Chapter 3

Modern Logistics Management for Online Retailers

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Abstract

Rapid advances in digitalization have brought about a radical transformation in the retail sector, accelerating the transition from traditional to online retail. Shifts in customer habits, particularly following the Covid-19 pandemic, have led to significant increases in e-commerce volume. This rapid growth in online sales has intensified competition, requiring businesses to respond more quickly to changing customer expectations. In this context, the importance of modern logistics management in online retail is increasing, and business processes are being enhanced with digital solutions. Another focus of this section, and central to online retailing, is the last-mile delivery process. Increasing order volume, traffic density, and environmental impacts have made last-mile delivery one of the most expensive and challenging logistics processes. To overcome these challenges, tangible technologies such as autonomous vehicles, drones, electric vehicles, and parcel lockers, as well as intangible technologies such as the Internet of Things (IoT), artificial intelligence, decision support systems, and crowdsourcing, are coming to the forefront. Similarly, technology-based innovations such as IoT, Radio Frequency Identification (RFID), Augmented Reality (AR), Mixed Reality (MR), and drone applications significantly contribute to customer satisfaction by increasing the transparency and speed of logistics processes. With all these digitalization processes, modern logistics management has become a critical element in achieving competitive advantage for online retailers.

This study aims to present the existing literature on modern logistics practices in online retail and to offer guidance for both researchers and

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practitioners. In this context, the study provides only theoretical information. It aims to assess the practical impact of digital technologies by considering not only streaming but also real-time applications. This holistic perspective is particularly important in today's online retail environment, where technological advancements are reshaping inventory management and last-mile delivery processes.

1. Introduction

With the introduction of self-service shopping in the 1900s, the transition from local retail to chain stores and shopping malls began in retail. The widespread adoption of e-commerce and online retailing occurred in the 1990s. Although businesses began using online systems to share information with suppliers in the 1970s, the internet's emergence as a B2C e-commerce channel only became possible in the mid-1990s. From the early 2000s onward, the third transformation process began in the retail sector, with the integration of online and physical channels, the concept of omnichannel retailing, gaining prominence. Technologies such as smart devices, mobile payment systems, and augmented reality enable a personalized and seamless shopping experience, and successful retailers have gained a competitive advantage by transitioning from multi-channel structures to hybrid models (Hänninen et al., 2019).

Today's changing market conditions are driving businesses to reduce costs, increase efficiency, and respond more effectively to customer expectations by improving logistics, inventory control, and supply chain management processes (Pasupuleti et al., 2024).

The retail sector, which constitutes a significant part of the economy in both developed and developing countries around the world and is constantly growing, has a dynamic structure where changes in businesses and products occur very quickly (Hübner et al., 2021). Within this dynamic landscape, effective inventory management is critical for businesses operating in the retail sector, increasing service levels while reducing costs. Inventory, which requires significant investment, constitutes a significant portion of company assets, and improper management can create financial risks. Therefore, technological advancements, ranging from manual systems to integrated information systems, are increasing efficiency by supporting decisions about where and how orders are fulfilled (Vanessa Munoz Macas et al., 2021). With the recent Covid-19 pandemic, while physical retail has declined, online retail has rapidly transformed with technological innovations (Xu, 2020; Malenkov et al., 2021).

Online retailing refers to all resources and retail processes where retailers leverage digital technologies to create, transfer and deliver value at every stage of the customer experience (Schweiger et al., 2024). One of the key elements that distinguishes the online retail model from the traditional physical retail model is the dependence on logistics services to deliver products to consumers (Wang et al., 2023).

This study proceeds as follows: Section 2 discusses inventory optimization in the context of online retail. Section 3 examines innovations in last-mile delivery. Section 4 explores the role of technology-enabled logistics, focusing on applications such as IoT, RFID, and drones. Finally, Section 5 presents the overall conclusions and offers insights for future research and practice.

