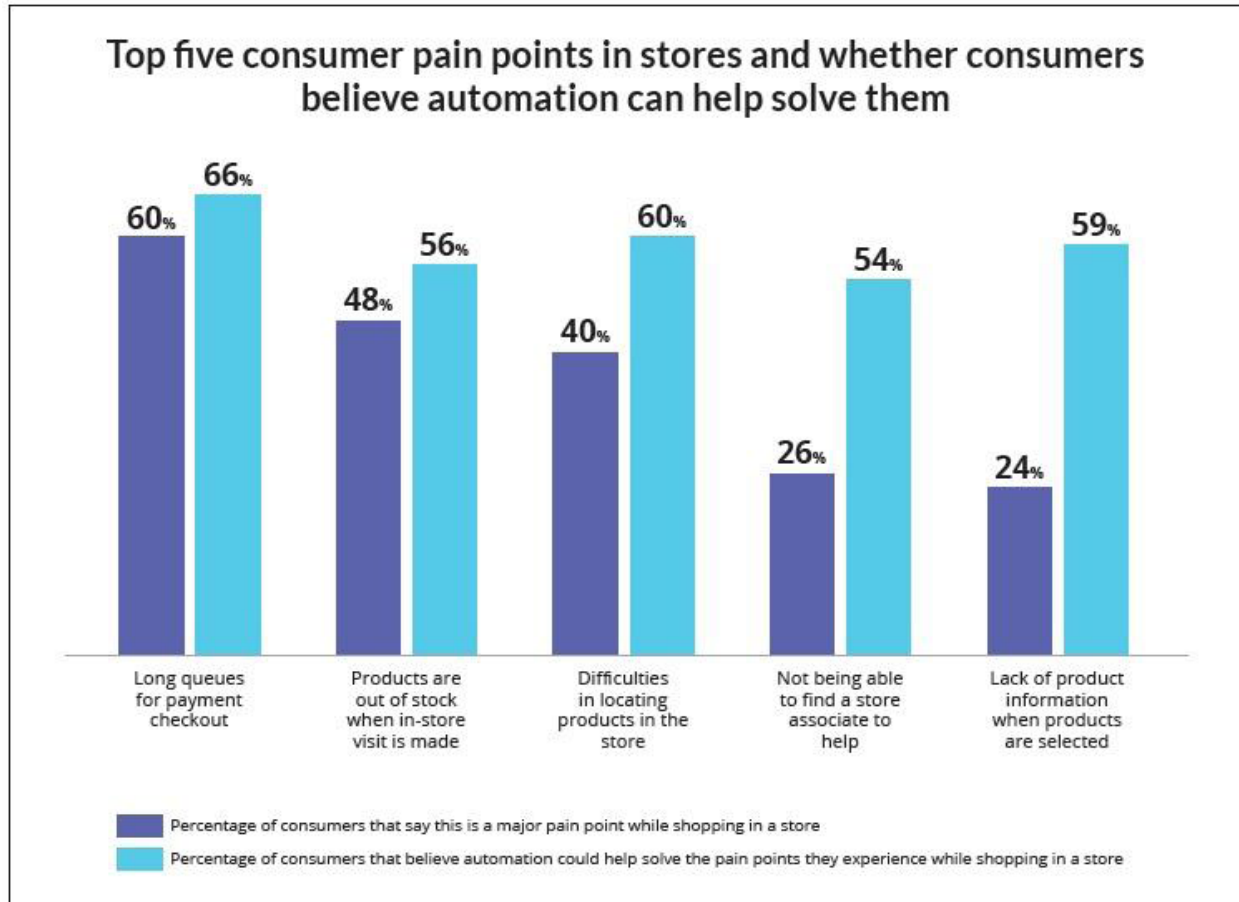
The synthesis process involved comparing findings across categories, reconciling differences between academic and practitioner perspectives, and integrating case examples to demonstrate both opportunities and limitations of AI adoption. This approach strengthens the validity of the analysis while ensuring that insights remain relevant to both researchers and industry practitioners.

Figures included in this analysis were reproduced directly from their sources. The author created no new figures, and no modifications were made beyond standard formatting for consistency. Each figure is accompanied by full source citations to ensure transparency and proper attribution.

traffic, manages inventory in real-time, and even deploys cashier-less checkout systems. Figure 1 illustrates the top in-store consumer pain points, highlighting how automation directly addresses these frustrations (Guha et al., 2021; Retail Tech, 2023).

Mobile Commerce and Apps

Mobile platforms now account for a large portion of retail traffic. AI customizes app interfaces, automates



Courtesy: CB Insights Report

Figure 1: Top Five Consumer In-Store Consumer Pain Points and Confidence Levels that Automation Can Solve

location-based promotions, and powers features like augmented reality try-ons and voice assistants (Beatrice, 2023). As shown in Figure 2, younger shoppers favor brands that integrate mobile-based personalization.

Social Media and Influencer Channels

AI enables real-time trend analysis, targeted ad delivery, and automated responses via social chatbots. It also plays a central role in social commerce, where customers shop directly through posts and livestreams (Moore, Bulmer, & Elms, 2022).

