Guest editorial: Advancing the future of retail operations with cutting-edge technologies

1. Introduction

The retail industry is fundamentally changing due to emerging technologies (Morenza-Cinos *et al.*, 2019; Ta *et al.*, 2023). Machine learning (ML) and artificial intelligence (AI) for example, can help retailers improve demand forecasting accuracy (Modgil *et al*., 2021; Chou *et al.*, 2023) and analyze data in real time, enabling them to better align their inventory decisions with their logistics network capabilities (Sodero *et al.*, 2019). Other technologies such as blockchain, the Internet of Things (IoT) and augmented reality (AR) allow retailers to support product tracking and authenticity verification, real-time data accessibility and product visualization for customers, as well as the automation of processing product returns (Hartley *et al*., 2021). Furthermore, these technologies have also contributed to the rise of new retail formats and fulfillment models, such as reserve/buy online pick up/return in store, webrooming and buy in store/ship-to-home, which allow retailers to offer a more seamless customer experience across retail channels (Jin *et al*., 2023). Additionally, last-mile delivery is being reshaped by new delivery modes, including drones and autonomous delivery (Merkert *et al*., 2022).

While these technological innovations offer many opportunities for retailers to improve their operational efficiency, their implementation often poses significant challenges for retailers (Angelopoulos *et al.*, 2023). Adopting new technologies requires substantial financial investments, cross-functional coordination and changes to legacy systems. For example, while over 90% of retailers have adopted AI in some shape or form, often as pilots, most retailers struggle with rolling out this technology on a larger scale [1].

Research on omnichannel retailing has shown that integrating physical and digital retail channels can improve customer service experience and convenience. However, it can also create tensions related to inventory visibility, order orchestration and last-mile cost management (Hubner *et al.*, 2016; Melacini *et al.*, 2018). Other technologies, such as IoT and blockchain, promise greater supply chain traceability and transparency. Yet these benefits often depend on system-wide participation and sustained investments from supply chain partners (Hartley *et al.*, 2022). Moreover, work on data-driven retail processes suggests that these tools are only as effective as the underlying data quality and managerial capabilities that support their use (Sodero *et al.*, 2019; Modgil *et al*., 2021). As such, the successful implementation of these technologies is highly dependent on foundational organizational processes and managerial capabilities.

In addition to implementation issues, retailers struggle with fully realizing the promised and expected benefits associated with these emerging technologies. Research suggests that the performance outcomes of these emerging technologies are contingent on contextual factors such as retail format, product and service characteristics, channel configuration, customer expectations and retailers' digital maturity (Gauri *et al.*, 2021; Castelo-Branco *et al.*, 2022). For instance, technologies designed to enrich customer experience, such as AR and other digital engagement tools, may improve customers' purchase confidence and product evaluation. However, they might also generate limited value or even friction if they are poorly aligned with customer needs or retail channel design (Grewal and Roggeveen, 2020; Hilken *et al.*, 2017; Poushneh and Vasquez-Parraga, 2017). Technologies designed to enhance fulfillment, such as automated delivery systems or autonomous solutions, can reduce lead time and expand service options, but they also introduce operational complexities, regulatory concerns and cost tradeoffs that might offset their benefits (Merkert *et al.*, 2022). While prior

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work has enhanced our understanding of how emerging technologies have the potential to continue to transform retail operations and the customer experience, much of this work remains conceptual in nature or limited in scope (Guida *et al.*, 2023; Modgil *et al.*, 2022).

The understanding of drivers, implementation issues and outcomes of technology adoption in retail operations varies significantly depending on the technology under investigation. For example, implementation issues related to AI or big data vary greatly from those related to IoT technologies which focus on enabling real-time monitoring and connectivity across supply chain and in-store operations. Similarly, the discussion of automation versus human input varies tremendously across these technologies. Thus, the diversity of technological contexts underscores the need for *context-specific* research investigations in order to offer in-depth insights into how specific technologies are implemented in the retail industry.

Against this backdrop this special issue is positioned at the intersection of retail operations and emerging technologies. It seeks to explore the drivers to the adoption of these technologies, the considerations that shape their implementation and the ways in which the combination of these elements can redefine customer experience and, ultimately, reshape the industry.

In this editorial we first introduce the six manuscripts included in the special issue, highlighting how each manuscript advances our understanding of how retailers engage in the adoption of these technologies, technology-specific implementation opportunities and challenges and retail, consumer and supply chain outcomes. Second, we identify avenues for future research structured around the three key dimensions of antecedents, implementation opportunities and challenges and outcomes. In doing so, this editorial provides a starting point for additional research to further explore the impacts of emerging technologies in retail operations while also encouraging research that is theoretically grounded and empirically rigorous.

2. Introducing the special issue

Employing a diverse set of empirical methods ranging from qualitative and survey to simulation and quantitative techniques, the six papers in this special issue collectively portray retail technology not as a set of isolated innovations, but as an interconnected ecosystem in which operational design, consumer behavior, organizational capabilities and channel integration jointly determine value creation. Across the studies, a common theme emerges: the success of emerging retail technologies depends not merely on technical feasibility, but on how effectively technologies are embedded within broader omnichannel systems and aligned with consumer expectations, organizational capabilities and strategic objectives. Yuan *et al.* (2026) challenge the assumption that omnichannel return strategies such as buy-online-return-in-store (BORIS) automatically create value, demonstrating that their benefits are highly conditional and dependent on complementary operational and marketing decisions. Garg *et al.* (2026) similarly show that the viability of drone delivery hinges not only on operational efficiency, but also on consumer motivation, perceived value and retailer-consumer engagement. Complementarily, Merkert *et al.* (2026) explore how drones can enhance warehousing and last-mile delivery from an organizational perspective and highlight barriers as well as opportunities for the implementation of this technology. Park *et al.* (2026) further extend this ecosystem perspective by illustrating how third-party delivery platforms can complement, rather than cannibalize, retailers' proprietary channels when channel integration is strategically managed. Oliveira *et al.* (2026) shift attention toward the information-processing capabilities required to coordinate increasingly decentralized and consumer-centric fulfillment systems, while Bianco *et al.* (2026) demonstrate that warehouse automation creates value only when developed as a dynamic organizational capability aligned with evolving retail complexity. Collectively, these studies build a broader picture of modern retail transformation in which technology adoption, channel coordination, organizational adaptability and consumer engagement operate as mutually reinforcing components of a highly integrated retail ecosystem. A summary of the selected papers is presented in Table 1.