2. Inventory Optimization in Digital Retail

In today's world, digitalization has become one of the most significant transformations in society, directly impacting many areas from business to daily life (Hagberg et al., 2016). Penetrating nearly all aspects of human life, digitalization has also directly impacted the retail sector, enabling the transition from traditional retailing to online retailing (Malenkov et al., 2021). One of the biggest benefits of digitalization to the retail sector is the development of e-commerce and the resulting increase in online sales. In fact, the volume of online sales has reached approximately nine times that of traditional retail, and this increase continues a global scale (Wassan et al., 2022). E-commerce giants like Alibaba and Jingdong are developing new formats to adapt to changing demands, while business processes integrated with technologies like IoT, artificial intelligence, and big data are reshaping retail models and contributing to employment (Xu, 2020).

In recent years, the integration of digital solutions into business processes has created a significant revolution in the field of inventory management. Innovative technologies, such as data analytics and artificial intelligence, MRP (Material Requirement Planning), IoT, and blockchain, have fundamentally transformed the way companies plan and control their inventory (Niaz, 2022). Data analytics has changed how retail businesses manage their inventory by giving them tools and information that help them keep track of stock in a smarter and more efficient way (Farooq et al., 2024). While customers in traditional retail can access products directly and quickly, digital retail involves a certain waiting period. Therefore, inventory management and optimization have become strategically critical to ensure rapid access and customer satisfaction. While traditional retailing, where each store serves only a specific area, requires small inventories, online retailing requires larger amounts of inventory due to the distribution of numerous small orders across wider geographic areas (Wang & Shen, 2023). Traditional inventory management approaches, often manual, intuitive, and based on historical data, have led to issues such as stock shortages, overstocking, and inefficiency. However, digital solutions, powered by big data analytics and AI, have made demand forecasting more dynamic, and inventory planning more flexible and agile (Niaz, 2022). The digitalization of company operations has resulted in the emergence of structured data from ERP systems, point-of-sale data, and IoT sensors, as well as vast unstructured data sets such as news, social media, and text documents. While this wealth of data offers significant opportunities to support inventory decisions, traditional optimization methods fall short in the face of these complex and diverse data structures, which contain numerous constraints and decision variables (Pasupuleti et al., 2024). Furthermore, companies need to generate demand forecasts to respond promptly to uncertain customer demands and effectively manage inventory costs. Given the time between order and delivery, it is critical for companies to plan bulk orders before stock runs out (Seyedan et al., 2023). In this regard, machine learning in inventory management improves demand forecasting and contributes to inventory optimization by analyzing historical and current data. This data-driven approach increases the accuracy and efficiency of inventory processes. However, traditional demand forecasting methods often rely on fixed models and may fail to capture small but critical trends (Pasupuleti et al., 2024).

Stock management is an important part of the supply chain, and effective stock management requires stock optimization; in this way, businesses aim to minimize the costs of their inventories (Teplická & Culkova, 2020). Stock optimization refers to the systematic development of strategies to balance stock levels with demand forecasts. The purpose is to reduce warehouse costs, shorten lead times, and keep stock quantities at a proper level while controlling stockouts (Thomas et al., 2021).

Inventory Recording Error (IRI), a practical inventory problem that directly affects the efficiency of retail operations, refers to the difference between the quantity documented in a company's inventory system and the real physical inventory. This difference can lead to crucial issues in the retail industry, such as stockouts and lost revenue due to excessive inventory replenishments (Shabani et al., 2021). Nevertheless, by specifically monitoring product availability across all locations through technology-based inventory management, retailers can accurately complete online and in-store orders without getting excess inventory, thereby enhancing operational efficiency (Vanessa Munoz Macas et al., 2021).

One of the most essential methods used in inventory optimization is linear or integer programming. These methods are evaluated using the exact solution type and provide mathematical optimization. DeHoratius et al. (2023) examined a retailer serving consumers with uncertain and stable consumer demand in their study. Two sales scenarios were considered for unmet demand. The model instantly shares daily stock from suppliers to the retailer and was solved using deterministic linear programming to provide high profitability. In their study, Chancahuana Castillo et al. (2024) showed a profit-maximizing inventory management model for a retailer in Peru utilizing linear programming techniques. The study sought to maximize revenue based on the quantity of products sold, in accordance with the lowest demand and capital constraints, considering costs, demand, and capital data for the company's different products. Vicente (2025) used a mixed integer linear programming model to optimize each unit's inventory levels, supply levels, and product flow. A case study was conducted to test and validate the model.