Supply Chain and Fulfillment

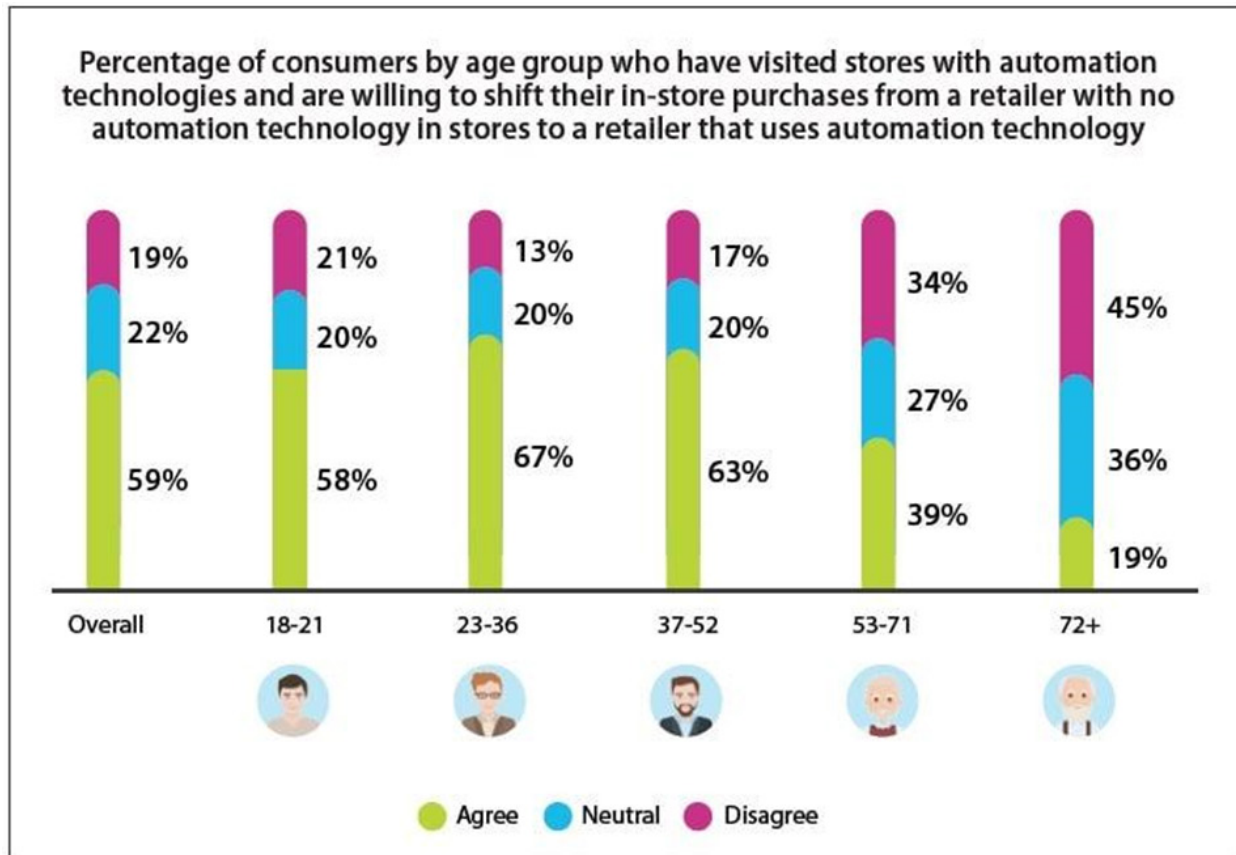
AI-driven logistics improve demand forecasting, automate warehouse operations, and provide real-time shipment tracking. Figure 4 illustrates measurable improvements in stock accuracy, delivery speed, and logistics cost reduction through the use of AI tools (Just-style.com, 2024).

Brick-and-Mortar Stores

This section explores the enduring relevance of brick-and-mortar retail and how artificial intelligence is transforming the physical store experience through automation, personalization, and operational enhancements.

Despite the explosive growth of e-commerce, brick-and-mortar stores remain an essential pillar of the omnichannel retail experience. Physical retail is undergoing a renaissance, not in contrast to digital commerce, but as its complement. AI is playing a central role in this transformation by bringing intelligence, automation, and personalization into the store's environment.

Retailers are implementing AI-powered tools to optimize nearly every aspect of in-store operations. Smart shelves use sensors and computer vision to detect product placement, flag out-of-stock items, and update digital price tags automatically (Guha et al., 2021). This ensures a seamless shopping experience while reducing the labor needed for routine stock management. Walmart, for instance, uses ro-



Courtesy: CB Insights Report

Figure 2: Percentages of Consumers Willing to Favor In-Store Purchases From Automated Retailer to Non-Automated Retailer By Age Group

bots in many locations to autonomously scan shelves and alert employees about restocking needs (Just-style.com, 2024).

Checkout, traditionally a major source of friction for shoppers, is also being reimagined through AI. Cashier-less checkout systems like Amazon Go use sensors and cameras to detect what customers pick up and charge them automatically upon exit. This model significantly reduces waiting times and enhances customer convenience. As shown in Figure 1, consumers list long lines and checkout frustration as top in-store pain points, issues that AI technologies are now directly addressing.

