FACTORS INFLUENCING CROSS-BORDER E-COMMERCE LOGISTICS ON CUSTOMER SATISFACTION IN CHINA

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ABSTRACT

With the development of the internet and information technology, cross-border online shopping has become a new consumption norm for Chinese residents. Logistics, as the pillar of cross-border online shopping, has attracted close attention from practitioners and researchers because it not only influences customer shopping experience, but it also influences customer confidence level in cross-border online shopping. Previous studies have shown that Chinese cross-border logistics suffer from problems such as low satisfaction levels, high transportation costs, and long delivery times. Therefore, the purpose of this study was to determine the level of customer satisfaction in cross-border logistics in China and investigate the factors that lead to customer satisfaction in cross-border logistics. This study used a quantitative method approach to conduct a questionnaire survey of 458 customers residents in southwest China. The data were then analysed by mean value, correlation, and regression through Statistical Package for Social Sciences (SPSS) version 23.0 on the level of customer satisfaction. The findings showed that the customer satisfaction level of cross-border logistics in China is at a moderate level, with transportation cost, delivery time, return and exchange, information tracking, and staff service quality having a significant positive relationship with customer satisfaction of the cross-border logistics. The findings of the study enable this researcher to make some suggestions on how to effectively manage cross-border logistics to improve customer satisfaction in cross-border logistics. Therefore, logistics managers should reduce consumer transportation costs, reduce delivery time, simplify the return and exchange process, and provide convenient and reliable information tracking and high-quality staff service quality to improve cross-border logistics customer satisfaction.

Keywords: Cross-border logistics, customer satisfaction, online shopping.

ABSTRAK

Dengan perkembangan internet dan teknologi maklumat, membeli belah dalam talian merentasi sempadan telah menjadi satu norma penggunaan baru bagi penduduk China. Sebagai tonggak utama dalam pembelian atas talian rentas sempadan, logistik telah menarik perhatian pengamal dan penyelidik kerana ia bukan sahaja mempengaruhi pengalaman pelanggan, tetapi ia juga mempengaruhi tahap keyakinan pelanggan dalam membuat pembelian dalam talian rentas sempadan. Kajian terdahulu telah menunjukkan bahawa logistik rentas sempadan China mengalami masalah seperti tahap kepuasan yang rendah, kos pengangkutan yang tinggi dan masa penghantaran yang panjang. Oleh itu, tujuan kajian ini adalah untuk mengenalpasti tahap kepuasan pelanggan logistik rentas sempadan di China dan untuk mengkaji faktor-faktor yang menunjukkan kepuasan pelanggan logistik rentas sempadan. Kajian ini dijalankan menggunakan kaedah kuantitatif melalui tinjauan soal selidik terhadap 458 orang pelanggan yang menetap di barat daya China. Data tersebut kemudiannya dianalisis dengan menggunakan perisian *Statistical Package for Social Science* (SPSS) versi 23.0. Data dianalisis berdasarkan statistik nilai min, korelasi, dan regresi untuk tahap kepuasan pelanggan. Dapatan kajian menunjukkan bahawa tahap kepuasan pelanggan logistik rentas sempadan di China adalah pada tahap sederhana dengan kos pengangkutan, masa penghantaran, pemulangan dan pertukaran, penjejakan maklumat dan kualiti perkhidmatan kakitangan mempunyai hubungan positif signifikan terhadap kepuasan pelanggan logistik rentas sempadan. Dapatan kajian membolehkan penyelidik ini mencadangkan beberapa cara untuk menambahbaik pengurusan logistik rentas sempadan dengan berkesan bagi meningkatkan kepuasan pelanggan dalam logistik rentas sempadan. Oleh itu, pengurus logistik haruslah mengurangkan kos pengangkutan pengguna, mengurangkan masa penghantaran, memudahkan proses pemulangan dan pertukaran, menyediakan penjejakan maklumat yang mudah dan boleh dipercayai, dan kualiti perkhidmatan kakitangan yang berkualiti tinggi untuk meningkatkan kepuasan pelanggan logistik rentas sempadan.

Kata kunci: Logistik rentas sempadan, kepuasan pelanggan, pembelian atas talian.

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ACSI:	American Customer Satisfaction Index
TC:	Transportation Cost
DT:	Delivery Time
RE:	Returns and Exchange
IT:	Information Tracking
SSQ:	Staff Service Quality
CS:	Customer Satisfaction
KMO:	Kaiser-Meyer-Olkin
EFA:	Exploratory factor analysis
VIF:	Variance Inflation Factor

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Although China's traditional foreign trade growth rate has slowed down in recent years, cross-border e-commerce has continued to rise rapidly. Ministers from developed countries concluded at the Organization for Economic Cooperation and Development (OECD) Ministerial Conference on Electronic Commerce in Ottawa, Canada, in 1998 that e-commerce would be a powerful engine of economic growth (OECD, 1998). However, at that time, factors such as technology, customer behavior, and trade limited the development of e-commerce. Cross-border e-commerce in China has been fueled by the rapid rise of Internet technology, information technology, and economic globalization. Different types of e-commerce platforms have been introduced, leading to a significant change in the traditional business retail model E-commerce is the fastest-growing area of the global economy because it bridges the gap between buyers and sellers (Ding, Huo & Campos，2017).

Customer needs are becoming increasingly diverse and personalized, and online shopping attracts customers with convenience, ease of access, product variety, and low prices. Online shopping is becoming increasingly common, though it is essentially a social activity (Xu and Lee, 2018). Quality, counterfeiting, and product piracy drive customers in developing countries to buy from abroad more frequently

(Forrester, 2014). Cross-border e-commerce is increasingly popular among customers because it provides customers with convenience in time and space by meeting various shopping demands, including cross-border payments, customs clearance, logistics, and delivery. Lower prices and better quality are the initial motivations for Chinese customers to choose cross-border online shopping (Pei et al., 2016; Chen, 2017). customers can purchase any product in the World at a lower price and more conveniently without leaving home. It dramatically enhances the consumption-ability of Chinese residents, satisfies customers' demand for products from other countries, and creates a vast international trade industry. As a result, cross-border e-commerce has emerged as a new source of growth for China's economy (Rong and Zhong, 2018).

According to the report "Global and China Cross-border B2C E-Commerce Market Size, Production and Sales, and Growth Rate Research Report 2022," published by iiMedia2022, the global cross-border B2C e-commerce market size reached 536.20 billion yuan (RMB) in 2021 and is expected to reach 149.79 billion yuan by 2027. The industry of cross-border e-commerce has continued to expand. The global B2C cross-border e-commerce transaction scale increased 27.5% year over year in 2018, bringing the global cross-border online shopping penetration rate to 51.2%. Customers in the Middle East who purchase online via cross-border e-commerce make for the most significant share of online shoppers in the region, reaching 70%. Western Europe is the continent's largest e-commerce market, and among European countries, Macedonia and Portugal have the highest cross-border online commerce

penetration rates. In Australia, cross-border e-commerce accounts for 25% of the e-commerce market, and Australian online shoppers prefer to buy products from the U.K. and the U.S. across borders. E-commerce in Brazil is more mature, while e-commerce in Argentina is growing rapidly in Latin America. 2018 Fair and related policies were introduced to promote the growth of China's cross-border e-commerce, and the number of cross-border e-commerce customers in China surpassed 100 million. In 2018, 30.7% of cross-border e-commerce customers chose to buy cross-border because of the high quality of overseas commodities, and there was a 7.8% growth in the first half of 2018.

With a population of over 1.3 billion, China is the most significant potential market globally. Refer to figure 1.1, according to the "2020-2021 China Imported Cross-Border E-Commerce Industry Research Report" published by iiMedia Research. The transaction size of China's imported cross-border e-commerce market reached 2.64 trillion yuan in 2019, up 17.3% year on year. The transaction size of the imported cross-border e-commerce market reached 3.07 trillion yuan in 2020. According to analysts at iimedia research, although the epidemic dampened the scale of imported cross-border e-commerce transactions in 2020, the growth rate of transaction scale will increase again as China's economy recovers and domestic consumption is upgraded(iiMedia research, 2021). According to PayPal (an American online payment company), more than a quarter of Chinese online shoppers buy foreign commodities online via the Internet, especially from the United States, the United Kingdom, and Japan (PayPal, 2014).

Figure 1.1
2016-2020 China's cross-border e-commerce imports volume (Billion Yuan)
Source: iiMedia Research

Various reasons have contributed to the growth of cross-border e-commerce, including the widespread use of smartphones, high-speed internet, and the maturing of online payment system technologies (Chen, 2017; He and Wang, 2019). Although the number of Internet users and cross-border online shopping has recently increased dramatically (Martens, 2013; Rezaei, Amin, & Ismail, 2014), cross-border online shopping is still practically immature in China and faces many problems to be solved (Sun, 2020).

Logistics plays a vital role in e-commerce, and although most transactions are conducted electronically, the actual product needs to be delivered to the customer through traditional transportation methods. As e-commerce continues to grow, the importance of logistics will also increase (Zurek, 2015; Jiao,2015). The rise of cross-border e-commerce has contributed to the development of cross-border express logistics in China. (He, Wu, and Choi, 2021; Wang and Zhao, 2015). The broad

overseas market has attracted many logistics companies, both Chinese and foreign, to accelerate cross-border business development. In the meantime, the cross-border business has also put forward higher operational requirements for major logistics operators: on the one hand, they have to meet the challenges that domestic logistics do not face, such as long spatial distance, wide coverage, and complicated policies on customs clearance procedures (Yang and Shen, 2015).

On the other hand, they have to face intense competition from well-known international logistics operators, such as UPS and FedEx. The provision of high-level logistics services to customers is essential in the process of improving competitive advantage (He et al., 2021). In order to strengthen the position of logistics companies in the market, there is an urgent need for logistics companies to provide better quality services by improving management techniques and upgrading modern hardware and software (Wang and Zhao, 2015; Gil-Saura et al., 2010).

Through the observation of the current situation of China's cross-border e-commerce logistics services, it is found that China's cross-border development is still relatively lagging, and there are generally significant problems such as slow transportation speed, high logistics cost, low information, and difficulty in fulfilling returns and exchanges (Peng, 2022). It has a significant impact on the quality of logistical services and customer evaluation, and it has become a significant barrier to cross-border e-continuing commerce expansion.

Nowadays, a crucial area for the growth of cross-border e-commerce is service

quality management. Mentzer et al. (2001) found through research on Dell that service quality significantly affects company profits. And that improving service quality management can help improve the competitiveness of companies. Since the mid-1980s, service quality has been focused on marketing and logistics research (Chaniago et al., 2021). Customer satisfaction is directly affected by the service elements provided in logistics services. Providing high-quality logistics services to customers will help cross-border e-commerce businesses develop loyal customers, sustain their competitive advantage, increase their competitiveness, and achieve their fundamental values (Zhang and Zhang, 2010).

In summary, the logistics industry has profound changes due to the logistics industry needs to be studied in depth from different perspectives. Cross-border e-commerce is developing quickly in China, but the critical pillar supporting cross-border e-commerce, i.e., cross-border logistics, faces many problems, including service quality, transportation time, logistics cost, and other related issues. These are the challenges facing cross-border e-commerce logistics in China and the issues that researchers need to study.

1.2 Problem Statement

In recent years, online cross-border shopping's growing influence and applicability and the rapid increase in the number of customers have resulted in a rise in the total volume of cross-border e-commerce logistics (Liu et al., 2018). With the rise in cross-border e-commerce logistics services, many cross-border e-commerce

companies have joined the market competition. The issue of cross-border e-commerce logistics customer satisfaction has been raised. The rapid global popularity of e-commerce logistics services has ignored an essential part of customer satisfaction. And customer satisfaction is central to the success of many companies (Srinath, 2017), as customer needs are constantly changing, and customer satisfaction is vital for continuous business improvement (Razak and Nayan, 2020). Despite being one of the most critical aspects of e-commerce logistics (Sankar and Gopalakrishnan, 2020). However, cross-border logistics customer satisfaction has proven to be a challenge, especially in China, where cross-border e-commerce logistics orders and activities abound.

With the widespread use of Internet technology, customer satisfaction, especially in the logistics industry, has attracted close attention from practitioners and scholars (Hameed et al., 2018). Logistics in global business have become extremely complex because of different countries' trade restrictions, transportation distances, and cross-currency concerns (Wang et al. 2015). Despite this, cross-border logistics is still struggling to improve customer satisfaction (Zhou and Zhang, 2021; Lu, 2020). Previous research has found that the growth rate of international logistics is not keeping pace with the needs of cross-border e-commerce (Hensher et al., 2015). Bai et al. (2019) proposed that China has a large population, high Internet penetration, and faces many logistics orders every day, but the level of satisfaction with cross-border e-commerce is low. Chen (2019) pointed out that China's cross-border e-commerce logistics and transportation system are still incomplete. There are often

problems such as low delivery time, poor delivery service, severe parcel damage, and poor logistics informatization, which cause dissatisfaction among Chinese cross-border e-commerce logistics customers. Zhang (2021) and Dai et al. (2021) suggested that the satisfaction level of cross-border logistics in China is generally low, mainly due to high logistics costs. Liu, Che, and Chi (2022) pointed out that the level of service quality of cross-border e-commerce logistics largely affects customer satisfaction and is a bottleneck for the development of China's cross-border e-commerce industry at present.

A company cannot survive in the market if its activities are not centred on customers' expectations (Uvet, 2020). In addition, customer satisfaction affects customer loyalty, and low satisfaction reduces customer repurchase intention (Srinath, 2017; Djumarno et al., 2018). Ul-Hameed et al. (2019) supports the view that dissatisfaction with logistics customers can negatively affect the performance of logistics companies. If the inadequacy of cross-border logistics causes customer dissatisfaction or even abandonment of consumption, it will have an extremely negative impact on the development of cross-border e-commerce.

With the increasing and sophisticated customer demand in China, customers demand higher levels of products, quality, and services and increasing demands on logistics capabilities. Some companies face issues related to logistics services (Li & Yi, 2019; Chen et al., 2019), including transportation cost (Xia, 2016), delivery times (Teresa&Evangelos, 2015), returns, and exchanges (Wang et al., 2020), information

tracking (Song, 2016), and staff service quality (Yan, 2014).

Compared with domestic logistics, cross-border logistics involves cross-border trade, industrial chains, and longer transportation cycles. Including inbound and outbound logistics, inbound and outbound customs, and especially international logistics links, international express shipping costs for cross-border e-commerce are chronically high, sometimes even higher than the value of the goods (Cui & Yang, 2017). In addition, sometimes, once the goods are detained or stranded in customs, warehouse rental fees are incurred during this period. All these invariably increase the cost of cross-border logistics even more (Gao, 2018). As the total cost of cross-border logistics increases, the final cross-border logistics price will also increase, affecting the level of customer satisfaction. Although most studies have concluded that there is a significant relationship between price and customer satisfaction, some scholars still propose that there is no relationship between the two (Ahmed et al., 2014).

