VILNIUS UNIVERSITY FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION

Business Process Management

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MASTER THESIS

Logistikos procesų poveikis klientų pasitenkinimui elektroninėje prekyboje	The impact of logistics processes on customer satisfaction in E-shopping

Supervisor Prof. Andrius Jaržemskis

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Keywords

- Logistics Processes

- Customer Satisfaction

- E-Shopping

- Online Shopping

- Delivery Speed

- Order Accuracy

- Return Process

- Last-Mile Delivery

- Customer Expectations

- Logistics Efficiency

List of Abbreviations

Table 1 : *Table of Abbreviations*

Abbreviation	Full Form
ACSI	American Customer Satisfaction Index
ANOVA	Analysis of Variance
B2B	Business-to-Business
B2C	Business-to-Consumer
C2C	Consumer-to-Consumer
E-commerce	Electronic Commerce
E-S-QUAL	Electronic Service Quality scale
E-shopping	Electronic Shopping
H1–H5	Hypothesis 1 to 5
LML	Last-Mile Logistics
R²	Coefficient of Determination
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences
β (beta)	Standardized Regression Coefficient

Chapter 1: Introduction to the Role of Logistics in E-Shopping Customer Satisfaction

In 1994, the concept of e-shopping as we know it today didn't even exist. But by 2019, just 25 years later, more than 2 billion people around the world were shopping online, spending over $4.3 trillion, while businesses carried out online transactions worth around $27 trillion. (Laudon & Traver, 2021).

As online shopping continues to expand, the importance of logistics processes has grown significantly. Logistics, defined as the movement of materials into, through, and out of a firm (Gholizadeh et al., 2022), plays a central role in shaping the overall customer experience. It encompasses the communication and coordination of flows between two parties and is often considered the vein of an organization. Effective logistics integrates information flow, packaging, production, transportation, and storage, ensuring that products are delivered accurately, efficiently, and on time (Hattab & Iljić, n.d.).

Previous research has examined various logistics components and their relationship to customer satisfaction. However, there is still a need for more detailed analysis of logistics process dimensions through customer feedback to understand how specific logistics elements impact customer satisfaction.

This thesis focuses on four key logistics processes that are essential in e-shopping operations:

1. Delivery Speed
2. Order Accuracy
3. Return Process
4. Last-Mile Delivery

The novelty of this thesis lies in its focused exploration of key logistics factors and their influence on customer satisfaction in the e-shopping sector. By analyzing quantitative data, this study aims to deepen the understanding of how logistics processes affect customer experiences and expectations.

1.1 Rationale for Choosing the Topic

The topic *"The Impact of Logistics Processes on Customer Satisfaction in E-Shopping"* was chosen because logistics has become a decisive factor in shaping customer experience in today's fast-growing e-shopping environment. As online shopping continues to expand globally, customers increasingly expect quick, accurate, and reliable deliveries. Even a minor logistics issue, such as a delayed shipment, a wrong item, or a complicated return process, can significantly reduce satisfaction and lead to the loss of customer loyalty.

Furthermore, while logistics has traditionally been viewed as an internal operational function, it now serves as a critical element of customer value creation. Many existing studies focus on general service quality or consumer behavior, but relatively few have analyzed how specific logistics processes, such as delivery speed, order accuracy, return process, and last-mile delivery, affect customer satisfaction collectively.

In addition to its academic importance, my decision to study this topic is closely linked to my professional experience at LOTOS BALTICA, where I am currently employed in the logistics department. This role has provided me with practical insight into how logistics operations function in real business environments and how they impact customer satisfaction directly. Observing challenges such as managing delivery schedules, ensuring order accuracy, and optimizing last-mile delivery has motivated me to conduct a deeper academic analysis of the relationship between logistics processes and customer satisfaction in e-shopping. By combining hands-on professional experience with research, this study aims to bridge the gap between theory and practice in logistics management.

1.2 Relevance of the Topic

The topic *"The Impact of Logistics Processes on Customer Satisfaction in E-Shopping"* is highly relevant in today's rapidly expanding digital marketplace. E-shopping sales have grown dramatically over the last two decades, with millions of consumers now expecting fast, accurate, and convenient deliveries. Logistics processes, including delivery speed, order accuracy, return handling, and last-mile delivery, have become critical competitive differentiators for online retailers. In an environment where customers can easily switch to competitors after one unsatisfactory experience, efficient logistics is no longer just a support function but a central driver of customer satisfaction and loyalty. While previous studies have examined individual logistics factors or broader service quality dimensions, fewer have provided an integrated analysis of multiple logistics processes from the customer's perspective.

1.3 Research Gap

Logistics plays a pivotal role in shaping customer satisfaction in e-shopping, yet existing research reveals important gaps. Most studies have focused on individual logistics elements, such as delivery speed, order accuracy, return policies, or last-mile delivery, often examining them in isolation or as part of broader service quality frameworks. This fragmented perspective makes it difficult to understand how these processes interact and which factors most strongly influence customer satisfaction. Furthermore, there is a lack of empirical studies that directly compare multiple logistics processes from the customer's viewpoint using a quantitative approach.

This thesis seeks to address this gap by providing an integrated analysis of four core logistics processes: delivery speed, order accuracy, return process, and last-mile delivery, to evaluate their individual and combined effects on customer satisfaction in the e-shopping context. The findings aim to offer both theoretical insights and practical guidance for enhancing logistics strategies in online retail.

1.4 Justification of Key Logistics Processes

The four logistics processes: delivery speed, order accuracy, return process, and last-mile delivery, were selected because they represent the most critical touchpoints affecting customer satisfaction in e-shopping. Delivery speed is widely recognized as a key driver of customer expectations, while order accuracy ensures that customers receive exactly what they purchased, directly impacting trust and satisfaction. The return process reflects the ease and convenience of handling post-purchase issues, an increasingly important factor in online retail. Last-mile delivery connects all logistics efforts to the customer, representing the final and most visible step of the delivery experience. For each of these steps, the study carefully chose the most relevant and impactful variable to represent its effect on customer satisfaction. By focusing on these four processes, this research provides a comprehensive and structured view of the logistics factors that most strongly influence customer satisfaction in e-shopping

1.5 Novelty of the Thesis

What makes this research unique is its combined, data-based look at four major logistics processes: Delivery Speed, Order Accuracy, Return Process, and Last-Mile Delivery within one unified framework for e-shopping. While most previous studies tend to focus on just one process or a single market, this thesis examines all four together, making it possible to directly compare their impact on

customer satisfaction. Using a quantitative survey with data collected from active online shoppers, the study will apply statistical analysis to explore how each process influences satisfaction levels. This integrated approach not only brings new empirical insights but also gives businesses practical guidance on which logistics improvements should be prioritized to meet customer expectations.

1.6 Research Problem

The research problem of this study focuses on understanding the relationship between logistics processes and customer satisfaction in the e-shopping sector. Specifically, it examines how key logistics factors, Return Process, Delivery Speed, Order Accuracy, and Last-Mile Delivery, influence customer satisfaction in e-shopping. The study aims to identify which of these logistics processes have the greatest impact on the overall customer experience and how improving these areas can enhance satisfaction levels. By analyzing these factors using a quantitative approach, this research seeks to provide practical insights for optimizing logistics operations in e-shopping to better meet customer expectations.

1.6.1 Main problem

How do logistics processes impact on customer satisfaction in the e-shopping sector?

1.6.2 Sub-problems

- How does the return process impact on customer satisfaction in e-shopping?
- How does delivery speed affect customer satisfaction in the e-shopping sector?
- How does order accuracy influence customer satisfaction in online shopping?
- What role does last-mile delivery play in customer satisfaction in e-shopping?

1.7 Aim, Purpose, and Objectives of the Thesis Work

1.7.1 Aim

To evaluate the relative and combined impact of four critical logistics processes: delivery speed, order accuracy, return process efficiency, and last-mile delivery, on customer satisfaction in e-shopping, and to identify which factors exert the strongest influence on overall satisfaction.

1.7.2 Purpose

The purpose of this study is to explore how logistics processes, including return processes, delivery speed, order accuracy, and last-mile delivery, impact customer satisfaction in the e-shopping sector. The research aims to identify key factors that can enhance the efficiency and effectiveness of logistics systems in e-shopping. By examining these processes, the study will provide insights into how e-shopping companies can improve their logistics strategies to better meet customer expectations. The results will help optimize logistics practices and offer recommendations to improve customer satisfaction, which could be implemented to support future e-shopping growth.

1.7.3 Objectives

- To analyze the importance of four key logistics processes: delivery speed, order accuracy, return process, and last-mile delivery in shaping customer satisfaction in e-shopping.
- To determine which logistics process has the greatest influence on overall satisfaction.
- To reveal weaknesses in current logistics processes and propose evidence-based solutions for improvement.

1.8 Scope & Limitations

1.8.1 Scope

This study focuses on the impact of logistics processes on customer satisfaction in the e-shopping sector, specifically examining four key factors: return process, delivery speed, order accuracy, and last-mile delivery. The research will collect data through surveys to gather insights on customer experience and perceptions of logistics processes in e-shopping. The study aims to explore how these logistics factors influence customer satisfaction

1.8.2 Limitations

This study is limited to examining the impact of logistics processes on customer satisfaction in the context of e-shopping. It specifically focuses on four logistics factors: Return Process, Delivery Speed, Order Accuracy, and Last-Mile Delivery. The analysis is restricted to customer satisfaction from a logistics perspective only.

Data is collected through online surveys, which may involve certain limitations such as a limited sample size, potential response bias, or subjective interpretations by participants. These factors may affect the generalizability of the results.

1.9 Structure of the Thesis

This thesis is organized into five coherent chapters to address the research problem systematically. Chapter 1 introduces the topic, outlines the research problem, objectives, scope, and limitations. Chapter 2 provides a comprehensive theoretical framework, reviewing relevant literature on e-shopping, logistics processes, and customer satisfaction. Chapter 3 details the research methodology, including the research model, design, data collection, and analytical techniques. Chapter 4 presents empirical findings, including descriptive, correlation, and regression analyses. Finally, Chapter 5 synthesizes the results, discusses theoretical and practical implications, offers recommendations, and suggests directions for future research

1.10 AI Usage Statement

In the preparation of this thesis, AI-assisted tools, including ChatGPT, Gemini, Grammarly, and Turnitin, were used to support language editing, proofreading, formatting, and originality checking. All research content, analyses, and original contributions are solely the work of the author.

1.11 Chapter Summary

This chapter gave an overview of how e-shopping has grown rapidly and highlighted the key role logistics play in shaping customer satisfaction. It explained the research problem, aim, purpose, and objectives of the study, focusing on four main logistics factors: delivery speed, order accuracy, return process, and last-mile delivery. The chapter also discussed the scope of the research and acknowledged its limitations, such as the reliance on survey data. By setting out this foundation, the chapter prepares the way for a deeper exploration. The next chapter will review existing literature on logistics and customer satisfaction, helping to frame the analysis and insights that follow.

Chapter 2: Theoretical Framework and Literature on Logistics and Customer Satisfaction in e-shopping

2.1 Introduction to E-Shopping

2.1.1 Definition of E-Shopping

Katawetawaraks and Wang (2011) emphasize that many people prefer online shopping because it is quick and convenient, offering consumers more options and flexibility. They also note that trust plays a crucial role, as some individuals hesitate to shop online due to concerns about product quality or security. In contrast, traditional shopping is valued for the ability to physically inspect products and seek personal opinions before buying. Their focus is largely on consumer behavior influencing online versus offline preferences.

Laudon and Traver, however, approach the topic from a more technical and structural perspective. They define e-shopping as the use of the Internet, the World Wide Web, and mobile applications to conduct business transactions, framing it within the broader concept of e-shopping as digitally enabled commercial transactions where value is exchanged for goods or services. Unlike Katawetawaraks and Wang, their discussion is less about individual consumer attitudes and more about the infrastructure and processes that make online shopping possible.

By comparing these perspectives, it becomes clear that Katawetawaraks and Wang offer a behavioral and motivational lens, while Laudon and Traver provide a systems-oriented definition. This difference in emphasis reflects their research objectives, consumer psychology versus business and technology frameworks. While both acknowledge the growing role of online shopping.

There are several reasons why people prefer shopping online. For instance, they can buy products anytime without visiting a physical store. They can easily compare prices across different websites and avoid the stress of dealing with salespeople or crowded shops. According to Katawetawaraks and Wang (2011), the key factors that influence online shopping behavior can be grouped into four areas: convenience, information, product availability, and cost and time savings or efficiency.

- **Convenience** is one of the main benefits. People can shop at any time, even late at night or on holidays. Online stores are open 24/7, which isn't the case with physical shops. Many customers also like avoiding long lines and crowded places. Plus, some online services are available even after regular business hours, offering chat or email support for quick help when needed. Some

people also prefer shopping online to avoid the pressure of interacting with salespeople. It gives them more freedom and a more relaxed experience.

- **Information** is another reason. The internet makes it easier for consumers to access detailed descriptions, features, and reviews from other buyers. Since they can't touch or try the product, they rely heavily on this kind of information to make confident decisions (Katawetawaraks & Wang, 2011).

- **Product variety and availability** are also key. Online stores usually offer more options than physical ones. Some products are even exclusive to online platforms. Companies can also reach areas where they don't have physical stores. For example, brands like Yves Rocher, a French brand, doesn't have any physical locations in the United States. Instead, it allows U.S. customers to shop through its website by adding products to their cart and having them delivered directly to their homes. Similarly, Boccia Titanium has physical stores in several U.S. states but not in Connecticut. To meet the needs of customers there, the company provides an online store where people can place orders. Flexible payment options are another plus, giving buyers more control over how and when they pay.

- **Cost and Time Efficiency:** One of the biggest reasons people shop online is to save money and time. Many products are cheaper online than in physical stores. Online platforms also make it easy to compare prices across different sellers, helping customers find better deals. Websites like eBay, Amazon, AliExpress, Temu, even offer auctions or "best offer" options, making shopping feel like a fun game or treasure hunt.

  Besides saving money, online shopping saves time and effort. People can shop anytime, from anywhere, without dealing with traffic, looking for parking, waiting in long lines, or facing crowds, especially during busy seasons (Childers et al., 2001). This convenience also helps reduce stress and makes the overall experience more enjoyable

For this study, the definition by Laudon and Traver will be adopted because it provides a comprehensive framework that includes both the technological and transactional aspects of online shopping

2.1.2 Types of E-Shopping Platforms

The table below outlines various types of e-shopping platforms, showcasing key examples and their unique features. These categories highlight the diversity within e-shopping, which directly influences logistics strategies and customer satisfaction.

Table 2 : *Types of E-Shopping Platforms and Their Key Features*

CATEGORY	KEY PLATFORMS	UNIQUE FEATURES
B2C	Amazon	Vast inventory, frequent sales, fast delivery
B2B	Alibaba	Bulk purchasing, credit facilities
C2C	eBay , Facebook Marketplace	Peer-to-peer sales, diverse categories
SUBSCRIPTION-BASED	Netflix	Convenience, curated experiences
SOCIAL COMMERCE	Instagram Shops	Visual appeal, social integration
MOBILE COMMERCE	Wish , temu	App-exclusive deals, mobile payments
AUCTION PLATFORMS	eBay , AstaGuru, Saffronart	Vintage pieces, rare collections, competitive pricing
FLASH SALES	AliExpress Flash Deals (Global) ,Myntra, Snapdeal	Limited-time discounts, loyalty rewards
SECOND-HAND PLATFORMS	Vinted ,Cashify, Zeeffy ,	Sustainability, quality assurance
CUSTOM GOODS	Etsy, iTokri	Handcrafted, personalized products
ON-DEMAND SHOPPING	Swiggy Instamart, Zepto	Hyperlocal delivery, speed
RENTAL E-COMMERCE	Rent the Runway , Rentomojo, The Stylease	Affordable, sustainable

Source: Saxena, E. (2025). 10 Most Popular Types Of Online Shopping,

As shown in Table 2, different types of e-shopping platforms serve diverse customer needs and operate with varying logistics models, which play a big role in shaping customer satisfaction. For example, B2C sites like Amazon focus on quick delivery and having lots of products available (*Saxena, E. 2025)*. Meanwhile, C2C platforms like eBay and Facebook Marketplace rely on individual sellers to handle shipping, which can lead to more variation in delivery speed and service. Subscription services like Netflix, on the other hand, deliver digital content, so their logistics challenges are very different from those selling physical products. Understanding these differences is important because they shape how customers experience shopping and how satisfied they feel with the service.

2.1.3 Top Online Shopping Categories

According to a report published by Shopify (2024), the global Online Shopping market is dominated by a few key product categories, with Electronics leading at $922.5 billion in online sales. This is followed by the Fashion category, which reached $760.0 billion, reflecting strong consumer interest in clothing, shoes, and accessories through online platforms.

Other major categories include Food ($460.1 billion), Beverages ($248.7 billion), DIY and hardware items ($220.2 billion), and Furniture ($220.1 billion). These figures suggest that even traditionally in-person shopping categories are now being embraced online. In addition, categories such as Media ($193.9 billion), Beauty and personal care ($169.6 billion), Tobacco products ($116.6 billion), and Toys and hobbies ($89.8 billion) also contribute significantly to global online sales.

In total, people now spend over $5.7 trillion online, and this number keeps growing every year. This data highlights the growing diversification of e-shopping and the importance of tailoring logistics processes to fit the specific needs of each product category.

2.2 Defining Logistics Processes in E-shopping and Its Influence on Customer Satisfaction

2.2.1   Definition of Logistics Processes in E-shopping

Logistics processes in e-shopping refer to the coordinated set of activities involved in the storage, handling, and movement of goods from sellers to buyers through digital platforms.

Before delving into logistics processes, it is essential to understand the broader concept of logistics itself. Benotmane, Belalem, and Neki (2018) describe logistics as the integration and coordination of various interrelated activities designed to plan, implement, and control the flow of physical goods from their origin to the point of consumption. They emphasize that logistics within organizations typically consists of three main categories:

- **Core activities:** that are directly tied to internal production, such as procurement, manufacturing, distribution, and returns.

- **Transport management**: which involves the external movement of goods and people, and often includes aspects of maintenance operations; and

- **Support activities**: which are not directly involved in production but are critical to enabling logistics operations, including information systems, administration, and strategic planning.

Understanding this comprehensive framework provides a foundation for analyzing logistics processes, which represent the specific, structured actions carried out within this broader logistics system.

Similarly, Rushton, Croucher, and Baker view logistics as a dynamic, flexible concept that varies across industries, encompassing materials management, distribution, transportation, warehousing, and reverse logistics. They emphasize logistics as the efficient transfer of goods while maintaining customer service and facilitating both physical and information flows.

In contrast, Pavel Ceniga and Viera Šukalová (2017) define logistics processes more narrowly as the coordinated flow of goods and information, distinguishing between primary processes (such as supply, production, and distribution) and supporting processes (including strategic planning and innovation).

- Primary logistic processes involved the processes of supply, production, and distribution, changing temporal, spatial, quantitative, quality, and genre properties (attributes) of goods and information. These processes are essential for the physical flow of materials and include tasks like transportation, storage, and order processing.

- Supporting logistics processes, on the other hand, encompasses strategic planning, administrative functions, and decision-making processes that enhance and optimize the primary logistics activities. Examples include logistics cost management, development of logistics strategies, implementation of logistics technologies, personnel training, and innovation management.