Table 1. Summary of papers on this special issue

Authors	Technology focus	Research questions	Theoretical lens	Method	Key findings	Contributions to gaps	Managerial implications
Garg *et al.* (2026)	Drone delivery	How do expectancy, instrumentality, valence and consumer engagement with retailers influence consumer motivation to use drone delivery in an omnichannel retail setting?	Expectancy theory	PLS-SEM and NCA using survey data	(1) All three positively predict both consumer motivation and CER; (2) Valence is the strongest predictor of motivation and the *only* VIE component imposing a binding bottleneck threshold; (3) Expectancy and instrumentality are statistically necessary conditions; (4) CER significantly predicts motivation and partially mediates all paths, but not a necessary condition	Extends Expectancy Theory into consumer-facing logistics contexts, revealing that the VIE components play structurally distinct roles rather than functioning as interchangeable predictors. Repositions CER as a relational amplifier, specifying when and how the consumer-retailer relationship shapes readiness for fulfillment innovation adoption	Emphasize personal value (speed, convenience, sustainability and innovative appeal) first, then reinforce reliability and practical benefits Scale only when consumer readiness thresholds are met; integrate drones into existing apps and loyalty programs
Park *et al.* (2026)	Technology-enabled delivery platforms, channel integration	"Do delivery platform partnerships result in significant, positive sales gains for restaurants through their physical and online direct channels?" & "Can restaurants' operational strategies impact the relationship?"	Channel capabilities theory	Difference-in-differences models with propensity score matching using secondary expenditure data	(1) Platform partnerships yield a 1.36% increase in physical channel sales and a 42.6% increase in direct, online sales. (2) Sparse physical store networks derive greater store sales increases from partnerships. (3) Direct online fulfillment integration leads to higher online sales	Extends channel-capabilities literature by demonstrating that delivery platforms act as a complement (rather than substitute) to direct channels. Provides guidance on how physical footprint and direct-fulfillment capabilities moderate these benefits	Prioritize platform partnerships in sparse-store markets and route orders through the restaurant's own app/site while outsourcing delivery Compare revenue gains with commissions and operating costs; scale back platforms as direct channels strengthen

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Table 1. Continued

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Oliveira *et al.* (2026)	Real-time data processing, adaptive distribution networks, omnichannel fulfillment	"How can an adaptive, technology-driven DN be structured to dynamically allocate orders and improve operational performance in a consumer-centric omnichannel environment subject to attended delivery constraints?"	Organizational Information Processing Theory (OIPT)	Simulation study based on real-world retail and consumer survey data	(1) Relying on a single facility type is insufficient for diverse demands. (2) Decentralizing into a hybrid approach and postponing fulfillment decisions with real-time data mitigates task uncertainty, reduces fulfillment time and minimizes failed delivery attempts	Addresses a gap in the holistic integration of multiple delivery modes, logistics preferences and inventory locations. Operationalizes real-time, consumer-driven order allocation to replace static network designs	Dynamically assign orders to the nearest stocked store or DC using real-time inventory and delivery-preference data Use scheduled home delivery to reduce failed attempts and prepare stores for ship-from-store through layout changes, training and added staffing as volume grows
Yuan *et al.* (2026)	Omnichannel Reverse Logistics	What is the association between the use of BORIS cross-channel return service and e-retailer business performance?	Transaction Cost Theory	Econometrics	(1) BORIS provides a negligible direct benefit to website sales and has no meaningful impact on other performance metrics but weakly bolsters average order value and web traffic for in-store pickup (2) When sponsored search spend is low, BORIS lifts AOV but not conversion rates. Conversely, BORIS drives incremental website traffic when paired with high-spend sponsored search (3) E-retailers using BORIS for competitive purposes may face significant consequences related to social media moderation	By moving beyond simple sales figures, this study shows empirical evidence that supports anecdotes and it also contends that BORIS's direct benefits are often weaker or more conditional than previously assumed. Specifically, its interaction effects provide guidance on how marketing levers like free shipping and digital advertising spend can impact conversion, traffic and average order value	Target BORIS to premium customers and high-priced products to increase order value and website traffic, not overall sales Bricks-and-clicks retailers should invest in dedicated counters, trained staff and digital return tracking; pure e-retailers should partner only if BORIS reduces reverse-logistics costs or complexity

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Authors	Technology focus	Research questions	Theoretical lens	Method	Key findings	Contributions to gaps	Managerial implications
Bianco *et al.* (2026)	Warehouse automation	How and to what extent do grocery retailers develop and deploy warehouse automation as a capability to transform logistics processes in response to evolving operational and market demands?	Dynamic Capabilities	Qualitative study, interviews	(1) There are six core DC processes supported by automation: inbound and outbound handling, pallet storage and depalletization, layer/case storage and picking (2) There are five strategic factors guiding automation choices: selectivity, accessibility, expandability, scalability and resilience (3) Warehouse automation is a dynamic capability, as selectivity and accessibility support sensing, expandability and scalability facilitate seizing and resilience maintains transformation	Focuses on warehouse automation as a strategic process of building long-term adaptability as opposed to a static, technology-centric investment	Map DC processes to suitable automation technologies and identify improvement gaps Evaluate investments on selectivity, accessibility, expandability, scalability and resilience, not cost alone
Merkert *et al.* (2026)	Drone delivery	How do warehouse operators and drone service providers perceive adoption decisions and collaborative arrangements at the technological, organizational and environmental dimensions?	Technology–Organization–Environment	Semi-structured interviews	(1) Technological factors for drone delivery are the primary drivers of managers' adoption decisions. (2) Organizational collaboration between warehouse operators and drone service providers is essential but currently underdeveloped and various governance mechanisms have emerged. (3) For a wider adoption of drones for warehousing and last-mile delivery, environmental support in the form of regulation and ecosystem support are necessary	Shifts the focus from consumer acceptance of drone delivery to the organizational perspective by focusing on adoption challenges and opportunities	Successful implementation does not depend on the drone technology itself but on organizational collaboration and governance. The successful adoption of drone delivery requires drones to be integrated into existing warehouse and last-mile delivery operations and should be based on operational needs rather than as a standalone technology

Yuan *et al.* (2026) examine the role of BORIS as a popular strategy to attract consumers. In this study, the authors analyze data gathered for North America's Top 1,000 e-retailers (2013–2019). They reveal that BORIS's operational challenges often outweigh its benefits. Analyzing website sales, conversion rates, order value and traffic, this study shows that BORIS offers negligible direct benefits for pure e-retailers. For omnichannel "bricks-and-clicks" retailers, BORIS only weakly boosts traffic and order value when paired with free return shipping or low sponsored search spend, though it can drive incremental traffic when synchronized with high-spend search campaigns. Ultimately, their findings suggest that while BORIS can offer highly specific, conditional advantages, its overall impact on e-retailer performance is weak, challenging the conventional wisdom of its effectiveness.

Garg *et al.* (2026) shift the conversation on drone-enabled retail operations away from purely technical and operational feasibility toward a deeper understanding of the demand side. The research offers a timely and theoretically rigorous examination of a critical bottleneck in retail innovation: the formation of consumer motivation. Drawing on expectancy theory and integrating partial least squares structural equation modeling (PLS-SEM) with Necessary Condition Analysis (NCA), the research provides a dual perspective on what is "sufficient" to drive motivation and what is "indispensable" for it to exist. The findings show that unless consumers perceive meaningful personal benefit, improvements in technical reliability (expectancy) or outcome utility (instrumentality) are unlikely to generate the necessary motivational force for adoption. The paper further enriches the retail conversation by introducing Consumer Engagement with Retailers (CER) as a critical relational mechanism in technology acceptance.