Delivery time is also one of the factors that affect customer satisfaction. Cao and Xu (2013) highlighted the problems associated with long delivery order lead times for cross-border e-commerce. Okholm et al. (2013) found that the main reason customers abandoned cross-border shopping was that customers perceived delivery costs to be too high and delivery times too long. The problems customers encounter with cross-border e-commerce shopping are mainly related to logistics and delivery rather than the products themselves (Eurobarometer, 2013). Customers highlight negative experiences with logistics services, such as delivery delays and damaged

goods (Bitkom, 2013). Most cross-border logistics companies face the problem of transportation time. Zhang, Zheng, and Dong (2014) pointed out that logistics time significantly affects customers' evaluation and satisfaction with logistics services. Compared with domestic logistics, cross-border logistics involves two and more countries and regions. International transportation involves many steps and complex transactions, and customs clearance and commodity inspection take longer to experience, so cross-border transportation time is an uncontrollable factor (Cui and Yang, 2017). If the transportation time is too long, it will influence logistics customer satisfaction.

Unlike offline transactions, because of the lack of physical experience, the goods bought online may contradict psychological expectations. Therefore, more frequent demand for the return and exchange of goods will arise (Zou, 2015). And because of the complex logistics process of cross-border e-commerce, more links, and more extended periods, the goods may cause certain risks of damage to goods after a series of tedious procedures such as unpacking and re-sealing by customs in the process of transportation (Lu, 2019). However, logistical returns of consumers as shippers are rarely discussed in previous literature, but returns are a very important factor in cross-border e-commerce logistics because of the complex processes and operations involved (Li and Lu, 2019).

Customers' demand for information is reflected in the pre-purchase of goods and the post-purchase logistics and transportation. Cross-border logistics services that are

well-developed can facilitate the business activities of cross-border e-commerce. (Hsiao et al., 2017). The cross-border goods purchased by customers often need to go through a long period of logistics transportation, and customers cannot be satisfied immediately. Uncertainties such as safety issues and time delays during transport can affect customers' utility (Banerjee and Banerjee, 2012). However, several scholars have debated on the degree of influence of logistics transportation time on logistics satisfaction, but customers can indirectly influence their satisfaction with cross-border logistics by obtaining information on cross-border logistics and reducing the uncertainty of cross-border logistics.

The service attitude of frontline staff in logistics enterprises directly affects enterprises' service quality and level. At present, logistics enterprises' service staffs are mainly young staff in the post-80s and post-90s who have distinctive personality characteristics and work features (Hu, 2016). The frontline staffs of logistics enterprises are in direct contact with customers. According to Zhao and Nan (2015), the service quality of frontline staff is one of the main factors that affect customer satisfaction. Customer satisfaction is the basis for companies to maintain regular customers and keep their competitive advantage. However, there are also apparent shortcomings in the services of logistics enterprise staff, including service attitude, dress code, and customer communication (Hu, 2016; Li, 2017).

In addition, customers' expectations of service quality change over time. Customer preferences, trends, and customer behavior are not the same as in the past (Hassan et

al., 2019). Therefore, evaluating logistics service quality models may become inappropriate as time passes and customers accumulate logistics experience (Lin et al., 2016). Therefore, this study will assess the service quality of cross-border logistics through the current customer satisfaction with cross-border logistics.

1.3 Research Question

The preceding problem statement reveals several critical influences on customer satisfaction in cross-border e-commerce logistics. Based on these factors, several questions are identified below:

i. What is the level of customer satisfaction of cross-border logistics?

ii. What are the factors leading to customer satisfaction in cross-border logistics?

1.4 Research Objective

The following are the study's objectives, as outlined in the study:

i. To determine the level of cross-border logistics customer satisfaction.

ii. To investigate the factors leading to customer satisfaction in cross-border logistics.

1.5 Significance of the Study

This study has three implications. First, it provides feasible, practical insights for cross-border e-commerce companies to facilitate customer satisfaction. It aids cross-border e-commerce corporations in comprehending the relationship between the quality of their logistical services and customer satisfaction during the transaction process and clarifies the degree of influence of cross-border e-commerce logistics on customer satisfaction. It assists cross-border e-commerce businesses in identifying appropriate customer management methods and approaches, ultimately achieving the goal of increasing customer satisfaction by improving the quality of cross-border e-commerce logistics services.

Secondly, it provides feasible, practical insights for cross-border e-commerce companies to improve their competitiveness. It aids cross-border e-commerce companies in properly and effectively managing their customers and adopting targeted strategies to maintain existing customers and develop new ones. Thus, it reduces marketing and management costs, expands enterprise sales, enhances enterprise profitability, and finally achieves the purpose of improving enterprise competitiveness.

Finally, the universality of customer satisfaction and logistics service theories is verified. Most existing customer satisfaction and logistical services research are based on offline physical industries and logistics. Furthermore, research on cross-border e-commerce is not very comprehensive and may not apply to all

cross-border e-commerce businesses. Therefore, this study systematically investigates the influence factors of logistics services on customer satisfaction in cross-border e-commerce and can verify whether customer satisfaction theory and logistics service theory are universally applicable to cross-border e-commerce.

1.6 Scope of the Study

Cross-border logistics is growing rapidly worldwide, forming a new model of foreign trade. However, behind the rapid development, it faces the problem of increasing customer satisfaction. This study will take cross-border e-commerce customers in China's southwest region as the research object. According to Figure 1.2, cross-border e-commerce users in southwest China account for about 12.4% of cross-border e-commerce users in China.

Furthermore, this study will only focus on the five factors of cross-border e-commerce logistics that affect customer satisfaction: transportation cost, delivery time, returns and exchanges, information tracking, and staff service quality.

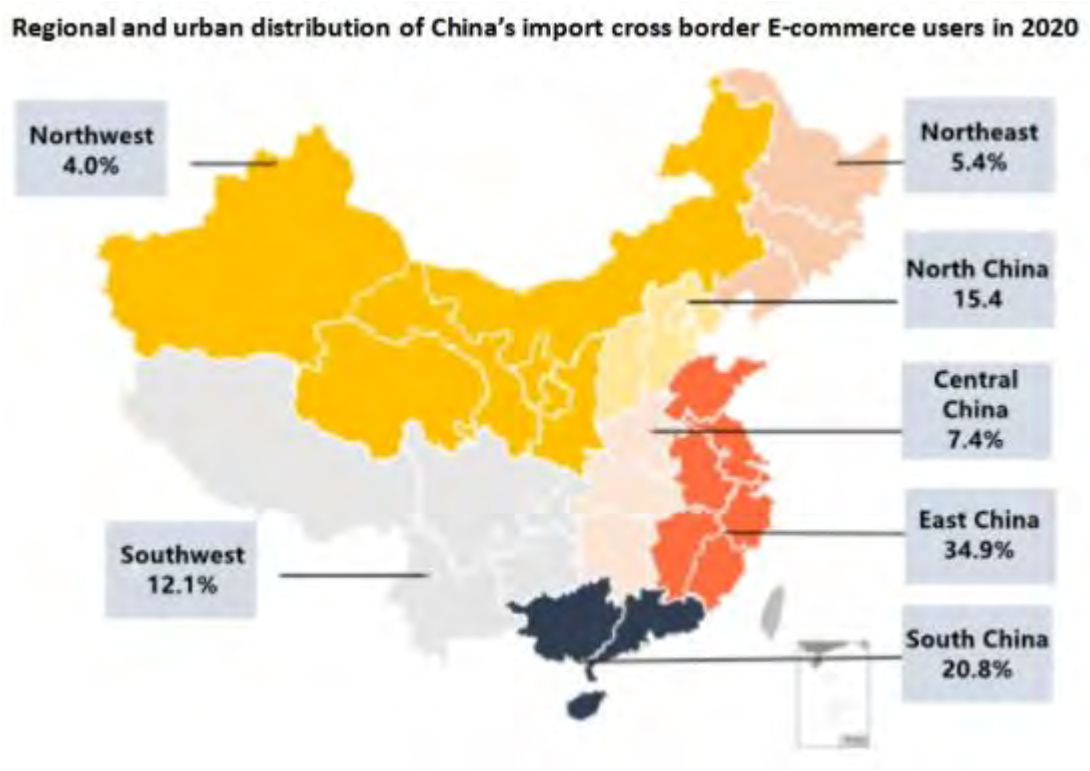


Figure 1.2
Regional and urban distribution of China's import cross border E-commerce users in 2020
Source: data.iimedia.cn

1.7 Summary

This chapter introduces the motivation for this study, which is to determine the factors that influence customer satisfaction in cross-border logistics. Although cross-border logistics has grown quickly in recent years, this growth has resulted in various logistical issues such as price, delivery time, returns and exchanges, information tracking, and staff service quality. All these factors can significantly reduce customer satisfaction. This chapter lays the study's foundation and helps build the literature review.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews and discusses some of the literature on cross-border e-commerce logistics practices. This chapter explains the relationship between the identified variables and cross-border logistics customer satisfaction. A comprehensive systematic and integrated critical analysis of this topic is presented to deepen the understanding of the current research. Other central concepts are discussed to help researchers utilize the material and provide solutions to the problems addressed in the study. In addition, this chapter reviews previous literature on logistics pricing, delivery times, returns and exchanges, information tracking, and logistics staff service quality. Finally, the chapter discusses the literature related to the research questions and constructs literature supporting the research hypotheses, contributing to developing the conceptual framework.

2.2 Cross-border e-commerce logistics

After 2013, as cross-border e-commerce and cross-border logistics began a rapid development phase, many publications connected to cross-border e-commerce logistics surged (Giuffrida et al., 2017). For many years, researchers have debated the importance of logistics in e-commerce. However, logistics is generally accepted as a critical factor in e-commerce (Ramanathan et al., 2014). International logistics under

cross-border e-commerce is part of the logistics domain, which is a complex and variable structure consisting of several subsystems (Lai, 2019). Its scope includes the transport trade of imported and exported goods, international mail courier operations, and other movements of goods between different countries (Chen et al., 2015).

Whether it is e-commerce or cross-border e-commerce, existing studies generally affirm that the key is to guarantee the role and facilitate logistics (Hu, 2021). The development of cross-border e-commerce can create more development prospects and space for cross-border logistics, while the sustainable development of cross-border logistics can continue to promote the development of cross-border e-commerce (Li, 2021; He and Wang, 2019; Liu, 2015). Cross-border logistics is a decisive factor in the development of cross-border e-commerce (Aqlan, 2020; Hazarika and Mousavi). A logistics industry that fails to keep up with the growth of e-commerce can instead constrain the development of e-commerce (Hensher et al., 2015). Kawa (2015) states that a few years ago, efficient logistics was a source of competitive advantage in e-commerce. And now, it is a prerequisite.

Kanagavalli and Azeez (2019) argue that e-commerce logistics includes logistics structures (e.g., direct distribution or through distribution centers), logistics processes (e.g., order processing, storage, packaging, and shipping), and information and reporting systems. Sui and Tan (2015) state that cross-border e-commerce logistics refer to the rapid collection, transportation, and delivery of documents, packages, and other items. And tracking the status of these items throughout the process and

providing other services such as customs clearance while maintaining control over the items. Its essence is to use international logistics networks, facilities, and technologies to realize the global flow and exchange of goods following international practices and the international division of labor and cooperation principles. To promote the growth of the regional economy and the most efficient use of global resources, its goal is to deliver goods from the exporting country to the importing country in quality, quantity, and timely manner through the best way and path at the lowest cost and to bear the least risk. Xie and Bai (2017) elaborated on the concept of cross-border e-commerce and cross-border logistics. They proposed a series of development suggestions to promote innovation in cross-border e-commerce and logistics models. Jia (2019) points out that there are four standard models of cross-border e-commerce and analyses the evolution of cross-border e-commerce logistics models.

While e-commerce has efficient and fast information interaction technology that can easily handle information flow, capital flow, and business flow, on the other hand, logistics need to be carried out offline (Wei and Zhou, 2015). Jiao (2015) states that cross-border e-commerce logistics place higher demands on networking and informatization. He, Wu, and Choi (2021) argue that good cross-border logistics is a critical aspect of facilitating cross-border e-commerce drives.

2.2.1 Cross-border Logistics in the World

With the continuous research on cross-border e-commerce by scholars at home and abroad, cross-border logistics, as a vital connection in the development of cross-border e-commerce, has been increasingly favored by scholars.

Cross-border e-commerce has developed earlier in developed countries in Europe and the United States, such as eBay in the United States. The cross-border logistics in these developed countries have also developed faster and more advanced (Liu et al., 2015). Rhoades (2007) gives a thorough overview of freight transportation, multi modal transportation, e-commerce, and the sustainability of logistics in the globalization process. The sustainability of logistics models is pointed out as a significant influencing factor in the growth of B2C e-commerce and as a direction for future research into the synergy between logistics and B2C e-commerce. Although this study is focused on e-commerce, it provides a solid framework for future scholars to conduct cross-border e-commerce logistics research. For many years, logistics has been regarded as a source of competitive advantage for cross-border e-commerce corporations. International scholars have discussed the importance of logistics in cross-border e-commerce. Ramanathan (2013) also points out that a crucial factor in the success of cross-border e-commerce businesses is logistics. If it is not appropriately managed, it may lead to failure. According to Gomez-Herrera (2014), many factors affect the take-off of cross-border e-commerce, the most complex of which is logistics, regarding the synergistic development of cross-border

e-commerce and cross-border logistics. Henher (2015) also believes that if cross-border logistics cannot keep up with the pace, cross-border e-commerce will suffer.

2.2.2 China's cross-border logistics

At present, the development of cross-border e-commerce in China is still in the early stage, and both cross-border e-commerce and cross-border logistics are still new (Zhang and Guo, 2016). Xu and Xu (2017) point out that China's cross-border logistics are costly, slow, and infrastructure backwards compared with cross-border logistics in developed countries. Most Chinese logistics companies with single service functions lack service awareness and poor service quality, limiting the companies' development. Liu et al. (2015) pointed out that Chinese logistics companies have not provided specialized, personalized logistics services for cross-border e-merchants.

Therefore, some scholars began to focus on the relationship between cross-border e-commerce and cross-border logistics. Ying (2015) conducted a study on the logistics mode selection of Chinese B2C cross-border e-commerce. The findings showed that the construction of China's cross-border logistics system lagged behind, and the international logistics costs were high. These problems hindered the further development of China's B2C cross-border e-commerce. Meng et al. (2014) proposed promoting the integration of cross-border e-commerce and logistics by merging various operational mechanisms of domestic logistics, foreign logistics, and

cross-border e-commerce and optimizing the distribution of benefits. Ji and Zhang (2015) studied the synergistic development of cross-border e-commerce and cross-border logistics. They proposed that the adoption of multiple cross-border logistics mode sharing can improve logistics efficiency. Zhou (2014) argued that the choice of logistics mode for cross-border e-commerce should consider factors such as cost and risk. Zhang (2015) pointed out that the backwardness of China's cross-border logistics system, the lack of logistics technology, and even the single logistics service seriously restricts the development of cross-border logistics. Li (2014) analyzed the logistics dilemma of cross-border e-commerce based on an industry-wide perspective and elaborated several paths to promote the development of cross-border e-commerce logistics.

2.3 Cross-border logistics customer satisfaction

Customer satisfaction is a relative concept comparing customers' perceptions and expectations of product and service consumption (Rong and Zhong, 2018). Customer satisfaction can also be considered as a cumulative evaluation based on the entire purchase and consumption experience of a product or service over time (Fornell, 1992). Kotler and Keller (2016) stated that customer satisfaction is the customer's perception of happiness or disappointment due to comparing the performance of the product/service and the customer's expectations. Customer satisfaction is established when a company satisfies the needs and wants of its customers (Hanif et al., 2010). However, customer satisfaction is dynamic, and changes in the market may affect

customer preferences and expectations (Politis et al., 2013). Also, customer satisfaction is a holistic structure that combines several factors, the most important of which is service quality (Zeithaml, Bither, and Gremler, 2013).