The following model highlights the four key logistics processes examined in this research:

Figure 1 : Conceptual Model of Key Logistics Processes
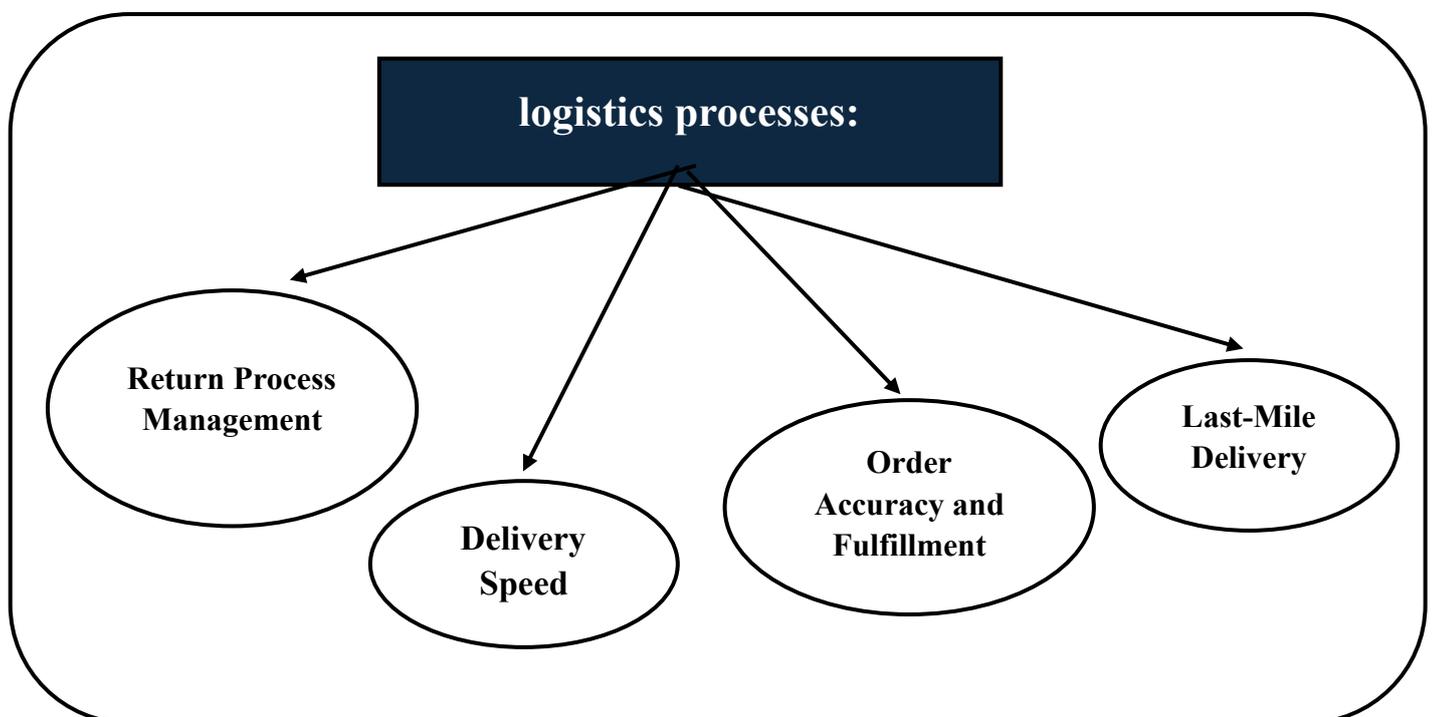
Figure 1 illustrates the key logistics processes that form the foundation of this study. These processes are critical to understanding how logistics processes impact customer satisfaction in e-shopping. The specific components: Return Process Management, Delivery Speed, Order Accuracy and Fulfillment, and Last-Mile Delivery, are identified in the figure. A detailed explanation of each component will be provided in the following chapters.

While Benotmane et al. and Rushton et al. provide broad and flexible frameworks emphasizing the scope of logistics, Ceniga and Šukalová offer a more structured approach focused on operational processes. For this study, Ceniga and Šukalová's definition will be adopted, as it clearly differentiates the specific activities within logistics processes, facilitating detailed analysis of e-shopping logistics.

2.2.2   The Role of Logistics in Customer Satisfaction

Customer satisfaction is a critical determinant of success in e-shopping, with logistics playing a central role in delivering that satisfaction. Rushton, Croucher, and Baker (2014) emphasize that logistics goes beyond the mere movement of goods to ensuring high levels of customer service by delivering the right product, in the right quantity, condition, place, time, and cost, often referred to as the "seven rights" of logistics.

Building on this, Uvet (2020) identifies five key logistics quality factors that influence customer satisfaction: timeliness, order condition, personnel contact quality, operational information sharing, and order discrepancy handling. Uvet's study highlights that effective logistics is not only about speed but also about clear communication and responsive service when issues arise.

Similarly, DHL (2023) points out that several key factors influence customer satisfaction, including delivery time, cost, packaging quality, and communication. For example, when customers receive their orders on time, at a reasonable cost, and in good condition, their satisfaction increases significantly. On the other hand, damaged packaging or delivery delays often lead to customer dissatisfaction.

While Rushton et al. focus on the fundamental principles of logistics, Uvet and DHL provide more detailed factors directly linked to customer experience in e-shopping. For this study, Uvet's framework will be adopted as it offers a comprehensive and practical set of logistics quality criteria that align closely with customer satisfaction in online shopping contexts.

2.3 Key Logistics Processes in E-Shopping

2.3.1 Return Process Management

Returns management is an integral component of supply chain management, involving the coordination of returns, reverse logistics, gatekeeping, and return avoidance. As outlined by (Rogers and Tibben-Lembke) , this process spans both internal operations and external supply chain partners, emphasizing a holistic approach to reverse product flows. When implemented effectively, return management not only facilitates efficient handling of returned goods but also offers strategic benefits, such as reducing unnecessary returns and controlling reusable assets, like packaging and containers. Their framework identifies multiple sub-processes and highlights the importance of alignment with other corporate functions, supply chain processes, and interfirm relationships to ensure operational success and customer satisfaction.

In comparison, DE Brito and Dekker (2002) defined Return management as including all the activities related to handling and managing returned products, components, or materials to recover value. This recovery can be as simple as reselling the product, or it may involve additional steps such as collecting, inspecting, sorting, and processing, which can lead to remanufacturing or recycling.

Customer returns, as outlined by de Brito and Dekker (2002), can stem from a variety of causes that generally reflect the different phases of product usage. These are

- **Reimbursement guarantees**
- **Warranty returns**
- **Service returns**
- **End-of-use returns**
- **End-of-life returns**

Reimbursement guarantees allow customers to return products shortly after purchase if the product does not meet their expectations or needs, such as issues with size, color, or fabric in clothing. Warranty returns when a product fails to meet the quality standards promised during the warranty period. Customers can return it for repair, replacement, or refund.

While Rogers and Tibben-Lembke provide a broad, strategic framework emphasizing coordination and integration within the supply chain, de Brito and Dekker offer a more operationally focused view centered on value recovery and return reasons. For this study, Rogers and Tibben-Lembke's

comprehensive framework will be used as it better captures the complexity of returns management within e-shopping logistics and its strategic implications for customer satisfaction and supply chain alignment.

a. Reverse logistic:

Reverse logistics, once seen as the process of recycling used or malfunctioned products, has expanded to encompass various processes related to product return and collection for recovery, repair, refurbishment, recycling, remanufacturing, or the disposal of used or end-of life items (Rasool et al., 2023, as cited in Appiah & Owusu-Bio, 2024). The contemporary focus on reverse logistics emphasizes not only the movement of products backward but also the value captured through this process (Wilson et al., 2022, as cited in Appiah & OwusuBio, 2024). Despite several definitions of reverse logistics, the central focus across these definitions has been on both the direction of movement and the purpose behind it.

Rogers and Lembke, define reverse logistics as, The process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods, and related information from the point of consumption to the point of origin to recapture value or proper disposal.

De Brito and Dekker (2002) break down reverse logistics into four main processes. The first is collection, where products are brought back from customers to a recovery point. Next is a combined step of inspection, selection, and sorting, during which the products' quality is evaluated, and decisions are made about how to recover them. The third process involves re-processing or direct recovery. Direct recovery includes options such as re-use, resale, or redistribution without much alteration, while re-processing covers activities like repairing, refurbishing, remanufacturing, recycling, or even incineration. Finally, redistribution is the process of delivering the recovered products to new users (see Figure 2).

Figure 2 : Reverse Logistics Processes
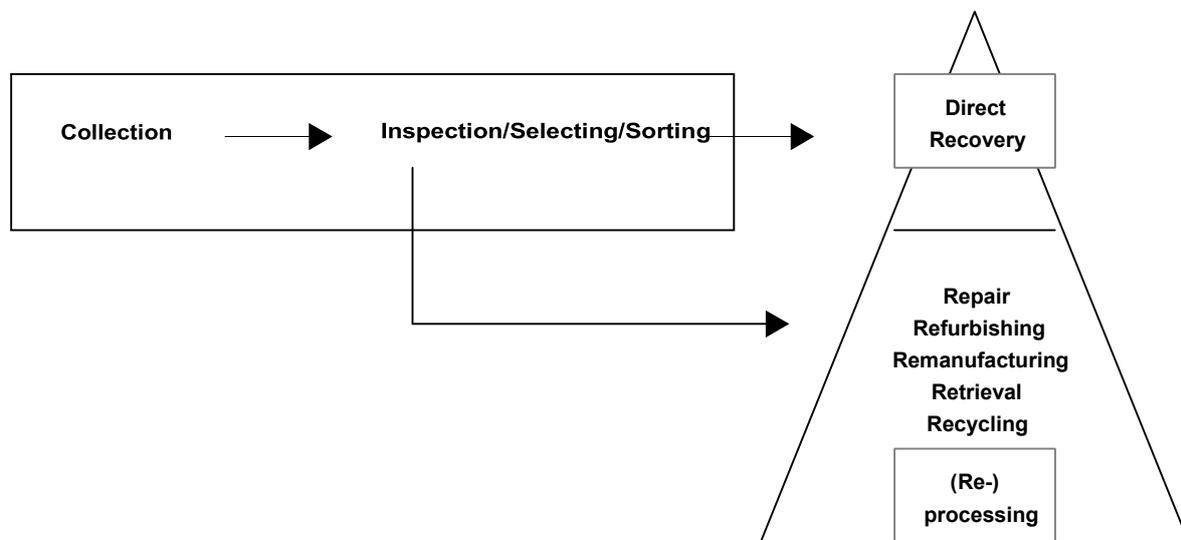
Source: (de Brito & Dekker, 2002)

While Rogers and Tibben-Lembke provide a broad operational definition emphasizing flow control and value capture, de Brito and Dekker offer a detailed process-oriented framework that clarifies the specific steps involved in reverse logistics. For this study, de Brito and Dekker's process-focused model will be adopted, as it provides a clear structure useful for analyzing reverse logistics activities in the context of e-shopping.

2.3.2   Delivery Speed and Timeliness

Today, with technology and globalization, people can buy products more easily. But they don't like waiting. They want their orders to arrive on time, just as promised. That's why delivery speed is one of the most important parts of logistics process (Akıl & Ungan, 2022).

Similarly, Handayani (2021, cited in Cahyaning Raheni et al., 2021) and Hafizha, Abdurrahman, and Nuryani (2019) link on-time delivery directly with customer satisfaction, defining it largely as the time between placing an order and receiving it. These perspectives treat timeliness as a straightforward measure of punctuality.

By contrast, Aminah (2017, cited in Kaligis et al., 2024) and Sakti and Nystrom (2007, cited in Kaligis et al., 2024) broaden the concept, framing timeliness as dependent on supplier capabilities, such as production capacity, geographical distance, while also emphasizing precision in delivery location and timing. This makes their definition more operationally complex compared to the punctuality-focused views of Hafizha et al. and Handayani.

Other scholars, such as Yang and Wang (2019, cited in Akıl & Ungan, 2022), highlight the logistics process itself, arguing that delivery speed is tied to how efficiently goods are received, sorted, and transported. Tandon (2022) further advances this view by framing delivery speed as a value-added service, stressing that it not only affects logistics metrics but also shapes customer expectations and behavior.

Kaligis et al. (2024) offer the most comprehensive perspective, presenting three dimensions of timeliness: accuracy in delivering goods, accuracy in pricing, and accuracy in scheduling. Unlike authors who focus narrowly on punctuality or logistics efficiency, this approach reflects the multifaceted nature of timeliness and its broader role in customer satisfaction.

Many studies across different industries have found a positive link between delivery speed and customer satisfaction. (*in Akıl and Ungan 2022)*

Several factors influence delivery speed, including internal and external elements:

Figure 3 : Factors Influencing Delivery Speed
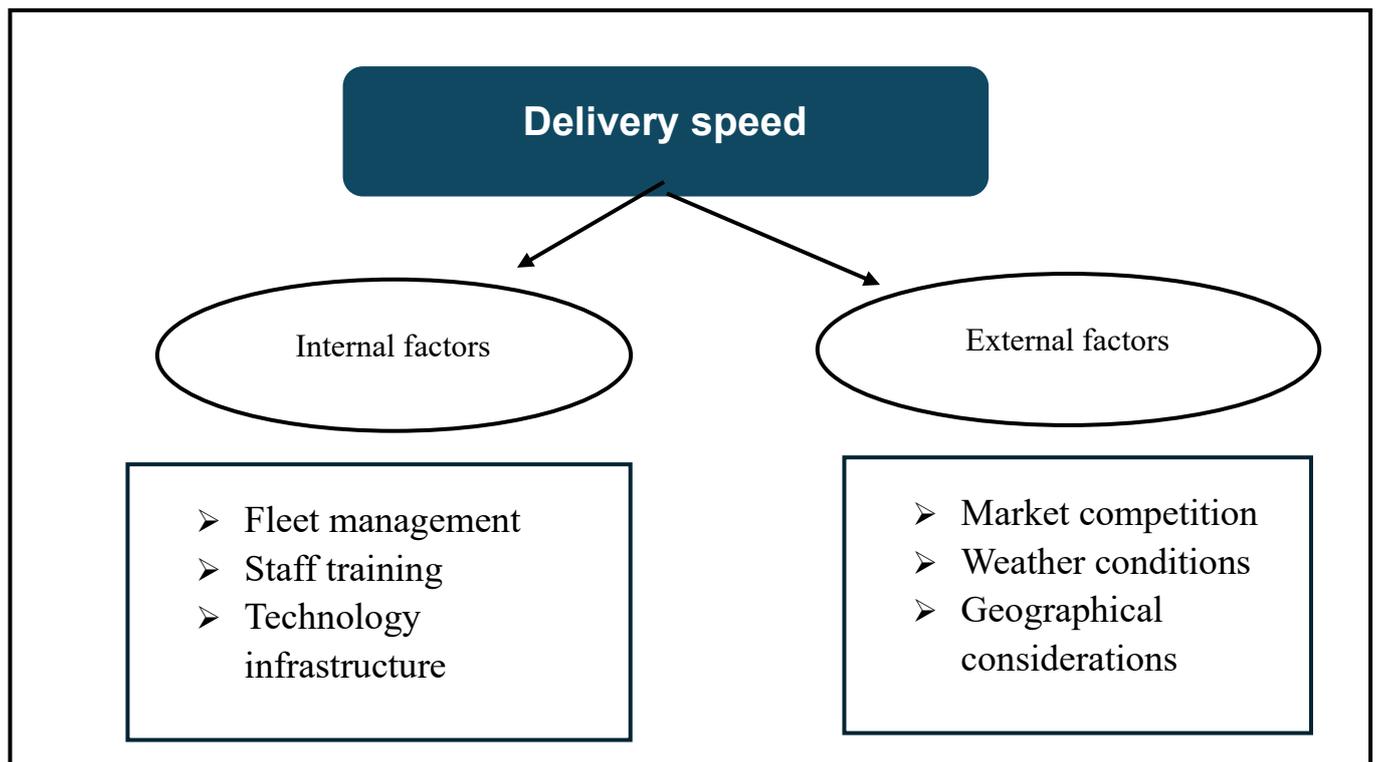
Source: Upper Delivery Speed

For this thesis, Kaligis et al.'s multidimensional definition is adopted, as it captures not only the speed of delivery but also its precision, cost implications, and scheduling accuracy, providing a more holistic framework for analyzing delivery timeliness in e-shopping.

2.3.3   Order Accuracy and Fulfillment

Vakulenko et al. (2024) define order fulfillment broadly, emphasizing its overlap with several functional areas such as inventory management, storage, packaging, shipping, and returns. For them, efficient execution of these operations creates a competitive advantage by ensuring that customers receive orders accurately, in good condition, and on time. Similarly, Lin and Shaw (1998) frame order fulfillment as the process that begins with receiving a customer's order and ends with the delivery of the finished product. Their focus, however, is narrower, treating fulfillment as a linear, activity-based process within the supply chain.

Croxton (2003), by contrast, goes beyond the operational view, describing order fulfillment as a strategic process. He emphasizes the design and management of a responsive supply chain network that not only completes orders but also minimizes total delivered cost through cross-functional collaboration and partnerships. This shifts the perspective from order fulfillment as a set of operational tasks (Vakulenko et al., Lin & Shaw) to order fulfillment as a source of long-term competitiveness.

For the purposes of this study, Croxton's (2003) definition is the most appropriate, since it integrates both operational efficiency and strategic alignment. This makes it especially relevant to e-shopping, where rapid fulfillment must balance customer satisfaction with cost efficiency and supply chain collaboration.

The Order Fulfillment Process:

Figure 4 : The Five Key Stages of the Order Fulfillment Process

01	• **Sources of incoming goods:** • Manufacturers , wholesalers
02	• **Receiving**: • (Distribution centre)
03	• **Storage**: • Short-term
04	• **Processing** : • Picking and packing
05	• **Shipping** : • Transport order to customer

As shown in Figure 4, the order fulfillment process follows a linear flow that starts with sourcing goods and ends with delivering them to the customer. The five key stages include: (1) sourcing incoming goods from suppliers, (2) receiving and registering goods in a distribution center, (3) storing them short-term until needed, (4) processing orders through picking and packing, and finally, (5) shipping and transporting orders to customers. This structure ensures that operations are both efficient and responsive to customer needs.

2.3.4   Last-Mile Delivery

Samet (2024) defines last-mile delivery as the final phase of the logistics process, involving the movement of goods from a distribution or fulfillment center to the customer's doorstep. He highlights its dual nature: while it is the most costly and time-consuming stage, it is also the most critical for customer satisfaction, since it directly affects delivery speed and reliability.

Lim, Jin, and Srai, however, provide a more nuanced perspective. They acknowledge that most definitions of Last-Mile Logistics (LML) agree on its position as the final stage of delivery but argue that many fail to clearly specify its boundaries within the supply chain. They emphasize that while some scholars treat LML broadly, covering both urban and non-urban deliveries, others limit it to urban contexts. Fundamentally, they define LML as the movement of a business-to-consumer parcel from a fulfillment center (order penetration point) to the customer's chosen delivery location, whether that is their home or a collection point.

The comparison reveals that Samet (2024) focuses on the impact of last-mile delivery, its cost, time, and role in customer satisfaction, whereas Lim, Jin, and Srai concentrate on the definition and scope of the process, stressing its boundary conditions and variations across contexts.

For the purpose of this study, the definition by Lim, Jin, and Srai is adopted, since their clarification of scope (urban vs. non-urban and home vs. collection point) provides a more precise foundation for analyzing last-mile logistics in e-shopping environments

2.4 Customer Satisfaction in e-shopping

2.4.1   Definition and Importance of Customer Satisfaction

Kotler and Keller (2016) define customer satisfaction as the emotional response: pleasure or disappointment that results from comparing a product or service's performance with customer

expectations. Their definition highlights the psychological process behind satisfaction, where exceeding expectations leads to delight, meeting them creates satisfaction, and falling short results in dissatisfaction. They also caution that maximizing satisfaction is not always the company's primary goal, since improving satisfaction through price cuts or service upgrades can reduce profitability.

Angelova and Zeqiri (2011), by contrast, emphasize the strategic role of satisfaction in modern marketing. They argue, using the American Customer Satisfaction Index (ACSI), that satisfaction is a driver of profitability, customer retention, and market share. Their perspective positions satisfaction not merely as an emotional response but as a measurable and actionable performance indicator for businesses competing in dynamic markets.