Inventory optimization utilizes heuristic and metaheuristic algorithms, which are developed and tested on a variety of problems. Heuristic algorithms are algorithms developed for a specific problem, while metaheuristic algorithms are more general techniques that can be used on a variety of problems (Salhi & Thompson, 2022). Due to their applicability to a variety of problems, metaheuristic algorithms are frequently preferred, particularly in retail supply chain problems. Lorenzo-Espejo et al. (2022) used a hybrid method of Particle Swarm Optimization and Simulated Annealing metaheuristic algorithms to dynamically optimize store and intermediate warehouse inventories for a textile company. In the study, inventory optimization was tested in different scenarios, aiming to meet demand across all sales channels based on sales forecasts. Brandimarte et al. (2024) examined a fashion company's network consisting of a central warehouse and numerous retail stores. A hybrid metaheuristic method is proposed for the problem involving horizontal shipments both from warehouses to stores and between stores. Abed et al. (2025) proposed Advanced Ant Colony Hybridization using the GRU algorithm to reduce delivery times for e-commerce orders. The study involves a three-stage optimization process. Initially, items undergo categorization following the established guidelines for customer allocation. Subsequently, employing a fusion of the Gate Recurrent Unit (GRU) algorithm and Extreme Gradient Boosting, the system categorizes customer requests based on similar routes. Lastly, the most efficient path is created through a combination of Ant Colony

Optimization and GRU algorithms, enabling workers to gather a larger quantity of goods and expedite order fulfillment.

To summarize, effective inventory management is becoming more reliant on a diverse set of advanced digital methodologies, such as heuristic and metaheuristic algorithms, linear and integer programming models, methods for predicting demand, and systems that aid in decision-making. These novel methods enable organizations to precisely ascertain ideal inventory quantities, decrease expenses, and boost the productivity of workflows within the increasingly intricate and data-driven retail industry of today (Bányai, 2018).

3. Last-Mile Delivery Innovations

Last-mile delivery guides to online retailers' delivery processes, from the last transfer point in the delivery chain to the final delivery end (Kiba-Janiak et al., 2021). With the quick growth of e-commerce and urbanization, this process has become increasingly challenging due to rising operational costs and time-limited deliveries, particularly in urban areas (Boysen et al., 2021; Ieva et al., 2025). Similarly, increasing express deliveries extends urban traffic congestion and CO_2 emissions. This situation has brought green logistics solutions to the fore in line with the Sustainable Development Goals. It has directed to important developments in information technology and robotics-based creations (De Maio et al., 2024). While current technological innovations have tried to manage existing problems, the emphasis is on promoting environmentally friendly, efficient, trustworthy, and sustainable last-mile delivery (Shuaibu et al., 2025). From a corporation's perspective, last-mile delivery is the least efficient and most costly logistics process due to the small size of orders and the scattered delivery points (Mangiaracina et al., 2019). Customers' desire for the fastest product access grows this cost pressure and necessitates innovative explanations for last-mile delivery. Therefore, promising solutions are being developed to manage last-mile delivery effectively (Shuaibu et al., 2025). In this context, solutions for last-mile delivery are considered in two groups (Mangiaracina et al., 2019; Mogire et al., 2025; Shuaibua et al., 2025):

• Tangible technologies: parcel lockers, pick-up points, drones, electric vehicles, and autonomous delivery with robots.

• Intangible technologies: crowdsourcing logistics, decision support systems, artificial intelligence, IoT, big data, and operating systems.