Over the past few decades, customer satisfaction has become a fundamental concept in marketing and business strategy (Bowersox, 2014). Customer satisfaction has always been one of the essential characteristics that managers should focus on. The company's competitive advantage is to satisfy its customers better than its competitors, exceed customer needs, and hopefully be better than its competitors (Minta, 2018). Uddin (2019) states that customer satisfaction provides a more significant advantage to service providers and helps companies to survive in the face of fierce competition.

To assess customer satisfaction, researchers have conducted numerous studies (Abdolvand, Albadvi, and Aghdasi, 2015). Yi and Nataraajan (2018) emphasized that customer satisfaction is an essential concept in modern marketing and practice, emphasizing providing customers with satisfactory services or products to gain rewards. Rezaei (2014) stated that customer satisfaction is essential to building long-term relationships and achieving customers' willingness to repurchase.

One of the most critical factors influencing customers' propensity to make future purchases is customer satisfaction (Daniel et al., 2012). Customers who are satisfied with purchasing a product or service will repurchase more frequently and are highly likely to recommend the product or service to others (Djumarno and Djamaluddin,

2018). Previous studies have found that many factors affect logistics customer satisfaction. Such as reasonable shipping prices and shipping costs (Zhang, Zheng, and Dong, 2014), on-time delivery (Teresa & Evangelos, 2015), reasonable or convenient return and exchange processes (Wang et al., 2017), efficient logistics (Mak et al., 2015), high-quality logistics services (Subramanian, Gunasekaran, Yu, Cheng & Ning, 2014), and reliable information tracking (Xue et al., 2016). All these factors can improve customer intention and create more satisfaction. However, poor quality is one of the factors that can easily lead to customer dissatisfaction.

How to provide the best logistics services without sacrificing quality is an ongoing challenge for logistics companies (Javalgi, Martin, & Todd, 2004), especially in countries with exceptionally high volumes of logistics transactions. Various previous studies have emphasized customer satisfaction and developed logistics customer satisfaction as one of the critical areas (Cichosz et al., 2017; Hu et al., 2016).

Stopka et al. (2016) stated that customer satisfaction is essential for logistics companies seeking a competitive advantage. Mentzer et al. (1989) suggested that the needs of each logistics service customer and the perception of each service indicator may be different. Therefore, the extent to which logistics companies can create efficiency in providing logistics services to their customers contributes to the satisfaction of logistics customers. According to Ahmed et al. (2019), high-quality logistics services are essential to satisfy customers and create customer loyalty to retain customers. Akil and Ungan (2022) explored the factors of e-commerce

logistics services that affect customer satisfaction. Meidutė-Kavaliauskienė et al. (2014) analyzed the logistics services of customer satisfaction. Bowersox et al. (2014) presented three limitations regarding logistics customer satisfaction.

Customer satisfaction is a well-known concept that has been validated in many fields, including customer research, business strategy, marketing, and economic psychology (Setiawan and Sayuti, 2017). Customer satisfaction is crucial because satisfied customers grow value for the company, spread positive word of mouth, and help build a good brand reputation (Hanif, 2010). Therefore, improving customer satisfaction is a key objective (Saleem et al., 2015).

2.3.1 Quality of logistics services

The research on logistics service and logistics service quality has been long, and previous researchers have mainly defined the connotation of logistics service and logistics service quality. The 7Rs theory proposed by Perrault and Russ (1974) is the most famous, which considers logistics service as a company's ability to provide customers with the "right price and the right channel or way at the "right time" and "right place" with the ability to deliver the right needs or wants. According to Subaebasni et al. (2019), logistics services are activities that include inventory, warehouse stock logistics, information, transportation, customs clearance, and packaging.

It is known that one of the pillars of every logistics company is its logistics service quality, and the service level of a logistics company determines customer satisfaction (Thai, 2013; Huang et al., 2019; Singh, 2020). According to Giao (2020), logistics service quality is generated by comparing customer expectations and perceptions. Improving service quality will lead to great success in long-term competitiveness (Choy et al., 2014). Giuffrida et al. (2017) state that service quality is increasingly important in the e-commerce environment, especially in the logistics industry.

The importance of logistics service quality has long been recognized. The results of many studies strongly support the idea that improving logistics service quality can increase customer satisfaction (Yuen and Chan, 2010. Xu and Qiao, 2013). Fernandes et al. (2018) argue that logistics service quality is critical in significantly improving customer satisfaction. Otsetova (2017) stated that improving service quality should be a continuous focus for logistics companies. Teresa and Evangelos (2015) analyzed ten attributes of logistics services that affect customer satisfaction. Huang and Satchabut (2019) reviewed studies related to logistics service quality in the e-commerce environment, taking into account the actual situation of e-commerce in China. The relationship between customer satisfaction and logistics service quality in the Chinese e-commerce market was clarified. Kersten et al. (2010) developed a new method to measure service quality and highlighted the importance of service quality in the logistics industry. Nan and Liu (2013) analyzed the current state of logistics service quality evaluation regarding the service results of logistics enterprises, the service process, and service capability. Sulastri et al. (2019) explored the influence of

logistics service quality in logistics results in quality and logistics process quality on customer satisfaction. The results of Sohn et al. (2017) showed a non-linear relationship between logistics service quality attributes and customer satisfaction.

Through service performance, logistics service quality can create customer value and satisfaction (Sutrisno et al., 2019; Huang and Satchabut, 2019). For logistics companies, logistics service quality is the key to gaining a good reputation and, thus, more profit (Mai, 2011).

2.3.2 Transportation cost with cross-border logistics customer satisfaction

According to Alma's (2015) definition of price, from the customer's perspective, "price is the value of a product in exchange for money." Kotler and Armstrong (2010) suggest that pricing is the sum of the fees charged for a product or service or the value exchange that customers give up obtaining or use the product or service. Relatively low prices are a critical factor in customer satisfaction (Lang, 2020; Cakici et al., 2019).

Shamsudin et al. (2020) investigated the relationship between price perception and customer satisfaction. According to Briesch Krishnamurth and Mazumdar (1997), price affects customer behavior to a greater or lesser extent whether customers actively perceive it or not. According to Allard et al. (2020), customer perceptions of unfair prices may lead to negative outcomes for firms. However, in a study by Ahmed et al. (2014), it was concluded that perceived price is not significantly related

to customer satisfaction. Wei and Lin (2013) also found that customers do not generate higher satisfaction because the price is reasonable, but they rate it accordingly based on the overall quality.

Prices associated with logistics are based on logistics shipping prices, return service fees, and discounts. The provision of logistics services and returns incur specific costs. It is estimated that logistics costs for international logistics account for approximately 15-20% of product costs (Li, 2018). Shipping costs are essential in all customers' e-commerce purchase decisions (Gessner and Snodgrass, 2015; Kawa and Zdrenka, 2016). If logistics costs are too high, customer experience will be poor, affecting customer satisfaction (Wang and Li, 2018). The price of the receipt is one of the critical factors that affect customer satisfaction. It is a factor that determines the overall pricing of the product and, therefore, the purchase intention. (Xia and Yan, 2016). According to Zhang, Zheng, and Dong (2014), price helps to generate customer satisfaction or dissatisfaction. However, some cross-border e-commerce goods are more costly than those sold in physical stores due to logistics and distribution costs. Customers do not choose goods from other countries because they cannot be purchased in brick-and-mortar stores in their home countries. Saipe (2013) highlights the importance of logistics costs in e-commerce. In addition, He (2014) studied two Chinese companies, Postal Express and Shentong Express. He found that customers were more satisfied with the price of Shentong Express. He (2014) also found that the shipping price of Shentong Express was lower than that of Postal Express for almost the same delivery time. Prices associated with cross-border

logistics also include return service fees (Zhang, 2014). Both delivery prices and return service fees affect customer satisfaction. Usually, customers compare these prices with those of other companies. If customers find that other companies offer lower prices, this may cause customer dissatisfaction. Therefore, reasonable prices are critical to customer satisfaction.

In conclusion, price is one of the critical factors in any logistics process. A study by Rao (2011) and others showed that improving logistics performance by charging higher prices did not help improve logistics customer satisfaction. The reduction in logistics costs positively impacts cross-border transactions (Hoekman and Nicita, 2010). And as customer satisfaction increases, the negative impact of price increases decreases (Keiningham et al., 2014). Moreover, price plays a crucial role in meeting customer expectations (Vasić et al., 2019), and reasonable prices increase customer satisfaction. Although the relationship between price and customer satisfaction is debated, it broadly supports a correlation between these two variables. Thus, Chinese logistics companies have a strong relationship between price and cross-border logistics customer satisfaction.

Table 2.1
Summary of past research on the relationship of transportation cost

Studies	Country	Purpose	Type of source	Finding
Mohd Farid Shamsudin, Syafiqah Md Nayan, Mohd Fikri Ishak, Siti Aisyah Esa, Sallaudin Hassan, (2020)	Malaysia	To measure the relationship between perceived price and customer satisfaction	Journal	All dimensions of perceived price have a positive impact on customer satisfaction

Richard A.Briesch, Lakshman Krishnamurth, Tridib Mazumdar, S. P. RAJ, (1997)	The U.K.	To investigate the impact of price on customer behavior	Journal	Price affects customer behavior; whether customers actively perceive price or not, price more or less affects customer behavior.
Thomas Allard, Lea H.Dunn, Katherine White, (2020)	USA	To explore the impact of consumer price perceptions.	Journal	Consumer perceptions of unfair prices may lead to negative business outcomes
Wei Jiahua, Lin Xi, (2013)	China	To Research the influence mechanism of satisfaction and loyalty of logistics service quality	Journal	Customers do not generate a high level of satisfaction because the price is reasonable but rather rate the overall quality accordingly.
Zohaib Ahmed, Muhammad Rizwan, Mukhtar Ahmad, Misbahul Haq, (2014)	Pakistan	To investigate the effects of service quality, perceived quality, perceived value, brand trust and customer satisfaction on brand loyalty	Journal	No significant correlation between perceived price and customer satisfaction
Zhang Lina, Zheng Guiling, Dong Weijia (2014)	China	To propose suggestions for optimizing Taobao's logistics services	Journal	Logistics price and customer satisfaction have a significant impact
Wang Xuehui, Li Lulin, (2018)	China	To the analysis of the current market situation of cross-border e-commerce and the development of bottlenecks	Journal	Logistics costs can affect the customer experience and, thus, customer satisfaction.
Alan Saipe	Canada	To investigate whether Canada has the right framework of economic policies to promote a thriving e-commerce market and review logistics services.	Journal	Large e-commerce companies tend to have lower unit delivery costs and lower overall costs Logistics costs as a percentage of revenue.
He Jianhua(2014)	China	To investigate customer satisfaction in the logistics industry	Journal	In almost the same delivery time, customers are more satisfied with the logistics companies with lower prices

2.3.3 Delivery time with cross-border logistics customer satisfaction

Delivery time mainly refers to the time that occurs between product ordering time and product delivery time. It includes order response time, the order processing time

for e-commerce, product delivery time, and logistics turnaround time (Zhang, Zheng, & Dong, 2014). Shipping time was ranked as the second most critical determinant of customer satisfaction, with the attribute of the speed of shipping time (Teresa & Evangelos, 2015). The average delivery time of logistics has a high correlation with customer satisfaction (Gajewska and Zimon, 2018). Logistics companies, especially shippers, prioritize transit time (Yuen & Thai, 2015). With the proliferation of the latest supply chains in manufacturing and retail, more products or services are becoming more time sensitive (Saslavsky & Shepherd, 2014).

According to Pan (2020), transportation time in cross-border logistics is an uncontrollable factor. The dissatisfaction of cross-border logistics customers becomes evident when the transportation time becomes longer waiting time (Zhang, 2018). Customers attach great importance to the timeliness, especially for B2C e-commerce services (Bi, 2017). Longer shipping times can create disappointment in customers' minds and lead to dissatisfaction (Ali and Haeeb, 2019).

According to Yan (2014), the concept of transit time refers to the quality of time. A long-elapsed time indicates a low quality of time, and a short-elapsed time suggests a high quality of time. The virtual nature of the whole process, from order to delivery, increases the customer's insecurity. The longer the elapsed time, the higher the insecurity; this, in turn, causes customer dissatisfaction. Therefore, customer satisfaction can be obtained by reducing the transit time.

The main advantage of e-commerce is the ease of use. On-time or early delivery is considered a critical success factor for e-commerce and logistics companies (Huang et al., 2019). Customers always expect to receive their orders on time (Morganti et al., 2014). The results of many studies generally agree that logistics transit time has a high correlation with customer satisfaction. Therefore, shipping time in cross-border e-commerce logistics positively impacts customer satisfaction (Kawa and Zdrenka, 2016; Du et al., 2018). In conclusion, one of the most important factors affecting customer satisfaction is shipping time. The shortest shipping time increases customer satisfaction, while a longer shipping time decreases customer satisfaction.

Table 2.2
Summary of past research on the relationship of delivery time

Studies	Country	Purpose	Type of source	Finding
Zhang Lina, Zheng Guiling, Dong Weijia(2014)	China	To propose suggestions for optimizing Taobao's logistics services	Journal	There is a negative relationship between customer satisfaction and delivery time, and the relationship is significant
Gajewska Teresa, Grigoroudis Evangelos (2015)	Poland	To provide findings on the importance of logistics service attributes that influence customer satisfaction	Journal	Shipping time is the second most important factor determining customer satisfaction, and its attribute is the speed of shipping time
Gajewska Teresa, Dominik Zimon, (2018)	Poland	To present the results of a questionnaire survey on the factors behind the development of e-commerce services	Journal	The average delivery time of logistics is significantly correlated with customer satisfaction
Yuen Kum Fai, Thai Van Vinh, (2015)	Singapore	To determine the dimensions of transport service quality and examine their impact on customer satisfaction	Journal	Reliability and shipping speed are the main predictors of customer satisfaction

Pan HaiLan (2020)	China	To introduce the relationship between the components of the logistics supply chain and propose the construction strategy of the logistics supply chain management model.	Journal	1. Cross-border e-commerce emerged late in China but developed at a fast pace. 2. Logistics is an important link to support the development of cross-border e-commerce
Bi Jiesheng (2017)	China	To study the timeliness of logistics companies	Journal	Logistics timeliness can improve customer satisfaction and strengthen the brand of logistics companies
Huang Sheng-Teng, Su I-Hsuan , Lee Wei-Chi. Lin Tz-Heng (2019)	China Taiwan	To improve the quality of logistics services for cross-border e-commerce business	Journal	The key success factor for e-commerce and logistics companies is on-time delivery
Eleonora Morganti, Saskia Seidel, Barbara Lenz(2014)	Germany	To compare the alternatives to home delivery that have been developed by French and German parcel delivery operators	Journal	Logistics delivery is one of the top concerns of e-shoppers and e-retailers in the EU
Arkadiusz Kawa, Wojciech Zdrenka (2016)	Poland	To Propose a concept of cross-border e-commerce integrator	Journal	The concept of a cross-border e-commerce integrator is proposed, and its main task is to integrate the whole supply chain.