Bolton (2016) situates satisfaction within the broader customer experience framework, recognizing it as a multidimensional construct shaped not only by functional outcomes but also by emotional and contextual factors. Unlike Kotler and Keller's more transactional view, Bolton's approach stresses that satisfaction is influenced by the holistic customer journey, including emotional resonance and situational needs.

The comparison shows that Kotler and Keller focus on the psychological mechanism of satisfaction, Angelova and Zeqiri emphasize its strategic business value, and Bolton highlights its multidimensional and experiential nature.

For this study, Kotler and Keller's (2016) definition is adopted, since it provides a clear and widely recognized foundation for understanding customer satisfaction as the alignment or misalignment between expectations and performance, which can then be linked to loyalty, retention, and profitability.

2.4.2 Customer Expectations in E-Shopping

Kotler and Keller (2016) argue that customer expectations extend beyond product quality and delivery speed to include how companies manage satisfaction and feedback. With the rise of digital platforms, consumers increasingly expect fast and transparent communication, and unmet expectations can quickly damage a brand's reputation through negative online reviews. Conversely, companies that exceed expectations often use high satisfaction ratings to strengthen trust and attract customers.

Parasuraman, Zeithaml, and Malhotra (2005), however, approach customer expectations more systematically through the E-S-QUAL model. Their framework identifies four key dimensions of online service quality: efficiency (ease and speed of website use), fulfillment (accuracy of product

descriptions and timely delivery), system availability (technical reliability), and privacy (security of personal and payment data). Unlike Kotler and Keller's broader focus on communication and reputation management, the E-S-QUAL model narrows expectations to measurable service quality factors specific to e-shopping.

The comparison highlights two perspectives: Kotler and Keller stress the broad behavioral and reputational impact of customer expectations, while Parasuraman et al. provide a structured and operational model for measuring expectations in online retail environments.

For this study, the E-S-QUAL model (Parasuraman et al., 2005) is adopted because it provides a concrete and multidimensional framework tailored to e-shopping, making it more applicable for analyzing how logistics processes affect customer satisfaction in online shopping.

2.4.3   Impact on Customer Satisfaction

Several studies have highlighted different factors shaping customer satisfaction in online shopping, though they vary in emphasis. Guo et al. (2012) identified eight major drivers, including delivery service, website design, product quality, and payment method, with delivery service emerging as the strongest influence.

In contrast, Rahmayanti et al. (2021) focused on four dimensions: product quality, security, price, and website quality, and found that product quality alone accounted for the largest share of satisfaction (38%), suggesting that customers prioritize whether products meet their expectations.

Similarly, Khan et al. (2015) found that factors such as price, convenience, product information, return policy, financial risk, product risk, and delivery risk all play a role in shaping satisfaction and repurchase intention. Specifically, the availability and usefulness of product information help consumers evaluate products confidently. A lenient return policy was also shown to increase satisfaction. Additionally, delivery risk, including delayed or damaged deliveries, was found to have a negative impact on customer satisfaction

Comparing these perspectives, Guo et al. stress the logistics dimension (delivery service), Rahmayanti et al. emphasize product quality as the core factor, and Khan et al. provide a risk–benefit trade-off framework that balances multiple considerations.

For this study, Rahmayanti et al.'s (2021) definition is adopted, as it captures both tangible (product quality, price) and intangible (security, website quality) factors in a focused framework, while

also empirically highlighting the dominant role of product quality in driving customer satisfaction in e-shopping

2.5 Conclusion of the Literature Review

This chapter examined how e-shopping, logistics processes, and customer satisfaction are connected. The review showed that logistics factors such as return management, delivery speed, order accuracy, and last-mile delivery are central to shaping customer experiences. At the same time, customer satisfaction was found to depend on both tangible elements like product quality and delivery reliability, and intangible aspects such as trust, communication, and convenience.

However, literature also reveals gaps. Most studies analyze logistics factors separately rather than as an integrated system, and many frameworks are rooted in traditional retail, overlooking the specific challenges of e-shopping. Moreover, few studies directly link logistics performance to customer satisfaction across diverse platforms and product categories.

To address these gaps, this study adopts a process-oriented framework that connects logistics processes with customer satisfaction outcomes. This approach will provide a more comprehensive view of how logistics performance influences loyalty and trust in e-shopping environments.

Chapter 3: Research Methodology for Analyzing Logistics Impact on Customer Satisfaction

This chapter outlines the methodological framework used to conduct research on the importance of logistics processes for customer satisfaction in the context of e-shopping. This methodology aims to explain how the research was designed, how data was collected, and what tools and techniques were used to analyze the data. By clearly defining the research approach, sampling method, data collection instruments, and analysis procedures, this chapter ensures the transparency and replicability of the study.

The chapter begins by describing the overall research design and strategy, followed by a detailed explanation of the target population and sampling technique. It then presents the data collection method, including the structure of the questionnaire used to gather information from online shoppers. The chapter also explains the techniques employed to analyze the collected data,

Finally, Validity and the limitations of the methodology are discussed to ensure a comprehensive understanding of the research process.

3.1 Research model

The research model for this research consists of five interconnected parts: research goals, conceptual framework, research methods, validity, and research questions.

Figure 5 : *Elements Of The Research Methodology*
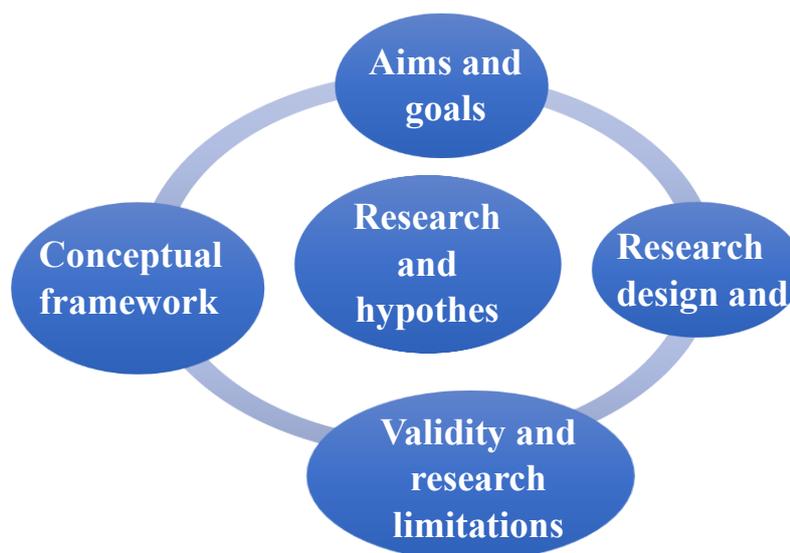
Source : Viktoryia Danilovich.

3.1.1   Research Model Explanation

A research model provides a clear structure that guides the entire research process. It outlines the key components that shape the direction of the study and ensure a logical flow from theoretical concepts to empirical investigation. The present research model consists of five main components, each addressing specific research-related concerns. These components include Aims and Goals, Conceptual Framework, Research Questions and Hypotheses, Research Design and Methods, and Validity and Research Limitations.

Table 3 : Overview of Research Design and Objectives

Aims and goals	Outline what the study seeks to achieve specifically, to examine how logistics processes influence customer satisfaction in e-shopping. This includes understanding which logistics factors (like delivery speed or return process) are most important to online customers.
Conceptual framework	includes past studies related to logistics and customer satisfaction. It focuses on four key logistics factors: delivery speed, order accuracy, return process, and last-mile delivery. These are believed to play a major role in shaping customer experiences
Research Questions and Hypothesis	They aim to explore the relationship between logistics processes and customer satisfaction, while the hypotheses suggest specific connections between the logistics factors and satisfaction levels.
Research methods	A quantitative approach will be used, with surveys distributed to e-shopping customers. Data will be analyzed statistically to find patterns and relationships.
Validity and research limitations	address the potential weaknesses of the research. This section also reflects on how the results might inform better logistics strategies in online shopping

Source: composed by the author.

Figure 6 : *Research Model*
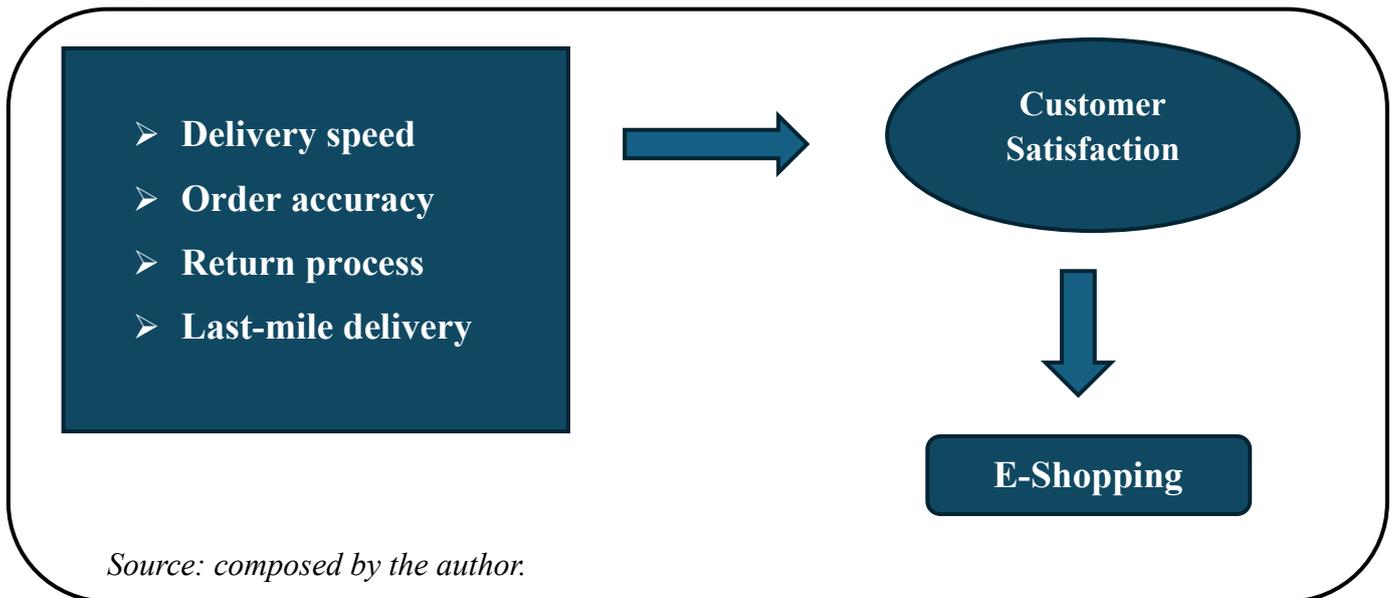
Source: composed by the author.

This research model was developed by the author to highlight the key factors that influence customer satisfaction in e-shopping. It brings together four main elements: delivery speed, order accuracy, return process, and last-mile delivery, which together shape the customer's overall experience. The model provides a clear structure for understanding which areas matter most to online shoppers.

3.2 Aim and goals of the present research

3.2.1 Research Aim

The aim is to examine the impact of logistics processes on customer satisfaction in E-shopping.

First, the main goal of the present research is to analyze the overall connection between logistics processes and customer satisfaction. in the context of e-shopping,

The study seeks to identify which logistics-related factors have the greatest impact on customer experience and satisfaction, particularly in online retail environments.

3.2.2 Research Objectives

To achieve this aim, the study is guided by the following specific objectives:

1. To analyze the role of logistics processes in the e-shopping environment.
2. To assess customer satisfaction levels with logistics services in e-shopping

3. To evaluate the impact of key logistics factors such as delivery speed, order accuracy, return process, and last-mile delivery on customer satisfaction.

4. To identify which logistics process factors are most influential in shaping customer satisfaction in e-shopping.

3.3 Conceptual framework

The conceptual framework of this study is based on theoretical insights and previous research concerning the relationship between logistics processes and customer satisfaction in the context of e-shopping. Numerous studies have shown that logistics performance significantly shapes the online shopping experience and directly influences customer satisfaction

This research focuses on four key logistics factors identified in the literature as most impactful on customer satisfaction:

- **Delivery Speed** is defined as the period between when an order is placed and when it is delivered to the customer's location. (Tandon, U. 2022)

- **Order Accuracy** refers to the correct fulfillment of customer orders, delivering the right items, in the right quantity, to the right location without any errors (Callarman, 2020, as cited in Le Minh et al., 2024).

- **Return Process** Return management is the strategic process of handling product returns from consumers. It includes all activities associated with returns, such as mitigation, collection, sorting, and distribution of returned products (Cullinane & Cullinane, 2021, as cited in Brolin & Lundgren, 2021).

- **Last-Mile Delivery** involves the movement of a business-to-consumer (B2C) parcel from the order penetration point, typically a fulfillment center, to the final delivery location preferred by the recipient (Lim, Jin & Srai 2023).

These four logistics elements form the independent variables of the study, while customer satisfaction acts as the dependent variable

To test this framework, a structured questionnaire was developed and distributed via Google Forms. The instrument includes closed-ended questions to assess customer perceptions of each logistics factor and their overall satisfaction with recent e-shopping experiences.

3.4 Research Questions and Hypotheses:

3.4.1 Research Questions

How do logistics factors such as delivery speed, order accuracy, return process, and last-mile delivery affect customer satisfaction?

3.4.2 Sub-Questions

- ✓ How does the return process impact on customer satisfaction in e-shopping?
- ✓ How does delivery speed affect customer satisfaction in the e-shopping sector?
- ✓ How does order accuracy influence customer satisfaction in online shopping?
- ✓ What role does last-mile delivery play in customer satisfaction in e-shopping?

3.4.3 Hypotheses

H1: Delivery speed has a positive impact on customer satisfaction in e-shopping.

H2: Order accuracy has a positive impact on customer satisfaction in e-shopping.

H3: Return process efficiency has a positive impact on customer satisfaction in e-shopping.

H4: Last-mile delivery has a positive impact on customer satisfaction in e-shopping.

H5: Delivery speed has a stronger effect on customer satisfaction compared to other factors.

3.5 Research methods and questionnaires:

A quantitative research approach is adopted for this study to achieve the research objectives and to test the proposed hypotheses. The main method of data collection is a structured survey.

The survey is designed to assess customer satisfaction with specific logistics process factors in e-shopping, including delivery speed, order accuracy, return process, and last-mile delivery. Participants are selected based on their recent online shopping experience.

To analyze the collected data and examine the relationship between logistics processes and customer satisfaction, Descriptive Statistics and Correlation Analysis is employed. This statistical method is used to determine the strength and direction of the relationships between the logistics processes and customer satisfaction levels.

3.5.1   Research methods

The current study is conducted in the context of the e-shopping logistics sector, focusing on how logistics processes affect customer satisfaction.

To collect data, an online survey method was used. A list of participants was reached through public platforms and social media, targeting individuals with recent experience in online shopping. The survey was created using Google Forms and distributed electronically.

All participants were clearly informed that their participation was voluntary and anonymous, and that no personal information would be linked to their responses. The aim was to gather honest feedback about their experiences with delivery speed, order accuracy, return process, and last-mile delivery in relation to their satisfaction as e-shopping customers.

Figure 7 : Steps Of The Research Procedure

| Designing the Research Model and Questionnaire | → | Distributing the Survey and Collecting Responses | → | Analyzing the Data | → | Drawing Conclusions |
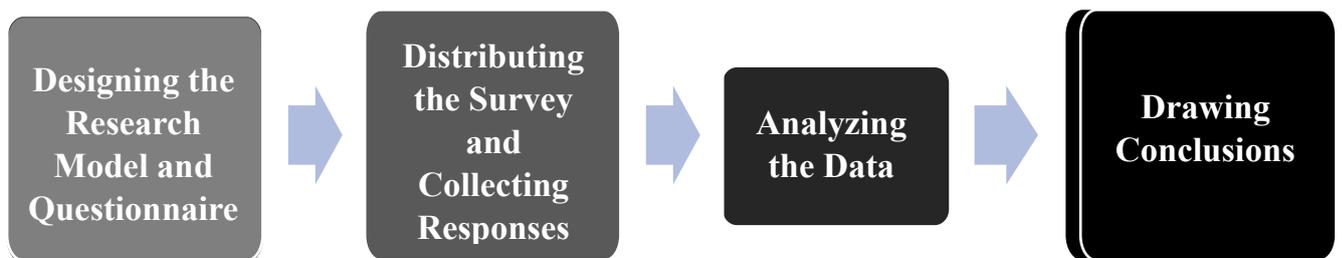
Source: Composed by the author.

3.5.2   Research questionnaires

For this research, two instruments were used to measure logistics processes and their impact on customer satisfaction in e-shopping: a structured questionnaire designed based on previous validated studies (Dias et al., 2022; Akıl & Ungan, 2022; Mohammad, 2021; Caberoy et al., 2025) and self-reported evaluation scales.

The survey covered key logistics dimensions: delivery speed, order accuracy, return process efficiency, and last-mile delivery, which are hypothesized to affect customer satisfaction.

3.5.3   Questionnaire Development

The survey was constructed using measurement scales sourced from peer-reviewed literature. The questionnaire included the following four main logistics process dimensions:

Table 4 : *Overview of Measurement Scales for Logistics Processes in E-Shopping.*

Variable	Source	Number	Scale Type
Delivery Speed	• Dias et al. (2022) • Akıl, S., & Ungan, M. C.(2022). • Caberoy et al. (2025).	4	**5-point Likert .** **4-Point Satisfaction Scale..** **3-Point Likert Scale.**
Order Accuracy	Akıl, S., & Ungan, M. C. (2022).	3	**5-point Likert Scale.**
Return Process	Akıl, S., & Ungan, M. C. (2022). Adapted by author.	3	**5-point Likert Scale.**
Last-Mile Delivery	Caberoy et al. (2025).	4	**4-Point Satisfaction Scale.**
Overall Logistics Satisfaction	Adapted by author.	2	**5-point Likert Scale.**

Source: Composed by the author.

3.5.4 Data Collection Method

To collect the data for this research, a short online questionnaire was created using Google Forms. It was shared with people who have experience with e-shopping, and their participation was completely voluntary and anonymous. This helped ensure that everyone could answer freely, without pressure or judgment.

This method was chosen because it offers several advantages. First, it allowed the researcher to reach many people quickly and easily. Second, since no names or personal details were collected, people could feel more comfortable giving honest answers. Finally, by using an online form, all

participants received the same questions in the same way, avoiding any influence from the researcher.

Overall, this approach made it easier to gather real opinions from everyday online shoppers and was a good fit for the goals of the study.

3.5.5   Sample Size Determination:

A comparative review of participant numbers in similar studies helped estimate the required sample size. The table below summarizes the number of participants in those studies:

Table 5 : Comparative Analysis of Study Participants

Name	Research	Year	Number of participants
Caberoy et al.	Factors Affecting Customer Satisfaction of Last-Mile Delivery Logistics.	2025	385 participants.
Nazir Uddin Mohammad.	Impacts of Return Process Service Quality on Customers' Purchase Intention through e-Commerce Website in Bangladesh.	2019	423 participants.
Akıl, S., & Ungan, M. C.	E-Commerce Logistics Service Quality: Customer Satisfaction and Loyalty.	2022	1,562 participants.
Dias et al.	Assessing the Effects of Delivery Attributes on E-Shopping Consumer Behavior.	2022	615 participants

Source: Composed by the author.

The participant numbers of these similar studies were taken into consideration when calculating the required sample size for the research at hand. Although the study by Akıl and Üngan (2022) included 1,562 participants, but this was considered a large sample size. Therefore, based on the range observed in other studies, the necessary number of participants for this research was set between 200 and 500.

3.5.6 Data Preparation

Before analyzing the survey data, several steps were taken to ensure accuracy, consistency, and suitability for statistical analysis. Proper data preparation is essential to obtain valid and reliable results. The following procedures were carried out:

- **Data Cleaning:**

Responses were reviewed to identify and remove incomplete or inconsistent entries

- **Exporting Data:**

The responses were exported from Google Forms to Excel and then imported into SPSS for statistical analysis.

- **Coding the Variables:**

Google Forms automatically coded the Likert-scale questions. All items were then rescaled to a 5-point scale to ensure consistency across all variables. Demographic variables were also coded for easier analysis.