Among tangible technologies, parcel delivery is the most widely used method for online orders. Different types of solutions are being developed, such as cargo delivery with driverless vehicles, cargo bike delivery, and autonomous vehicle delivery. In human-driven delivery, products are generally picked up in bulk from the main warehouse and delivered individually to different customers (Mohammad et al., 2023). However, in recent years, with advancements in information technologies, human-driven delivery has been replaced by the development of strategies for the use of autonomous vehicles to ensure safety, efficiency, and convenience in traffic. (Guo et al., 2023). Autonomous vehicle delivery aims to contribute to reducing urban traffic congestion, air pollution, and accident rates. It is becoming more commercially accessible and increasing its use in new areas (Engesser et al., 2023; Alverhed et al., 2024). The use of autonomous vehicles is also becoming widespread in warehousing and distribution processes. Indeed, Automated Guided Vehicles, which have been widely used in warehouses for many years, have recently begun to be used for last-mile delivery in the form of Autonomous Delivery Robots (Alverhed et al., 2024). Thanks to the 24/7 delivery capabilities of all these autonomous vehicles, they can shorten delivery times, respond quickly to customer expectations, and ultimately, improve the service quality of logistics companies (Engesser et al., 2023). When evaluated in terms of environmental impacts, autonomous vehicles allow service providers to make land use more efficient, reduce urban traffic and minimize environmental impacts compared to human-driven delivery methods (Schnieder et al., 2022).

Autonomous vehicles are also evolving overall in warehousing and distribution processes. Certainly, Automated Guided Vehicles, which have been widely used in warehouses for many years, have recently started to be used for last-mile delivery in the form of Autonomous Delivery Robots (Alverhed et al., 2024). Thanks to the 24/7 delivery abilities of all these autonomous vehicles, they can shrink delivery times, respond fast to customer expectations, and ultimately, improve the service quality of logistics businesses (Engesser et al., 2023). Regarding environmental impacts, autonomous vehicles allow service providers to make land use more efficient, reduce urban traffic, and minimize environmental impacts compared to human-driven delivery methods (Schnieder et al., 2022).

With the expansion of e-commerce, the number of last-mile deliveries has grown, leading to difficulties in delivering to the correct address and delays or missed deliveries. To overcome these problems, monitored and automated parcel locker solutions have been developed (Lagorio & Pinto, 2020). Parcel lockers, used as a self-service tool, reduce both the delivery of products to the customer and the collection of returns from the customer, while also offering a service solution at lower expenses than home delivery

(Vakulenko et al., 2018). However, in this system, parcel lockers' number, location, and capacity are important planning issues. The goal here is to provide customers with fast and economical service. Therefore, fixed and variable costs must be systematically calculated, and a parcel locker with sufficient capacity must be placed in the correct location (Deutsch & Golany, 2018). Studies have shown that when adequate capability and cost-effectiveness are achieved, parcel locker delivery can seriously reduce home deliveries (Molin et al., 2022).

One solution created among abstract technologies is crowdsourced last-mile delivery. In this business instance, the sender provides the transport service via a mobile or computer application from community members who provide their own vehicles (Castillo et al., 2018). Crowdsourcing last-mile delivery uses people's movements to transport packages, aiming to control traffic congestion, noise, and emissions. This explanation can maximize impact by utilizing bicycles, electric vehicles, and pedestrian transportation (Giret et al., 2018). Compared with conventional outsourcing methods, crowdsourced delivery offers greater adaptability for businesses and necessitates considerably less financial commitment (Huang & Ardiansyah, 2019). According to research, crowdsourced delivery leads to noticeable decreases in delivery expenses and pollution while ensuring prompt and dependable service. Additionally, crowdsourced delivery offers a solution to a widespread issue for customers, like being away from their residence (Devari et al., 2017).

Numerous prominent online stores are improving logistical solutions for final-stage delivery and scrutinizing consumer opinions. The strategic methodology adopted by Amazon for satisfying customer demands in final-stage logistics was examined by Shamout et al. (2024). The research delved into the elements influencing these anticipations and assessed their influence on subsequent purchases. The results, derived from questionnaire data obtained from 1,000 Amazon shoppers, revealed that prompt and precise deliveries significantly influence customer contentment.