Foot traffic analytics is another area where AI is making brick-and-mortar stores smarter. Cameras and heatmaps powered by computer vision analyze how customers navigate store layouts, dwell times near displays, and bottleneck areas. These insights help retailers redesign store layouts to increase engagement and maximize sales (Pillarisetty & Mishra, 2022).

AI-enabled workforce management is equally transformative. Using predictive analytics, retailers can

forecast peak hours, local weather effects, and even promotional spikes to schedule optimal staff coverage (Kotler, 2024). This ensures labor efficiency while maintaining high service levels, especially in high-touch environments like fashion or electronics.

In experiential retail models, AI helps deliver personalized in-store journeys. Interactive mirrors, digital kiosks, and Radio Frequency Identification (RFID)-based fitting room assistants offer styling recommendations or complementary products based on individual profiles (Retail Tech, 2023). These experiences bridge the convenience of online shopping with the tactile advantages of physical stores.

According to Mustakallio (2015), the future of physical retail lies in blending traditional service with digital insight. Rather than being displaced, brick-and-mortar stores are evolving into intelligent environments where AI delivers operational efficiency, customer insight, and immersive brand storytelling. In short, AI has reinvigorated physical retail, not by replacing human touch, but by augmenting it with data-driven efficiency and personalization.

E-Commerce and Online Marketplaces

E-commerce platforms and online marketplaces represent the digital backbone of omnichannel retail. They offer convenience, reach, and personalization at scale, and artificial intelligence is central to their effectiveness. From personalized product recommendations to dynamic pricing and intelligent search, AI is transforming digital retail environments.

One of the most impactful applications of AI in e-commerce is the recommendation engine. Retailers like Amazon, eBay, and Walmart use AI-driven algorithms to analyze browsing history, previous purchases, and demographic data to suggest products uniquely relevant to each user. These systems are continuously trained on user behavior to refine accuracy and increase conversions (Beatrice, 2023). According to Pillarisetty and Mishra (2022), effective AI recommendations can lead to a 10–30% increase in average order value, demonstrating clear ROI.

Another important feature is dynamic pricing, where AI monitors competitor prices, inventory levels, seasonal trends, and customer demand to automatically adjust pricing in real time. This strategy helps online marketplaces maintain competitiveness while maximizing profit margins. Guha et al. (2021) note that dynamic pricing algorithms are most effective when paired with segmentation tools that tailor price sensitivity analysis to different customer groups.

Search functionality is another critical area where AI plays a role. Traditional keyword-based search is being replaced by semantic search and visual search, powered by machine learning (ML) and natural language processing (NLP). These technologies understand the intent behind a user's query and return more accurate, context-aware results. For example, a search for "comfortable black shoes for walking" might prioritize orthotic-friendly sneakers with positive comfort reviews, rather than just shoes tagged as "black" or "walking" (Moore, Bulmer, & Elms, 2022).

AI also enhances customer service in digital marketplaces through chatbots and virtual assistants. These systems manage queries, recommend products, and even process returns. As Chaubard (2023) explains, retail AI chatbots can resolve more than 80% of common issues without human intervention, reducing costs and increasing service availability.

Security and fraud prevention are further AI use cases in e-commerce. Machine learning models monitor transactions in real time for unusual patterns that may indicate fraud, allowing platforms to flag suspicious activity immediately and minimize losses (Guha et al., 2021).

E-commerce also benefits from AI-driven content optimization, including A/B testing of product titles, images, and descriptions. Generative AI is increasingly being used to create persuasive product listings and automated customer follow-up emails tailored to user behavior (Kotler, 2024).

Despite these innovations, it is important to acknowledge that not all retailers have the infrastructure to deploy AI at scale. Saratchandran (2025) notes that smaller brands often struggle with fragmented data sources, budget limitations, and a lack of in-house expertise, making it harder to compete with dominant platforms like Amazon.

Nonetheless, the direction is clear: AI is no longer a "nice-to-have" in e-commerce; it is essential for staying relevant in an environment defined by personalization, agility, and efficiency. "The first thing you can do on the website or app before they order is to leverage great search, snappy interfaces, and smart recommendation systems that can drive basket size and enhance the shopping experience" (Chaubard, 2023). Collaborative filtering is a method that can be employed at this stage of the purchaser's journey, such as a software called Algolia, which truly makes a difference. Once the consumer has completed their cart, they may have some questions that can be addressed via chatbots and AI-powered call centers; these would help to keep operating costs low while keeping customer satisfaction front of the mind throughout the e-commerce experience.

Now that the customer has completed their order, the next goal should be to fulfill the order as quickly and accurately as possible. As many of the cases surmised, out-of-stock items and poor substitutions can be a primary cause of customer discontent as well as one of the highest contributing factors to both low Net Promoter Score (NPS) and low profit. Shelf digitalization data can allow customers to choose from in-stock items only, which can mitigate the possibility of losing a customer for life due to this.