- **Checking for Completeness:**

The dataset was reviewed to identify missing answers. A small number of responses contained missing values, and these were removed to ensure the accuracy and reliability of the analysis.

- **Organizing the Dataset:**

All variables were clearly labeled and arranged properly to ensure smooth statistical processing. The prepared dataset was then used in SPSS to conduct the three main analyses of the study:

- ✓ Descriptive analysis
- ✓ Correlation analysis
- ✓ Multiple regression analysis

3.6 Validity and research limitations

This study was designed to ensure reliable and valid findings; however, certain limitations must be acknowledged to provide a complete context for interpreting the results.

Ensuring Validity: To minimize threats to validity, the survey instrument was carefully constructed using established scales from prior literature. The selection of participants was conducted without

bias, and respondents were explicitly instructed to answer honestly and based on their personal experiences, thereby reducing social desirability bias and researcher influence.

Despite these efforts, several limitations exist. First, the study focused only on four logistics factors (delivery speed, order accuracy, return process, and last-mile delivery), meaning other important elements like pricing, customer service, or website experience were not included. Second, the research applied only a quantitative method. Including qualitative methods like interviews or open-ended surveys could have provided deeper insights.

Third, the survey was conducted in English, which may have affected the responses, especially if participants were not fully comfortable with the language. While most respondents were familiar with English due to their background in international e-shopping, language could still have had some influence on the clarity or completeness of the answers.

Fourth, the sample is predominantly composed of young male respondents, which limits the generalizability of the findings to other demographic groups such as older adults or female shoppers.

3.7 Ethical Considerations

This study was conducted in accordance with established ethical principles for academic research involving human participants. The following measures were implemented to ensure the ethical integrity of the research process:

Informed Consent: All participants were fully informed about the purpose, nature, and scope of the study before completing the survey. Participation was entirely voluntary, and respondents were free to withdraw at any time without any negative consequences.

Anonymity & Confidentiality: No personally identifiable information was collected. All data were aggregated, analyzed anonymously, and stored securely.

Transparency of Purpose: The objectives of the research, as well as how the collected data would be used, were clearly communicated to participants. This ensured that respondents understood the context of the study and the intended outcomes.

Minimization of Risk: The survey focused on general logistics experiences, posing no foreseeable psychological, social, or physical risk to participants.

3.8 Conclusion

This chapter presented the methodological framework designed to investigate the impact of logistics processes on customer satisfaction within the context of e-shopping. It outlined the structure and logic guiding the research, including the research model, objectives, conceptual framework, research questions, hypotheses, and data collection methods. By adopting a quantitative approach supported by structured questionnaires, the study ensures objectivity and allows for measurable analysis of relationships between logistics factors, delivery speed, order accuracy, return process, and last-mile delivery and customer satisfaction.

The methodology was carefully developed to maintain validity and reliability throughout the research process. The sample selection, data collection procedures, and analytical techniques were chosen to ensure consistency, transparency, and replicability of the results. Although the study acknowledges certain limitations, such as the exclusion of qualitative insights and potential language barriers, the adopted methods remain appropriate and sufficient for addressing the research objectives.

Overall, this chapter provides a solid foundation for the empirical analysis presented in the following chapter. The structured research design and systematic approach enable a comprehensive examination of how logistics processes influence customer satisfaction in e-shopping, setting the stage for data analysis and interpretation in Chapter 4.

Chapter 4: Analysis of the Impact of Logistics Processes on Customer Satisfaction in E-Shopping

4.1 Analysis of the study participants

A total of 277 respondents participated in the survey, which explored the relationship between logistics processes and customer satisfaction in the context of e-shopping. All participants were individuals who actively shopped online. The questionnaire featured a variety of response formats designed to capture insights aligned with the specific objectives of this study.

The respondents represented a mix of genders and age groups, with different levels of online shopping frequency. This diversity provided a broad view of customer experiences and expectations. The analysis begins with the overall response rate and continues with a closer examination of the participants' online shopping habits, particularly their frequency of online purchases.

4.1.1 Note on Response Variation

Although 277 individuals initially participated in the survey, several respondents did not answer every question. As a result, the number of valid responses varies across tables. Most analyses are based on 261 completed responses, representing only participants who answered the specific questions being analyzed. This ensures accuracy and reliability in the interpretation of the results.

4.2 Presentation of Results

4.2.1 Demographic Characteristics of Respondents

A total of 277 respondents completed the demographic section of the survey. This subsection presents an overview of their key characteristics, including age, gender, and frequency of online shopping. Understanding the profile of participants helps contextualize the results and ensures that the findings accurately represent typical e-shopping customers.

Table 6 : *Response Rate for Questionnaire*

	FREQUENCY	PERCENTAGE
TOTAL	277	100%
RESPONDED	261	94.23%

NOT RESPONDED	16	5.78%

Source: Questionnaires.
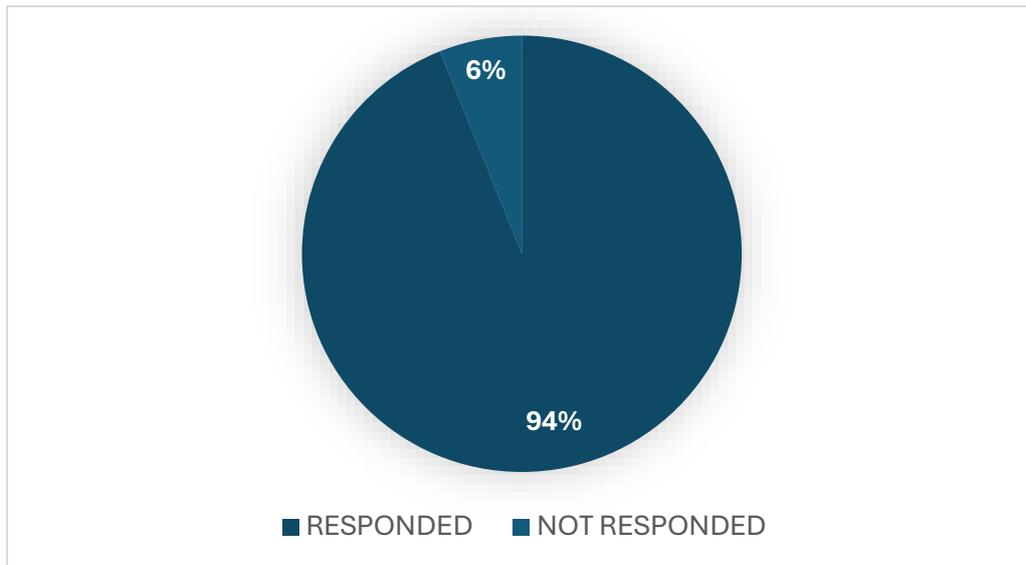
Figure 8 : Response Rate

✓ **Interpretation:**

The chart above clearly elaborates the response rate of the individuals. A total of 277 candidates were approached with the help of questionnaires. Out of which 277 responded, whereas 16 individuals refused to respond. A total of 94% response rate.

a)   *Demographic information.*

Respondents were asked to indicate their gender by selecting from given options. The results provided a basic overview of the gender distribution among participants.

Table 7 : Gender of Respondents

GENDER	**FREQUENCY**	PERCENTAGE
Male	169	64,8%
Female	72	27,6%
Prefer not to say	20	7,7%
Total	261	100%

Source: Questionnaires.
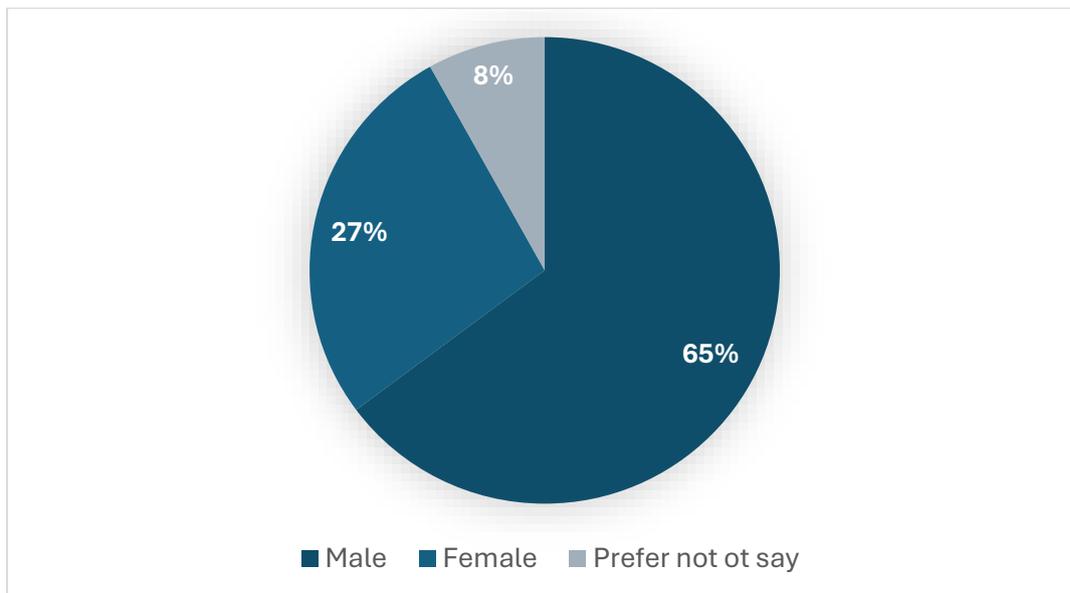
Figure 9 : Respondents Gender

✓ **Interpretation**

Out of the 261 respondents who answered the gender question, the majority 169 people (around 64,8%) identified as male. Another 72 respondents (about 27,6%) identified as female, while 20 people (7.7%) chose not to disclose their gender. This indicates that most of the participants were male.

Table 8 : Age of Respondents

AGE	FREQUENCY	PERCENTAGE
UNDER 18	19	7,3%
18-24	14	59%
25-34	56	21,5%
35-44	29	11,1%
+45	3	1.1%
TOTAL	261	100%

Source: Questionnaires.
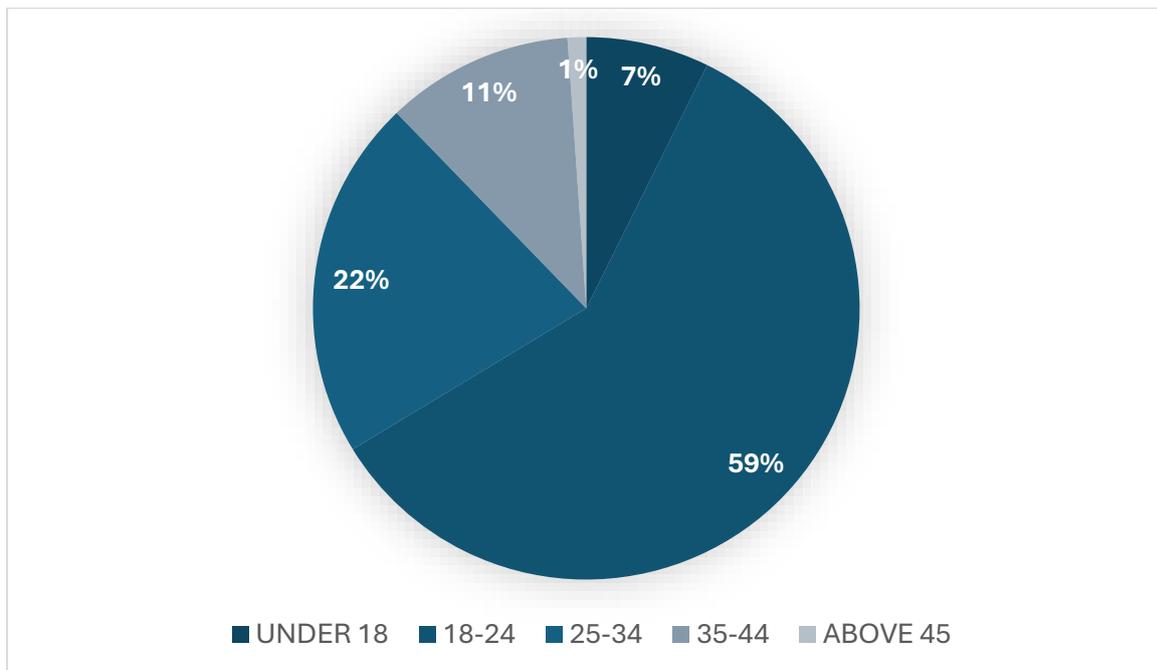
Figure 10 : Respondents Age

✓ **Interpretation**

Looking at the age breakdown of the 261 people who answered this question, most of them were between 18 and 24 years old, making up nearly 59% of the responses. The next largest group was 25 to 34 years old, with about 21.5%, followed by 35 to 44-year-olds at almost 11.1%. A smaller group of respondents, around 7.3%, were under 18, and just 3 people were over 45.

Overall, the data shows that the survey mainly attracted younger participants, which makes sense given the popularity of online shopping among this age group.

Conclusion:

The demographic data reveal that the majority of respondents were young males, with most participants falling in the 18 to 24 age group. Females and older age groups were less represented, and a small portion chose not to disclose their gender. This indicates that the survey primarily captured the opinions and behaviors of young male participants, which should be considered when interpreting the overall results of the study. The age and gender distribution aligns with trends in online engagement, suggesting that the findings may be particularly relevant to younger, male-dominated populations.

b) *Online Shopping Frequency:*

Respondents were asked how often they shop online. Out of 247 people who answered this question, the responses varied, giving a good sense of different shopping habits.

Table 9 : *Frequency of Online Shopping Among Respondents*

	Frequency	PERCENTAGE	Cumulative Percent
Rarely	53	20.3%	20.3 %
Occasionally	135	51,7%	72%
Frequently	65	24.9%	96.9 %
Very Frequently	8	3.1%	100%
Total	261	100%	

Source: Questionnaires
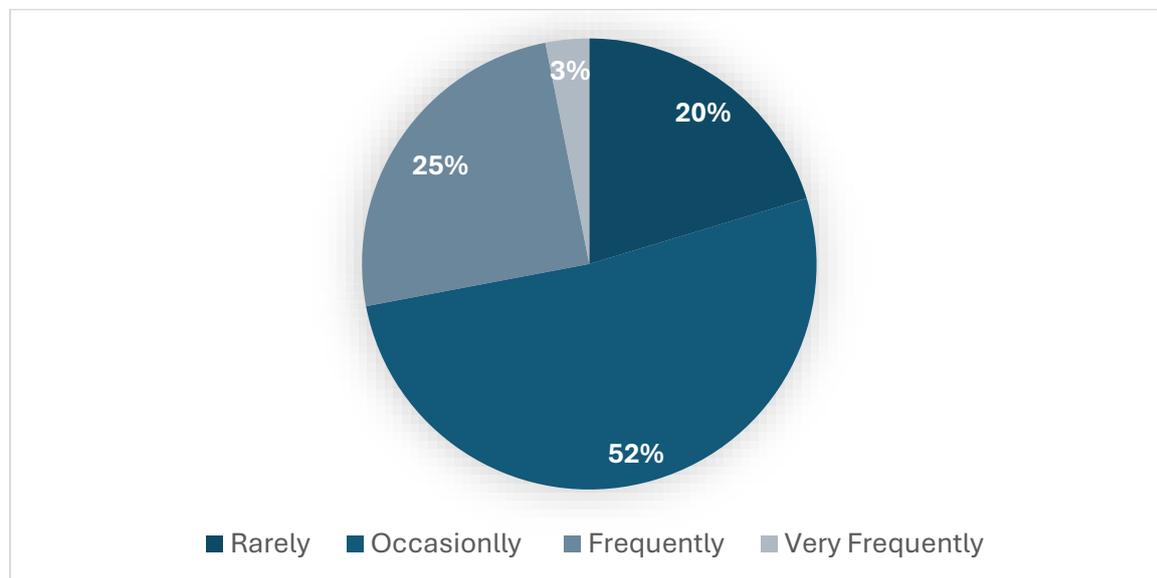
Figure 11 : *Online Shopping Frequency*

✓ **Interpretation**

The chart presents how often respondents shop online, based on percentage data from 261 participants. The results show a wide range of shopping behaviors.

A small portion of respondents shop rarely (1–2 times per year), making up 20% of the total. A larger group, 52%, said they shop occasionally (1–2 times per month). The most common response was frequently (1–2 times per week), chosen by 25% of participants, indicating that many people regularly shop online. Lastly, 3% of respondents reported shopping very frequently (3+ times per week).

4.2.2 Logistics Performance Factors:

a) Delivery speed:

Table 10 : *Importance of delivery speed*

	Frequency	PERCENTAGE	Percent Cumulative
Not important	40	15,3%	15,8%
Important	134	51,3%	66.6%
Very important	87	33.3%	100%
Total	261	100%	-

Source: Questionnaires.
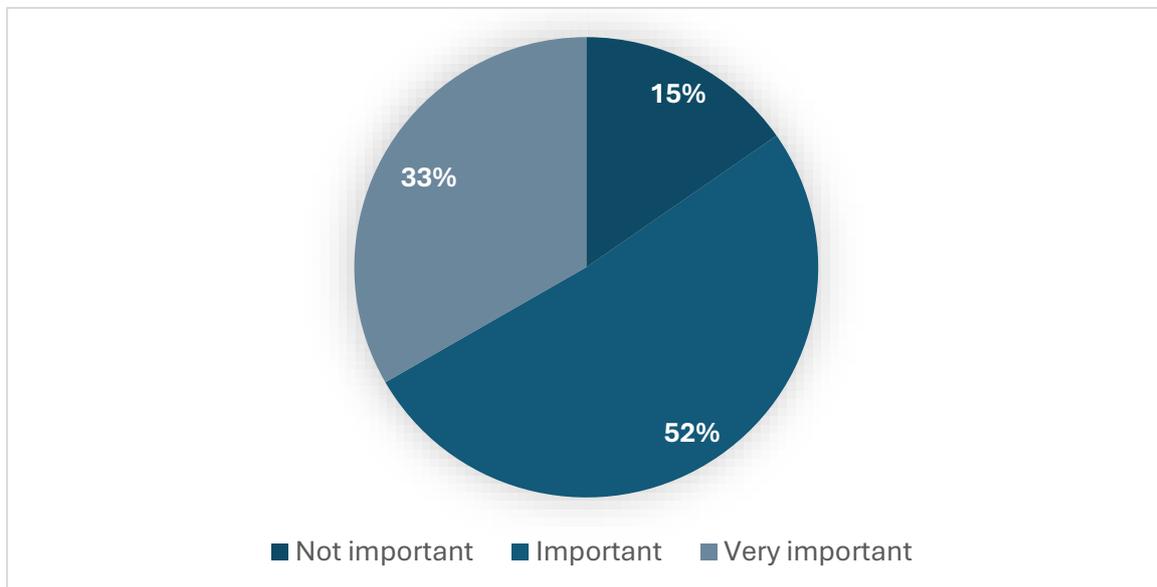
Figure 12 : *Importance Of Delivery Speed*

✓ **Interpretation**:

The majority of respondents consider delivery speed to be a key factor when shopping online, with 52% selecting important and 33% selecting very important. This indicates that timely delivery is a critical aspect of customer satisfaction in e-shopping. Only 15% of respondents viewed it as not important, showing that most online shoppers clearly expect fast delivery as a standard part of the shopping experience.