Merkert *et al.* (2026) adopt a qualitative research approach to shed light on the technological, organizational and environmental factors that impact drone operations for warehousing and last-mile delivery. The authors conduct semi-structured interviews with 38 warehouse and drone delivery managers across the globe to explore the organizational challenges and limitations associated with the implementation of this new technology for fulfillment operations. Analyzing the data through the lens of Technology–Organization–Environment (TOE), the findings not only highlight the benefits and barriers of drone delivery adoption but also the importance of inter-organizational collaboration and different governance mechanisms for successful implementation of the technology.

Park *et al.* (2026) examine the synergy between consumer-facing delivery platforms and omnichannel retail operations. Drawing on channel capabilities theory and leveraging a proprietary dataset, the authors show that platform partnerships can complement rather than cannibalize retailers' direct channels. Specifically, each platform partnership increases physical store sales by 1.36% and direct online sales by 42.6%, suggesting that third-party platforms function as effective customer acquisition and discovery mechanisms that redirect traffic to higher-margin proprietary channels. The benefits are particularly pronounced for restaurant chains with sparse physical networks and for firms with deeper channel integration, where customers order through the retailer's own interface while the platform handles fulfillment. Overall, the study demonstrates that strategic collaboration with delivery platforms can expand, rather than substitute for, direct-channel sales.

Oliveira *et al.* (2026) focus on how omnichannel retailers can shift away from centralized fulfillment models toward distribution networks that are both adaptive and consumer-centric. Drawing on Organizational Information Processing Theory (OIPT), the authors argue that coordinating multiple delivery modes (quick commerce, scheduled delivery and in-store pickup) across varied consumer demands generates considerable task uncertainty and information load. This challenge is amplified in emerging markets, where security concerns make attended home deliveries the norm and tight time-window coordination a common operational constraint. Using data from a Brazilian omnichannel retailer and a consumer survey, they conduct simulation analyses to test whether an adaptive network that allocates orders in real time according to inventory availability and consumer preferences can mitigate this task uncertainty. Their results show that no single

facility type can effectively serve such diverse demands. A decentralized, hybrid configuration that postpones fulfillment decisions through real-time data instead reduces task uncertainty and lowers failed delivery attempts, while also cutting quick-commerce fulfillment times. Ultimately, the study illustrates how information-processing capabilities help empower omnichannel retailers to manage operational tradeoffs in increasingly consumer-centric environments.

Finally, Bianco *et al.* (2026) examine how grocery retailers implement warehouse automation to transform logistics processes in response to operational complexity. They argue that warehouse automation is a dynamic capability rather than a technical investment. Specifically, the authors analyze core distribution processes by conducting semi-structured interviews with eight automation providers and six grocery retailers, complemented by site visits. Their results unveil five strategic dimensions that guide warehouse automation decisions: selectivity, accessibility, expandability, scalability and resilience. Interpreted through the lens of Dynamic Capabilities theory (Teece *et al.*, 1997), their framework demonstrates that selectivity and accessibility strengthen a firm's sensing capabilities for effective decision-making, while expandability and scalability facilitate seizing new business opportunities. They conclude that successful automation depends on managerial and organizational logic that aligns technological design with evolving retail demands, bridging the gap between functional intralogistics research and capability-based strategic perspectives.

3. Toward an integrative research agenda for retail technologies

This section develops an integrative research agenda organized around three interrelated dimensions: the antecedents of technology adoption, the implementation and operational integration of these technologies, and their outcomes and systemic implications. Figure 1 summarizes this organizing logic, positioning emerging technologies within a broader retail ecosystem in which these three dimensions form a self-reinforcing cycle that spans multiple stakeholders and can be interpreted through a range of complementary theoretical lenses.

3.1 Antecedents of technology adoption in retail operations

The value of emerging technologies can only be realized through successful user adoption. Yet adopting new technologies often involves substantial costs, uncertainty and risk. Consequently, understanding the drivers of technology adoption has remained a central concern in the literature.

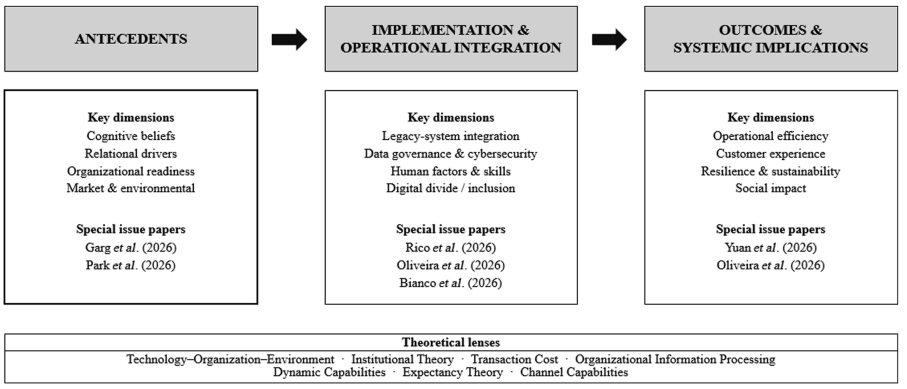

Figure 1. An integrative framework of emerging technology in retail operations

At the most granular level, technology adoption is rooted in users' technology-related cognitive beliefs, with consumers, managers and employees representing the most extensively studied stakeholder groups. For consumers, perceived usefulness and perceived ease of use consistently emerge as key drivers of adoption across a range of customer-facing technologies, including contactless payment systems, IoT applications, augmented reality/virtual reality (AR/VR) technologies, parcel lockers, autonomous vehicles, delivery and service robots and other contactless technologies (Guida *et al.*, 2023; Encarnación and Amaya, 2025; Kasilingam and Krishna, 2022; Ratchford *et al.*, 2023; Shankar *et al.*, 2021; Shin *et al.*, 2026). Extending this stream of research, Garg *et al.* (2026) in this special issue examine the antecedents of motivation that both precede and sustain intention to use. For managers and employees, additional cognitive and evaluative beliefs shape adoption decisions. Prior research highlights the importance of perceived competence, or confidence in a technology's ability to perform its intended functions, as well as perceived distributive justice, referring to the fairness of outcome distributions associated with technology use (Falcone *et al.*, 2021). Similarly, valence, or the perception that benefits outweigh associated costs and appropriateness, reflecting the fit between technological features and task requirements, are critical determinants of successful adoption of technologies such as blockchain and IoT (Sharma *et al.*, 2026). Social influence and anthropomorphism have also been identified as important drivers of employees' willingness to work with autonomous delivery robot technologies, with these relationships mediated by perceptions of procedural fairness (Shin *et al.*, 2026).