"Once customers have submitted their orders, make sure you are communicating with them regularly, keeping them in the know on when they can expect their order to arrive (or when they can come pick it up)...this means no substitutions, fast picking, and fast delivery" (Chaubard, 2023). According to Chaubard, using humans to pick the items and employing DRO (distributionally robust optimization) algorithms can be extremely advantageous at this phase. Scalable approaches are ideal for this, and returns can be relatively painless by using AI to identify and report any potentially fraudulent activity.

Mobile Commerce and Apps

This section investigates how AI technologies power mobile commerce, enhancing user experience



Figure 3: Robomart’s Concept For “Self-Driving” Grocery Stores

through personalization, real-time engagement, and intelligent interface design.

Mobile commerce, or m-commerce, has become one of the most powerful forces in modern omnichannel retail. With over 6 billion smartphone users globally, retailers are now focusing on creating seamless, intelligent mobile experiences to meet consumers where they are, literally in the palm of their hands. AI serves as the core engine powering these mobile platforms, enabling real-time personalization, location-based marketing, voice-enabled search, and augmented reality (AR) shopping.

AI analyzes a wealth of mobile data, including location, search patterns, dwell time, and app behavior, to deliver hyper-personalized product recommendations and promotions. This intelligence allows retailers to engage with users contextually. For instance, push notifications are triggered when customers walk near a physical store or browse a product online but abandon their cart. Personalized offers, sent within minutes, are proven to increase conversion and reduce abandonment (Beatrice, 2023; Chaudhary, 2023).

Retailers like Starbucks and Target use mobile apps enhanced with AI to adjust promotions in real time. Based on time of day, weather, or even social media sentiment, these platforms deliver highly targeted messages that boost foot traffic and app usage (Pillarisetty & Mishra, 2022).

One of the most compelling innovations in mobile commerce is the integration of augmented reality (AR). Powered by AI, AR features allow customers

to visualize products such as furniture, glasses, or makeup on themselves or in their own space before purchasing. Brands like IKEA, Sephora, and Warby Parker have incorporated these features into their apps, improving engagement and reducing return rates. According to Moore, Bulmer, and Elms (2022), AR transforms mobile apps from simple transactional tools into immersive, experiential environments that enhance customer satisfaction and strengthen brand loyalty. Voice commerce is another area where AI enhances mobile interaction. With tools like Siri, Alexa, and Google Assistant, customers can place orders, track shipments, or find nearby stores using simple voice commands. Natural language processing (NLP) ensures that these systems understand context, intent, and personal preferences (Guha et al., 2021). As voice adoption continues to grow, especially among multitasking consumers, retailers that optimize their mobile platforms for voice search can gain a distinct advantage.

AI also helps mobile apps adapt over time. Machine learning models analyze individual usage patterns to reorganize home screens, prioritize product categories, or pre-load content for better performance. This personalized app optimization enhances the user experience and increases time spent on the app (Calvo, Franco, & Frassetto, 2023).

As illustrated in Figure 2, Gen Z and millennial consumers show a strong preference for AI-powered mobile experiences, including features like smart chat, real-time offers, and AR trials. Retailers targeting these segments should prioritize mobile innovation, as loyalty is increasingly shaped by convenience and responsiveness.

While the benefits are clear, mobile commerce powered by AI also requires careful data governance. Retailers must be transparent about what data is collected, how it is used, and how customers can control their mobile data footprint (Kotler, 2024). Trust is a critical currency in mobile interactions, and mishandling user data can severely damage brand credibility.

In summary, mobile commerce is no longer a secondary channel; it is a central interface between consumers and brands. With AI driving engagement, prediction, and personalization, mobile apps are evolving into the most versatile and dynamic tools in the omnichannel retail toolkit.

Social Commerce and Influencer Marketing

Social commerce is one of the fastest-growing components of omnichannel retail, and AI is its engine. As consumers increasingly rely on social media for product discovery and recommendations, brands are investing in AI technologies to deliver seamless, shoppable experiences within these platforms. Instagram, TikTok, and Facebook have evolved into dynamic marketplaces where the lines between content and commerce are intentionally blurred, and AI is responsible for much of that integration (Moore, Bulmer, & Elms, 2022).

AI enables real-time personalization of content feeds, automatically curating products based on users' engagement, preferences, and previous activity. Through AI-powered sentiment analysis, retailers gain valuable insights into how consumers feel about products, influencers, or campaigns. This allows marketing teams to adjust messaging and promotions dynamically (Beatrice, 2023).

Retailers are also using AI to assess the performance of influencer partnerships. Algorithms track click-through rates, conversions, follower demographics, and engagement metrics to determine ROI. These insights help companies select the most relevant content creators and optimize influencer campaigns. As Saratchandran (2025) explains, the most successful social commerce strategies rely on AI not just for automation, but for intelligent decision-making that keeps pace with changing trends. AI also powers visual search in social commerce, allowing users to click on an image in a post or video and instantly access product details. This is especially effective with Gen Z consumers, who prefer visual-first experiences and are more likely to trust peer reviews and influencer endorsements than traditional advertising (Calvo, Franco, & Frassetto, 2023).