Table 11 : *Delivery takes place on the date specified at the order stage*

-	Frequency	PERCENTAGE	Percent Cumulative
Strongly Disagree	4	1.5%	1.5%
Disagree	14	5.4%	6.9%
Neutral	81	31%	37.9 %
Agree	140	53.6%	91.5
Strongly Agree	22	8.4%	100%
Total	261	100%	-

Source: Questionnaires.
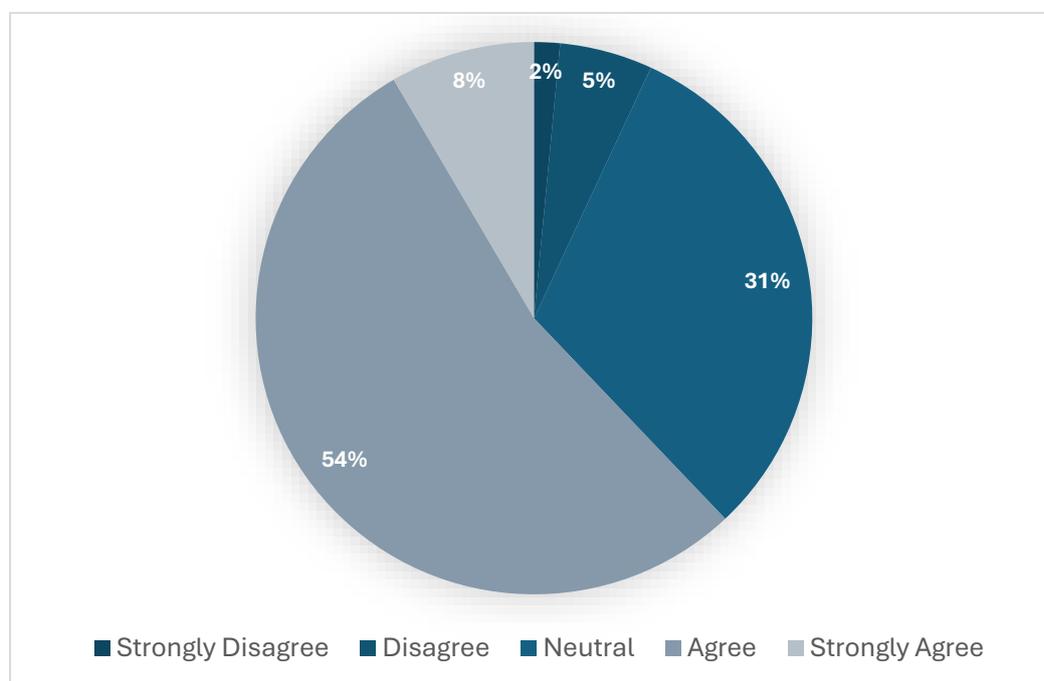
Figure 13 : *Delivery Occurs on Promised Date*

✓ **Interpretation:**

The majority of respondents (54%) agreed that their orders were delivered on the promised date, while 8% strongly agreed. This means that about 62% of participants had positive experiences with delivery punctuality. However, a significant portion (31%) remained neutral, possibly indicating mixed experiences. A smaller group disagreed (5%) or strongly disagreed (2%),. Overall, the results show that while many customers are satisfied with delivery speed, there is still room to improve consistency and reliability.

Table 12: *The time between placing an order and receiving an order is short*

-	Frequency	PERCENTAGE	Percent Cumulative
Strongly Disagree	24	9.2%	9.2%
Disagree	84	32.2%	41.2%
Neutral	73	28%	69.2%
Agree	56	21.5%	90.7%
Strongly Agree	24	9.2%	100%
Total	261	100%	-

Source: Questionnaires.
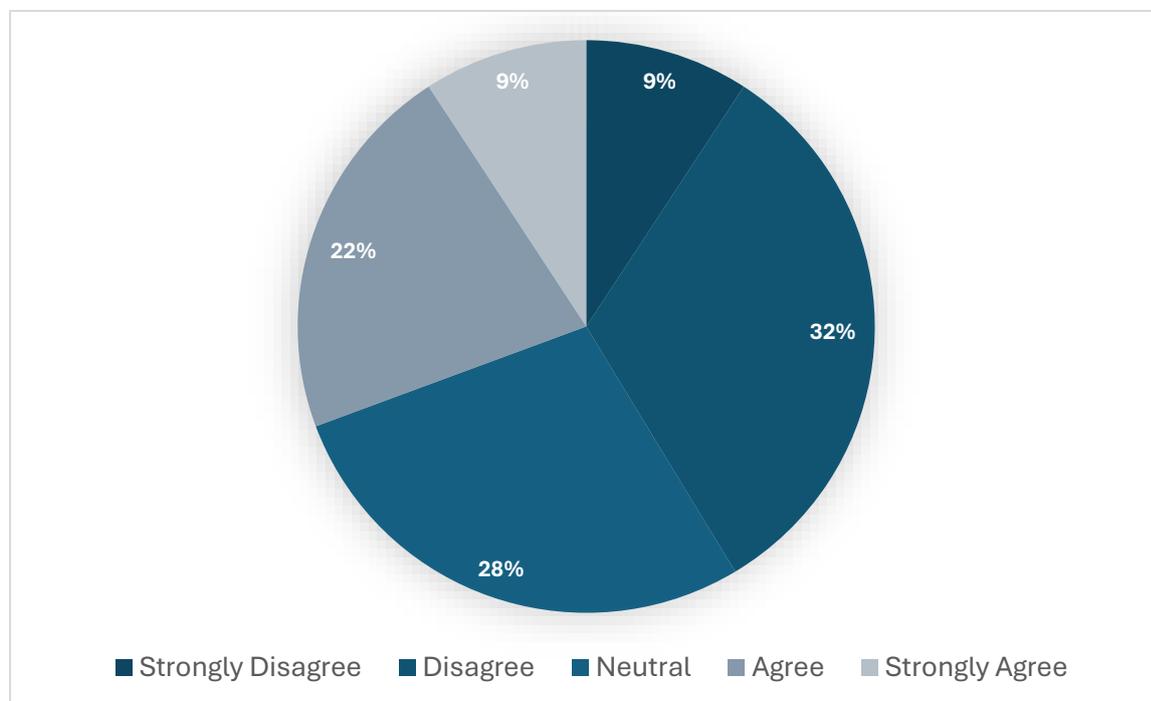
Figure 14 : *Time Between Order and Delivery*

✓ **Interpretation:**

The results show that opinions are quite mixed regarding delivery speed. About 32% of respondents disagreed, and 9% strongly disagreed that the time between placing and receiving an order is short, meaning over 41% had negative views about delivery speed. Meanwhile, 22% agreed, and 9% strongly agreed, showing that some customers do find it fast. Around 26% remained neutral.

Table 13 *: The delivery arrived on the same day I received the text message that my parcel was out for delivery*

-	Frequency	PERCENTAGE	Percent Cumulative
Very Unsatisfied	24	9.2%	9.2%
Unsatisfied	16	6.1%	15.3%
satisfied	139	53.3%	68.6%
Very satisfied	82	31.4%	100%
Total	261	100%	-

Source: Questionnaires.
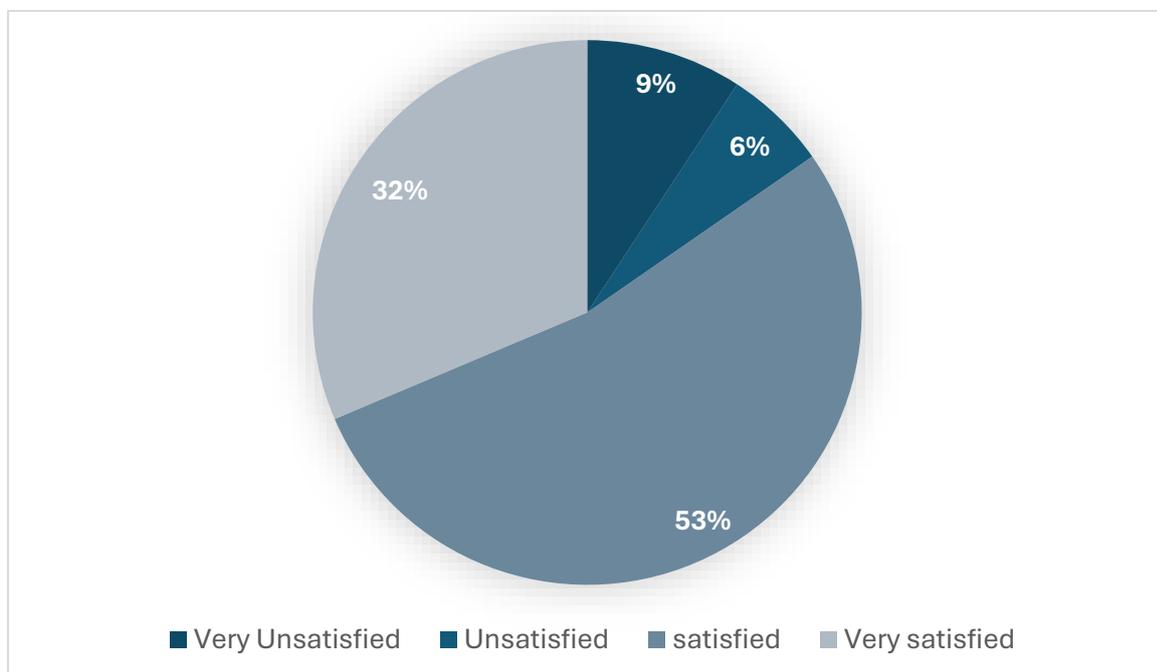
Figure 15 : *Same Day Delivery After Notification*

✓ **Interpretation:**

Most respondents were satisfied with how quickly their parcel arrived after receiving the delivery text. Over 53% said they were satisfied, and 32% were very satisfied, making up more than 85% of positive responses. Only a small percentage were unsatisfied (6%) or very unsatisfied (9%), which shows that same-day delivery after notification generally meets customer expectations.

b) Order Accuracy:

Table 14 : Delivery products are rarely delivered badly

-	Frequency	PERCENTAGE	Percent Cumulative
Strongly Disagree	22	8.4%	8.4%
Disagree	27	10.3%	18.7 %
Neutral	59	22.6%	41.3%
Agree	104	39.8%	81.1%
Strongly Agree	49	18.8%	100%
Total	261	100%	-

Source: Questionnaires.
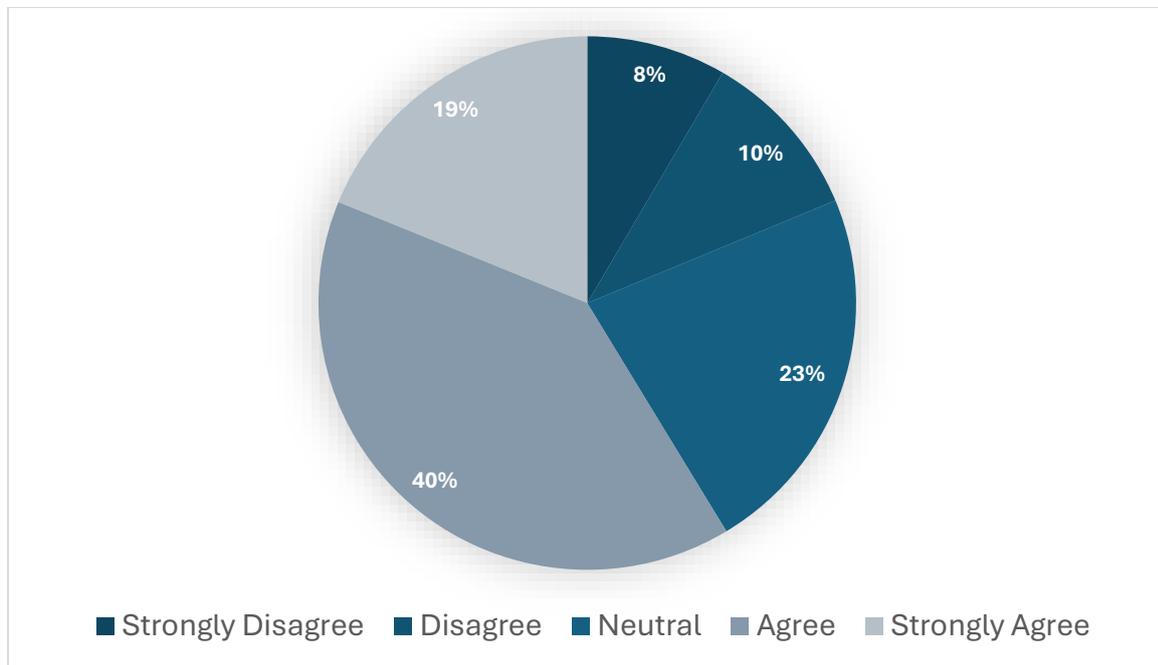
Figure 16 : Products Are Rarely Delivered in Bad Condition

✓ **Interpretation:**

The results show that most respondents had positive experiences with the condition of their delivered products. Around 40% agreed and 19% strongly agreed that products are rarely delivered in bad condition, with a combined 59% expressed satisfaction. About 23% were neutral, possibly indicating that their experiences were mixed. On the other hand, 10% disagreed, and 8% strongly disagreed, showing that a small portion of respondents have faced issues with damaged or poorly handled items. Overall, most customers seem to trust the quality of deliveries they receive.

Table 15 : *The Delivery product comply with the conditions specified at the order stage*

-	Frequency	PERCENTAGE	Percent Cumulative
Strongly Disagree	29	11.1%	11.1%
Disagree	5	1.9%	13%
Neutral	53	20.3%	33.3%
Agree	149	57.1%	90.4%
Strongly Agree	25	9.6%	100%
Total	261	100%	-

Source: Questionnaires.
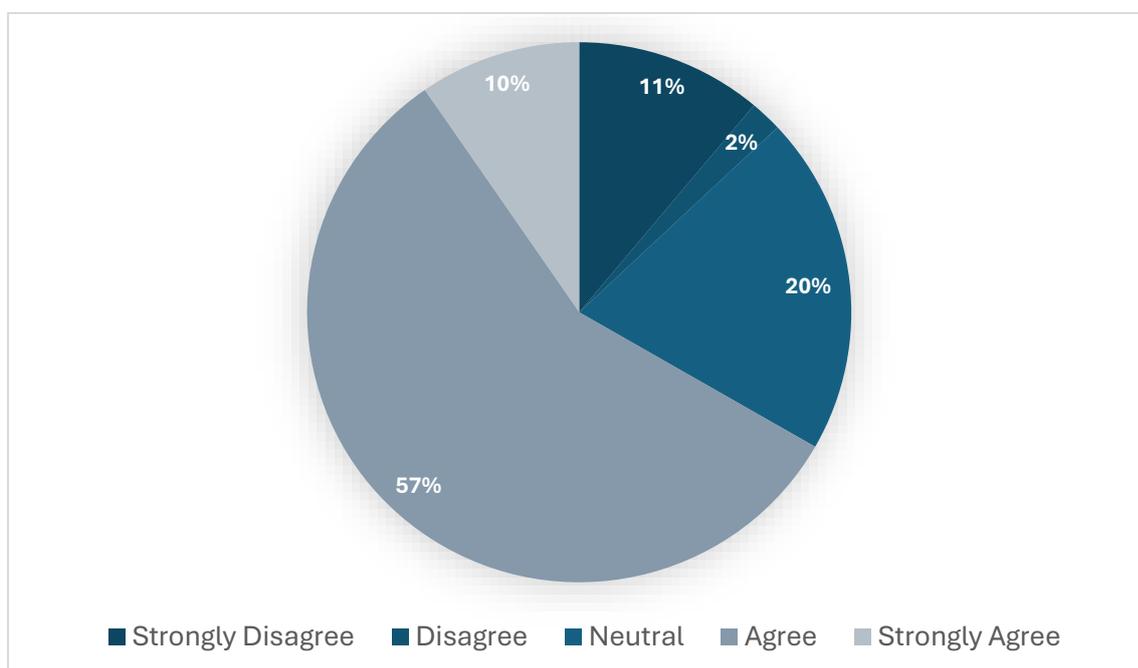
Figure 17 : *Products Match Conditions Specified During Order*

✓ **Interpretation:**

The majority of respondents felt that the products they received matched what was promised when ordering. About 57% agreed, and 10% strongly agreed, combined 67% expressing satisfaction. Meanwhile, 20% gave a neutral response, possibly reflecting mixed or uncertain experiences. On the other hand, 11% strongly disagreed and 2% disagreed, making up 13% of respondents who were not satisfied. Overall, most customers seem to believe they get what they order, though there's still a small group that experiences inconsistencies.

Table 16 : *Wrong product delivery are not made*

-	Frequency	PERCENTAGE	Percent Cumulative
Strongly Disagree	11	4.2%	4.2%
Disagree	95	36.5%	40.7%
Neutral	57	21.9%	62.6%
Agree	69	26.5%	89.1%
Strongly Agree	28	10.8%	100%
Total	261	100%	-

Source: Questionnaires.
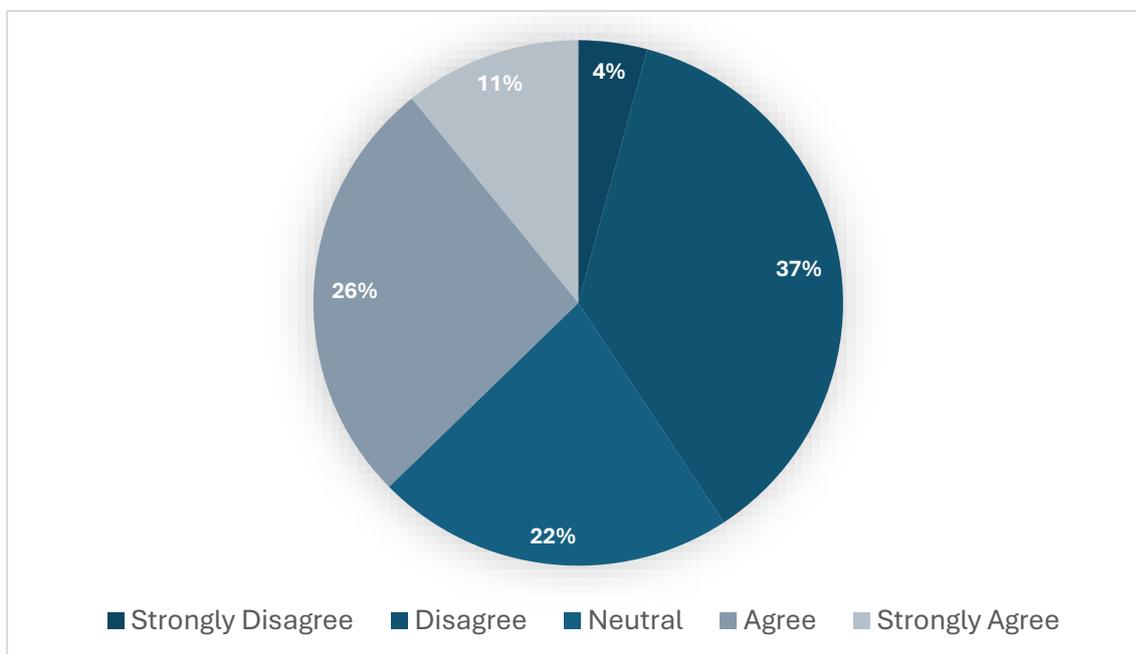
Figure 18 : *Wrong Products Are Rarely Delivered*

✓ **Interpretation:**

The responses show mixed experiences with wrong product deliveries. About 37% disagreed, and 4% strongly disagreed, meaning over 41% of respondents have likely experienced receiving incorrect items. On the other hand, 26% agreed, and 11% strongly agreed that wrong deliveries are rare, totaling 37% with positive views. 22% remained neutral, possibly indicating occasional or unclear experiences. Overall, while many respondents are satisfied, a significant number have faced issues with wrong product deliveries.

c) Return Process:

Table 17: *The return cost is totally affordable for me.*

-	Frequency	PERCENTAGE	Percent Cumulative
Strongly Disagree	41	15.7%	15.7%
Disagree	42	16.1%	31.8%
Neutral	60	23%	54.8%
Agree	101	38.7%	93.5%
Strongly Agree	17	6.5%	100%
Total	261	100%	-

Source: Questionnaires.
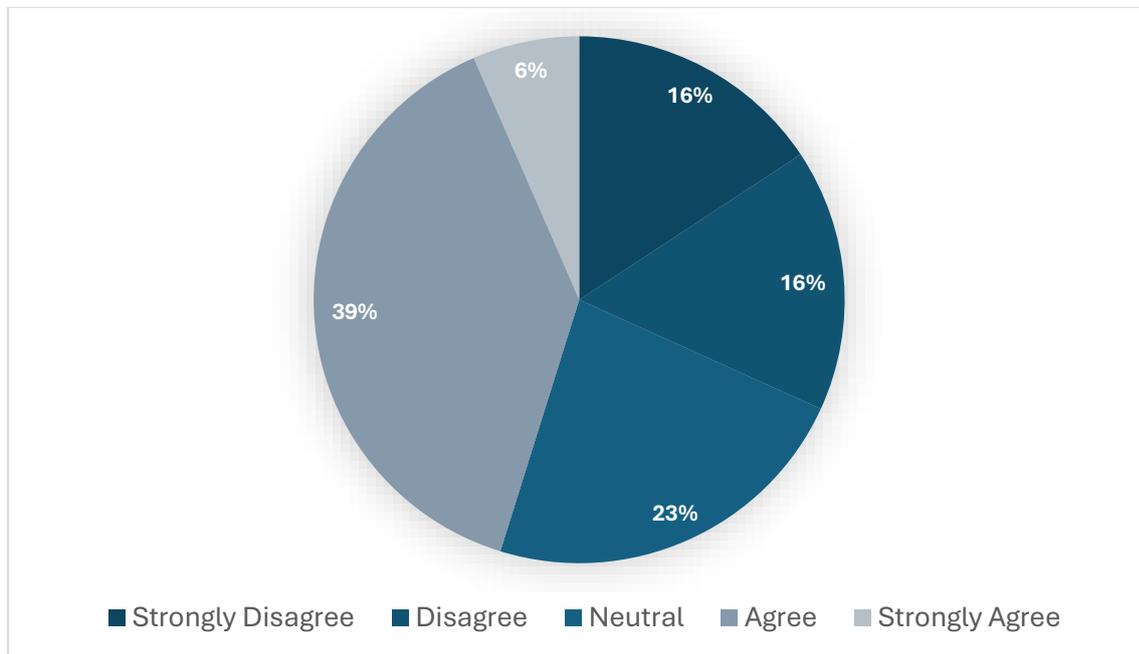
Figure 19 : *Return Cost Is Affordable*

✓ **Interpretation:**

The results show that many respondents find return costs manageable. About 39% agreed and 6% strongly agreed, meaning 45% feel that return costs are affordable. However, 16% strongly disagreed, and 16% disagreed, totaling over 32% who find return costs too high. 23% stayed neutral, possibly unsure or having no strong opinion. Overall, while a good portion of respondents are satisfied, there's still a notable number who feel return costs could be improved.