At the organizational level, a broad stream of research has focused on firm readiness to adopt emerging technologies, often emphasizing organizational capabilities and perceptions of expected benefits such as improved forecasting, enhanced visibility and greater operational efficiency and effectiveness (Modgil *et al*., 2021; Chou *et al.*, 2023). Angelopoulos *et al.* (2023) and Xu and Pero (2024) further demonstrate that retailers characterized by greater digital maturity, stronger leadership support and stronger innovation orientation are more likely to invest in and successfully deploy emerging technologies. Other organizational drivers identified in the literature include organizational agility, inertia, complacency, top management support, mergers, environmental, social and governance (ESG) orientation and stakeholder priorities (Shankar *et al.*, 2021). Park *et al.* (2026), featured in this special issue, add channel integration as another important determinant of retail technology application. Broader market and environmental forces have also been identified as important drivers of technology adoption. The rise of omnichannel retailing and e-commerce has intensified competitive pressure on retailers to pursue technological innovation (Jin *et al.*, 2023; Aithal *et al.*, 2023). At the same time, institutional pressures influence retailers to adopt technologies by imitating competitors and responding to industry norms and expectations (Hartley *et al.*, 2022). Supply chain and macro-level disruptions, such as the COVID-19 pandemic, regulatory compliance requirements and technological progress, have also created a broader "technology push" that progressively increases the feasibility and attractiveness of adoption (Shankar *et al.*, 2021).

Beyond cognitive and cost-benefit-related determinants, relational drivers are also becoming increasingly important, particularly with the emergence of AI-enabled technologies that exhibit human-like characteristics. Garg *et al.* (2026) in this special issue identify consumer engagement with retailers as an important factor influencing motivation to adopt drone technologies. Likewise, anthropomorphism–the tendency to attribute human characteristics to nonhuman entities–has been shown to influence employees' willingness to work with autonomous delivery robots (Shin *et al.*, 2026). Future research should further explore these relational dimensions of technology adoption. Several promising research directions also emerge from the current literature. First, existing studies often examine adoption drivers in isolation, focusing separately on consumers, employees, managers, or firms. However, technology adoption in retail ecosystems is inherently interconnected, with adoption decisions shaped by the alignment or misalignment of motivations, incentives and perceptions across multiple actors. Thus, more research is needed to examine the interaction

and synergy among multiple adoption drivers across different stakeholders and supply chain actors. Second, while existing studies predominantly emphasize positive drivers, "negative antecedents" warrant equal attention. Future research should investigate how failed technological implementations, intrusive surveillance practices, or poorly designed applications may destroy value for both retailers and customers. Third, much of the literature remains concentrated in the United States, Europe and China, highlighting the need for additional research in emerging markets and across diverse cultural contexts. Fourth, rather than treating technologies such as IoT or AI as monolithic constructs, future studies should decompose them into application-level features, such as smart sensing, predictive analytics, or real-time control, to identify which functionalities most strongly influence adoption outcomes. Finally, the retail implications of emerging infrastructures and platforms, including fifth-generation (5G), micro-cloud computing and the metaverse, remain largely speculative and require longitudinal investigation. More broadly, research on technology adoption is increasingly shifting beyond antecedents and drivers toward questions surrounding post-adoption behavior, strategic operational reconfiguration, the "dark side" of technology and the broader systemic impact of emerging technologies on the retail ecosystem.

A further frontier concerns the rise of generative and agentic artificial intelligence, which differs qualitatively from the narrower technologies examined above. Whereas most retail applications of AI to date have automated discrete tasks such as forecasting or routing, generative systems increasingly mediate the consumer interface itself through conversational shopping assistants, synthetic product content and, most recently, autonomous agents that search, compare and transact on a consumer's behalf. These capabilities intensify the relational and anthropomorphic dynamics identified above, since consumers and employees now negotiate adoption with systems that appear to reason and converse. They also raise novel antecedents that the existing literature has scarcely theorized, including trust in machine-generated recommendations, the delegation of decision authority to autonomous agents and retailers' willingness to cede parts of the customer relationship to third-party AI intermediaries. Future research should examine how generative and agentic AI reshape adoption at the consumer, employee and firm levels and whether established acceptance models extend to settings in which the technology acts as an autonomous economic actor rather than a passive tool.

3.2 Implementation and operational integration

Although emerging technologies offer substantial promise for improving retail operations and performance, their implementation is often accompanied by considerable challenges. These challenges stem from multiple sources and frequently vary according to the technology being adopted, which underscores the importance of a nuanced, context-specific understanding of the implementation process. First and foremost, implementing these technologies may require substantial capital investment and adjustments to the physical infrastructure and human capital (Neumann *et al.*, 2021; Solem *et al.*, 2023). Narang and Shankar (2019), for example, show that in returns management, the lack of mature reverse logistics systems further complicates the implementation of advanced technological solutions.

One of the most prominent issues relates to the integration of new technologies with existing legacy systems. Many retailers operate within established infrastructures that are not readily compatible with advanced digital solutions, necessitating substantial investments in system redesign and process reconfiguration (Angelopoulos *et al.*, 2023; Guida *et al.*, 2023). Similarly, technologies such as IoT and blockchain promise greater traceability and transparency, but these benefits frequently depend on ecosystem-wide participation and sustained investments from supply chain partners (Hartley *et al.*, 2022).

The nature and quality of the data needed to successfully implement these technologies also pose significant challenges. For example, technologies like AI and ML rely on large volumes of high-quality data and many retailers struggle with issues related to data availability,

accuracy and governance (Xu and Pero, 2023). The effectiveness of data-driven decision-making is contingent on the availability of high-quality data and solid data management practices. Furthermore, the implementation of data-intensive technologies, such as IoT and big data and predictive analytics, necessitates massive information technology (IT) governance and data architecture overhauls (Sodero *et al.*, 2019). Increasing digitalization exposes the supply chain to cyber risks (Richey *et al.*, 2023), meaning that secure implementation is not merely an IT concern but a foundational operational requirement. Additionally, technologies such as drones and autonomous delivery systems face regulatory uncertainty (Alizadeh *et al.*, 2026), while the use of customer data raises critical questions regarding privacy and ethical governance (Shankar *et al.*, 2021).

Organizational and human factors may also create implementation issues. The introduction of advanced technologies often requires managers to develop new skillsets, particularly in contexts in which human-machine collaboration becomes central (van Hoek *et al.*, 2022; Brau *et al.*, 2023, 2024). Resistance to change, lack of technical expertise, or even simply human bias or cultural barriers may hinder technology implementation (Akkermans *et al.*, 2024). In the context of AI in decision-making, for example, Zerilli *et al.* (2022) argue that managers' attitudes towards AI algorithm recommendations range from passive acceptance (loafing) to rejection (opposition). Other studies, like McKinley *et al.* (2026), Cui *et al.* (2022) and Hou *et al.* (2024) demonstrate how users change their behaviors when using AI-based systems in demand forecasting, procurement and healthcare recommendations, respectively.