Figure 2 highlights how younger demographics express stronger trust in AI-powered social platforms. They expect to browse, evaluate, and purchase products without leaving the social environment. Retail-

ers who can meet these expectations with seamless, AI-enabled social experiences build stronger brand affinity and conversion rates.

As Pillarisetty and Mishra (2022) emphasize, the power of AI in social commerce lies in its ability to transform content into commerce, moving from inspiration to transaction in just a few taps. The brands that thrive in this space are those that embrace AI not only as a marketing tool but as an engine of personalization, automation, and agility.

Supply Chain, Logistics, and Fulfillment Integration

A seamless omnichannel experience depends not only on front-end personalization and engagement but also on efficient, responsive, and intelligent back-end retail operations. Artificial intelligence has become indispensable in optimizing the retail supply chain, ensuring that customers receive the right product at the right time through the right channel. In an era where shoppers expect fast, accurate, and flexible fulfillment, AI helps retailers meet these expectations through predictive analytics, automation, and real-time logistics optimization.

At the core of AI-driven supply chain management is demand forecasting. Machine learning models analyze historical sales, seasonality, promotional activity, regional trends, weather patterns, and even social media signals to predict product demand at store, warehouse, and regional levels (Guha et al., 2021). This level of forecasting allows retailers to minimize stockouts and overstocks, reducing both lost sales and inventory holding costs.

Retailers like Amazon and Walmart leverage AI to determine what products to stock where and when, optimizing local inventories based on predictive purchasing behavior. AI also drives automated replenishment systems, where items are reordered and shipped to warehouses or stores before inventory hits a critical low (Just-style.com, 2024).

AI plays a pivotal role in logistics and delivery optimization as well. Real-time data from GPS, weather services, and traffic analytics is fed into routing algorithms that dynamically adjust delivery routes. This reduces fuel costs, shortens delivery windows, and enhances delivery accuracy. As Pillarisetty and Mishra (2022) explain, AI enables last-mile logistics to become adaptive and customer-centric, aligning delivery slots with customer preferences and availability. Figure 3 illustrates an example of a fast-delivery innovation that targets grocery orders for customers. It delivers a premium and personal experience based on each customer's specific order.

In warehouses, AI powers robotics and automation for faster and more accurate order picking and packing. Robotics systems, like those used by Amazon, sort and retrieve products with precision, while AI



Figure 4: How AI Can Enhance Supply Chain and Logistical Operations for Retail Businesses

ensures orders are grouped and processed in the most efficient sequence (Guha et al., 2021). These technologies drastically cut labor costs and improve fulfillment speed.

Figure 4 illustrates areas where AI can improve performance across the supply chain, boosting inventory accuracy, increasing warehouse throughput, and shortening delivery cycles. These gains are not only operational but also customer-facing, as fast, accurate fulfillment directly impacts satisfaction and repeat purchases.

Retailers are also using AI for returns optimization, identifying patterns in product returns to improve quality control, reduce fraud, and forecast future reverse logistics needs. AI can even suggest alternate products to customers before they complete a return, thereby salvaging potential revenue (Chaubard, 2023).

Sustainability is becoming a key consideration in fulfillment, and AI contributes here as well. Algorithms optimize load sizes, reduce empty trips, and forecast carbon impact per delivery route. As Thompson (2020) suggests, retailers are increasingly using AI not just for efficiency, but also for environmental responsibility, aligning with growing consumer demand for eco-conscious brands.

However, Kotler (2024) cautions that full AI integration into supply chains requires significant investment and infrastructure. Legacy systems, siloed data, and limited interoperability can hinder prog-

ress, particularly for smaller retailers or those lacking digital maturity.

Despite these challenges, AI's value in supply chain logistics and fulfillment is indisputable. It transforms a traditionally reactive function into a proactive and predictive one, ensuring that omnichannel promises are met consistently, efficiently, and sustainably.

Though AI adoption can be advantageous across almost every segment of a retail business, "AI's... greatest impact could be felt across the supply chain. From anticipating orders to managing deliveries, AI has the power to drastically increase efficiency in all areas of the supply chain..." (Guha et al., 2021). Throughout this analysis, it becomes evident that one of the key advantages of utilizing artificial intelligence within supply chain operations is to predict future trends, manage inventory, and forecast demand. Retailers who hope to supersede their competitors as the industry leans even more heavily on AI and digitization will be able to successfully incorporate this technology. Despite the cost and expertise required to make this happen, the pros will outweigh the cons from a long-term perspective because these early technological advancements can propel the respective retailer to the forefront of consumer satisfaction.

Case Studies and Industry Snapshots

To fully appreciate AI's impact on omnichannel retail, it's essential to examine real-world applications.

This section presents real-world examples of AI integration in retail, showcasing success stories and lessons from brands that failed to adapt. Author Laura Husband details premier retailers who are successful at adopting automation within their supply chain initiatives, including “US supermarket Walmart and online giant Amazon are using AI-powered robots in fulfillment centers to manage inventory, process orders, and optimize storage space. They’re also utilizing predictive analytics to forecast demand, ensuring products are available when and where they are needed.” (Just-style.com, 2024).