Table 18 : *The return process is simple & easy to understand*

-	Frequency	PERCENTAGE	Percent Cumulative
Strongly Disagree	65	24.9%	24.9%
Disagree	99	37.9%	62.8%
Neutral	28	10.7%	73.5%
Agree	54	20.7%	94.2%
Strongly Agree	15	5.7%	100%
Total	261	100%	-

Source: Questionnaires.
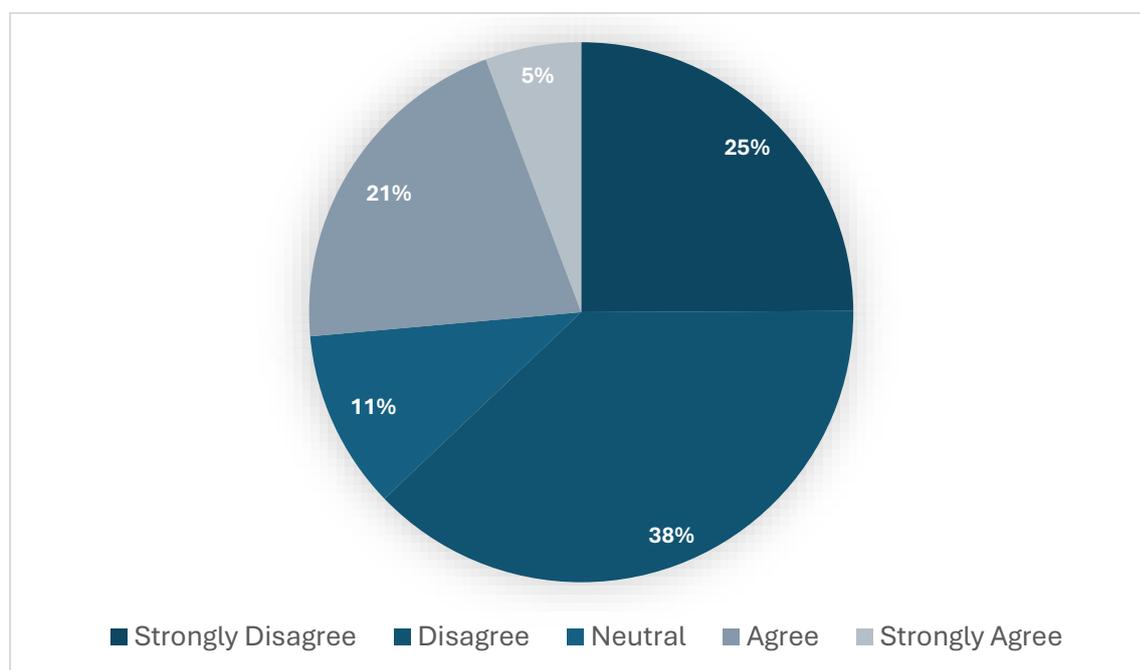
Figure 20 : *The Return Process is Simple & Easy to Understand*

✓ **Interpretation**

The results suggest that many respondents find the return process challenging. A large portion, 38%, disagreed, and 25% strongly disagreed, together with making up 63% of participants who do not find the return process simple or clear. Only 21% agreed, and 5% strongly agreed, showing that just over 21% had a positive view. 11% remained neutral.

Overall, the data highlights a need for improvement in making return procedures easier and more understandable for online shoppers.

Table 19 : *The return duration is acceptable until the seller receives the returned product*

-	Frequency	PERCENTAGE	Percent Cumulative
Strongly Disagree	39	14.9%	14.9%
Disagree	52	19.9%	34.8%
Neutral	102	39.1%	73.9%
Agree	67	25.7%	99.6%
Strongly Agree	1	0.4%	100%
Total	261	100%	-

Source: Questionnaires.
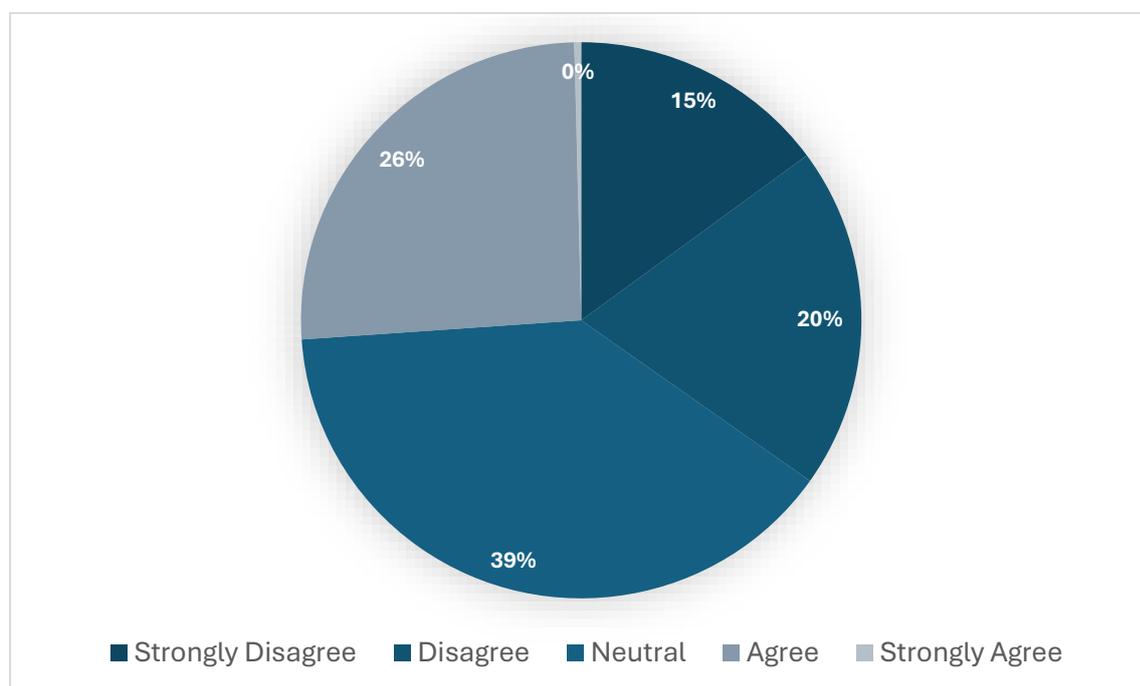
Figure 21 : *Return Duration Is Acceptable Until Seller Receives the Product*

✓ **Interpretation**

The responses show that many participants have mixed or negative views about return duration. A large portion of 39% responded neutrally, possibly indicating uncertainty or mixed experiences. Meanwhile, 15% strongly disagreed, and 20% disagreed, meaning over 35% of respondents are not satisfied with the time it takes for returns to be completed. Only 26% agreed and 0.3% strongly agreed that the return duration is acceptable, making up about 27% with a positive view. Overall, the data suggests that return time may not meet the expectations of many online shoppers.

d) Last-Mile Delivery:

Table 20 *: The delivery rider has demonstrated knowledge of the local area*

-	Frequency	PERCENTAGE	Percent Cumulative
Very Unsatisfied	29	11.1%	11.1%
Unsatisfied	30	11.5%	22.6%
satisfied	172	65.9%	88.5%
Very satisfied	30	11.5%	100%
Total	261	100%	-

Source: Questionnaires.
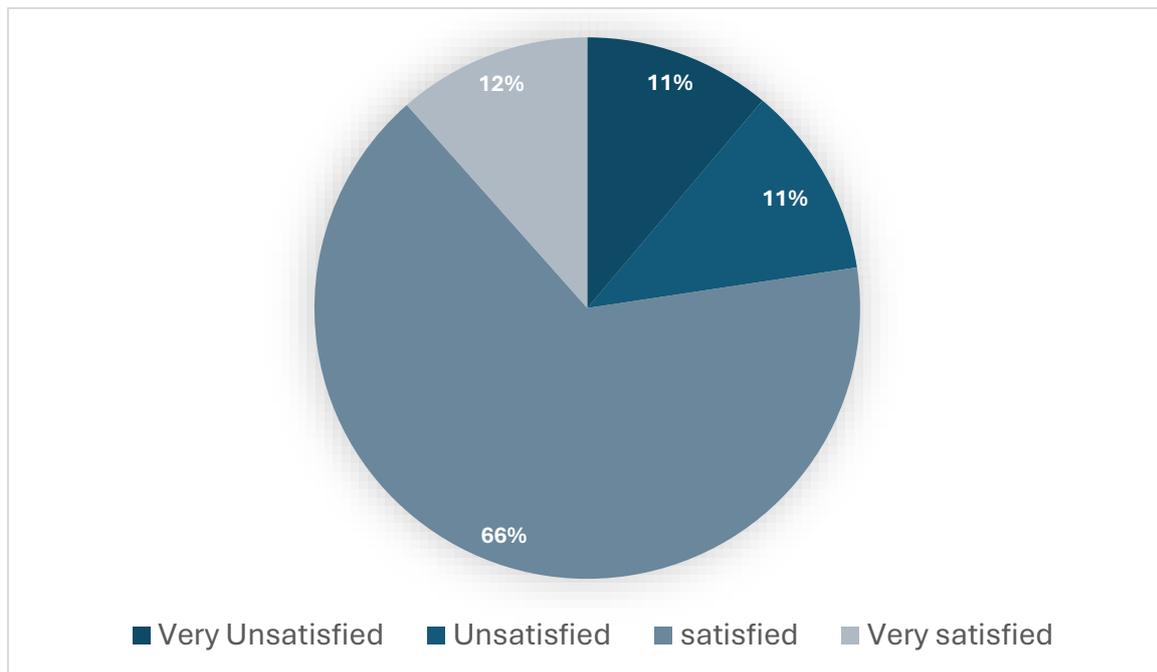
Figure 22 : *Delivery Rider Knows the Local Area*

✓ **Interpretation:**

The data suggests that most respondents had a positive experience with delivery riders' familiarity with their local area. A significant 66% of participants reported being satisfied, while 12% were very satisfied, contributing to nearly 78% overall satisfaction. However, 11% were unsatisfied, and another 11% were very unsatisfied, showing that while the majority had smooth delivery experience, a small portion of respondents may have encountered location-related delivery issues.

Table 21 : The delivery rider has communicated with me respectfully and politely

-	Frequency	PERCENTAGE	Percent Cumulative
Very Unsatisfied	5	1.9%	1.9%
Unsatisfied	49	18.8%	20.7%
satisfied	114	43.7%	64.4%
Very satisfied	93	35.6%	100%
Total	261	100%	-

Source: Questionnaires.
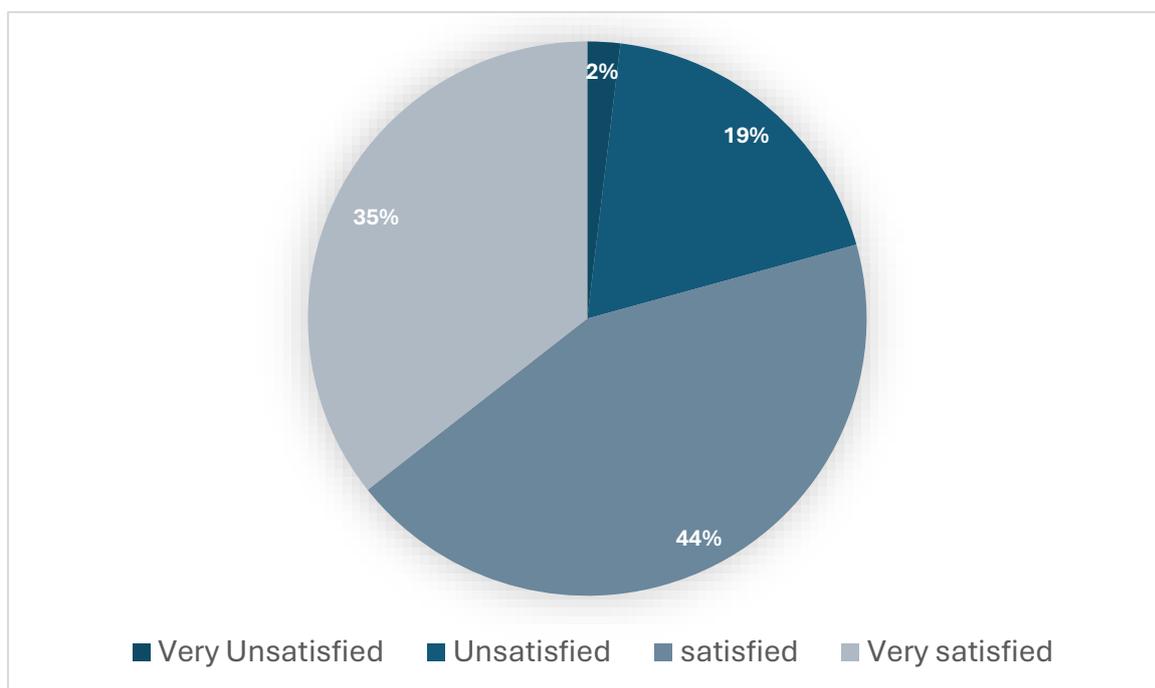
Figure 23 : Delivery Rider Communicated Respectfully & Politely

✓ **Interpretation:**

The results show that most respondents had a positive experience when it came to how delivery riders communicated. A large portion 44% said they were satisfied, while 35% were very satisfied, adding up to nearly 79% overall positive feedback.

However, 19% reported being unsatisfied, and a small 2% were very unsatisfied, indicating that while the majority had good interactions, there's still a group of customers who felt the communication could have been more respectful or polite.

Table 22 : The delivery rider has followed the instructions given for the delivery address

-	Frequency	PERCENTAGE	Percent Cumulative
Very Unsatisfied	14	5.4%	5.4%
Unsatisfied	15	5.7%	11.1%
satisfied	154	59%	70.1%
Very satisfied	78	29.9%	100%
Total	261	100%	-

Source: Questionnaires.
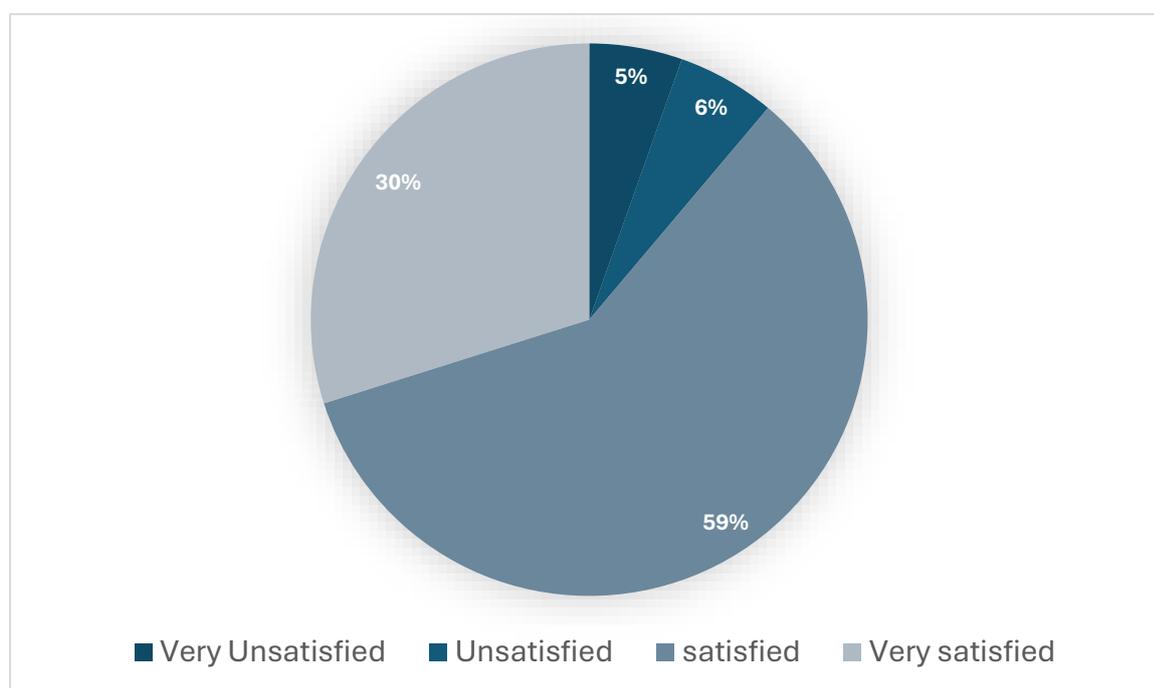
Figure 24 : Delivery Rider Followed Delivery Instructions

✓ **Interpretation:**

The results indicate that most respondents were pleased with how well delivery riders followed the instructions given. A significant 59% were satisfied, and 30% were very satisfied, meaning nearly 90% of participants had a positive experience in this area.