Raghavan and Zhang (2024) stated that the final phase of delivery constitutes about 35% of logistical expenditures. They utilized an Amazon-provided dataset to assess the economical and timely effectiveness of "jumper" and "helper" strategies employed by firms like FedEx and UPS. The jumper strategy involves a driver getting assistance from a colleague who aids in loading, unloading, and delivering items. The helper strategy enables the driver to proceed to different sites while one staff member carries on with deliveries. Their study exhibited a 35.8% decrease in journey duration and a 22% reduction in expenses.

Abualola et al. (2023) investigated the combined utilization of crowdsourcing and unmanned aerial vehicles in final-stage delivery. They put forward a consolidated framework for addressing crowdsourcing delays at busy hours, restrictions in drone flying distance, and constraints in payload size. According to simulation assessments conducted using this framework—echoing those imposed by businesses such as Amazon and Mercedes-Benz—the consolidated strategy proved superior to independent crowdsourcing techniques.

4. Technology-Enabled Logistics

The concept of the IoT, introduced by Kevin Ashton at MIT in 1999, is a real-time system where objects can exchange information with each other, operating without human intervention. As can be seen in Figure 1, in this system, data from objects can first be transferred to the local network and then to the user's computer via the internet (Ivankova et al., 2020).

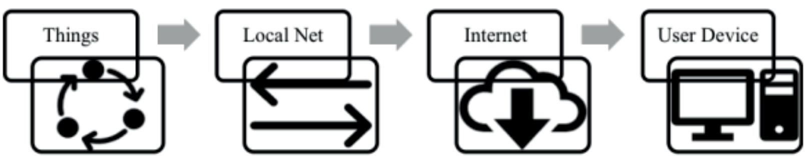

Figure 1. Concept of IoT / Source: Ivankova et al., (2020)

IoT technology offers many opportunities and improvements for retail businesses through logistics management. Data from IoT devices allows tracking the status, location, and transportation conditions of products in real time. This visibility (Liu et al., 2024) allows:

- More accurate delivery time estimates,
- Potential delivery problems can be quickly identified,
- Rapid action can be taken regarding damaged or lost products.

Considering customer expectations in online retail, order fulfillment is a crucial process. Thanks to IoT, this process not only ensures order fulfillment but also minimizes overall delivery costs (Yerpude & Singhal, 2020). The contributions of IoT to the order fulfillment process include (Yerpude & Singhal, 2017):

- A proactive approach to the process,
- Higher accuracy in demand forecasting,
- Fewer write-offs and higher cash flow,
- Savings in planning and ordering time,
- Creating an environment of trust through transparency,
- Higher inventory turnover and more effective inventory management,
- Higher responsiveness to customer orders and customer satisfaction.

IoT provides e-commerce businesses with real-time data about products, enabling them to monitor and improve the quality of logistics services. Among IoT's contributions to this process is the continuous monitoring of product information at all stages of the supply chain, enabling the prediction of potential risks. Furthermore, thanks to IoT components integrated into products, it is possible to record logistics processes such as production, packaging, warehousing, and distribution. This allows transparent tracking of the entire process, from raw materials to the final product and the sales cycle, through the label information provided during online shopping. This provides buyers with critical information for decision-making (Sharma & Gandhi, 2021).