Industry leaders are already using artificial intelligence to enhance operations, streamline customer experiences, and remain competitive. These case studies provide evidence of the tangible benefits and the risks of failing to evolve.

Walmart

Walmart has implemented AI-powered autonomous robots across its distribution centers. These robots scan shelves to identify stockouts, misplaced products, or price discrepancies. By using AI to automate inventory auditing and shelf replenishment, Walmart has significantly reduced manual labor and improved on-shelf availability (Just-style.com, 2024). In addition, predictive analytics forecast local demand, enabling smarter restocking across thousands of store locations.

Amazon

Amazon leads the retail sector in AI-powered logistics and personalization. Its supply chain leverages machine learning models to dynamically adjust delivery routes based on weather conditions, traffic patterns, and warehouse congestion (Guha et al., 2021). Its recommendation algorithms and product ranking engines are powered by billions of data points, resulting in hyper-personalized shopping for every user.

Sephora

Sephora uses an AI-powered skin tone detection system that matches users with the right foundation and cosmetic shades through its mobile app. This reduces friction in the beauty shopping experience and bridges the gap between digital convenience and physical product fit. AI is also integrated into their loyalty program, offering custom rewards based on predicted purchase behavior (Kotler, 2024).

Zara

Zara combines AI with trend forecasting to stay ahead of fast fashion demands. Its system analyzes real-time social media conversations and Google search trends to determine which colors, styles, and cuts are gaining popularity. It then uses AI to reallo-

cate inventory across global stores based on demand forecasts (Calvo, Franco, & Frasquet, 2023).

Retail Transformation Challenges and Lessons from Legacy Retailers

Examining legacy retailers provides useful context for understanding why modernization efforts vary across the industry. JCPenney, for instance, continues to operate and has not disappeared from the marketplace. However, the company has faced long-standing challenges that include inconsistent strategic direction, delayed investment in digital capabilities, and difficulty repositioning itself in a retail environment that increasingly favors convenience, personalization, and integrated technology. These challenges illustrate how large, traditional retailers often struggle to update legacy systems and organizational structures at the speed required by modern consumers.

Toys R Us presents a different case. Although often cited as an example of retail disruption, its decline was driven primarily by financial constraints from its leveraged buyout, which limited its ability to invest in store improvements, e-commerce, and customer experience initiatives. While technology adoption played a role in its competitive positioning, it was not the direct cause of the company’s collapse. Instead, the situation shows how financial limitations, operational rigidity, and timing can all influence whether a retailer is able to keep pace with shifting consumer behavior.

Together, these examples show that retail performance is shaped by a combination of strategic readiness, financial capacity, and adaptability rather than by the presence or absence of any single technology. As Thompson (2020) notes, physical retail continues to evolve rather than disappear. The retailers that succeed tend to be those that align their strategic priorities, organizational capabilities, and technology adoption efforts in a coordinated and forward-looking way.

At the same time, the adoption of AI introduces new responsibilities for retailers. As companies integrate AI into consumer-facing and operational functions, they must address concerns related to transparency, fairness, data stewardship, and organizational readiness. These considerations highlight the importance of careful planning and responsible implementation when building a modern omnichannel environment.

Data Privacy and Regulation

The most pressing AI-transformation concern is data privacy. AI relies on massive amounts of customer data, including behavioral, transactional, and biometric data. Consumers are increasingly aware of how their data is collected and used, and they expect transparency and control over that process (Kotler,

2024). Regulations such as the General Data Protection Regulation (GDPR) in Europe and the California Consumer Privacy Act (CCPA) in the United States require businesses to obtain consent, disclose data usage practices, and allow users to opt out.

Retailers that fail to comply risk fines, reputational damage, and customer loss. As Beatrice (2023) notes, privacy is not just a legal obligation; it's a trust imperative.

Algorithmic Bias and Fairness

AI-powered tools are only as good as the data they are trained on. Bias in datasets can lead to discriminatory pricing, product recommendations that exclude certain groups, or inaccurate sentiment analysis. For example, dynamic pricing algorithms may inadvertently charge different prices based on location, device type, or demographic proxies (Guha et al., 2021).

Retailers must conduct regular audits of their AI-powered tools and engage in "ethical debugging" to ensure that algorithms treat all users fairly. Failure to do so could alienate customers and lead to public backlash.

Cost, Complexity, and Resistance to Change

Smaller and mid-sized retailers face significant barriers to AI adoption. These include high implementation costs, lack of internal technical expertise, and uncertainty about ROI (Saratchandran, 2025). Even when the AI technology is available, cultural resistance can slow progress. Employees may feel threatened by automation, or managers may struggle to trust AI-generated insights over traditional experience-based decision-making.

Integration with Legacy Systems

Mustakallio (2015) emphasizes that legacy infrastructure often lacks the flexibility needed to integrate new AI technologies. Without modern technologies like APIs or scalable cloud infrastructure, many traditional retailers find themselves bottlenecked, unable to unlock the full value of their data or deploy cutting-edge tools.