However, implementation challenges extend beyond internal personnel to external end-users. Just as managers require specific capabilities to use new systems, consumers must also be equipped to navigate them. For example, while online fulfillment strategies like buy-online-pickup-in-store, reserve-online pickup-in-store, buy-online-curbside-pickup and buy-online return-in-store are implemented with the main goal of empowering consumers with the choice of fulfillment method to align with their preferences (Hsia *et al.*, 2020), the impact of these strategies might not be uniform across consumer populations. Effective implementation requires inclusive service design that accounts for the so-called "digital divide", the reality that many consumer populations might not possess digital literacy or wide access to communication technologies (Paraskevas *et al.*, 2025). This divide limits consumers' skills, access and motivation to use a retailer's online channels (Sunar and Swaminathan, 2022). Therefore, retailers face the complex implementation challenge of designing user interfaces and physical infrastructures that accommodate diverse consumer capabilities rather than alienating them, for example, by addressing consumer resistance to AR/VR or IoT and understanding how consumer preferences shape crowdsourcing delivery effectiveness.

3.3 Outcomes and systemic implications

Studies suggest that the adoption of emerging technologies in retail influences a wide range of operational, strategic and consumer-related outcomes. One of the most consistently observed benefits is improved operational efficiency. Automation, robotics and AI-driven systems enhance the speed and accuracy of warehousing, fulfillment and inventory management processes, resulting in cost reductions and improved service levels (Merkert *et al.*, 2022; Modgil *et al.*, 2021). Beyond efficiency gains, emerging technologies in retail reshape managerial decision-making. However, different technologies, such as AR, VR, AI and drone delivery to name a few, possess unique characteristics, suggesting that the mechanisms through which they influence enhanced managerial decision-making might vary. Future research should further contribute by examining how specific technologies shape managerial cognition and decision processes, thereby contributing to a more nuanced understanding of technology-enabled decision-making in retail operations.

In addition to operational efficiency, emerging technologies in retail operations have also significantly changed customer experience and outcomes. For example, retailers leveraging technologies such as AR/VR, personalization algorithms and contactless payment systems can

significantly enhance the shopping experience for their customers. These technologies provide customers with more engaging, convenient and seamless interactions across retail channels and can subsequently lead to higher levels of customer satisfaction and loyalty (Ratchford *et al.*, 2023; Guida *et al.*, 2023). However, these technologies may introduce unintended consequences since they can be inherently biased, potentially leading to negative customer sentiments (RTTS, 2024). Thus, future research could explore the ethical, behavioral and policy outcomes of these technologies in retail operations, specifically with respect to customer perceptions of bias, fairness and trust.

Furthermore, the implementation of these technologies can lead to enhanced supply chain agility, resilience and sustainability. For example, digital solutions can lead to efficiency gains regarding resource utilization, waste reduction and environmentally-friendly practices (Belaud *et al.*, 2019; Bai and Sarkis, 2020). Similarly, real-time data visibility and advanced analytics enable retailers to respond more effectively to supply chain disruptions and demand fluctuations (Russo *et al.*, 2022). However, these benefits are accompanied by new risks, particularly cybersecurity threats, which highlight the double-edged sword of digital transformation (Richey *et al*., 2022). Given that the volume of data generated and processed through these technologies increases retailers' exposure to cyberattacks, data breaches and ransomware attacks (Turgel *et al.*, 2023). Future research could explore these risks more systematically to better understand the potential dark side of technology adoption for retail operations.

Lastly, an under-researched outcome refers to the potential social impact of retailer technologies. Parasksevas *et al*. (2025), for example, found that retailers' focus on omnichannel and online fulfillment strategies ameliorates the negative impacts of digital divide conditions on vulnerable consumer populations and supports retailer sales. Building on this insight, future research could further contribute to this discussion by providing nuanced and in-depth insights into how technology adoption in retail affects underprivileged and disabled populations. Furthermore, researchers could explore the implementation and impact of emerging technologies across countries. Such an approach would allow scholars to shed light on the varying institutional differences, specifically with regard to the regulatory, economic and cultural conditions.

3.4 Theoretical opportunities

Beyond identifying empirical drivers and outcomes of technology adoption, future research would also benefit from stronger theoretical integration. The complexity of emerging retail technologies increasingly requires multi-level theoretical perspectives that can explain not only why firms adopt technologies, but also how technologies reshape operational processes, consumer experiences and broader retail ecosystems. Table 2 highlights several promising theoretical lenses that may help scholars better examine the organizational, institutional, operational and consumer-facing dimensions of technology-enabled retail transformation.

Table 3 summarizes key future research questions emerging from the theoretical and empirical gaps identified throughout this editorial. We organize the questions according to the primary phenomenon being explained and distinguish it from how that phenomenon is theoretically interpreted. Antecedents capture the individual, technological, organizational and relational conditions that shape readiness, acceptance, or resistance before adoption. Implementation issues concern the processes through which emerging technologies are integrated, governed, coordinated, adapted and scaled within retail and supply chain systems. Outcomes refer to the consequences of adoption and use for consumers, employees, managers, firms, interorganizational relationships and broader operational performance. Theory development and integration, by contrast, seeks to explain the underlying mechanisms, construct relationships, boundary conditions and conceptual extensions needed to account for these phenomena.

Table 2. Potential theoretical lenses

Theoretical framework	Core concept and focus	Vital factors/Dimensions	Sample application to transforming logistics and fulfillment	Sample application to enhancing customer experience
Technology-organizational-environment (Tornatzky and Fleischer, 1990)	Focuses on how a firm's context shapes its capacity to adopt, implement and assimilate technological innovations	Technological: Compatibility, complexity, relative advantage, technical infrastructure Organizational: Firm size, resource endowment, Firm structure, human capital capability Environmental: Industry structure, competitive intensity, regulatory landscape, supply chain readiness	Technological: Warehouse automation for enhanced throughput and reduced inventory safety stock Organizational: Strategic deployment of AI processes integrated with firm workflows Environmental: Industry adoption of electronic price tags for more proactive price management	Technological: Autonomous drone delivery for enhanced consumer convenience Organizational: Physical store locations as a determinant of cross-channel BORIS processes Environmental: Gig worker employment classification and impact on meal delivery costs to consumers
Institutional theory (DiMaggio and Powell, 1983; Hartley *et al.*, 2022)	Focuses on how organizational behaviors and structures are shaped by external social pressures to achieve legitimacy and survival	Coercive: Pressures from formal laws, government mandates, or powerful supply chain nodes Mimetic: Copying the successful structures or technologies of industry leaders during periods of high ambiguity Normative: Pressures arising from professionalization, shared industry standards and academic/expert networks	Coercive: RFID and blockchain as a potential response to regulations requiring enhanced supply chain visibility Mimetic: Industry movement toward the adoption of electronic price tags for dynamic demand management Normative: Adopting cross-border e-commerce supply chain structure and processes pioneered by competitors	Coercive: Data governance regulations designed to protect consumer privacy Mimetic: Adoption of meal delivery platforms to offer new services to consumers Normative: Rising consumer expectations of frictionless omnichannel returns
Theory of consumer transaction cost (North, 1990; Teo and Yu, 2005; Williamson, 1989)	Focuses on minimizing the hidden costs (non-monetary frictions) incurred by consumers during the search, purchase and consumption phases	Search Costs: Time and mental effort spent discovering, researching and selecting products Information Costs: Frictions related to understanding product details, price variations and availability Bargaining/Decision Costs: Effort expended to execute the transaction, finalize details and confirm security Enforcement/Post–Purchase Costs: Costs associated with tracking, delivery delays, executing returns, or rectifying errors	Indirect Application via Logistics: Efficient fulfillment pipelines directly eliminate consumer anxieties regarding item availability Optimized upstream supply chain visibility translates into enhanced accuracy for retail websites Advanced fleet routing minimizes delivery windows, fundamentally suppressing consumer anxiety costs regarding arrival times	Search/Information: Using generative AI to finetune recommendations and reduce consumer cognitive overload Bargaining: Deploying biometric payments or localized mobile wallets to remove point-of-sale friction Enforcement: Providing self-service return portals and instantaneous refunds to lower the perceived risk of an online transaction