2.3.4 Returns and Exchange with cross-border logistics customer satisfaction

In e-commerce, goods are sold through electronic channels (e.g., the Internet). Customers purchase goods through the concept of described virtual size and quality information, which inevitably leads customers to make false assumptions that result in many product returns, especially for B2C e-merchants (Rao et al., 2018). According to Wang et al. (2021), the main reasons for product returns are customer preference, product quality, damage to the goods during long-distance shipping, and product description discrepancies. When a customer requests a return after receiving the goods for some reason, the resulting return service can also be referred to as

e-commerce reverse logistics. E-commerce reverse logistics is the e-commerce logistics activity caused by the reverse return situation, which is the process of returning the goods to the merchant (Rajendran et al., 2018).

Returns management plays a vital role in e-commerce to improve consumer purchase confidence and customer satisfaction while improving the image and reputation of the company (Jalil, 2019). The report on e-commerce product return statistics and trends (2016) further shows that 92% of potential customers would repurchase the product if the return process were hassle-free. However, reverse logistics also faces challenges and obstacles.

Yang and Shen (2015) suggested that parcel breakage and loss rates in cross-border logistics are much higher than in domestic logistics. Wang et al. (2012) pointed out that the high return rate of e-commerce has become a big challenge for the industry. Ding, Hu, and Campos (2017) pointed out that the problem of return and exchange services is increasingly prominent and is one of the biggest problems that cross-border e-commerce needs to address and overcome. Biswas and Abdul-Kader (2018) analyzed the challenges faced by reverse logistics and proposed a directional approach to solving these challenges. Wang, Liu and Wei (2013) analyzed the causes of e-commerce reverse logistics and pointed out the poor quality of return logistics services. Das et al. (2018) introduced the reverse logistics network design problem of an e-commerce enterprise. Li and Lu (2019) elaborated on customers' service quality perceptions of reverse logistics and constructed a reverse logistics satisfaction

evaluation system. Yu and Kim (2019) analyzed the return and exchange services in Chinese and U.S. e-commerce markets. Dissanayake & Singh (2007) showed that reverse logistics management that supports customer emotions could increase profits and improve customer satisfaction.

In conclusion, reverse logistics is undoubtedly an essential part of e-commerce, but the reverse logistics problem is undoubtedly a major challenge for e-commerce. However, there is a general lack of attention to the reverse logistics process, and previous studies on logistics service quality rarely mention this key factor (Lamba et al., 2020). Therefore, it can be proved that reverse logistics management is crucial for e-commerce enterprises.

Table 2.3
Summary of past research on the relationship of return and exchange

Studies	Country	Purpose	Type of source	Finding
Shashank Rao, Kang Bok Lee, Brian Connelly, Deepak Iyengar (2018)	USA	To extend previous work on Merchandise return policies by introducing a signaling theory perspective	Journal	A returning event may only affect purchases that require a return, but the group of shoppers affected by the policy includes shoppers who may not have actually experienced a return event.
Wang Xiaohua, Xie Jingchao, Fan Zhiping, (2015)	China	To enable retailers to choose the best cross-border logistics model to meet marketing strategies	Journal	Product returns and reverse logistics are key issues in cross-border e-commerce and logistics.
Emy Ezura A. Jalil (2019)	Malaysia	To determine the relationship between e-commerce reverse logistics variables and customer satisfaction in the surrounding areas of the Klang Valley.	Journal	Returns management can improve consumer confidence in purchasing and customer satisfaction while enhancing a company's image and reputation

Yang Zhenhua, Shen Qiang, (2015)	China	To analyze the development of cross-border e-commerce exports and identify the problems and related root causes that hinder their development	Journal	Cross-border logistics has problems such as untraceable packages and high breakage/loss rates
Chiranjib Biswas, Walid Abdul-Kader, (2018)	Canada	To summarize and analyze the challenges facing Reverse Logistics (RL) and provide directional approaches to address/overcome these challenges	Journal	Compared to forward logistics, reverse logistics is a complex process. RL has multiple starting points and a high degree of uncertainty.
Wang Wenming , Liu Yan , Wei Yingjie, (2013)	China	To explore the main causes of reverse logistics and to analyze the problems of reverse logistics in China.	Journal	The main problems of reverse logistics in China are lack of management awareness, lack of effective return mechanism, low processing efficiency and poor service attitude.
Li Yi, Lu Libin, (2019)	China Taiwan	To elaborate on consumers' perceptions of reverse logistics service quality and construct an evaluation system	Journal	An evaluation index system based on the SERVQUAL model and LSQ model was established, and the SERVPERF model was used for the evaluation

2.3.5 Information tracking with cross-border logistics customer satisfaction

Information tracking can be defined as a solution for tracking history, tracking the status of products, recording location data, and determining the delivery location in a physical environment (Shamsuzzoha et al., 2011). Since most cross-border logistics processes do not include face-to-face interactions, it is essential to track the customer's shipment properly. This process can be achieved by using information and communication technology (ICT). And the introduction of ICT into logistics systems will influence logistics tracking services and other services that are important to the logistics industry (Luisa Dos Santos Vieira et al., 2012).

Information tracking of logistics is essential because most consumers have a high demand for logistics information (Su, 2018). Without a proper logistics tracking system, effective logistics coordination will be challenging to achieve (Shamsuzzoha and Helo, 2011). According to Song (2016), the quality of tracking information is an essential determinant of logistics customer satisfaction. Bienstock and Royne (2010) also discussed the relationship between information technology and customer satisfaction in logistics services in their study. Sutrisno et al. (2019) and Priento et al. (2020) also suggested that improving logistics information quality has a significant impact on customer satisfaction.

Kalkan (2018) stated that providing information tracking can improve the reliability of logistics delivery and reduce the rate of lost orders. Tian et al. (2016) noted that the logistics customer satisfaction index ranked second regarding logistics information security, timeliness, and availability of tracking information, such as logistics order inquiries. This index suggests that the traceability of logistics companies has a significant impact on customer perceptions. However, according to Yang and Xiao (2014), order tracking ranked fourth in the customer satisfaction index after the attitude of logistics services. Cross-border logistics services can better use the Internet to track deliveries because they can attract more customers than traditional logistics systems. Choy et al. (2014) suggested that the implementation of information technology in the logistics industry has improved the quality of service, thus creating competitiveness. A better information tracking system can bring confidence and certainty to consumers after purchase.

In conclusion, logistics information has become an essential part of the logistics industry due to the high consumer demand (Aćimović et al., 2020). Additional features of information tracking in cross-border logistics positively impact customer satisfaction. A quality information tracking system creates a positive perception in the customer's mind, automatically increasing customer satisfaction.

Table 2.4
Summary of past research on the relationship of information tracking

Studies	Country	Purpose	Type of source	Finding
Su Jiangsheng (2018)	China	To discuss the problems encountered by cross-border order enterprises and cross-border logistics enterprises in the industry docking	Journal	The tracking of electronic orders is crucial for both enterprises and logistics companies. Cross-border logistics companies must overcome this problem if they want to stand firm in overseas markets
Song Xiaoxu (2016)	China	To investigate the main factors affecting the satisfaction of logistics services of online shopping	Master dissertation	The main factors were found to be logistics delivery quality, logistics information quality, staff service quality, logistics safety and brand image.
Angeline Sutrisno, Erna Andajani, Fitri Novika Widjaja (2019)	Indonesia	To analyze the impact of service quality of logistics companies on customer satisfaction and loyalty	Journal	The information quality dimension has the highest impact on customer satisfaction
Berna Kalkan (2018)	China	To analyze the relationship between the use of information technology by logistics companies to ensure customer satisfaction and business performance.	Journal	Logistics companies can improve customer satisfaction and profitability by improving the quality of information.

Tian Xue, Niu Pengfei, Wang Chen, Duan Yixuan(2016)	China	To investigate cross-border e-commerce logistics service indicators and analyze logistics service indicators that are closely related to customer satisfaction	Journal	The logistics customer satisfaction index ranked second in terms of logistics information security, timeliness and the availability of tracking information such as logistics order inquiries.
Yang Benfang, Xiao Feng(2014)	China	To analyze of the impact of logistics and distribution services on C2C customer satisfaction in the context of Taobao	Conference Proceedings	Order tracking ranked fourth in the customer satisfaction index, after logistics service attitude

2.3.6 Staff service quality with cross-border logistics customer satisfaction

The attitude of logistics service representatives, the external image of staff, communication with customers, personalized services, and other relevant elements have a substantial impact on the perception of e-commerce logistics services. The service quality of logistics company staff in terms of customers, image, attitude, and communication contributes to the overall quality (Zhang, 2014). The guarantee of logistics services refers to the ability of the staff to ensure good service quality (Yang and Xiao, 2014).

Staff service quality is the key to the overall quality of logistics companies, and customer satisfaction is obtained by training staff and improving their service quality (Uvet, 2020). Zhang (2011) states that improving logistics services requires a logistics company's staff training system to develop logistics staff with high-quality service capabilities. Le et al. (2019) also suggest that logistics companies should

design staff training programs to improve staff communication skills, problem-solving skills, and work attitudes.

According to Thai (2013), service quality consists of one main attribute related to the attitude, external performance, and communication style of the staff of the logistics company. The service quality of the staff depends on the quality of the tools and attitudes of the staff in terms of service and communication skills that meet the requirements. Logistics companies are committed to providing professional and systematic services to their customers and logistics activities, and service is the basic supply of all logistics companies. In today's competitive times, quality service is the key advantage. Regardless of the company's nature, the contribution of staff is essential to providing quality services (Ellinger et al., 2010).

Li et al. (2015) stated that the service attitude, professionalism, and courtesy of logistics staff are direct forms of customer-perceived services. It is a critical factor that affects customer evaluation of logistics services. Yan (2014) found that staff communication is crucial to improving logistics customer satisfaction. Communication in personal services is even more critical because staff communicates directly with customers, just as staff in courier services communicate face-to-face during the delivery process. The customer's perception of the logistics service is established in this direct communication, which is critical to ensuring customer satisfaction. However, Wei and Zhou (2015) found no significant

relationship between the quality of employee communication and customer satisfaction.

In ensuring customer satisfaction, the quality of personal delivery is also emphasized, and a good image wins customers (Song, 2016). However, Yang and Xiao (2014) noted that most logistics staff leave goods at the company's doorstep or at the courier station without delivering to the physical address, which has led to customer dissatisfaction.

In conclusion, the service quality of staff is one of the critical factors that determine customer satisfaction in cross-border logistics. A decrease in the quality of staff service can reduce customer satisfaction. Service quality depends on the attitude, behavior, and communication between staff and customers, especially during the delivery process, and the information generated by staff. Therefore, staff service quality is closely related to customer satisfaction with cross-border logistics.

Table 2.5
Summary of past research on the relationship of staff service quality

Studies	Country	Purpose	Type of source	Finding
Zhang Yuanxiao (2014)	China	To develop a theoretical model and measurement system for logistics service quality evaluation	Journal	Developed a measurement model and logistics service quality measurement suitable for B2C e-commerce logistics
Yang Benfang, Xiao Feng (2014)	China	To analyze of the impact of logistics and distribution services on C2C customer satisfaction in the context of Taobao	Master dissertation	Customers' feelings about logistics are largely related to the attitude of logistics service personnel.

Hasan Uvet (2020)	USA	To study how logistics services affect customer satisfaction	Journal	The quality of personnel contact, one of the three main dimensions of service quality, has a significant impact on the perception of satisfaction.
Duc Nha Le, Hong Thi Nguyen, Phuc Hoang Truong (2019)	Vietnam	To validate the five determinants of service quality and to examine the link between service quality and customer satisfaction	Journal	To improve service quality, logistics companies should raise awareness of a customer-oriented culture and equip their employees with the necessary skills and the right attitudes.
Vinh V. Thai(2013)	Singapore	To explore the definition of the logistics service quality concept and its related dimensions	Journal	Logistics service quality consists of one main attribute related to staff's attitude, external performance, and communication style in logistics companies.
Yan Mengmeng (2014)	China	To investigate the relationship between each dimension of online shopping logistics service quality and customer satisfaction with logistics service	Master thesis	Staff communication is an important factor in improving logistics customer satisfaction
Wei Hua Zhou Jing (2015)	China	To clarify the key logistics factors affecting customer satisfaction	Journal	Staff service quality has a significant positive correlation with customer satisfaction

2.4 Research framework

As the major support platform for cross-border e-commerce, cross-border logistics is the last key link essential for e-commerce (Delfmann et al., 2002; Wei & Zhou, 2015; Chen, 2019). Cross-border logistics is spreading globally, especially in China, where the overall transaction volume is growing at an alarming rate to reach the highest level (Guo, Zhong & Zhang, 2016). However, customer satisfaction in cross-border

logistics is essential. However, customer satisfaction in cross-border logistics is crucial. Due to the rapid rise of different online marketplaces, customers can conduct transactions more securely. (Hu, Iyer, Hesse & Ahlert, 2004). Various cross-border logistics services have a positive effect on customer satisfaction. These services include transportation cost, delivery times, return logistics services, information tracking, and staff service quality.

Transportation cost, such as transportation costs, significantly impact customer satisfaction (Wu & Yan, 2016). This is because it is one of the factors that influence customers' purchase intent and determines the overall value of the commodity. It is the main factor that affects customer satisfaction in cross-border logistics systems (Zhang, Zheng & Dong, 2014).

Furthermore, the time it takes for logistics to arrive is an essential factor that impacts customer satisfaction (Zhang, Zheng & Dong, 2014). The faster the distribution speed, the shorter the delivery time, positively affecting customer satisfaction. Yang and Xiao (2014) suggested that delivery speed impacts customer satisfaction. Therefore, delivery time significantly impacts cross-border logistics customer satisfaction.

Logistics and distribution service assurance refers to the ability of the company's staff to ensure quality service (Yang & Xiao, 2014). The service quality provided by logistics staff determines customer satisfaction (Thai, 2013). Moreover, staff service quality has a significant positive effect on customer satisfaction. (Wei & Zhou, 2015).

Therefore, there is an important relationship between staff service quality and customer satisfaction.

Unlike offline transactions, due to the lack of physical experience, goods purchased online may contrast with psychological expectations, leading to more frequent demand for returns and exchanges (Zou, 2015). Furthermore, because of the complicated process logistics of cross-border e-commerce, with more links and more extended periods, the process of customs inspection, after a series of tedious procedures such as opening and then sealing and packaging, may cause certain risks to goods, such as damage to goods (Lu, 2019). Therefore, logistics enterprises' return and exchange services indirectly affect customer satisfaction.

The level of customer satisfaction is also influenced by the tracking system of the cross-border logistics system. A well-managed information tracking system has a significant positive impact on customer satisfaction with the purchased products. A good logistics order inquiry system and a product delivery schedule with information security impact customer satisfaction (Tian, Niu, and Wang, Duan, 2016).

Therefore, based on the above discussion, the research framework of this study is shown in Figure 2.1.