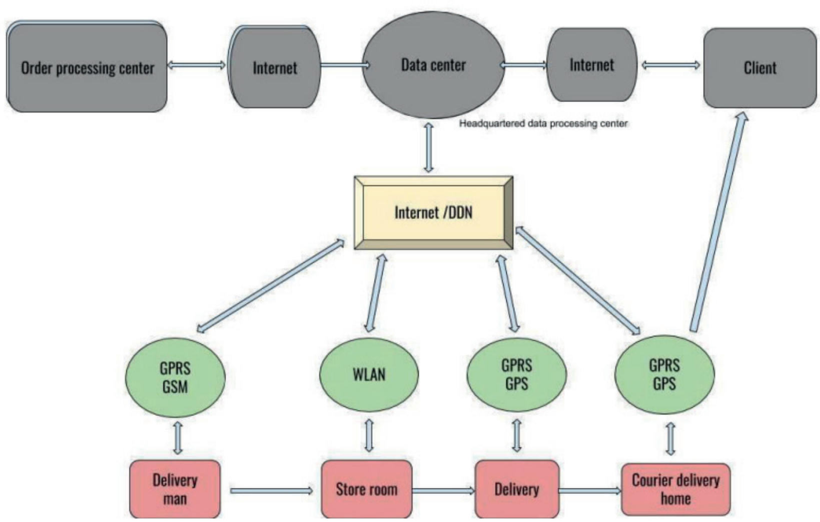

Figure 2. IoT in E-Commerce Logistics Process / Source: Sharma & Gandhi, (2021).

RFID is a technology based on the detection of electromagnetic signals using wireless sensor technology and a tag placed on objects. Data is then provided by readers reading the tag (Tebaldi et al., 2023). Integrating RFID technology into the supply chain has increased inventory accuracy, cost efficiency, traceability, and transparency.

Similarly, RFID has made logistics more manageable by providing real-time tracking, automating inventory management, and minimizing human errors (Abyaneh et al., 2025). One of the most important problems in the supply chain is the discrepancy and inconsistency between records and the real situation, which is called inventory errors. RFID technology allows for the removal of inventory errors (Dai & Tseng, 2012). Walmart, one of the world's largest online retailers, executed automatic scanning by implementing RFID technology, decreasing the rate of product scanning errors and the need for human work (Shin & Eksioglu, 2015). The data visibility and traceability delivered by IoT and RFID technologies have driven the integration of AR and MR applications into logistics processes in recent years. AR and MR applications optimize package picking, sorting, loading, and unloading. Combined with AI-based techniques, these technologies help human force productivity and increase the effectiveness of last-mile delivery operations (Leva et al., 2025).

With the expansion of digital retail, big retail companies are driving progress in using drones for package delivery with minimal human intervention (Sham et al., 2023). Retailers aim to improve delivery pace and reduce costs using uncrewed aerial vehicles for individual orders (Perera et al., 2020). Nevertheless, drone deliveries can also face issues such as interruptions due to power outages. Furthermore, drones equipped with cameras constantly record customer locations and property, raising the issue of privacy. Finally, the easy and unauthorized seizure of software-based control mechanisms by unauthorized individuals also raises the problem of product theft (Sakthivel et al., 2023). However, in the future, as the number of drone drivers increases and vehicles become more suitable for transportation, drones are predicted to become a technology that can be used more actively and beneficially in daily life. At this point, customers' perceptions and attitudes towards delivery processes will be among the most important factors determining the use and adaptation process of the technology in question (Toraman & Öz, 2023).

Drone delivery has the potential to revolutionize on-demand delivery due to its advantages in time and cost. To realize this potential, network design problems related to drone-based delivery have been widely explored in the literature. In their study, Sun and Li (2024) propose a framework for designing a smart drone delivery network. This framework enables the determination of store locations, drone fleet size and allocation, customer assignments, and delivery routes. The objective is to maximize profits while minimizing integrated risks. In this context, a dual-objective nonlinear programming model is developed, and a case study is conducted using geographic data from Shanghai. Montemanni and Dell'Amico (2023) adapted the classical traveling salesman problem (TSP), commonly used in routing, to a parallel drone scheduling TSP, where customer demands are met through a coordinated fleet of trucks and drones. Their constraint programming model aims to minimize the total time required to serve all customers.

Lastly, Ma et al. (2025) addressed the problem of drone route planning and vehicle utilization within the quick commerce (q-commerce) model of online retailing. Their proposed model aims to reduce delivery times and enhance product quality and service efficiency by considering both time and temperature variations when planning drone delivery routes.