Table 3. Research gap and future research directions

	Future research directions
Antecedents (Factors that precede adoption and influence readiness, acceptance, or resistance among relevant stakeholders)	• How do cognitive and relational factors influence continued usage and post-adoption behaviors toward AI-enabled retail technologies? • How does the alignment or misalignment of perceptions, incentives and readiness across consumers, employees, managers and supply chain partners jointly shape the success or failure of emerging retail technology adoption? • What factors contribute to consumer or employee resistance toward emerging retail technologies, particularly in cases involving privacy concerns, failed implementations, or perceived loss of trust? • Which specific features of emerging technologies are most influential in driving adoption across different cultural, institutional and market settings?
Implementation issues (Processes, resources, governance that determine whether an adopted technology can be successfully deployed and scaled)	• How can retailers integrate emerging technologies with legacy systems and fragmented supply chain infrastructures without creating major operational disruptions or excessive implementation costs? • How do issues related to data governance, cybersecurity, regulation and consumer privacy affect the implementation of technologies such as AI, IoT and blockchain in retail operations? • How do organizational capabilities, managerial attitudes toward AI and differences in consumer digital literacy influence the implementation and accessibility of omnichannel retail technologies across diverse user groups?
Outcomes (Post-adoption consequences of technology use for behavior, decision-making, operational performance, relationships and broader stakeholder welfare)	• How do different emerging technologies uniquely shape and change retail managers' cognition, judgment and decision-making processes in retail operations? • How do different emerging technologies influence customer perceptions such as bias, fairness and trust? • How can retailers safeguard against the growing risks of cybersecurity threats and data breaches?
Theory development and integration (Questions aimed at explaining mechanisms and boundary conditions, integrating theoretical perspectives, or identifying where established theories require extension)	• How do technological, organizational and environmental factors jointly influence retailers' ability to successfully integrate emerging technologies across omnichannel retail? • How do institutional pressures, such as regulatory mandates, competitive imitation and evolving consumer expectations, shape the adoption and diffusion of emerging retail technologies across different countries and retail sectors? • How can emerging retail technologies reduce consumer transaction costs related to search, purchasing, fulfillment and returns and which technology-enabled capabilities most strongly enhance consumer convenience and omnichannel experience?

This distinction is important because empirical findings and theoretical implications serve different purposes. Findings establish what was observed within a particular setting, sample and research design; theoretical implications explain why those observations matter for existing concepts, assumptions and causal explanations. A statistically significant relationship, for example, does not in itself constitute a theoretical contribution unless it clarifies a mechanism, challenges an established assumption, identifies a boundary condition, or extends the explanatory reach of a theory. Accordingly, the questions in Table 3 are assigned

according to their principal analytical purpose, while recognizing that strong research often connect several categories, for example, by identifying an antecedent, tracing its influence through implementation, assessing its outcomes and using those relationships to refine or integrate theory.

4. Concluding remarks

Technological innovations continue to redefine and transform the boundaries of the retail industry. As retailers increasingly adopt sophisticated technologies to thrive in a hypercompetitive, omnichannel environment while serving an increasingly demanding customer base, the need for rigorous research examining the elements that shape their successful implementation becomes paramount. We hope that the contributions presented in this special issue stimulate further scholarly inquiry into the role of technology in shaping the future of retail logistics and supply chain management.

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Note

1. https://www.retaildive.com/spons/90-of-retailers-are-using-ai-far-fewer-are-ready-to-run-it-at-scale/822118/

References

Aithal, R.K., Choudhary, V., Maurya, H., Pradhan, D. and Sarkar, D.N. (2023), "Factors influencing technology adoption amongst small retailers: insights from thematic analysis", *International Journal of Retail & Distribution Management*, Vol. 51 No. 1, pp. 81-102, doi: 10.1108/ijrdm-02-2022-0042.

Akkermans, H., Basten, R., Zhu, Q. and Van Wassenhove, L. (2024), "Transition paths for condition-based maintenance-driven smart services", *Journal of Operations Management*, Vol. 70 No. 4, pp. 548-567, doi: 10.1002/joom.1295.

Alizadeh, A., Srinivas, S., Noble, J. and Otto, A. (2026), "Collaborative truck multi-drone pollution routing problem with pickup and delivery under variable truck speeds: a cost minimisation approach", *International Journal of Production Research*, Vol. 64 No. 14, pp. 1-33, doi: 10.1080/00207543.2026.2626537.

Angelopoulos, S., Bendoly, E., Fransoo, J.C., Hoberg, K., Ou, C.X. and Tenhiala, A. (2023), "Digital transformation in operations management: fundamental change through agency reversal", *Journal of Operations Management*, Forthcoming.

Bai, C. and Sarkis, J. (2020), "A supply chain transparency and sustainability technology appraisal model for blockchain technology", *International Journal of Production Research*, Vol. 58 No. 7, pp. 2142-2162, doi: 10.1080/00207543.2019.1708989.

Belaud, J.-P., Prioux, N., Vialle, C. and Sablayrolles, C. (2019), "Big data for agri-food 4.0: application to sustainability management for by-products supply chain", *Computers in Industry*, Vol. 111, pp. 41-50, doi: 10.1016/j.compind.2019.06.006.

Bianco, D., Baglio, M., Corti, A. and Dallari, F. (2026), "Rethinking grocery retail logistics: a holistic approach to warehouse automation", *International Journal of Physical Distribution & Logistics Management*, Vol. 56 No. 8, pp. 1012-1040, doi: 10.1108/ijpdlm-04-2025-0189.

Brau, R., Aloysius, J. and Siemsen, E. (2023), "Demand planning for the digital supply chain: how to integrate human judgment and predictive analytics", *Journal of Operations Management*, Vol. 69 No. 6, pp. 965-982, doi: 10.1002/joom.1257.

Brau, R.I., Sanders, N.R., Aloysius, J. and Williams, D. (2024), "Utilizing people, analytics, and AI for decision making in the digitalized retail supply chain", *Journal of Business Logistics*, Vol. 45 No. 1, e12355, doi: 10.1111/jbl.12355.

Castelo-Branco, I., Oliveira, T., Simões-Coelho, P., Portugal, J. and Filipe, I. (2022), "Measuring the fourth industrial revolution through the Industry 4.0 lens: the relevance of resources, capabilities and the value chain", *Computers in Industry*, Vol. 138, 103639, doi: 10.1016/j.compind.2022.103639.