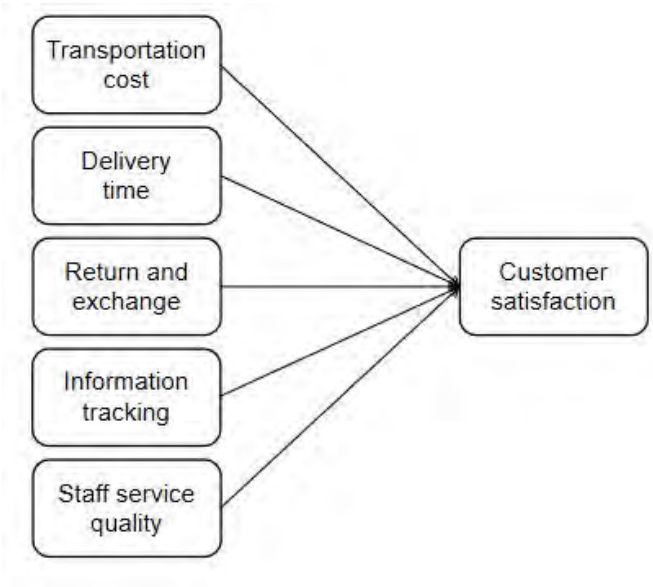


Figure 2.1
Theoretical Framework

2.5 Operational definitions

Operational definitions provide a brief description of the different variables and describe how the study intends to measure the variable of interest (Creswell, 2012). The current study variables are based on previous studies. Different research variables were used in this study. These variables included transportation cost, delivery times, returns and exchanges, information tracking, and staff service quality. The measured variables were used from previous studies.

2.5.1 Customer Satisfaction

There is a disconnect between the quality of logistical services, delivery, reputation, and real-world customer purchasing experiences. These elements are necessary for customer satisfaction.

As a result, customer satisfaction is highlighted in this study in terms of quality, pricing, service, delivery, reputation, and cross-border logistics experience. Thus, customer satisfaction in the context of cross-border logistics is defined as "a cross-border good buying and selling system with good quality, satisfactory price, good delivery service, and good reputation that satisfies the customer experience."

2.5.2 Transportation Cost

Transportation cost are the costs incurred in distributing goods to actual customers. In this study, transportation cost include transportation costs, returns, exchanges, and freight insurance prices.

Therefore, this study defines transportation cost as "logistics costs with reasonable costs, minimum return costs, and stable prices."

2.5.3 Delivery Time

Delivery time includes the time from the time the customer confirms the order to the actual delivery time. This is the time from the time a customer orders a specific shipment to the time it is actually delivered to that customer. According to the current study, cross-border transit time is based on different elements, such as the mode of transportation, customs clearance time, and delays caused by holidays.

Therefore, for the purpose of this study, transit time is defined as "delivery time, including transit time, customs clearance time, and reasonable delays to meet the

holidays of cross-border logistics customers."

2.5.4 Returns and Exchanges

Returns and exchanges include a series of steps and procedures that customers need to complete when returning or exchanging goods using cross-border logistics. Therefore, for the purpose of this study, returns are defined as "the process of streamlining the process and communicating with customers on time about pickups and information that needs to be prepared in advance."

2.5.5 Information Tracking

Information tracking is an essential part of the logistics system, which provides convenience for customers of logistics products. This study achieves information tracking through timely tracking information, error feedback, and logistics transportation information.

Therefore, this study defines information tracking as "the ability to verify time-tracking information, error feedback, and logistics transportation information for cross-border logistics transportation."

2.5.6 Staff Service Quality

Staff service quality is based on the logistics company staff's communication, attitude, and service level. It mainly includes fast and professional answers to customers' questions, the service attitude of logistics staff, the willingness of logistics staff to

help customers, instrumentation, and the responsibility of cross-border logistics staff.

Therefore, in this study, staff service quality is defined as "the process of providing better service through good staffs communication skills, attitude, grooming and professional approach of logistics staff to solve all customer problems."

2.6 Research Hypothesis

This research study focuses on the effect of cross-border logistics services on the level of cross-border logistics customer satisfaction. Therefore, the following hypotheses are derived from this study through the discussion in the framework development section above.

H1: There is a significant positive relationship between transportation cost with customer satisfaction.

H2: There is a significant positive relationship between delivery time with customer satisfaction.

H3: There is a significant positive relationship between returns and exchanges with customer satisfaction.

H4: There is a significant positive relationship between information tracking with customer satisfaction.

H5: There is a significant positive relationship between staff service quality with customer satisfaction.

2.7 Underpinning Theory

2.7.1 The Marketing Theory of 4Cs

The Marketing Theory of 4Cs is proposed by American marketing expert R.F. Lauterborn (1990), which corresponds to the 4Ps of traditional marketing. It is oriented to consumer needs and resets the four basic elements of the marketing mix: Consumer, Cost, Convenience, and Communication.

Customer refers to the customer's needs, according to the customer's needs to provide products or services; Cost refers to the customer's purchase cost and includes the customer's time, mental, and physical costs. Convenience refers to providing customers with the maximum shopping and uses convenience; Communication refers to active and effective communication with customers to establish a good corporate image in the minds of consumers.

Several authors have used the Marketing Theory of 4Cs to develop logistics performance, some examples of which include Du and Rong (2010), Shi (2014), and Ozturkoglu (2016). The Marketing Theory of 4Cs emphasizes that companies should, first of all, put the pursuit of customer satisfaction first, followed by efforts to reduce the purchase cost of customers, then they should pay full attention to the convenience of customers, and finally, they should also communicate actively with consumers.

Therefore, The Marketing Theory of 4Cs as a supporting theory is an appropriate choice to support this study.

According to the 4Cs theory, companies should put customers first, and satisfied customers are the key to business success (Jones and Sasser, 1995). In the context of this study, if logistics companies understand the needs of their customers, have reasonable logistics prices, fast logistics time, easy and effective return and exchange processes, good information tracking, and good employee skills/competencies. These companies are likely to meet the needs of their customers and be successful. Therefore, The Marketing Theory of 4Cs applies to this study.

2.7.2 ACSI Model

Fornell developed the American Customer Satisfaction Index model (ACSI model) in 1994. The theoretical basis of the ASCI model is explained in Fornell (1996), and the nature and purpose of the ACSI are discussed. The theoretical model is shown in Figure 2.2. In the ACSI model, total satisfaction is placed in a system of causal interactions that affect each other and are interrelated. It scientifically utilizes the customer's consumption cognitive process to identify overall satisfaction in an interactive system of interacting and interrelated causes and effects. The model can explain the relationship between consumption history and overall satisfaction and indicate the consequences of high or low satisfaction, thus giving the overall satisfaction a forward expectation character.

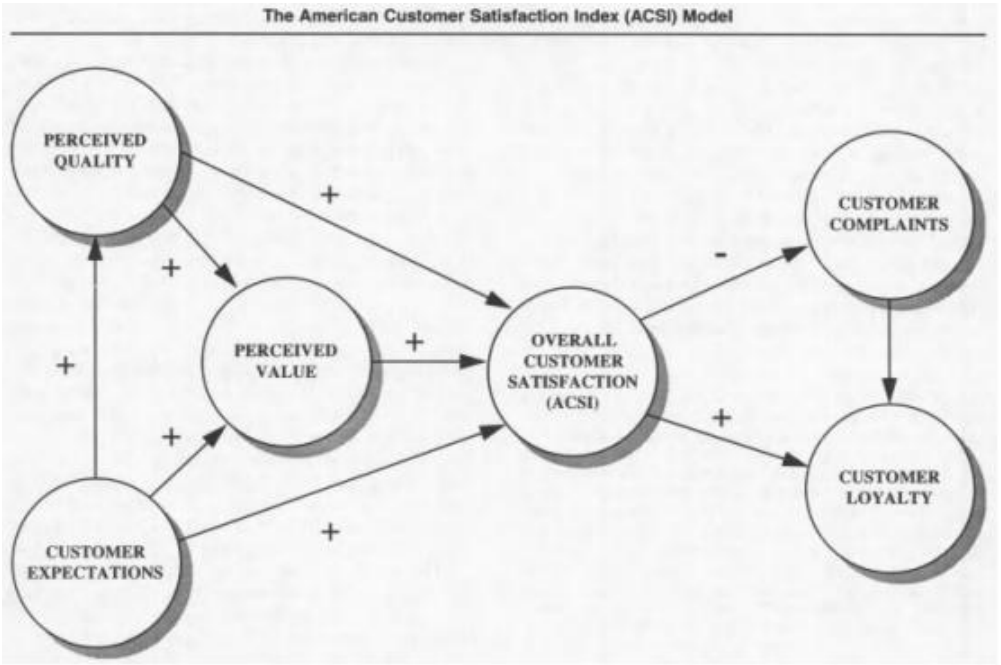


Figure 2.2
American Customer Satisfaction Index (ACSI) Model
Source: Fornell, Johnson, Anderson, Cha, & Bryant (1996)

Several researchers have used the ACSI model to develop satisfaction with e-commerce logistics services, such as Ali and Kaur (2018), Zhang, Cai, and Sun (2021), Subramanian et al. (2014) and Bryant (2001), etc. Based on the ACSI model, from the firm level, customer satisfaction directly affects customer loyalty and ultimately affects the profit level and competitiveness of the firm. From the perspective of regions and industries, using the customer satisfaction index data, it is possible to compare the level of customer satisfaction in different regions and industries. From the consumer's point of view, the American Customer Satisfaction Index expresses the general consumers' evaluation of the products and services they use or buy. Therefore, the ACSI model as a supporting theory is an appropriate choice to support this study.

In this study, overall logistics customer satisfaction is improved by meeting customers' perceived logistics expectations and improving their perceived quality and value. Overall, customer satisfaction affects customer complaints and loyalty, including the likelihood of repeat purchases and customer tolerance for price changes. Therefore, the ACSI model applies to this study.

2.8 Summary

This chapter provides a comprehensive review of research related to the area of cross-border e-commerce logistics and cross-border logistics customer satisfaction. It is found that transportation cost, delivery time, returns and exchanges, information tracking and staff service quality have a relationship with customer satisfaction. However, transportation cost and information tracking are controversial in previous studies; for example, some studies point out that there is no relationship between price and customer satisfaction. On the other hand, there are fewer studies on the relationship between returns and customer satisfaction, especially in the context of cross-border logistics in China. Therefore, research needs to be further explored.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents the methodology of this study based on the problem statement, research objectives, and previous research findings. This chapter includes the research framework, design, hypotheses, data analysis techniques, and data analysis steps. It provides a detailed discussion of the development of the research framework. It also discusses the study design, study population, data, and sampling. This chapter also discusses data collection methods. This section also discusses in detail the data collection procedures and the development of data collection instruments and measures. Finally, this section discusses applied data analysis techniques.

3.2 Research design

This study adopts a quantitative research design that aims to investigate the critical influencing factors (transportation cost, delivery time, return and exchange, logistics information track, and staff service quality) of customer satisfaction in cross-border e-commerce logistics in Southwest China.

Ahmad et al. (2019) defined quantitative research as a type of research that uses natural scientific techniques to produce statistical data and actual evidence. In addition, Watson (2015) states that quantitative research is applied to study the

relationships and trends between variables and can also be used to reject or accept the hypotheses of the study. Therefore, the quantitative approach applies to this study.

3.3 Population and sampling

The current study focuses on the impact of different services of cross-border e-commerce logistics on cross-border e-commerce logistics customer satisfaction. Therefore, this study takes all cross-border e-commerce logistics customers in the southwest region of China as the target population. This means that data will be collected from cross-border e-commerce logistics customers in southwest China to examine the level of customer satisfaction with cross-border e-commerce logistics.

The cluster sampling method will be used in this study. Cluster sampling is a sampling technique in which the entire group of interest is divided into multiple clusters (Latpate et al., 2021). Furthermore, Etikan and Bala (2017) argued that when the total area of the study is too large, a better approach for the researcher is to divide the area into smaller parts. The method is to divide the area into smaller parts of the same or equal size and then randomly select from the smaller units. Therefore, a whole-group sampling method is suitable for data collection.

This study divided Southwest China into five clusters by province: Tibet, Sichuan, Chongqing, Yunnan, and Guizhou. Sichuan was selected. Sichuan Province is considered to be the leading province in Southwest China because it is the "hot spot"

for economic development in Southwest China (Sun, 2021). According to the Sichuan Provincial Bureau of Statistics (2021), Sichuan Province has a population of 83.7 million people. It largely represents citizens' economic level and living standards in the Southwest. After selecting a cluster, a random sampling method is used to distribute the questionnaire and collect data.

3.4 Unit of analysis

The current study focuses on the satisfaction of cross-border logistics customers. This is why data is collected from customers of cross-border logistics. Therefore, the unit of analysis for this study is the individual.

3.5 Sample size

According to Krejcie and Morgan (1970), if the population exceeds 100,000, the sample size should be 384. According to China Cross-Border E-Commerce Development Report (2020), the size of Chinese cross-border e-commerce users reached 125 million. The Southwest region accounts for 12.4% or about 15.5 million people. Which is more than 100,000. Therefore, the sample size is 384.

Table 3.1

The Table of Krejcie and Morgan (1970)

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
20	19	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	100000	384

3.6 Instrumentation

This study used a questionnaire to collect primary data from Sichuan Province, China. Since measurement scales are appropriate for examining the relationship between different variables (Sekaran and Bougie, 2013), this study used the Likert scale to collect data because the Likert scale measures the extent to which respondents' express agreement and disagreement with various statements about an attitude, object, person, or event (Taherdoost, 2019). Generally, the Likert scale uses 5 points between strongly disagree and strongly agree. According to Chyung et al. (2017), 5-point Likert contains one middle point, and respondents are not coerced to agree or disagree so that they can share their true neutral opinion. Thus, the scale has five

categories such as 1=strongly disagree, 2=disagree. 3=neutral, 4=agree, and 5=strongly agree. The following are the measures of all variables. The questionnaire will be divided into two parts. The first part is the study related to descriptive statistics. It includes respondents' personal information, such as gender, age, education, income, and Cross-border e-commerce shopping experience. The second part of the questionnaire consists of the main variables of the study. These variables include cross-border transportation cost, cross-border delivery time, returns and exchanges, cross-border information tracking, staff service quality, and cross-border logistics customer satisfaction.