Despite these challenges, Chaubard (2023) argues that ethical and inclusive AI is not only achievable but essential. With the right safeguards and a clear roadmap, AI can enhance, not replace, human decision-making, improve fairness, and build lasting customer trust.

Social Influence & Adoption

Social media platforms have evolved far beyond their original function as a communication tool. Today, social media serves as a fully integrated com-

merce engine, one powered by artificial intelligence (AI). Platforms like Instagram, TikTok, Facebook, and Pinterest have become central to how consumers discover products, engage with brands, and make purchases. Within this landscape, AI is the force that enables automation, hyper-personalization, and real-time responsiveness.

AI enhances social media marketing by analyzing millions of data points from user interactions, preferences, and feedback. This allows brands to target advertisements, deliver personalized content, and identify emerging trends far more effectively than traditional marketing strategies. Moore, Bulmer, and Elms (2022) emphasize that AI technologies have become the "backbone of intelligent targeting," enabling real-time adaptation of marketing messages and ad placements to suit each user's journey.

One of the most powerful AI-enabled tools in this space is sentiment analysis. By scanning social posts, comments, and reviews, AI can determine public sentiment around specific products, campaigns, or influencers. This allows retailers to adjust their messaging dynamically or resolve public relations risks before they escalate (Beatrice, 2023). AI-powered dashboards also highlight which posts are generating engagement or backlash, providing actionable insights in real time.

AI also automates the selection and evaluation of influencers. Algorithms assess influencer reach, engagement quality, audience authenticity, and relevance to a brand's values and target demographics. As Pillarisetty and Mishra (2022) note, AI helps prevent mismatches between brands and influencers while ensuring better ROI for campaigns. It can even forecast the likelihood of a campaign's success based on historical performance and trend analysis.

One breakthrough is shoppable social media content. With AI, consumers can click on an influencer's outfit or home decor in a post and immediately access product details, pricing, and direct purchase links, all without leaving the app. These AI-powered experiences, called "shop-the-look" or "tap-to-buy," have transformed social media from a place of inspiration to one of instant transaction (Moore et al., 2022).

Visual search and AI-powered tagging are also growing. These technologies identify products in user-generated photos or influencer posts and match them to in-stock items in a retailer's catalog. This bridges the gap between content and commerce, converting views and likes into sales with minimal user friction.

Figure 2 supports this by highlighting generational differences in attitudes toward automation, which align with higher engagement levels among Gen Z and millennial shoppers in technology-enabled retail experiences. These demographics not only trust

influencer recommendations more than traditional ads but also expect seamless, app-integrated buying experiences (Calvo, Franco, & Frasquet, 2023).

Importantly, social media allows for community building, which AI helps facilitate through content recommendations and personalized engagement. AI ensures that users see content that aligns with their values, lifestyle, and shopping behavior, strengthening emotional ties to a brand (Chaubard, 2023).

That said, retailers must also navigate the ethical challenges of AI in this space. Hyper-targeting based on inferred preferences may raise concerns about surveillance and privacy, especially as social commerce becomes more embedded in everyday life (Kotler, 2024). Transparency in data use and opt-in personalization options are essential to maintaining customer trust.

As Saratchandran (2025) puts it, “AI is not simply optimizing social marketing, it is creating a new era of digital word-of-mouth.” Retailers that harness their full potential can not only increase conversions but also shape brand narratives at scale.

Discussion

This discussion section summarizes key takeaways and explores future trends, such as generative AI, augmented and virtual reality, and AI-driven sustainability, which are likely to influence retail strategies.

To contextualize these findings more fully, several established theoretical frameworks help explain not only how AI is transforming omnichannel retail but why its effects vary across organizations and consumer groups. The Technology Acceptance Model (TAM) provides insight into the consumer adoption of AI-enabled tools, where perceived usefulness and perceived ease of use directly influence engagement with chatbots, automated checkout, and mobile app personalization. The Resource-Based View (RBV) explains how AI capabilities, such as predictive analytics, recommendation engines, and automated supply chain systems, function as valuable, rare, and difficult-to-imitate resources that generate sustained competitive advantage for retailers with strong data infrastructure and organizational readiness. Service-Dominant Logic (SDL) further frames AI adoption as a mechanism for co-creating value between retailers and consumers by enhancing personalization, responsiveness, and relational interaction across channels. Integrating these frameworks elevates the analysis beyond descriptive synthesis toward a more theory-driven explanation of AI’s strategic role in omnichannel retailing.

As the retail industry navigates rapid technological change, the adoption of AI and automation emerges not just as an advantage but as a necessity for survival and growth in both physical and digital retail

environments. From the seamless personalization in e-commerce to the interactive, data-driven experiences in brick-and-mortar stores, AI is redefining how consumers engage with brands across every channel.

One of the most striking revelations in this exploration is how AI enables true omnichannel retail synergy. Rather than enhancing isolated touchpoints, AI facilitates a continuous, responsive retail journey that adapts in real time to customer needs, blurring the lines between online, offline, mobile, and social platforms. Retailers are no longer investing in technology solely for efficiency; they are building immersive, intelligent ecosystems designed to anticipate and respond to consumers’ preferences and behaviors instantly.