Chou, Y., Chuang, H.H., Chou, P. and Oliva, R. (2023), "Supervised machine learning for theory building and testing: opportunities in operations management", *Journal of Operations Management*, Vol. 69 No. 4, pp. 643-675, doi: 10.1002/joom.1228.

Cui, R., Li, M. and Zhang, S. (2022), "AI and procurement", *Manufacturing & Service Operations Management*, Vol. 24 No. 2, pp. 691-706, doi: 10.1287/msom.2021.0989.

DiMaggio, P.J. and Powell, W.W. (1983), "The iron cage revisited: institutional isomorphism and collective rationality in organizational fields", *American Sociological Review*, Vol. 48 No. 2, pp. 147-160, doi: 10.2307/2095101.

Encarnación, T. and Amaya, J. (2025), "Determinants of parcel locker adoption for last-mile deliveries in urban and suburban areas", *Transportation Journal*, Vol. 64 No. 1, e12031, doi: 10.1002/tjo3.12031.

Falcone, E.C., Steelman, Z.R. and Aloysius, J.A. (2021), "Understanding managers' reactions to blockchain technologies in the supply chain: the reliable and unbiased software agent", *Journal of Business Logistics*, Vol. 42 No. 1, pp. 25-45, doi: 10.1111/jbl.12263.

Garg, V., Zhu, L., Koutha, M., Niranjan, S. and Prybutok, V.R. (2026), "Retail takes flight: how consumer motivation and engagement propel drone deliveries", *International Journal of Physical Distribution & Logistics Management*, Vol. 56 No. 8, pp. 903-928, doi: 10.1108/IJPDLM-04-2025-0163.

Gauri, D.K., Jindal, R.P., Ratchford, B., Fox, E., Bhatnagar, A., Pandey, A., Navallo, J.R., Fogarty, J., Carr, S. and Howerton, E. (2021), "Evolution of retail formats: past, present, and future", *Journal of Retailing*, Vol. 97 No. 1, pp. 42-61, doi: 10.1016/j.jretai.2020.11.002.

Grewal, D. and Roggeveen, A.L. (2020), "Understanding retail experiences and customer journey management", *Journal of Retailing*, Vol. 96 No. 1, pp. 3-8, doi: 10.1016/j.jretai.2020.02.002.

Guida, M., Caniato, F., Moretto, A. and Ronchi, S. (2023), "Artificial intelligence for supplier scouting: an information processing theory approach", *International Journal of Physical Distribution & Logistics Management*, Vol. 53 No. 4, pp. 387-423, doi: 10.1108/ijpdlm-12-2021-0536.

Hartley, J.L., Sawaya, W. and Dobrzykowski, D. (2022), "Exploring blockchain adoption intentions in the supply chain: perspectives from innovation diffusion and institutional theory", *International Journal of Physical Distribution & Logistics Management*, Vol. 52 No. 2, pp. 190-211, doi: 10.1108/ijpdlm-05-2020-0163.

Hilken, T., De Ruyter, K., Chylinski, M., Mahr, D. and Keeling, D.I. (2017), "Augmenting the eye of the beholder: exploring the strategic potential of augmented reality to enhance online service

experiences", *Journal of the Academy of Marketing Science*, Vol. 45 No. 6, pp. 884-905, doi: 10.1007/s11747-017-0541-x.

Hou, T., Li, M., Tan, Y.R. and Zhao, H. (2024), "Physician adoption of AI assistant", *Manufacturing & Service Operations Management*, Vol. 26 No. 5, pp. 1639-1655, doi: 10.1287/msom.2023.0093.

Hsia, T.-L., Wu, J.-H., Xu, X., Li, Q., Peng, L. and Robinson, S. (2020), "Omnichannel retailing: the role of situational involvement in facilitating consumer experiences", *Information & Management*, Vol. 57 No. 8, 103390, doi: 10.1016/j.im.2020.103390.

Hübner, A., Wollenburg, J. and Holzapfel, A. (2016), "Retail logistics in the transition from multi-channel to omni-channel", *International Journal of Physical Distribution & Logistics Management*, Vol. 46 Nos 6-7, pp. 562-583, doi: 10.1108/ijpdlm-08-2015-0179.

Jin, Y."H.", Ueltschy Murfield, M.L. and Bock, D.E. (2023), "Do as you say, or I will: retail signal congruency in buy-online-pickup-in-store and negative word-of-mouth", *Journal of Business Logistics*, Vol. 44 No. 1, pp. 37-60, doi: 10.1111/jbl.12322.

Kasilingam, D. and Krishna, R. (2022), "Understanding the adoption and willingness to pay for internet of things services", *International Journal of Consumer Studies*, Vol. 46 No. 1, pp. 102-131, doi: 10.1111/ijcs.12648.

McKinley, F., Brau, R., Aloysius, J. and Rossiter Hofer, A. (2026), "Is AI an algorithm by any other name? Behavioral reactions to AI – and model-based demand planning algorithms", *Journal of Operations Management*, Vol. 72 No. 5, pp. 656-675, joom.70045, doi: 10.1002/joom.70045.

Melacini, M., Perotti, S., Rasini, M. and Tappia, E. (2018), "E-fulfilment and distribution in omni-channel retailing: a systematic literature review", *International Journal of Physical Distribution & Logistics Management*, Vol. 48 No. 4, pp. 391-414, doi: 10.1108/ijpdlm-02-2017-0101.

Merkert, R., Bliemer, M.C. and Fayyaz, M. (2022), "Consumer preferences for innovative and traditional last-mile parcel delivery", *International Journal of Physical Distribution & Logistics Management*, Vol. 52 No. 3, pp. 261-284, doi: 10.1108/ijpdlm-01-2021-0013.

Merkert, R., Hussain, M. and Bliemer, M. (2026), "Exploring opportunities and challenges for aerial drones at the interface of warehouse and last-mile delivery operations", *International Journal of Physical Distribution & Logistics Management*, Vol. 56 No. 8, pp. 1041-1072, doi: 10.1108/IJPDLM-05-2025-0232.

Modgil, S., Gupta, S., Stekelorum, R. and Laguir, I. (2022), "AI technologies and their impact on supply chain resilience during COVID-19", *International Journal of Physical Distribution & Logistics Management*, Vol. 52 No. 2, pp. 130-149, doi: 10.1108/ijpdlm-12-2020-0434.

Morenza-Cinos, M., Casamayor-Pujol, V. and Pous, R. (2019), "Stock visibility for retail using an RFID robot", *International Journal of Physical Distribution & Logistics Management*, Vol. 49 No. 10, pp. 1020-1042, doi: 10.1108/ijpdlm-03-2018-0151.

Narang, U. and Shankar, V. (2019), "Mobile app introduction and online and offline purchases and product returns", *Marketing Science*, Vol. 38 No. 5, pp. 756-772, doi: 10.1287/mksc.2019.1169.

Neumann, W.P., Winkelhaus, S., Grosse, E.H. and Glock, C.H. (2021), "Industry 4.0 and the human factor–a systems framework and analysis methodology for successful development", *International Journal of Production Economics*, Vol. 233, 107992, doi: 10.1016/j.ijpe.2020.107992.