3.6.1 Transportation cost

Transportation costs will measure transportation cost, transportation costs for returns and exchanges, price stability, and freight insurance. These scale items are from Zhang (2014) and Liao (2016). This scale contained 5 items. Below is the example of the items:

No.	Items	1	2	3	4	5
1.	The logistics company have a clear list of costs					
2.	The logistics company has a perfect price system, and the price is relatively stable					
3.	I am satisfied that the customer pays for shipping costs in the event of a return or exchange					
4.	The logistics company has different discounts according to the different logistics service					
5.	I am satisfied with the cost of cross-border logistics transportation					

3.6.2 Delivery time

In the context of this study, transportation time is measured based on transit time, customs clearance time, and reasonable delays to meet the holidays of cross-border logistics customers. The scale items for these measures are adopted from Liao (2016). This scale contained 6 items. Below is the example of the items:

No.	Items	1	2	3	4	5
1.	I am satisfied with the speed of the merchant's delivery after the order was successful					
2.	I am satisfied with the time from ordering to receiving parcel					
3.	There are different options for delivery time, and buyers are free to choose					
4.	I am satisfied with the customs clearance time of cross-border e-commerce logistics					
5.	I am satisfied with the time from the return of the goods from the logistics to the receipt of the new goods					
6.	I am satisfied with the delay in receiving goods during peak periods compared to normal periods					

3.6.3 Returns and Exchanges

In the context of the current study, returns and exchanges are "streamlined processes that communicate with customers on time about pickups and information that needs to be prepared in advance. The scale items for these measures were adopted from Li (2019). This scale contained 5 items. Below is the example of the items:

No.	Items	1	2	3	4	5
1.	Cross-border e-commerce platforms have detailed return and exchange instructions (such as providing clear return terms, processes, rules, etc.)					
2.	I am satisfied with the prompt response and reply from					

	customer service after requesting a return operation					
3.	After applying for a return operation, customer service can take the initiative to consult your request and follow up on your satisfaction					
4.	The entire return logistics operation process is easy and fast					
5.	After applying for the return operation, the system provides timely updates of the return logistics tracking information					

3.6.4 Information tracking

Information tracking is done through timely tracking information, error feedback, and logistics transportation information. These scale items were adopted from a previous study conducted by Zhang (2014) and Wei (2019). This scale contained 6 items. Below is the example of the items:

No.	Items	1	2	3	4	5
1.	I can track the logistics information of my orders in real time					
2.	I can check the status of my product's customs clearance in real time					
3.	Logistics companies provide consumers with the ability to track the location of their products at all times					
4.	Logistics companies can give accurate logistics and transportation information					
5.	I am satisfied with the feedback of error information after the error occurs					
6.	Timely and reliable feedback on order logistics information					

3.6.5 Staff Service Quality

Staff service quality was measured based on staff attitude, image, delivery, and client communication. The scale items are in the form of Wei (2019) and Liao (2016). This

scale contained 6 items. Below is the example of the items:

No.	Items	1	2	3	4	5
1.	The logistics staff has a positive attitude and good communication abilities					
2.	Logistics staff can solve my problems professionally and timely					
3.	In the case of a wrong delivery, an incomplete receipt, or other issues, logistics staff can manage them appropriately					
4.	The logistics staff presents a professional image by being well-dressed and well-behaved					
5.	The logistics staff is well-versed in their profession and is well-versed in the business					
6.	To protect the consignee's rights and interests, logistics staff operate with accuracy and consistency during delivery					

3.6.6 Customer satisfaction

Cross-border logistics customer satisfaction will be measured with the help of quality, price, service, delivery, company reputation, and customer experience. The scale items are adapted from a previous study by Pei (2013). This scale contained 7 items. Below is the example of the items:

No.	Items	1	2	3	4	5
1.	I am satisfied with the quality of cross-border logistics					
2.	I am satisfied with the price of cross-border logistics					
3.	I am satisfied with the cross-border logistics service					
4.	I am satisfied with the door-to-door cross-border logistics service					
5.	I am satisfied with the reputation of cross-border logistics					
6.	I am satisfied with the after-sales service of cross-border logistics					
7.	In general, I am satisfied with my shopping experience using cross-border logistics					

3.7 Data collection methods and procedure

This study will collect data through questionnaires. The questionnaire will be distributed online, using the professional questionnaire website "Questionnaire Star", and randomly distributed to respondents through social media such as WeChat and QQ in Sichuan province. Moreover, since this study was conducted in China, the questionnaire will be translated into Chinese so the participants to understand the questions more clearly and express their opinions and feelings comfortably.

In addition, in order to ensure that the collected sample data are true and valid, according to the background records of Questionnaire Star, some questionnaires with apparently short answering times and apparently regular answers, which may have inattentive and disorderly answers, were excluded. At the same time, the questions of "whether you have cross-border online shopping experience" and "whether you are from Sichuan Province" were set in the questionnaire, and some questionnaires with negative options were excluded to ensure that the collected sample data could be based on respondents' personal experience of cross-border online shopping in Sichuan Province.

3.8 Pilot study

According to In (2017), a pilot study is a small-scale study that is frequently undertaken before the main experiment. Pilot studies can aid researchers in determining the study's validity and also can aid in the planning and modification of

the major study. Therefore, before starting the main study, the researcher will conduct a pilot study with the questionnaire of this study to ensure its soundness. It can help the researcher to suggest changes to the questionnaire.

The sample size for the study was 25-100 (Emory and Cooper, 1991). Therefore, this study distributes 50 questionnaires as a pilot study. Based on the test questionnaire of the pilot study, 50 online questionnaires will be distributed through the professional questionnaire website "Questionnaire Star" to students, family and friends who have cross-border online shopping experience, and 47 questionnaires were returned. However, 4 questionnaires with no cross-border shopping experience and incomplete questionnaires are not included in the pilot study. Therefore, a total of 43 questionnaires were used for the pilot study.

3.8.1 Reliability

To test the reliability, this study used Cronbach's Alpha. The obvious advantage of Cronbach's alpha is that it provides a unique estimate of the internal consistency or reliability of the scale rather than the existence of a range of possible reliabilities (Allen, 2017). According to Adeniran (2019), Cronbach's Alpha has an acceptable range of 0.70 to 0.90 or higher. Therefore, in the table below, Cronbach's Alpha for all variables is shown.

Table 3.2

Transportation cost(TC) Reliability Results

TC-Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.917	.917	5

TC-Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Clear price	14.74	23.338	.779	.613	.899
Price stable	14.67	22.653	.844	.727	.887
Return piece	14.95	23.998	.710	.543	.913
Discounts	14.77	20.897	.870	.762	.880
transportation cost	14.91	23.039	.735	.587	.908

Table 3.2 shows that Cronbach's alpha associated with TC is 0.917, which exceeds the acceptable range of 0.9.

Table 3.3

Delivery time(DT) Reliability Results

DT-Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.933	.933	6

DT-Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Shipping speed	18.37	30.001	.843	.744	.915
Ordering to receiving the parcel	18.14	33.313	.736	.577	.929
Different choice about the delivery time	18.33	29.558	.808	.708	.920
Customs clearance time	17.95	28.569	.863	.778	.912
Return goods to receiving the new goods	18.26	31.433	.802	.695	.921
Delivery delay time	18.14	31.504	.775	.654	.924

Table 3.3 shows that Cronbach's alpha associated with DT is 0.933, which exceeds the acceptable range of 0.9.

Table 3.4
Returns and Exchange(RE) Reliability Results

RE-Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.913	.915	5

RE-Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Return and exchange instructions	14.77	21.754	.758	.599	.898
Return and exchange response	14.81	20.060	.771	.611	.895
Return and exchange follow-up	14.91	20.134	.765	.645	.896
Return and exchange logistics operations	14.86	20.837	.822	.710	.886
Return and exchange logistics information	14.98	19.547	.791	.648	.891

Table 3.4 shows that Cronbach's alpha associated with RE is 0.913, which exceeds

the acceptable range of 0.9.

Table 3.5
Information tracking(IT) Reliability Results

IT-Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.927	.927	6

IT-Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Track logistics information	18.51	31.494	.762	.607	.918
Customs clearance status	18.33	27.558	.862	.763	.904
Track shipments at all times	18.70	30.025	.791	.627	.913
Accurate logistics information	18.51	28.542	.815	.691	.910
Feedback of error information	18.60	30.435	.761	.583	.917
Timely logistics information	18.51	30.875	.749	.562	.919

Table 3.5 shows that Cronbach's alpha associated with IT is 0.927, which exceeds the acceptable range of 0.9.

Table 3.6
Staff Service Quality(SSQ) Reliability Results

SSQ-Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.927	.927	6

SSQ-Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Service attitude is good	18.63	30.763	.801	.663	.912
Solve the problem professional and timely	18.47	30.731	.783	.671	.915
Proper handling of error situations	18.42	29.773	.843	.727	.906
Staff image professional	18.58	30.535	.753	.603	.919
Well-versed in the business	18.79	31.027	.771	.616	.916
Operate with accuracy and consistency during delivery	18.51	30.827	.781	.631	.915

Table 3.6 shows that Cronbach's alpha associated with SSQ is 0.927, which exceeds the acceptable range of 0.9.

Table 3.7
Customer Satisfaction (CS) Reliability Results

CS-Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.941	.941	7

CS-Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Satisfied with cross-border logistics quality	22.37	45.953	.786	.636	.934
Satisfied with price of cross-border logistics	22.26	47.623	.772	.614	.935
Satisfied with service of cross-border logistics	22.26	43.719	.845	.718	.929
Satisfied with the door-to-door service of cross-border logistics	22.23	46.945	.745	.625	.937
Satisfied with reputation of cross-border logistics	22.12	44.534	.852	.731	.928

Satisfied with after-sale service of cross-border logistics	22.23	45.040	.858	.767	.927
Satisfied with shopping experience using cross-border logistics	22.12	45.296	.789	.689	.934

Table 3.7 shows that Cronbach's alpha associated with CS is 0.941, which exceeds the acceptable range of 0.9.

Table 3.8

Reliability Test Summary

Construct	**Factor**	**Alpha (inter item correlation)**	**Items**	**Cronbach' s Alpha if item deleted**
Transportation cost(TC)	Transportation cost(TC)	0.917	Clear price	0.899
			Price stable	0.887
			Return piece	0.913
			Discounts	0.880
			Transportation cost	0.908
Delivery time(DT)	Delivery time(DT)	0.933	Shipping speed	0.915
			Ordering to receiving parcel	0.929
			Different choice about the delivery time	0.920
			Customs clearance time	0.912
			Return goods to receiving the new goods	0.921
			Delivery delay time	0.924
Returns and Exchange(RE)	Returns and Exchange(RE)	0.913	Return and exchange instructions	0.898
			Return and exchange response	0.895
			Return and exchange follow-up	0.896
			Return and exchange logistics operations	0.886
			Return and exchange logistics information	0.891
			Return and exchange logistics information	0.891

Construct	Factor	Alpha (inter item correlation)	Items	Cronbach's Alpha if item deleted
Information tracking(IT)	Information tracking(IT)	0.927	Track logistics information	0.918
			Customs clearance status	0.904
			Track shipments at all times	0.913
			Accurate logistics information	0.910
			Feedback of error information	0.917
			Timely logistics information	0.919
Staff Service Quality(SSQ)	Staff Service Quality(SSQ)	0.927	Service attitude is good	0.912
			Solve the problem professional and timely	0.915
			Proper handling of error situations	0.906
			Staff image professional	0.919
			Well-versed in the business	0.916
			Operate with accuracy and consistency during delivery	0.915
Customer Satisfaction (CS)	Customer Satisfaction (CS)	0.941	Satisfied with cross-border logistics quality	0.934
			Satisfied with price of cross-border logistics	0.935
			Satisfied with service of cross-border logistics	0.929
			Satisfied with the door-to-door service of cross-border logistics	0.937
			Satisfied with reputation of cross-border logistics	0.928
			Satisfied with after-sale service of cross-border logistics	0.927
			Satisfied with shopping experience using cross-border logistics	0.934

Table 3.8 shows that all constructs' reliability is more than the acceptable range. All the constructs have a reliability value of more than 0.9, which is good.

3.8.2 Validity

Factor analysis identified closely related validity clusters. Therefore, this study used SPSS version 23 to conduct a factor analysis of the pilot study. KMO and Bartlett's test of sphericity was used to measure the sampling adequacy of factor analysis. KMO is an index used to compare the magnitude of the observed correlation coefficient and the partial correlation coefficient (Field, 2009). According to Shrestha (2021), KMO values were higher than 0.5 (a>0.5), and Bartlett's test of sphericity revealed statistically significant results (p<0.001); then, the factor analysis was appropriate.

Table 3.9
Transportation cost(TC) Validity Results

Component Matrix[a]	**Component 1**	**KMO and Bartlett's Test**		
Clear price	.861	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.844
Price stable	.906			
Return peice	.810	Bartlett's Test of Sphericity	Approx. Chi-Square	143.678
Discounts	.924		df	10
Cross-border logistics price	.830		Sig.	.000

Form table 3.9 shows for TC, the KMO value is 0.844(a>0.5), and Bartlett’s test of sphericity revealed statistically significant results(p<0.001). The factor analysis is thus appropriate. All of the items in the component matrix are above 0.4 quite strongly, and there is only one component extracted.

Table 3.10

Delivery time(DT) Validity Results

Component Matrix[a]	Component 1	KMO and Bartlett's Test		
Shipping speed	.895	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.876
Ordering to receiving parcel	.814			
Different choice about the delivery time	.868		Approx. Chi-Square	194.685
Customs clearance time	.910	Bartlett's Test of Sphericity	df	15
Return goods to receiving the new goods	.864			
Delivery delay time	.844		Sig.	.000

Form table 3.10 shows for DT, the KMO value is 0.876(a>0.5), and Bartlett's test of sphericity revealed statistically significant results(p<0.001). The factor analysis is thus appropriate. All of the items in the component matrix are above 0.4 quite strongly, and there is only one component extracted.

Table 3.11

Returns and Exchange(RE) Validity Results

Component Matrix[a]	Component 1	KMO and Bartlett's Test		
Return and exchange instructions	.847	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.862
Return and exchange response	.853			
Return and exchange follow-up	.853		Approx. Chi-Square	136.766
Return and exchange logistics operations	.892	Bartlett's Test of Sphericity	df	10
Return and exchange logistics information	.871		Sig.	.000

Form table 3.11 shows for RE, the KMO value is 0.862(a>0.5), and Bartlett's test of sphericity revealed statistically significant results(p<0.001). The factor analysis is thus appropriate. All of the items in the component matrix are above 0.4 quite strongly, and there is only one component extracted.

Table 3.12
Information tracking(IT) Validity Results

Component Matrix[a]	Component 1	KMO and Bartlett's Test		
Track logistics information	.836	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.916
Customs clearance status	.911			
Track shipments at all times	.858		Approx. Chi-Square	173.519
Accurate logistics information	.875	Bartlett's Test of Sphericity	df	15
Feedback of error information	.834			
Timely logistics information	.826		Sig.	.000

Form table 3.12 shows for IT, the KMO value is 0.916(a>0.5), and Bartlett's test of sphericity revealed statistically significant results(p<0.001). The factor analysis is thus appropriate. All of the items in the component matrix are above 0.4 quite strongly, and there is only one component extracted.

Table 3.13
Staff Service Quality(SSQ) Validity Results

Component Matrix[a]	Component 1	KMO and Bartlett's Test		
Service attitude is good	.866	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.903
Solve the problem professional and timely	.854			
Proper handling of error situations	.897		Approx. Chi-Square	175.272
Staff image professional	.828	Bartlett's Test of Sphericity	df	15
Well-versed in the business	.842			
Operate with accuracy and consistency during delivery	.851		Sig.	.000

Form table 3.13 shows for SSQ, the KMO value is 0.903(a>0.5), and Bartlett's test of sphericity revealed statistically significant results(p<0.001). The factor analysis is thus appropriate. All of the items in the component matrix are above 0.4 quite

strongly, and there is only one component extracted.

Table 3.14
Customer Satisfaction (CS) Validity Results

Component Matrix[a]	Component 1	KMO and Bartlett's Test		
Satisfied with cross-border logistics quality	.844	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.922
Satisfied with price of cross-border logistics	.832			
Satisfied with service of cross-border logistics	.890		Approx. Chi-Square	229.838
Satisfied with the door-to-door service of cross-border logistics	.813			
Satisfied with reputation of cross-border logistics	.896	Bartlett's Test of Sphericity	df	21
Satisfied with after-sale service of cross-border logistics	.899			
Satisfied with shopping experience using cross-border logistics	.844		Sig.	.000

Form table 3.14 shows for CS, the KMO value is 0.922(a>0.5), and Bartlett's test of sphericity revealed statistically significant results(p<0.001). The factor analysis is thus appropriate. All of the items in the component matrix are above 0.4 quite strongly, and there is only one component extracted.