On the other hand, only 6% reported being unsatisfied, and another 5% were very unsatisfied, showing that delivery accuracy is generally strong, with only a small portion of users experiencing issues

Table 23 *: The delivery rider has maintained a professional manner throughout the delivery process*

-	Frequency	PERCENTAGE	Percent Cumulative
Very Unsatisfied	14	5.4%	5.6%
Unsatisfied	23	8.8%	14.2%
satisfied	143	54.8%	69%
Very satisfied	81	31%	100%
Total	261	100%	-

Source: Questionnaires.
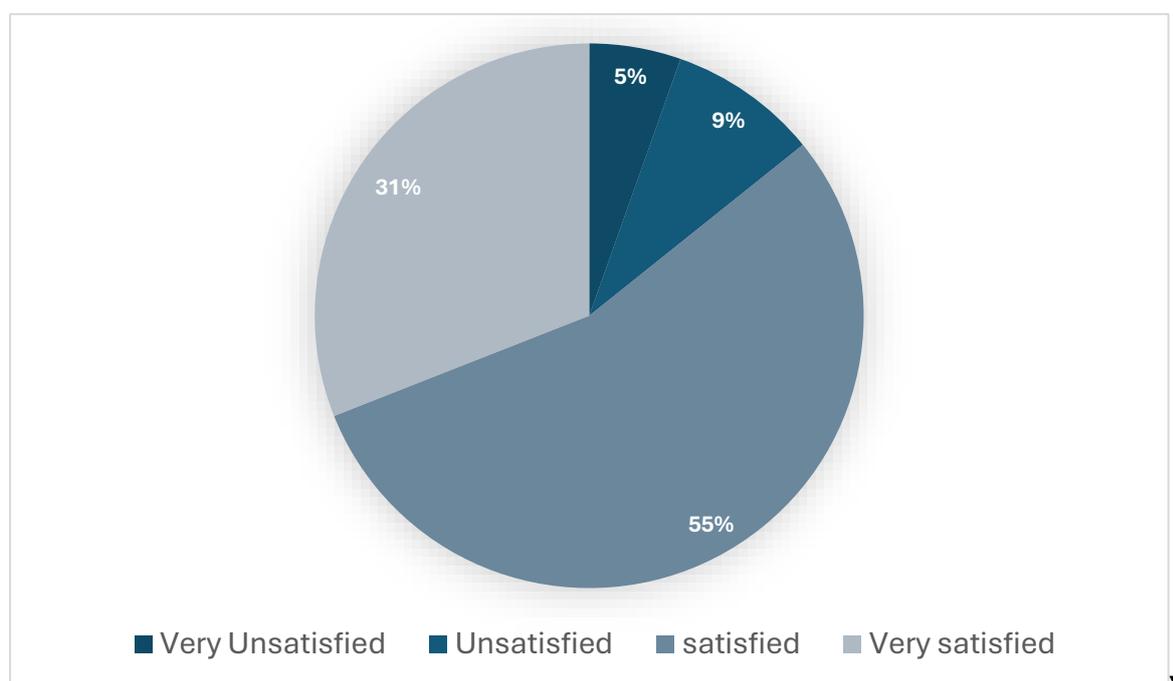
Figure 25 *: Delivery Rider Maintained a Professional Manner*

✓ **Interpretation:**

The results indicate that most respondents were pleased with the professionalism of the delivery riders. A significant 55% were satisfied, and 31% were very satisfied, meaning over 85% had a positive experience.

On the other hand, only 9% reported being unsatisfied, and about 5% were very unsatisfied, showing that while most deliveries were handled professionally, there's still a small group who faced fewer positive interactions.

Table 24 : I am satisfied with the overall logistics process of the online store

-	Frequency	PERCENTAGE	Percent Cumulative
Strongly Disagree	14	5.4%	5.4%
Disagree	1	0.4%	5.8%
Neutral	54	20.8%	26.6%
Agree	127	48.4%	75%
Strongly Agree	64	24.6%	100%
Total	260	100%	-

Source: Questionnaires.
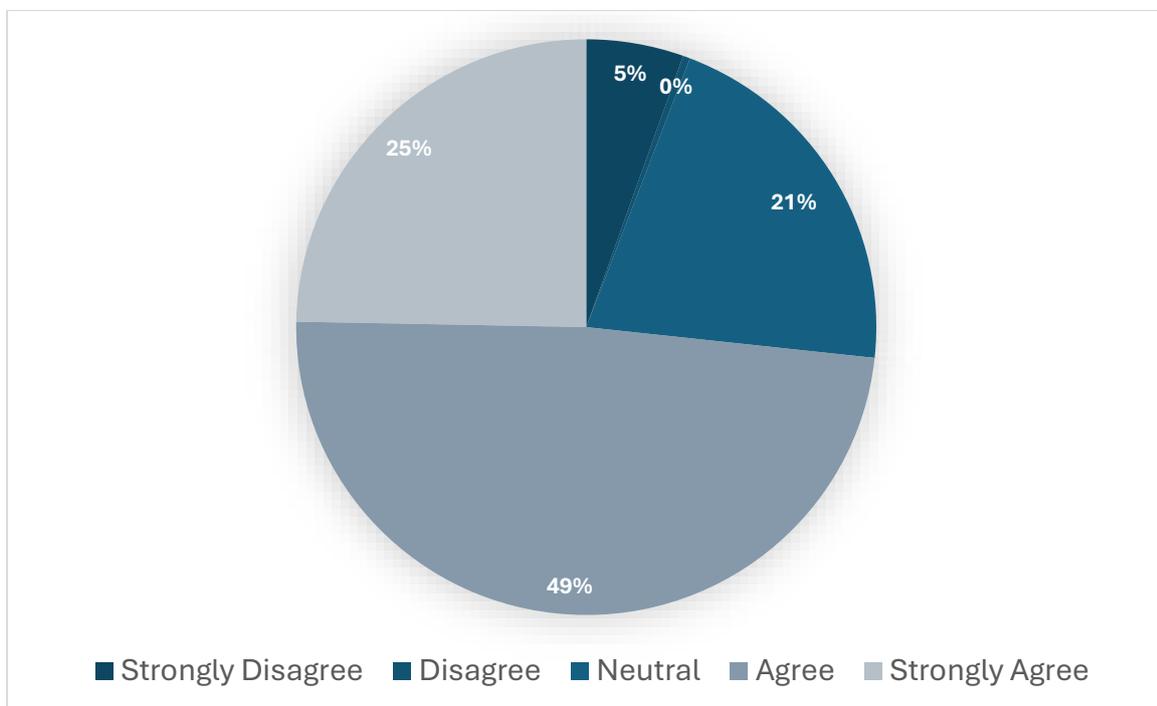
Figure 26 : Customer Satisfaction with Overall Logistics Process

✓ **Interpretation**

Most customers are happy with how the online store handles its logistics. About 49% agree, and 25% strongly agree that the logistics process is good, which means nearly 3 out of 4 people are satisfied. This shows that having fast and reliable deliveries is very important to shoppers.

Only a few people didn't like logistics (about 5%), and about 21% felt neutral, meaning they didn't have a strong opinion

Table 25 : *The logistics Service Met My Expectations*

-	Frequency	PERCENTAGE	Percent Cumulative
Strongly Disagree	24	9.2%	9.6%
Disagree	15	5.7%	14.9%
Neutral	27	10.3%	25.2%
Agree	54	20.7%	45.9%
Strongly Agree	141	54%	100%
Total	261	100%	-

Source: Questionnaires.
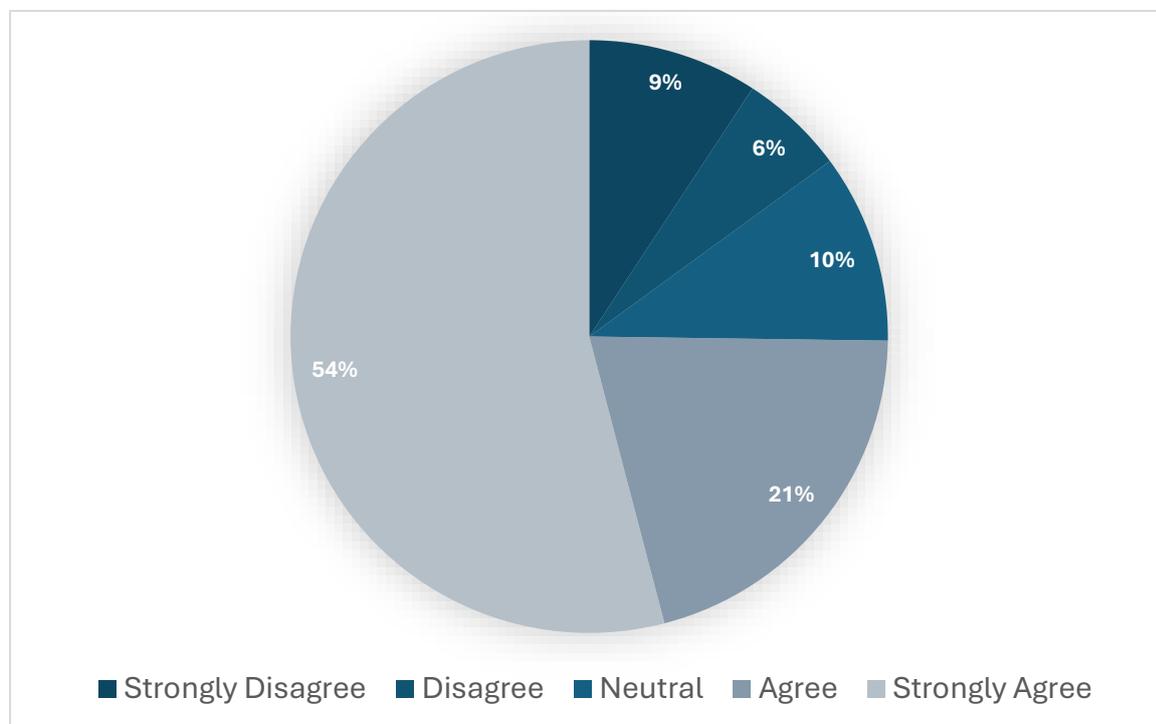
Figure 27 : *The logistics Service Met My Expectations*

- ✓ **Interpretation:**

The findings reveal that the logistics service met the expectations of most customers. A significant 54% strongly agreed, and 21% agreed that the service met their expectations, together accounting for 75% of all responses. In contrast, only 9% strongly disagreed, and 6% disagreed, showing that very few customers were dissatisfied with the service. About 10% of respondents remained neutral.

4.3 Descriptive Analysis

This section presents a descriptive analysis of the key variables examined in this study. Descriptive statistics, including the mean, standard deviation, minimum, and maximum values, are used to summarize respondents' perceptions of the main logistics process factors: Delivery Speed, Order Accuracy, Return Process, and Last-Mile Delivery, as well as Customer Satisfaction. These statistics provide an overview of the central tendencies and variability within the dataset and help illustrate how customers evaluate different aspects of logistics performance in the context of e-shopping. The descriptive analysis serves as a foundational step for understanding overall response patterns and supports the subsequent correlation and regression analyses that assess the relationships among the study variables.

4.3.1 Delivery Speed

Table 26 : Descriptive Statistics for Delivery Speed

Variables	N	Mean	Std. Deviation	Min	Max
Delivery Speed	261	3.45	0.784	1	5

Source: Questionnaires.

✓ **Interpretation:**

The descriptive results show that respondents rated delivery speed at a mean of 3.45 on a 5-point scale, indicating moderately positive perceptions of how quickly their orders were delivered. The standard deviation of 0.784 suggests low to moderate variability, meaning most customers shared similar views regarding delivery speed. Overall, customers generally perceive delivery speed as satisfactory, although there is still room for improvement in providing faster and more consistent delivery.

4.3.2 Order Accuracy

Table 27 : Descriptive Statistics for Order Accuracy

Variables	N	Mean	Std. Deviation	Min	Max
Order Accuracy	260	3.35	0.583	1	5

Source: Questionnaires.

✓ **Interpretation:**

The table presents descriptive statistics for the Order Accuracy variable based on 261 responses. The combined score has a mean score of 3.35, which indicates that respondents generally reported positive perceptions of order accuracy, suggesting that most customers received the correct items. The standard deviation of 0.583 reflects low variability, meaning customer experiences were relatively consistent.

Overall, order accuracy is above average, but improvements could further minimize occasional errors reported by some customers.

4.3.3 Return Process

Table 28 : *Descriptive Statistics for Return Process*

Variables	N	Mean	Std. Deviation	Min	Max
Return Process	261	2.75	0.555	1	5

Source: Questionnaires.

✓ **Interpretation:**

The table presents descriptive statistics for the Return Process variable based on 261 responses. With a mean score of 2.75, customer perceptions of the return process are neutral to slightly negative, suggesting that many respondents did not find the process particularly easy or convenient. The standard deviation of 0.555 indicates relatively consistent responses, meaning most customers shared similar experiences.

Overall, the results show that the return process is an area needing improvement, as customers generally do not view it as smooth or hassle-free.

4.3.4 Last-Mile Delivery

Table 29 : *Descriptive Statistics for Last-Mile Delivery*

Variables	N	Mean	Std. Deviation	Min	Max
Last-Mile Delivery	261	3.71	0.607	1	5

Source: Questionnaires.

✓ **Interpretation**

The last-mile delivery component, measured using four items and averaged into a composite score, yielded a mean of 3.71, indicating that respondents were highly satisfied with last-mile delivery performance. The standard deviation of 0.607 suggests low variability, showing that most customers consistently rated last-mile delivery positively.

Overall, customers perceive last-mile delivery as reliable and efficient.

4.3.5 Overall Logistics Satisfaction

Table 30 : *Descriptive Statistics for Overall Logistics Satisfaction*

Variables	N	Mean	Std. Deviation	Min	Max
Overall Logistics Satisfaction	260	3.96	1.030	1	5

Source: Questionnaires.

✓ **Interpretation**

The overall logistics satisfaction score has a mean of 3.96, indicating that respondents were generally satisfied with the logistics services. The standard deviation of 1.030 shows wider variability, meaning that while many customers were satisfied, others expressed mixed or less favorable experiences.

4.3.6 Summary of Descriptive Analysis

The descriptive statistics reveal that customers generally have positive perceptions of logistics performance in e-shopping. Last-mile delivery (mean = 3.71) and delivery speed (mean = 3.45) received moderately high ratings, while order accuracy was also above average (mean = 3.35). Overall logistics satisfaction was relatively high (mean = 3.96), although responses showed greater variability, indicating some mixed experiences. In contrast, the return process received the lowest rating (mean = 2.75), highlighting it as the main area needing improvement. These findings provide a foundation for examining the relationships between logistics factors and overall customer satisfaction in the subsequent analyses.

The next section will explore correlation analysis to examine how each logistics factor relates to overall customer satisfaction.

4.4 Correlation analysis

A correlation analysis was conducted to examine the relationships between customer satisfaction (the dependent variable) and key logistics process factors (the independent variables), namely Delivery Speed, Order Accuracy, Return Process, and Last-Mile Delivery. Pearson's correlation was applied, depending on the scale level and distribution of the variables. All analyses were performed using IBM SPSS Statistics, ensuring appropriate handling of the data and robust statistical results. This approach helps identify which logistics factors are most strongly associated with customer satisfaction, providing useful insights for improving service quality.

4.4.1 Delivery Speed

Table 31 : *Correlation analysis of Delivery Speed*

Correlations			
		Customer satisfaction	Delivery Speed
Customer satisfaction	Pearson Correlation	1	,519**
	Sig. (2-tailed)		<,001
	N	260	260
Delivery Speed	Pearson Correlation	,519**	1
	Sig. (2-tailed)	<,001	
	N	260	261

Source: Author

✓ **Interpretation**

The analysis reveals a statistically significant, moderate positive correlation between delivery speed and customer satisfaction ($r = 0.519$, $p < 0.001$). This indicates that faster delivery times are consistently associated with higher levels of customer satisfaction among online shoppers. This finding strongly aligns with the theoretical framework established in the literature review. Scholars such as Akıl & Ungan (2022) and Handayani (2021) have identified delivery timeliness as a fundamental expectation and a direct contributor to positive customer experiences. Furthermore, the result supports the multidimensional view of Kaligis et al. (2024), who posit delivery accuracy (a component of speed and scheduling) as a key dimension of service quality impacting satisfaction. Similarly, Tandon (2022)

highlights delivery speed as a value-added logistics service that directly shapes customer expectations and post-purchase evaluations.

Overall, the strong correlation confirms that delivery speed is not merely an operational metric but a key experiential factor in shaping customer satisfaction in e-shopping.

4.4.2 Order Accuracy

Table 32 : *Correlation analysis of Order Accuracy*

Correlations		Customer satisfaction	Order Accuracy
Customer satisfaction	Pearson Correlation	1	,446**
	Sig. (2-tailed)		<,001
	N	260	260
Order Accuracy	Pearson Correlation	,446**	1
	Sig. (2-tailed)	<,001	
	N	260	260

Source: Author

✓ **Interpretation**

The Pearson correlation analysis was performed to examine the relationship between order accuracy and customer satisfaction. The results indicate a moderate positive correlation between the two variables (r = 0.446, p < 0.001). This suggests that higher order accuracy is associated with higher customer satisfaction. The correlation is statistically significant at the 0.01 level, indicating that the observed relationship is unlikely to have occurred by chance.

This finding aligns with existing literature emphasizing the importance of order accuracy in logistics performance. Vakulenko et al. (2024) argue that accurate order fulfillment is essential for maintaining customer trust and satisfaction, particularly in e-shopping environments where customers cannot physically inspect products before purchase.

The correlation analysis confirms that order accuracy is a vital logistics factor contributing to customer satisfaction in e-shopping.

4.4.3 Return Process

Table 33 : Correlation analysis of Return Process

Correlations		Customer satisfaction	Return
Customer satisfaction	Pearson Correlation	1	,076
	Sig. (2-tailed)		,223
	N	260	260
Return	Pearson Correlation	,076	1
	Sig. (2-tailed)	,223	
	N	260	261

Source: Author

✓ **Interpretation**

The Pearson correlation analysis was conducted to examine the relationship between product returns and customer satisfaction. The results indicate a very weak positive correlation between the two variables ($r = 0.076$, $p = 0.223$). However, this correlation is not statistically significant at the 0.05 level, suggesting that there is no meaningful relationship between returns and customer satisfaction in this sample.

This finding gives a clearer understanding when considered alongside past research. While scholars like Rogers & Tibben-Lembke and de Brito & Dekker (2002) frame return management as a strategic process integral to supply chain and value recovery, its role in driving satisfaction may be different. The result implies that a well-managed return process may function more as a "hygiene factor" that prevents severe dissatisfaction when problems occur. It highlights a potential gap between operational importance and its direct emotional impact on customer experience.

4.4.4 Last-Mile Delivery

Table 34 : Correlation analysis of Last-Mile Delivery

Correlations		Customer satisfaction	Last-Mile Delivery
Customer satisfaction	Pearson Correlation	1	,634[**]
	Sig. (2-tailed)		<,001
	N	260	260
Last-Mile Delivery	Pearson Correlation	,634[**]	1
	Sig. (2-tailed)	<,001	
	N	260	261

Source: Author

✓ **Interpretation**

The Pearson correlation analysis was conducted to examine the relationship between last-mile delivery performance and customer satisfaction. The results indicate a strong positive correlation between the two variables ($r = 0.634$, $p < 0.001$). This is the strongest relationship among all variables studied

This finding powerfully corroborates the literature on the critical nature of the last mile. Lim, Jin, & Srai (2023) define last-mile delivery as the crucial final leg to the customer's chosen location, while Samet (2024) emphasizes it as the most visible and customer-facing stage. The strength of this correlation empirically confirms their assertions that last-mile delivery is disproportionately impactful on customer perception

4.4.5 Summary of Correlation Analysis

A Pearson correlation analysis was conducted to examine the relationships between customer satisfaction (dependent variable) and four key logistics factors: Delivery Speed, Order Accuracy, Return Process, and Last-Mile Delivery. The results reveal the following:

Table 35 : *Summary of Correlations Between Key Independent Variables and Customer Satisfaction*

Independent Variable	Pearson Correlation (r)	Significance (p-value)	Interpretation
Delivery Speed	0.519	< 0.001	Moderate positive correlation: faster delivery increases customer satisfaction.
Order Accuracy	0.446	< 0.001	Moderate positive correlation: accurate orders improve customer satisfaction.
Return Process	0.076	0.223	shows a weak but statistically significant relationship with satisfaction.
Last-Mile Delivery	0.634	< 0.001	Strong positive correlation: efficient last-mile delivery strongly enhances customer satisfaction.

Source: Author

Overall Conclusion: Delivery Speed, Order Accuracy, and Last-Mile Delivery significantly influence customer satisfaction, with Last-Mile Delivery having the most pronounced effect. In contrast, the Return Process does not appear to affect customer satisfaction in this sample. These findings suggest that logistics management strategies should prioritize efficient delivery and order accuracy to enhance customer satisfaction.