North, D.C. (1990), "A transaction cost theory of politics", *Journal of Theoretical Politics*, Vol. 2 No. 4, pp. 355-367, doi: 10.1177/0951692890002004001.

Oliveira, B.R.D, Bremen, J.C., Lopes, M.E.L. and Frazzon, E.M. (2026), "Enhancing omni-channel retail outbound logistics toward a consumer-centric, technology-driven approach", *International Journal of Physical Distribution & Logistics Management*, Vol. 56 No. 8, pp. 956-978, doi: 10.1108/IJPDLM-04-2025-0200.

Paraskevas, J.-P., Pan, X., Elking, I. and Park, K.H. (2025), "Bridging the digital divide in online retailing: the effect of a strategic focus on E-commerce fulfillment offerings", *Production and Operations Management*, Vol. 34 No. 4, pp. 744-759, doi: 10.1177/10591478241261254.

Park, K., Pan, X. and Dresner, M. (2026), "Delivering meals with benefits: platform partnerships in the restaurant industry", *International Journal of Physical Distribution & Logistics Management*, Vol. 56 No. 8, pp. 929-955, doi: 10.1108/ijpdlm-04-2025-0157.

Poushneh, A. and Vasquez-Parraga, A.Z. (2017), "Discernible impact of augmented reality on retail customer's experience, satisfaction and willingness to buy", *Journal of Retailing and Consumer Services*, Vol. 34, pp. 229-234, doi: 10.1016/j.jretconser.2016.10.005.

Ratchford, B., Gauri, D.K., Jindal, R.P. and Namin, A. (2023), "Innovations in retail delivery: Current trends and future directions", *Journal of Retailing*, Vol. 99 No. 4, pp. 547-562, doi: 10.1016/j.jretai.2023.10.006.

Richey, R.G., Chowdhury, S., Davis-Sramek, B., Giannakis, M. and Dwivedi, Y.K. (2023), "Artificial intelligence in logistics and supply chain management: a primer and roadmap for research", *Journal of Business Logistics*, Vol. 44 No. 4, pp. 532-549, doi: 10.1111/jbl.12364.

RTTS (2024), *Technology Challenges for Retailers 2024-2025*, RTTS, available at: https://www.rttsweb.com/resource-center/white-papers/technology-challenges-for-retailers-2024-2025 (accessed 21 May 2026).

Russo, I., Masorgo, N. and Gligor, D.M. (2022), "Examining the impact of service recovery resilience in the context of product replacement: the roles of perceived procedural and interactional justice", *International Journal of Physical Distribution & Logistics Management*, Vol. 52 No. 8, pp. 638-672, doi: 10.1108/ijpdlm-07-2021-0301.

Shankar, V., Kalyanam, K., Setia, P., Golmohammadi, A., Tirunillai, S., Douglass, T., Hennessey, J., Bull, J. and Waddoups, R. (2021), "How technology is changing retail", *Journal of Retailing*, Vol. 97 No. 1, pp. 13-27, doi: 10.1016/j.jretai.2020.10.006.

Sharma, V., Kumar, R.R. and Raj, A. (2026), "Mediating managerial beliefs and moderating personal innovativeness: an experimental approach to IoT adoption behavior in supply chains", *International Journal of Physical Distribution & Logistics Management*, Vol. 56 No. 1, pp. 61-92, doi: 10.1108/ijpdlm-12-2024-0493.

Shin, J., Wen, J., Liu, Z., Liu, X., Boone, C.A., Landers, V.M., Lee, G. and Huang, J. (2026), "Employee willingness to collaborate with autonomous delivery robots: a cross-cultural perspective", *International Journal of Physical Distribution & Logistics Management*, Vol. 56 No. 2, pp. 172-194, doi: 10.1108/ijpdlm-01-2025-0019.

Sodero, A., Jin, Y.H. and Barratt, M. (2019), "The social process of Big Data and predictive analytics use for logistics and supply chain management", *International Journal of Physical Distribution & Logistics Management*, Vol. 49 No. 7, pp. 706-726, doi: 10.1108/ijpdlm-01-2018-0041.

Solem, B.A.A., Fredriksen, J.I. and Sørebø, Ø. (2023), "Dynamic capabilities in the realisation of omnichannel retailing", *International Journal of Retail & Distribution Management*, Vol. 51 No. 1, pp. 21-38, doi: 10.1108/ijrdm-12-2021-0599.

Sunar, N. and Swaminathan, J.M. (2022), "Socially relevant and inclusive operations management", *Production and Operations Management*, Vol. 31 No. 12, pp. 4379-4392, doi: 10.1111/poms.13873.

Ta, H., Esper, T.L., Rossiter Hofer, A. and Sodero, A. (2023), "Crowdsourced delivery and customer assessments of e-logistics service quality: an appraisal theory perspective", *Journal of Business Logistics*, Vol. 44 No. 3, pp. 345-368, doi: 10.1111/jbl.12327.

Teo, T.S. and Yu, Y. (2005), "Online buying behavior: a transaction cost economics perspective", *Omega*, Vol. 33 No. 5, pp. 451-465, doi: 10.1016/j.omega.2004.06.002.

Tornatzky, L.G. and Fleischer, M. (1990), *Technological Innovation as a Process*, Lexington Books.

Turgel, D., Hahn, A.A., Hickman, T. and Naydonov (2023), "New technologies in the consumer & retail industry – key legal issues and risks | white and case LLP", 21 March, available at: https://www.whitecase.com/insight-alert/new-technologies-consumer-retail-industry-key-legal-issues-and-risks (accessed 21 May 2026).

van Hoek, R., Gorm Larsen, J. and Lacity, M. (2022), "Robotic process automation in Maersk procurement–applicability of action principles and research opportunities", *International*

Journal of Physical Distribution & Logistics Management, Vol. 52 No. 3, pp. 285-298, doi: 10.1108/ijpdlm-09-2021-0399.

Williamson, O.E. (1989), "Transaction cost economics", in *Handbook of Industrial Organization*, Elsevier, Vol. 1, pp. 135-182, doi: 10.1016/s1573-448x(89)01006-x.

Xu, J. and Pero, M.E.P. (2023), "A resource orchestration perspective of organizational big data analytics adoption: evidence from supply chain planning", *International Journal of Physical Distribution & Logistics Management*, Vol. 53 No. 11, pp. 71-97, doi: 10.1108/ijpdlm-04-2022-0118.

Yuan, Y., Heim, G.R. and Ketzenberg, M. (2026), "Emerging technology-enabled e-retailer returns processes: buy-Online-Return-In-Store and e-retailer performance", *International Journal of Physical Distribution & Logistics Management*, Vol 56 No. 8, pp. 979-1011, doi: 10.1108/IJPDLM-03-2025-0115.

Zerilli, J., Bhatt, U. and Weller, A. (2022), "How transparency modulates trust in artificial intelligence", *Patterns*, Vol. 3 No. 4, 100455, doi: 10.1016/j.patter.2022.100455.