Table 3.15
Validity Test Summary

Construct	KMO	Bartlett' s Test of Sphericity(Sig.)	Items	Component analysis
Transportation cost(TC)	0.844	0.000	Clear price	0.861
			Price stable	0.906
			Return piece	0.810
			Discounts	0.924
			Cross-border logistics price	0.830
Delivery time(DT)	0.876	0.000	Shipping speed	0.895
			Ordering to receiving parcel	0.814
			Different choice about the delivery time	0.868

			Customs clearance time	0.910
			Return goods to receiving the new goods	0.864
			Delivery delay time	0.844

Construct	KMO	Bartlett' s Test of Sphericity(Sig.)	Items	Component analysis
Returns and Exchange(RE)	0.862	0.000	Return and exchange instructions	0.847
			Return and exchange response	0.853
			Return and exchange follow-up	0.853
			Return and exchange logistics operations	0.892
			Return and exchange logistics information	0.871
			Return and exchange instructions	0.847
Information tracking(IT)	0.916	0.000	Track logistics information	0.836
			Customs clearance status	0.911
			Track shipments at all times	0.858
			Accurate logistics information	0.875
			Feedback of error information	0.834
			Timely logistics information	0.826
Staff Service Quality(SSQ)	0.903	0.000	Service attitude is good	0.866
			Solve the problem professional and timely	0.854
			Proper handling of error situations	0.897
			Staff image professional	0.828
			Well-versed in the business	0.842
			Operate with accuracy and consistency during delivery	0.851
Customer Satisfaction (CS)	0.822	0.000	Satisfied with cross-border logistics quality	0.844
			Satisfied with price of cross-border logistics	0.832
			Satisfied with service of cross-border logistics	0.890
			Satisfied with the door-to-door service of cross-border logistics	0.813
			Satisfied with reputation of cross-border logistics	0.896
			Satisfied with after-sale service of cross-border logistics	0.899
			Satisfied with shopping experience using cross-border	0.844

In summary, table 3.15 shows all the items of each factor. KMO and Bartlett's test of sphericity is in the acceptable range. In addition, KMO values were higher than 0.5 (a>0.5), and Bartlett's test of sphericity revealed statistically significant results (p<0.001); then, the factor analysis was appropriate (Shrestha 2021).

3.9 Data analysis

SPSS version 23 will be used to analyze the data. Descriptive data analysis techniques will be used to analyze non-quantitative data from respondents that are descriptive in nature. The analysis technique will cover means, frequencies, and standard deviations.

In order to test the reliability, this study will use Cronbach's Alpha coefficients to test the stability and consistency of the instruments, and according to Kiliç (2016), the reliability of the scale is considered good if the coefficient is found to be equal to or greater than 0.70. Moreover, factor analysis will be employed to test the validity of the instruments. According to Sekaran (2000), the KMO value is more than 0.8, and the validity value is considered to be good. Furthermore, according to Kwak and Park (2019), given that various statistical approaches assume that the distribution of population data is normal, it is critical to evaluate and test whether the data meet the normality criteria in data analysis. Therefore, in this study, the normality of the data will be based on checking skewness and kurtosis values.

According to Kang (2013), missing values are defined as the data value for a variable in the observation of interest that is not stored. In this study, missing value analysis will also be performed to mitigate the effect of missing values. Then, to address the research questions and hypotheses in this study, the researcher will first use Spearman correlation analysis to examine the strength of the variables. This analysis will be used to determine the relationship between transportation cost, delivery time, returns and exchanges, information tracking and staff service quality with cross-border logistics customer satisfaction. Finally, a regression analysis will be performed to test the hypotheses, where significance (p-value) and beta values will be considered. A regression analysis will be used to determine the effect of transportation cost, delivery time, returns and exchanges, information tracking and staff service quality on cross-border logistics customer satisfaction.

3.10 Summary

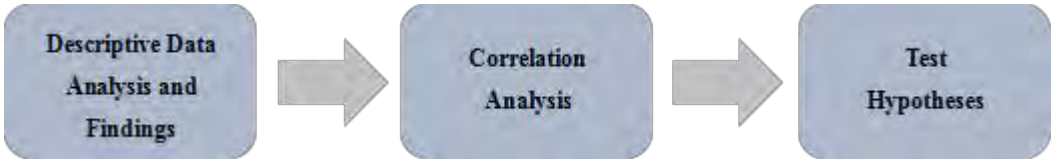
This chapter has explained the methodology applied in this study. All stages have been discussed, starting from data collection to the type of tools used to analyze the data. The results of the data analysis will be presented in the next chapter. Depending on the needs of the study, the findings or results of this study are explained in the next chapter.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Introduction

This chapter will discuss the results of the data collected from the questionnaire survey to answer the research questions. In general, this chapter is divided into two main sections, namely descriptive data analysis and empirical data analysis. In the descriptive data analysis section, the demographic information of the respondents, such as gender, marital status, age, highest education level, income level, location, and occupation in Sichuan Province, will be described. In addition, the empirical analysis section will discuss the analytical tests conducted, such as frequency analysis, Spearman correlation analysis, and multiple regression analysis. The flow of analysis is as below:



4.2 Descriptive Data Analysis and Findings

The questionnaire was created as an electronic questionnaire and published on the most popular and widespread questionnaire online survey website in China - Questionnaire Star. In addition, the questionnaires were sent randomly to WeChat and other online websites. The entire data collection process was conducted online for 15 days.

4.2.1 Survey Response Rate

Table 4.1
Survey Responses

Description	Total	Percentage(%)
Total Invitations sent out	968	100
Total Received Questionnaires	604	62.39
Other Province Questionnaires	59	9.8
No cross-border e-commerce shopping experience questionnaire	70	11.6
Accepted Questionnaires	475	78.6

This section presents the response rate of the survey. A total of 968 questionnaire invitations were sent, and 604 responses were received. Therefore, the response rate for this study was 62.39%. According to Hair et al. (1984), a response rate is generally considered acceptable when it exceeds 50%. However, 59 responses were from other provinces, and 70 had no experience with cross-border e-commerce shopping. Overall, a total of 475 useful responses were received, and accepted questionnaires accounted for 78.6% of the questionnaires received, which will be analyzed in this study.

4.2.2 Demographic Profile of Respondents

Respondents' demographics were categorized into seven types: gender, age, education level, income, occupation, location, and whether they had experience with cross-border e-commerce shopping. Responses from other provinces and no experience with cross-border shopping were removed. Therefore, it was not

necessary to test for location and the presence of cross-border e-commerce experience.

Table 4.2
Demographic Profile of Respondents

Item		Frequency	Percentage(%)
Gender	Male	196	41.3
	Female	279	58.7
	Total	475	100
Age	0-19	38	8
	20-24	57	12
	25-29	114	24
	30-34	84	17.7
	35-40	93	19.6
	40+	89	18.7
	Total	475	100
Education Level	High School	36	7.6
	Junior Collage	101	21.3
	Undergraduate	238	50.1
	Master	68	14.3
	PHD	32	6.7
	Total	475	100
Income Rate (Yuan)	0-1999	73	15.4
	2000-3999	67	14.1
	4000-5999	163	34.3
	6000-9999	115	24.2
	10000+	57	12
	Total	475	100
Occupation	Employed	311	65.4
	Retired	9	1.9
	Self-Employed	83	17.5
	Others	72	15.2
	Total	475	100

The table above shows that there are 196, or 41.3 % of males, and there are 279 or 58.7% females in this study. In terms of age, there are 6 different age groups: 38 respondents(8%) are under 19 years old. 57 respondents(12%) are between 20-24 years old. 114 respondents(24%) are between 25-29 years old. 84 respondents(17.7%) are between 30-34 years old. 93 respondents(19.6%) are between 35-40 years old, and 89 respondents(18.7%) are over 40 years old. 18.7%.In addition, there are 5 different categories for the education level. There are 36 respondents in high school, accounting for 7.6%. College has 101 respondents or 21.3%. Bachelor's degree has 238 respondents or 50.1%. There were 68 respondents or 14.3%, with a master's degree. 32 respondents or 6.7 percent with a PHD. For the income rate, there are 5 different income ranges. 73 respondents(15.4%) have income below RMB 1999/month. 67 respondents(14.1%) have an income between RMB 2000-3999/month. 163 respondents(34.3%) have an income between RMB 4000-5999/month. 115 respondents (24.2%) have an income between RMB 6000-9999/month. 57 respondents (12%) have income above RMB 10000/month. In additionally, there are 311 respondents have their own job, which is 65.4% of the total number, and 9 respondents have already retired (1.9%), 83 (17.5%) respondents do their own business, while 72 (9.0%) respondents belong to other situation, including housewife, househusband, students, the unemployed and so on.

4.3 Outliers

Outlier is an observation with a large relative error in the obtained statistical data.

The outliers are narrowly defined as those data in which some of the data are significantly inconsistent with other data (Leys et al., 2019). All misrepresented data in statistics are collectively called outliers. Due to the influence of human or random factors, misrepresented data may appear at any time. Thus, any one of the statistics may become an outlier. If the statistics are arranged from smallest to largest, if there is an outlier, it must be located at both ends of the data.

Detecting outliers before preparing data for analysis can ensure and improve the quality of results and their subsequent interpretation. The Z-Score Method is an important method for detecting outliers. The Z-Score range is -2.5 to 2.5, and exceeding the Z-Score range is considered an outlier (Saleem et al., 2014).

Therefore, the Z-score not in the range of -2.5 to +2.5 is considered an outlier in this study. There are 17 outliers in total, and after removing the outliers, there are a total of 458 data available for data analysis in this study.

4.4 Normality

In statistics, normality tests are used to determine whether a data set is well-modelled by a normal distribution and to calculate the probability that the random variables represented by the data set are normally distributed. It is an important assumption in multivariate analysis and statistical tests (Dsa and Imon, 2016), and the data may show useless results once the assumption is clearly violated. There are various ways to test whether the data distribution deviates from normality. However, the most

common representations are skewness and kurtosis, which were tested in previous studies.

Skewness is a statistic that studies the symmetry of the data distribution. The measurement of the skewness coefficient can determine the degree and direction of asymmetry of data distribution. Kurtosis is a statistic that studies the steepness or smoothness of a data distribution. The kurtosis coefficient is measured to determine whether the data distribution is steeper, or smoother compared to a normal distribution. According to Wahab et al. (2021), the data are acceptable if the skewness and kurtosis values are between -1.96 and +1.96.

Table 4.3
The Result of Normality Tests

	Valid	Missing	Skewness	Std.Error of Skewness	Kurtosis	Std.Error of Kurtosis
Transportation cost	443	0	-1.332	0.114	0.760	0.228
Delivery time	443	0	-1.359	0.114	0.631	0.228
Returns and Exchange	443	0	-1.421	0.114	0.960	0.228
Information tracking	443	0	-1.507	0.114	1.132	0.228
Staff Service Quality	443	0	-1.541	0.114	1.248	0.228
Customer Satisfaction	443	0	-1.511	0.114	1.182	0.228

In this study, the skewness and kurtosis values were tested, and all variables were between -1.96 and +1.96. As shown in Table 4.3, the ratios of skewness and kurtosis were within $\pm$ 1.96 of the normal distribution. Therefore, the assumption of normality was fully accepted.

4.5 Multicollinearity

Multicollinearity is the appearance of a correlation between two or more variables, and multicollinearity may lead to distorted or misleading analysis results (Daoud, 2017). Therefore, if the model has multicollinearity, its results may not be reliable (Shrestha, 2020). Thus, it is also necessary to make the assumption of multicollinearity.

In general, tolerance value and variance inflation factors (VIF) can be used to check for multicollinearity. According to Senaviratna and Cooray (2019), multicollinearity exists between variables when the tolerance value is less than 0.1 and (VIF) is greater than 10.

Table 4.4
Tolerance Value and the Variance Inflation Factor (VIF)

	Collinearity statistics	
Independent variables	Tolerance	VIF
Transportation cost	0.220	4.551
Delivery time	0.206	4.854
Returns and Exchange	0.187	5.354
Information tracking	0.173	5.768
Staff Service Quality	0.163	6.138

From Table 4.4 above, it can be seen that there is no multicollinearity among all independent variables because the Tolerance value is greater than 0.1 and the VIF value is less than 10. Therefore, there is no problem of any multicollinearity in this study.

In summary, the entire examination of the data proved that the underlying

assumptions were not violated. Therefore, the regression analysis for the following tests is appropriate.

4.6 Reliability and Validity

Since the accuracy of the empirical study results depends largely on the influence of the quality of the pre-existing questionnaire, it is particularly important to test the reliability and validity of the questionnaire through reliability and validity.

The reliability test ensures that the results of the questionnaire are stable, accurate and consistent across space and time, avoiding the negative effects of random errors. The validity test is to ensure that the overall structure of the questionnaire is reasonable and that the variables can be effectively measured and correctly reflected.

4.6.1 Reliability

Reliability is an important indicator of the reliability of survey research data and project evaluation data, mainly referring to the degree of credibility of the data. The purpose of the reliability test is to test whether the collected data can reflect the objective phenomenon.

According to Adeniran (2019), a value of reliability coefficient above 0.80 is considered good. Those values at 0.70 are considered acceptable, while reliability below 0.60 is considered poor. Reliabilities less than 0.60 are considered poor.

From the reliability analysis made, a table as shown below will be obtained. The

table shows the values of Cronbach's Alpha of the variable being analyzed. Cronbach's alpha determines the internal consistency or average correlation of items in a survey instrument to gauge its reliability. In this study, transportation cost, delivery times, returns and exchanges, information tracking, logistics staff service quality, and cross-border logistics customer satisfaction were tested.

Table 4.5
The Cronbach's Alpha of the Data

Variables	Cronbach's Alpha	Cronbach's Alpha Based Standardized	N of Items
Transportation cost	0.863	0.863	5
Delivery time	0.894	0.894	6
Returns and Exchange	0.890	0.890	5
Information tracking	0.915	0.915	6
Staff Service Quality	0.907	0.907	6
Customer Satisfaction	0.919	0.919	7

The table above shows the reliability analysis for an actual study. The number of items for transportation cost was 5, and Cronbach's Alpha is 0.863. The Cronbach's alpha for delivery time is 0.894, which is acceptable. The number of items in Returns and Exchange is 5, and its Cronbach's Alpha is 0.890, so Returns and Exchange are accepted. The Cronbach's Alpha for information tracking is high at 0.915 and is therefore strongly accepted. The Cronbach's Alpha for Staff Service Quality is also high at 0.907, which is a strong and acceptable result. The number of items for Cross-border Logistics Customer Satisfaction is 7, and it is the highest Cronbach's Alpha of 0.919 is strongly accepted.

Since Cronbach's Alpha results are acceptable for all variables, there is no need to

delete items.

However, reliability analysis alone is not sufficient to determine the reliability and validity of the variable items. In order to determine the reliability and validity of the items under test, factor analysis will be performed. One of the purposes of factor analysis is to convert multiple measured variables into a few composite indicators to improve the internal consistency of the items and to classify them.