5. Conclusion

With the rise of globalization and the spread of digitalization, business models have begun to change. One of these changes is online retailing, which involves buying and selling products online and interacting with consumers through the use of digital technologies. Today, online shopping has become an essential part of daily life, accessible to many people through both smartphones and computers (Lukiyanchuk et al., 2020). Purchasing products online requires a different process, including increased packaging, collection, storage, transportation, and return processes. From the consumer's perspective, a product purchased online cannot be used if it is not delivered to the right place, at the right time, and under the right conditions. In this context, "logistics" is extremely valuable in this entire process (Xing et al., 2011).

Logistics processes in online product purchases ensure that orders meet customer expectations in terms of time, cost, and quality through different logistics models adopted by online retailers (Kawa & Zdrenka, 2024). These logistics models generally involve the use of different technologies in logistics activities as a result of digitalization (Tabim et al., 2024). In this context, this section discusses modern logistics practices for online retailers under the subheadings of inventory optimization, last-mile delivery innovations, and technology-enabled logistics.

Inventory management is a crucial issue for online retailing. The necessity of holding large amounts of inventory, particularly due to serving large regions (Wang & Shen, 2023), necessitates inventory management to prevent/reduce the costs of inventories. Effective inventory management and optimization can reduce costs by maintaining optimal inventory levels (Teplická & Culkova, 2020) and establish a systematic balance between demand forecasts and inventory levels. This can reduce warehouse expenses related to operational processes in inventory management, shorten lead times, and maintain optimal inventory levels (Thomas et al., 2021). Inventory optimization, a critical aspect of inventory management, utilizes heuristic, metaheuristic, linear, and integer programming methods (Bányai, 2018). These methods make demand forecasts more accurate, enable decision support systems, and enable businesses to optimize their operational processes with appropriate stock levels.

In online retail, the logistics process begins with the physical storage of products, continues with order receipt, and concludes with delivery to the customer via last-mile delivery (Tabim et al., 2024). Last-mile delivery is extremely critical for businesses because it is the final stage in delivering the product to the customer. From an efficiency perspective, it is both the least efficient and the most costly process (Mangiaracina et al., 2019). Therefore, concrete technologies such as parcel lockers, pick-up points, and autonomous delivery with drones, electric vehicles, and robots are being used to reduce costs and increase operational efficiency in this process. In addition to tangible technologies, intangible technologies such as crowdsourcing logistics, decision support systems, AI, IoT, and big data analytics are also being used. Numerous studies in the literature assess the impact of such technologies, and the number of these studies is increasing daily (Mogire et al., 2025; Mangiaracina et al., 2019).

The final topic addressed within the logistics process of online retail is technology-enabled logistics, meaning the use of technologies such as IoT, RFID, and drones in logistics. The IoT offers many opportunities and improvements for businesses through logistics activities. With IoT, data from various physical devices can be processed and tracked in real time, enabling the use of information regarding product location and physical conditions (Liu et al., 2024). Similarly, RFID technology allows for the transmission of information via sensors, both during storage and transportation, through an electromagnetic tag attached to objects (Tebaldi et al., 2023). This technology enables the establishment of automated systems for both real-time tracking and inventory management (Abyaneh et al., 2025). Finally, there is package delivery using drones, which is not yet widely used but is seen as the future of digital retail. The goal of drone delivery is to ensure that products are picked up from specific locations and delivered to the end consumer by drone with minimal human intervention (Sham et al., 2023). The literature has seen a significant focus on such studies after 2020, with studies exploring the potential benefits of drone delivery (Perera et al., 2020) and potential drawbacks (Sakthivel et al., 2023).

Finally, numerous factors, including technological advancements, changing consumer preferences, and the COVID-19 pandemic, are driving businesses from physical retail to online retail. In this context, the importance of logistics processes in online retail is undeniable. This study addresses the practical implications of inventory optimization, last-mile delivery innovations, and technology-enabled logistics, specifically within logistics activities. Because the digital transformation process will bring about a fundamental shift in traditional management approaches, a robust infrastructure is essential. To adapt to this transformation most effectively, technology providers, online retailers, logistics service providers, and policymakers must collaborate continuously. It is anticipated that future studies focusing on how successful online retailers design logistics, their decision-making processes, and strategy development methods will provide valuable guidance and contributions to the literature and the industry.

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