Unexpectedly, the research revealed that AI is not only streamlining operations and personalizing engagement but also reshaping strategic thinking. Retailers are using AI insights to guide product development, identify emerging market trends before they surface, and even curate hyper-localized offerings based on regional demand data. This shift from reactive to predictive and even preemptive business models marks a significant evolution in the omnichannel retail strategy.

Another new concept that emerged is the rise of “experiential intelligence”—the use of AI not just to track behavior but to create emotionally resonant, multisensory retail experiences. From augmented reality try-ons and digital mirrors to AI-powered campaigns and dynamic pricing models, retailers are moving from transactional touchpoints to immersive, story-driven journeys.

However, these opportunities do not come without their challenges. Issues like data privacy, implementation complexity, and the ethical implications of automation must be carefully managed to maintain consumer trust and brand integrity.

Ultimately, AI-powered omnichannel retail is no longer a futuristic vision; it is a present reality that continues to evolve. Retailers who understand and embrace this transformation can not only meet the demands of the modern consumer but also shape the future of retail itself. The next frontier lies not in simply adopting AI but in reimagining retail from the ground up through the intelligent, adaptive lens it provides.

Managerial Implications and Strategic Priorities

The insights from this analysis highlight several actionable strategies for retail managers seeking to adopt or expand AI capabilities. First, leaders should prioritize investments that enhance both customer-facing experiences and back-end operational efficiency, beginning with high-impact applications

such as demand forecasting, automated inventory management, and personalized digital engagement. Retailers with limited budgets should adopt a phased approach, starting with tools that offer the highest ROI, such as recommendation engines, mobile app personalization, and AI-enabled customer service platforms. Cross-functional alignment is essential; IT, marketing, operations, and merchandising teams must collaborate to ensure that AI initiatives support a unified omnichannel strategy. Workforce readiness should also be prioritized by offering training programs that help employees work effectively alongside AI-powered tools, reducing resistance and ensuring smooth implementation.

Scenario-Based Foresight

To aid strategic planning, retailers should consider multiple potential futures:

Best-Case Scenario:

AI-powered tools integrate seamlessly across physical, digital, and supply chain operations, leading to substantial gains in personalization, forecasting accuracy, labor efficiency, and customer loyalty. Retailers that invest early and build strong data foundations achieve sustainable competitive advantages through unique, hard-to-imitate AI capabilities.

Worst-Case Scenario

Retailers experience fragmented adoption, ethical lapses, or data mismanagement, resulting in customer distrust, regulatory penalties, operational failures, and wasted investment. Smaller or under-resourced companies that adopt AI without a strategic foundation may fall further behind AI-mature competitors.

Most Likely Scenario

AI adoption continues unevenly across the retail sector, with leaders achieving strong returns through strategic integration while others progress more slowly due to budget constraints, data fragmentation, or cultural resistance. Over time, baseline AI capabilities—such as predictive analytics, fraud detection, and personalized recommendations—become standard industry expectations, forcing lagging retailers to accelerate adoption.

These foresight scenarios enable retail leaders to evaluate risk, allocate resources strategically, and anticipate the evolving competitive landscape.

Conclusion & Future Trends

Artificial intelligence is not just reshaping omnichannel retail; it is redefining the relationship between retailers and consumers. From personalization engines and virtual try-ons to predictive logistics and social commerce, AI empowers businesses to offer smarter, faster, and more relevant experiences across all channels.

Throughout this case study, we have examined how AI improves operations in brick-and-mortar stores, enhances digital shopping through recommendation systems, supports mobile app personalization, and drives engagement via social commerce. Figures 1 through 4 illustrate AI concept ideas and highlight customer perceptions (Calvo, Franco, & Frasquet, 2023; Guha et al., 2021; Just-style.com, 2024).

However, this transformation is not without challenges. Data privacy, algorithmic fairness, and resistance to change continue to pose barriers for both emerging and established retailers. Ethical deployment of AI is no longer optional; it is essential. Customers expect brands to use their data responsibly, and regulators are beginning to hold companies accountable (Beatrice, 2023; Kotler, 2024).

Looking ahead, several trends are poised to shape the next phase of AI in retail:

- **Generative AI** can automate marketing campaigns, create real-time product descriptions, and even power AI-driven styling assistants.
- **AR and VR** can become integral to immersive e-commerce, enabling customers to “walk” through virtual stores or try on clothing in real-time.
- **AI for sustainability** can gain traction, as retailers use machine learning to reduce carbon emissions, optimize delivery routes, and manage sustainable sourcing (Thompson, 2020).
- **Workforce augmentation**, rather than replacement, is key. As Chaubard (2023) notes, training staff to work alongside AI tools can be crucial to long-term success.

Retailers that proactively embrace these tools, while prioritizing ethics, transparency, and customer-centricity, can lead the future of commerce. AI is not a threat to human insight; it is a tool to amplify it. The brands that understand this can earn not only market share but also consumers’ long-term trust.

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Review

This article was accepted under the **constructive peer review** option. For further details, see the descriptions at: <http://mumabusinessreview.org/peer-review-options/>

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