These results provide a foundation for further analysis. To determine the predictive effects of these logistics' factors on customer satisfaction and to test the proposed hypotheses, a regression analysis will be conducted in the next section.

4.5 Regression analysis:

A regression analysis was conducted to test the hypotheses regarding the impact of key logistics process factors (Delivery Speed, Order Accuracy, Return Process, and Last-Mile Delivery) on overall customer satisfaction. The model's overall significance was assessed using ANOVA, while the individual contributions of the predictors were evaluated through regression coefficients and t-tests. The model fit was examined using R and R-squared values. This analysis was used to test the study's

core hypotheses. All analyses were performed using IBM SPSS Statistics to ensure accurate and reliable results.

4.5.1 Hypothesis Recap for Regression Analysis

H1: Delivery speed has a positive impact on customer satisfaction in e-shopping.

H2: Order accuracy has a positive impact on customer satisfaction in e-shopping.

H3: Return process efficiency has a positive impact on customer satisfaction in e-shopping.

H4: Last-mile delivery has a positive impact on customer satisfaction in e-shopping.

H5: Delivery speed has a stronger effect on customer satisfaction compared to other factors.

4.5.2 Regression Results and Hypothesis Testing

Table 36 : Regression Results Testing Hypotheses H1-H5

Predictor	B	SE	β	t	p	Hypothesis	Result
Constant	-1.44	0.42	–	-3.42	<.001	–	–
Delivery Speed	0.21	0.08	0.16	2.54	0.012	H1	Supported
Order Accuracy	0.41	0.09	0.23	4.64	<0.001	H2	Supported
Return Process	0.20	0.09	0.11	2.30	0.022	H3	Supported
Last-Mile Experience	0.74	0.11	0.43	6.56	<0.001	H4	Supported

Source: Author

4.5.3 Interpretation of Results

The regression model was statistically significant, $F_{(4, 255)} = 56.32$, $p < .001$, and explained 46.9% of the variance in customer satisfaction ($R^2 = .469$). As shown in Table 1:

- **H1** (Delivery Speed) is supported ($\beta = 0.16$, $p = .012$)

- **H2** (Order Accuracy) is strongly supported ($\beta = 0.23$, $p < .001$)

- **H3** (Return Process) is supported ($\beta = 0.11$, $p = .022$)

- **H4** (Last-Mile Experience) is strongly supported ($\beta = 0.43$, $p < .001$)

However, H5 is NOT supported. Delivery speed ($\beta = 0.16$) does NOT have the strongest effect. Last-mile experience ($\beta = 0.43$) and order accuracy ($\beta = 0.23$) both have stronger effects on

customer satisfaction. This suggests that customers prioritize overall delivery reliability and experience, including rider professionalism, communication, and accurate order fulfillment, over delivery speed alone.

4.5.4 Relative Importance of Factors

The standardized coefficients (β) show relative importance:

1. Last-mile experience ($\beta = 0.43$): Most important

2. Order accuracy ($\beta = 0.23$)

3. Delivery speed ($\beta = 0.16$)

4. Return process ($\beta = 0.11$): Least important

This ranking contradicts H5 and shows that customers value the complete delivery experience more than pure speed.

4.5.5 Summary of Regression Findings

Overall, the regression analysis demonstrates that logistics process factors significantly influence customer satisfaction, accounting for 46.9% of its variance. All four predictors delivery speed, order accuracy, return process, and last-mile experience were found to have significant positive effects, supporting H1–H4. However, H5 was not supported, as delivery speed was not the strongest predictor. Instead, last-mile experience emerged as the most influential factor, followed by order accuracy, delivery speed, and return process. These results highlight that the overall quality of the delivery experience plays a more critical role in shaping customer satisfaction than speed alone.

4.6 Analytical Summary of Logistics Impact on Customer Experience:

The comprehensive analysis of survey data from 261 e-shopping customers reveals that logistics performance is a decisive determinant of overall customer satisfaction. While multiple logistics processes contribute positively, their influence varies significantly in strength and priority.

Last-mile delivery emerges as the most critical factor, exhibiting the strongest positive correlation ($r = 0.634$) and the highest predictive power ($\beta = 0.43$) in the regression model. This underscores that the final leg of the delivery, encompassing rider professionalism, communication, adherence

to instructions, and local knowledge, is paramount in shaping the customer's final impression and satisfaction level.

Order accuracy and delivery speed also demonstrate substantial, statistically significant relationships with satisfaction. However, the analysis refutes the assumption that speed alone is the primary driver. Instead, receiving the correct product as described (order accuracy, $\beta = 0.23$) is shown to be more influential than the speed (delivery speed, $\beta = 0.16$). This indicates that customers prioritize reliability and correctness alongside timeliness.

In contrast, the return process, while still a statistically significant predictor, has the weakest effect ($\beta = 0.11$). Descriptive statistics further highlight this as the lowest-rated aspect (mean = 2.75), with many respondents finding it complex and costly. This identifies the returns experience as a major pain point and a key area for operational improvement.

Based on these results, the next chapter presents the conclusion of the study, theoretical implications, practical recommendations for e-shopping companies, and suggestions for future research

Chapter 5: Synthesis of Findings, Theoretical Contributions, and Practical Recommendations

5.1 Introduction

This chapter synthesizes the findings from the empirical analysis and discusses their implications in relation to the research objectives and hypotheses of the study. The primary aim of this research was to examine the impact of key logistics processes, namely delivery speed, order accuracy, return process, and last-mile delivery, on customer satisfaction in the context of e-shopping. Through a structured survey of 261 online shoppers, the study sought to determine which logistics factors most strongly influence satisfaction and to test five specific hypotheses derived from literature.

The chapter is organized as follows:
First, a summary of key findings is provided, highlighting the main results from descriptive, correlation, and regression analyses.
Next, the discussion section interprets these findings in light of existing literature and the study's hypotheses.
This is followed by an exploration of practical and theoretical implications, offering actionable recommendations for e-shopping and logistics practitioners.
Finally, the chapter outlines the limitations of the study and proposes directions for future research, concluding with a concise summary of the research contribution.

By integrating empirical results with theoretical insights, this chapter aims to provide a comprehensive understanding of how logistics performance shapes customer satisfaction in e-shopping and to offer evidence-based guidance for industry improvement

5.2 Summary of Key Findings

The analysis of survey data from 261 online shoppers revealed several important patterns regarding the relationship between logistics processes and customer satisfaction. The key findings are summarized below according to the study's main research variables and hypotheses.

✓ Demographic and Behavioral Profile
  - The sample was predominantly young (59% aged 18–24) and male (64.8%), reflecting a demographic highly engaged in e-shopping.

- Most respondents shopped online occasionally (51.7%) or frequently (24.9%), indicating a familiar and active user base.

✓ Descriptive Insights into Logistics Performance

- Last-mile delivery received the highest mean rating (3.71/5), followed by delivery speed (3.45/5) and order accuracy (3.35/5).
- The return process was the lowest-rated aspect (2.75/5), signaling a widespread area of customer dissatisfaction.

✓ Correlation Analysis

- Last-mile delivery showed the strongest positive correlation with customer satisfaction ($r = 0.634$, $p < 0.001$).
- Delivery speed ($r = 0.519$) and order accuracy ($r = 0.446$) also exhibited moderate positive correlations with satisfaction.
- The return process was not significantly correlated with satisfaction ($r = 0.076$, $p = 0.223$).

✓ Regression Results and Hypothesis Testing

The multiple regression model explained 46.9% of the variance in customer satisfaction ($R^2 = .469$, $p < .001$). The standardized coefficients (β) indicated the following:

- Last-mile delivery had the strongest effect on satisfaction ($\beta = 0.43$, $p < .001$), supporting H4.
- Order accuracy was the second-strongest predictor ($\beta = 0.23$, $p < .001$), supporting H2.
- Delivery speed had a significant but smaller effect ($\beta = 0.16$, $p = .012$), supporting H1.
- The return process also showed a significant but weak effect ($\beta = 0.11$, $p = .022$), supporting H3.
- H5 was not supported, delivery speed was not the strongest predictor; last-mile delivery and order accuracy both had stronger impacts on satisfaction.

✓ Overall Conclusion from the Analysis

While all four logistics factors significantly influenced satisfaction, last-mile delivery emerged as the most critical driver, followed by order accuracy and delivery speed. The return process, though statistically significant, had the weakest practical impact and was a notable pain point for customers.

5.3 Discussion of Findings

This section interprets the key findings of the study in relation to research questions, hypotheses, and existing literature. The discussion is structured around each of the four logistics factors and their relative influence on customer satisfaction in e-shopping.

- Delivery Speed:

The study found a moderate positive relationship between delivery speed and satisfaction ($r = 0.519$, $\beta = 0.16$), supporting H1. This aligns with existing literature that highlights timeliness as a key customer expectation. However, contrary to H5, speed was not the strongest predictor of satisfaction. This suggests that while customers value fast delivery, they prioritize reliability and experience over speed alone.

- Order Accuracy:

Order accuracy demonstrated a moderate positive correlation with satisfaction ($r = 0.446$) and was the second-strongest predictor ($\beta = 0.23$), supporting H2. This underscores the critical role of receiving correct items in building trust.

- Return Process:

The return process showed a weak effect in regression ($\beta = 0.11$) and no significant correlation with satisfaction ($r = 0.076$, $p = 0.223$). Descriptive results confirmed it was the lowest-rated aspect (mean = 2.75/5). While returns do not strongly enhance satisfaction when well-managed, they can significantly detract when perceived as complex, costly, or slow.

- Last-Mile Delivery:

Last-mile delivery emerged as the strongest driver of satisfaction ($r = 0.634$, $\beta = 0.43$), strongly supporting H4. This highlights the disproportionate importance of the final delivery experience including rider professionalism, communication, and adherence to instructions. This aligns with recent research identifying last-mile delivery as a key differentiator in e-shopping.

an

- Theoretical Integration

This study shows that how you deliver matters more than how fast you deliver. In the past, logistics research focused a lot on speed and cost. But my results point to last-mile experience and order accuracy as the top drivers of satisfaction.

- Last-mile delivery is most important; polite riders, good communication, and following instructions.
- Order accuracy is essential; getting what you ordered builds trust.
- Delivery speed still matters, but it's not the main thing once a reasonable time is met.
- The return process acts more like a basic expectation than a source of delight. When it works well, customers don't necessarily feel more satisfied, but when it's difficult, it causes clear frustration.

5.4 Recommendations

Based on the findings of this study, the following actionable recommendations are proposed for e-shopping businesses, logistics providers, and researchers.

5.4.1 Recommendations for E-Shopping & Logistics Managers

Enhance Last-Mile Delivery:

- Invest in training programs for delivery personnel focusing on professionalism, communication, and local navigation.

- Use technology to optimize delivery routes and track shipments in real-time.

- Introduce customer feedback mechanisms specifically for the last-mile experience (e.g., rating the delivery rider).

Ensure Order Accuracy:

- Implement double-check processes at the warehouse.

- Use technology such as barcode scanning to reduce human error.

Improve Return Process:

- Simplify return instructions and policies.
- Reduce costs associated with returns where possible.
- Shorten return duration to improve customer experience.

Invest in Technology:

- Provide live shipment tracking and timely notifications to customers.
- Collect customer feedback for continuous improvement in logistics

5.4.2 Recommendations for Future Research

➢ Expand the sample to include a wider demographic, covering more regions, age groups, and female respondents.

➢ Include additional logistics and service variables such as packaging quality, communication during delivery, and pricing factors.

➢ Explore the impact of advanced technologies (e.g., drones, AI routing) on last-mile delivery and customer satisfaction.

5.5 Limitations of the Study

While this study provides valuable insights into the relationship between logistics processes and customer satisfaction in e-shopping, several limitations should be noted. The sample was predominantly young (18–24 years old) and male, which may not accurately represent the broader online shopping population, limiting generalizability to older age groups with lower online shopping penetration. Methodologically, only quantitative data were collected through closed-ended surveys, and including qualitative methods such as interviews or open-ended questions could have offered deeper insights into customer experiences. The study also focused on four logistics factors: delivery speed, order accuracy, return process, and last-mile delivery, without examining other potential influences such as pricing, website usability, or product variety. Finally, conducting the survey in English may have introduced language bias for participants less comfortable with the language, potentially affecting the accuracy of some responses.

5.6 Conclusion

This master's thesis has thoroughly investigated the pivotal role that logistics processes play in shaping customer satisfaction within the e-shopping industry. The research was structured around a central problem: analyzing how specific logistics functions, namely Delivery Speed, Order Accuracy, Return Process, and Last-Mile Delivery, directly influence the customer experience.

Through an extensive review of academic literature and industry frameworks, this study established that in the digital marketplace, logistics is far more than a backend operation. It is a primary touchpoint and a key determinant of competitive advantage. The conceptual model developed in this thesis illustrates the integrated nature of these four processes and their collective impact on customer perception

The empirical analysis, based on a structured survey of 261 online shoppers, yielded several key findings:

First, logistics performance significantly influences customer satisfaction, accounting for nearly 47% of its variance. This underscores the central role that delivery operations play in shaping the post-purchase experience.

Second, not all logistics factors carry equal weight. While delivery speed, order accuracy, the return process, and last-mile delivery all positively affect satisfaction, their impacts vary considerably. Last-mile delivery emerged as the strongest predictor, followed by order accuracy, delivery speed, and finally the return process.

Third, the findings challenge the industry's prevailing emphasis on speed. Although timely delivery remains important, customers place greater value on reliability, professionalism, and accuracy. This suggests that e-commerce strategies overly focused on delivery speed may overlook more meaningful drivers of loyalty.

Finally, the study identifies the return process as a notable pain point a basic expectation that, when poorly managed, can undermine satisfaction, but when handled well, does little to enhance it.

In summary, this research provides a more detailed, experience-centered model of logistics-driven satisfaction, highlighting the need for e-shopping and logistics managers to balance operational efficiency with interpersonal quality and reliability. By prioritizing last-mile excellence and order accuracy, businesses can build stronger customer relationships that extend beyond transactional satisfaction to foster lasting loyalty.

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ANNEX 1

Title: The Importance of Logistics Processes for Customer Satisfaction in E-Shopping.

This survey is part of a Master's thesis research project exploring how logistics processes influence customer satisfaction in the context of online shopping. The goal is to gather insights from consumers regarding their experiences with delivery, tracking, packaging, returns, and customer service.

Your participation is completely anonymous, and all responses will be used solely for academic purposes. There are no right or wrong answers. We are interested in your honest opinions based on your personal experiences.

The questionnaire will take approximately 3 minutes to complete.
Thank you very much for your time and valuable contribution!

DEMOGRAPHIC QUESTIONS:

1. What is your age?
   - Under 18
   - 18-24
   - 25-34
   - 35-44
   - +45

2. What is your gender?
   - Male
   - Female
   - Prefer not to say

3. How often do you shop online?
   - Rarely (1–2 times/year)
   - Occasionally (1–2 times/month
   - Frequently (1–2 times/week)
   - Very Frequently (3+ times/week)

Logistics Process and Customer Satisfaction Questions:

- ✓ **Scale Types Used:**

- **3-point scale:**

   1 – Not Important| 2 – Important| 3 – Very Important.

- **4 point scale:**

   1 – Very Unsatisfied | 2 – Unsatisfied | 3 – Satisfied | 4 – Very Satisfied.

- **5-point scale:**

   1 – Strongly Disagree | 2 – Disagree | Neutral – Agree | 4 – Agree | 5 – Strongly Agree.

✓ Question

1. Importance of delivery time
2. Delivery takes place on the date specified at the order stage
3. The time between placing an order and receiving an order is short
4. The delivery arrived on the same day I received the text message that my parcel was out for delivery
5. Delivery products are rarely delivered badly
6. The Delivery product comply with the conditions specified at the order stage
7. Wrong product delivery are not made
8. The return cost is totally affordable for me
9. The return process is simple and easy to understand
10. The return duration is acceptable until the seller receives the returned product
11. The delivery rider has communicated with me respectfully and politely
12. The delivery rider has demonstrated knowledge of the local area
13. The delivery rider has followed the instructions given for the delivery address
14. The delivery rider has maintained a professional manner throughout the delivery process.
15. I am satisfied with the overall logistics process of the online store
16. The logistics service met my expectations

Summary

Anouar Ben Aissa Amoumen

Master Thesis

Business Process Management Master Program

Faculty of Economics and Business Administration, Vilnius University

Supervisor: Prof. Andrius Jaržemskis

Vilnius, 2026

SUMMARY:

89 pages, 35 tables, 27 Figures, 41 references

This master's thesis explores the impact of logistics processes on customer satisfaction in the e-shopping sector. The study focuses on four logistics processes: Delivery Speed, Order Accuracy, Return Process, and Last-Mile Delivery.

The thesis is organized into five chapters: an introduction, a review of relevant literature, the research methodology, an analysis of survey results, and conclusions

The literature review outlines the significance of logistics in e-shopping and emphasizes how logistics performance directly impacts customer satisfaction. Key concepts such as reverse logistics, fulfillment accuracy, delivery timeliness, and last-mile delivery

This research was conducted using a quantitative survey distributed to online shoppers. A total of 261 responses were collected and analyzed using SPSS software and Excel. Descriptive statistics and correlation & regression analyses were applied.

The empirical findings from this study indicate that Last-Mile Delivery emerges as the strongest predictor of customer satisfaction, followed by Order Accuracy and then Delivery Speed. While all four logistics factors are statistically significant, the Return Process exhibits the weakest effect, though it remains a critical area for improvement. Notably, the return process was identified as a particular pain point, with many respondents expressing dissatisfaction with its cost, complexity, and duration

Discussion & Conclusion summarize the key ideas from the literature review and the main findings from the research.

SANTRAUKA

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SANTRAUKA

Magistro darbą sudaro 89 puslapiai, 35 lentelės, 27 paveikslai ir 41 literatūros šaltinis.

Šiame magistro darbe analizuojama logistikos procesų įtaka klientų pasitenkinimui elektroninės prekybos sektoriuje. Tyrime nagrinėjami keturi pagrindiniai logistikos procesai: pristatymo greitis, užsakymų tikslumas, prekių grąžinimo procesas ir paskutinės mylios pristatymas.

Darbas suskirstytas į penkis skyrius: įvadą, mokslinės literatūros apžvalgą, tyrimo metodologiją, apklausos rezultatų analizę ir išvadas.

Literatūros apžvalgoje atskleidžiama logistikos svarba elektroninėje prekyboje ir pabrėžiama, kad logistikos veiklos efektyvumas turi tiesioginę įtaką klientų pasitenkinimui. Aptariamos pagrindinės sąvokos, tokios kaip atvirkštinė logistika, užsakymų įvykdymo tikslumas, pristatymo savalaikiškumas ir paskutinės mylios pristatymas.

Empirinis tyrimas atliktas taikant kiekybinį metodą – internetinę apklausą, skirtą elektroninės prekybos pirkėjams. Iš viso surinktas 261 tinkamas atsakymas. Duomenys analizuoti naudojant SPSS ir „Excel" programas, taikant aprašomąją statistiką, koreliacinę ir regresinę analizę.

Tyrimo rezultatai parodė, kad paskutinės mylios pristatymas yra stipriausias klientų pasitenkinimo prognozuotojas, po jo seka užsakymų tikslumas ir pristatymo greitis. Nors visi keturi logistikos veiksniai yra statistiškai reikšmingi, prekių grąžinimo procesas pasižymi silpniausia įtaka klientų pasitenkinimui, tačiau išlieka svarbia sritimi tobulinimui. Respondentai ypač dažnai išreiškė nepasitenkinimą grąžinimo proceso kaina, sudėtingumu ir trukme.

Diskusijų ir išvadų skyriuose apibendrinamos pagrindinės literatūros apžvalgos įžvalgos bei empirinio tyrimo rezultatai.