4.6.2 Factor Analysis

This section discusses the results of a factor analysis of an actual study of all items measuring the transportation cost, delivery time, return and exchange, information tracking, staff service quality and cross-border logistics customer satisfaction variables to determine whether each construct variable can be used as a single measure.

According to Orçan (2018), there are two main forms of factor analysis, exploratory factor analysis and confirmatory factor analysis. If the relationship between items is unknown or the number of extracted variables is not determined, researchers are advised to use exploratory factor analysis. If there has been a relationship between items, the researcher is advised to use deterministic factor analysis.

For this study, the items used in the questionnaire were collected from previous studies. Gunasekaran (1999) noted that in cases where variables were adapted from previous studies, it was necessary to re-examine the validity of the measures as they

would be tested in a different context. Because of the need to be context-specific, exploratory factor analysis (EFA) is considered appropriate. This helps to identify the structure of a set of variables that are used to describe the constructs in this model. This helps to identify the structure of a set of variables that are used to describe the constructs in this model. Therefore, to determine the construct validity of the measures used in this study, EFA was used to measure transportation cost, delivery time, return and exchange, information tracking, staff service quality and cross-border logistics. Customer satisfaction was used to measure all items of the construct.

According to Shrestha (2021), Bartlett's test of sphericity and Kaiser-Meyer-Olkin (KMO) are two commonly used tests. According to Kaiser (1974), KMO is an index used to compare the magnitude of the observed correlation coefficient and the partial correlation coefficient. The closer the KMO is to 1.0, the more appropriate the factor analysis is. If it is around 0.90, it is remarkable; if it is around 0.80; if it is around 0.70, it is moderate; if it is around 0.60, it is mediocre; if it is around 0.50, it is pathetic; if it is below 0.50, it is unacceptable. If it is below 0.50, it is unacceptable. Therefore, if the Bartlett Test of sphericity is significant and the KMO measure of sampling adequacy is greater than 0.60, then factor analysis is appropriate.

Table 4.6

The result of KMO and Bartlett's Test of Sphericity

Construct	Items	Component analysis	KMO	Bartlett's Test of Sphericity(Sig.)
Transportation cost(TC)	Clear price	0.793	0.853	0.000
	Price stable	0.786		
	Return piece	0.777		
	Discounts	0.818		
	Cross-border logistics price	0.842		
Delivery time(DT)	Shipping speed	0.797	0.913	0.000
	Ordering to receiving parcel	0.807		
	Different choice about the delivery time	0.781		
	Customs clearance time	0.843		
	Return goods to receiving the new goods	0.817		
	Delivery delay time	0.803		
Returns and Exchange(RE)	Return and exchange instructions	0.835	0.887	0.000
	Return and exchange response	0.828		
	Return and exchange follow-up	0.847		
	Return and exchange logistics operations	0.828		
	Return and exchange logistics information	0.830		
Information tracking(IT)	Track logistics information	0.835	0.917	0.000
	Track logistics information	0.854		
	Track shipments at all times	0.851		
	Accurate logistics information	0.845		
	Feedback of error information	0.812		
	Timely logistics information	0.834		

Construct	Items	Component analysis	KMO	Bartlett's Test of Sphericity(Sig.)
Staff Service Quality(SSQ)	Service attitude is good	0.828	0.917	0.000
	Solve the problem professional and timely	0.816		
	Proper handling of error situations	0.810		
	Staff image professional	0.803		
	Well-versed in the business	0.862		
	Operate with accuracy and consistency during delivery	0.841		
Customer Satisfaction (CS)	Satisfied with cross-border logistics quality	0.795	0.939	0.000
	Satisfied with price of cross-border logistics	0.838		
	Satisfied with service of cross-border logistics	0.836		
	Satisfied with the door-to-door service of cross-border logistics	0.820		
	Satisfied with reputation of cross-border logistics	0.837		
	Satisfied with after sale service of cross-border logistics	0.810		
	Satisfied with shopping experience using cross-border logistics	0.807		

The table above shows the validity analysis of this study, with validity tests on transportation cost (TC), delivery time (DT), return and exchange (RE), information tracking (IT), staff service quality (SSQ) and cross-border logistics customer satisfaction (CS). The KMO number of items for transportation cost (TC), delivery time (DT), return and exchange (RE), information tracking (IT), staff service quality (SSQ) and cross-border logistics customer satisfaction (CS) are 0.853, 0.913, 0.887,

0.917, 0.917, 0.939. According to Kaiser (1974), all the items are strongly accepted. In addition, the result of Bartlett's Test of Sphericity (Sig.) is 0.00, which means all the items are significant (P<0.05).

4.7 Descriptive analysis of variables

The customer satisfaction level test will be done using mean value analysis. The mean value is an important concept in statistics and an indicator of trends in data concentration. In addition, the mean value can reflect the overall situation and average level of a set of data.

4.7.1 Mean Value of Customer Satisfaction

Table 4.7 below shows the mean value analysis of cross-border logistics customer satisfaction. In the questionnaire of this study, "3" stands for Neutral and "4" stands for agree. And the mean value of cross-border logistics customer satisfaction is 3.8715, which is between 3 and 4. The results show that the level of cross-border logistics customer satisfaction is between neutral and agree, which is not a result of the low customer satisfaction level.

Table 4.7
Mean Value of Customer Satisfaction

	Mean	Median	Variance	Std. Deviation
Customer Satisfaction	3.8715	4.1429	0.874	0.93492

4.7.2 Mean Value of Transportation Cost

Table 4.8 shows the mean value analysis of transportation cost. In the questionnaire of this study, “3” stands for Neutral and "4" stands for agree. And the mean value of transportation cost is 3.8096, which is between 3 and 4. The results show that the transportation cost customer satisfaction level is between neutral and agree, this result is a normal satisfaction level and not a low satisfaction level.

Table 4.8
Mean Value of Transportation Cost Customer Satisfaction

	Mean	Median	Variance	Std. Deviation
Transportation Cost	3.8096	4.2000	0.956	0.97778

4.7.3 Mean Value of Delivery Time

Table 4.9 shows that the mean value of delivery time is 3.8206. In this study, "3" means neutral and "4" means agree, and the mean value result of delivery time is between 3 and 4, which indicates that the customer satisfaction of delivery time is between neutral and agree, and this result is normal satisfaction, not low satisfaction.

Table 4.9
Mean Value of Delivery Time Customer Satisfaction

	Mean	Median	Variance	Std. Deviation
Delivery Time	3.8206	4.1667	0.904	0.95072

4.7.4 Mean Value of Return and Exchange

Table 4.10 shows the mean value analysis of return and exchange. In the

questionnaire of this study, “3” stands for Neutral and "4" stands for agree. And the mean value of return and exchange is 3.8843, which is between 3 and 4. The results show that the return and exchange customer satisfaction level is between neutral and agree, this result is a normal satisfaction level and not a low satisfaction level.

Table 4.10
Mean Value of Return and Exchange Customer Satisfaction

	Mean	Median	Variance	Std. Deviation
Return and Exchange	3.8843	4.2000	0.943	0.97108

4.7.5 Mean Value of Information Tracking

Table 4.11 shows the mean value analysis of information tracking. In the questionnaire of this study, “3” stands for Neutral and "4" stands for agree. And the mean value of information tracking is 3.9061, which is between 3 and 4. The results show that the information tracking customer satisfaction level is between neutral and agree, this result is a normal satisfaction level and not a low satisfaction level.

Table 4.11
Mean Value of Information Tracking Customer Satisfaction

	Mean	Median	Variance	Std. Deviation
Information Tracking	3.9061	4.1667	0.928	0.96311

4.7.6 Mean Value of Staff Service Quality

Table 4.12 shows that the mean value of staff service quality is 3.9101. In this study, "3" means neutral and "4" means agree, the mean result of staff service quality is

between 3 and 4 and very close to 4, which indicates that the customer satisfaction of staff service quality is above neutral and close to satisfaction.

Table 4.12
Mean Value of Staff Service Quality Customer Satisfaction

	Mean	Median	Variance	Std. Deviation
Staff Service Quality	3.9101	4.1667	0.913	0.95555

4.8 Correlation Analysis

Many studies use correlation analysis to explore the degree of association between study variables. It is a statistical method used to explain the strength and direction of the linear relationship between two variables. (Senthilnathan, 2019; Gogtay& Thatte, 2017). Correlation is to explore the degree of relationship between two variables.

Nonparametric statistics are those that do not assume the specific form of the overall distribution of the data but try to obtain information from the sample or the data itself (Corder & Foreman, 2011). In the data sample of this study, only data from Sichuan Province, China and with experience related to cross-border e-commerce were selected, so this study belongs to the non-parametric statistical method. According to Behjat et al. (2016), non-parametric statistical correlation analysis can be done using Spearman correlation analysis.

Spearman correlation analysis produces coefficients that vary between -1 and +1. 0 indicates no correlation, and the strength of the correlation increases from 0 to +1 and from 0 to -1. Akoglu (2018) provides some empirical evidence to explain the

strength of the relationship between the two variables, as shown in Table 4.13.

Table 4.13
Spearman Correlation Coefficient

Correlation Coefficient		Strength of Relationship
+1	-1	Perfect
+0.9	-0.9	Very strong
+0.8	-0.8	
+0.7	-0.7	
+0.6	-0.6	Strong
+0.5	-0.5	
+0.4	-0.4	
+0.3	-0.3	Moderate
+0.2	-0.2	Weak
+0.1	-0.1	Negligible
0	0	None

(Source: Akoglu, 2018)

Therefore, the Spearman correlation analysis method will provide coefficient values and significance levels to determine if the independent variables are statistically significantly correlated with the dependent variable.

In this study, Spearman Correlation was used to test the relationship between transportation cost, delivery time, return and exchange, information tracking, staff service quality and cross-border logistics customer satisfaction. Table 4.14 shows the Spearman correlation results of this study.

Table 4.14

The result of Spearman Correlations Analysis

		Transpo-rtation Cost	Delivery Time	Return and Exchange	Information Tracking	Staff Service Quality	Customer Satisfaction
Transportation Cost	Correlation Coefficient	1.000	0.575**	0.519**	0.512**	0.553**	0.496**
	Sig(2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000
Delivery Time	Correlation Coefficient	0.575**	1.000	0.543**	0.522**	0.542**	0.587**
	Sig(2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000
Return and Exchange	Correlation Coefficient	0.519**	0.543**	1.000	0.549**	0.521**	0.505**
	Sig(2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000
Information Tracking	Correlation Coefficient	0.512**	0.522**	0.549**	1.000	0.505**	0.566**
	Sig(2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000
Staff Service Quality	Correlation Coefficient	0.553**	0.542**	0.521**	0.505**	1.000	0.562**
	Sig(2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000
Customer Satisfaction	Correlation Coefficient	0.496**	0.587**	0.505**	0.566**	0.562**	1.000
	Sig(2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000

According to the correlation strength criterion of Akoglu (2018), Table 4.7 shows that the relationship between transportation cost and delivery time, return and exchange, information tracking, staff service quality and cross-border logistics customer satisfaction is strong. The correlation coefficients are 0.575, 0.519, 0.512, 0.553, and 0.496.

The table also shows that there is a strong relationship between delivery time and transportation cost, return and exchange, information tracking, staff service quality and cross-border logistics customer satisfaction, and correlation coefficients are 0.575, 0.543, 0.522, 0.542, 0.587, respectively, p=0.000. Return and exchange also have a strong correlation with transportation cost, delivery time, information tracking, staff service quality and cross-border logistics customer satisfaction. Correlation coefficients are 0.519, 0.543, 0.549, 0.521, 0.505, and p=0.000, respectively.

There is a strong correlation between information tracking and transportation cost, delivery time, return and exchange, staff service quality and cross-border logistics customer satisfaction. Correlation coefficients are 0.512, 0.522, 0.549, 0.505, and 0.566, respectively, p=0.000.

Staff service quality has a strong correlation with transportation cost, delivery time, return and exchange and information tracking and cross-border logistics customer satisfaction, and correlation coefficients are 0.553, 0.542, 0.521, 0.505, 0.562, p=0.000.

According to the above table, cross-border logistics customer satisfaction has a strong correlation with all variables because the Pearman correlation coefficients are 0.496, 0.587,0.505, 0.566, and 0.562, respectively.

Although the correlations were reliable for all variables, the statistical significance of the correlations does not imply causality. Moreover, when several independent variables, transportation cost, delivery time, return and exchange, information tracking and staff service quality were used simultaneously, the results of the correlation coefficient did not explain the changes in the dependent variable cross-border logistics customer satisfaction. Therefore, multivariate analysis was used for the analysis such as multiple regression.

4.9 Regression Analysis

Correlation analysis can only examine the direction and degree of correlation

between variables, but it cannot obtain the specific form of the interrelationship between variables, nor can it infer changes in one variable from changes in another variable, which can be obtained through regression analysis.

Regression analysis can be used to study the relationship between variables. In addition, regression analysis can also be used for estimation and forecasting. Therefore, the regression analysis concerning the influence dependent variable (TC, DT, RE, IT, SSQ) on the independent variables (CS) is listed below one by one.

4.9.1 Regression analysis of the influence of transportation cost (TC) on customer satisfaction (CS)

Table 4.15
Multiple Regression analysis of the influence of TC on CS

	B	STD. error	Beta	Sig.
(Constant)	0.748	0.091		0.000
Transportation Cost (TC)	0.820	0.023	0.857	0.000

Note: R=0.857; R^2=0.735; F=1265.633; Significant level: *p<0.05,**p<0.01
B: Unstandardized coefficient; STD. error**:** Standard error of coefficient
Beta: Beta coefficient

The relationship between transportation cost and customer satisfaction is significant (ß=0.857, p<0.001). R^2 also shows that 0.735 of the variation in cross-border logistics customer satisfaction is explained by transportation cost. Transportation cost was shown to have a positive influence on customer satisfaction. In the regression equation, all transportation cost dimensions are significant predictors of cross-border logistics customer satisfaction.

4.9.2 Regression analysis of the influence of delivery time (DT) on customer satisfaction (CS)

Table 4.16
Multiple Regression analysis of the influence of DT on CS

	B	STD. error	Beta	Sig.
(Constant)	0.553	0.085		0.000
Delivery Time (DT)	0.869	0.022	0.883	0.000

Note: R=0.883; R^2=0.780; F=1619.698; Significant level: *p<0.05,**p<0.01
B: Unstandardized coefficient; STD. error**:** Standard error of coefficient
Beta: Beta coefficient

The relationship between delivery time and customer satisfaction is significant (ß=0.883, p<0.001). R^2 also shows that 0.780 of the variation in customer satisfaction is explained by delivery time. Delivery time was shown to have a positive influence on customer satisfaction. In the regression equation, all transportation cost dimensions are significant predictors of cross-border logistics customer satisfaction.

4.9.3 Regression analysis of the influence of return and exchange (RE) on customer satisfaction (CS)

Table 4.17
Multiple Regression Analysis for RE Influencing CS

	B	STD. error	Beta	Sig.
(Constant)	0.593	0.087		0.000
Return and Exchange (RE)	0.844	0.022	0.877	0.000

Note: R=0.877; R^2=0.769; F=1516.203; Significant level: *p<0.05,**p<0.01
B: Unstandardized coefficient; STD. error**:** Standard error of coefficient
Beta: Beta coefficient

The relationship between return and exchange and customer satisfaction is significant (ß=0.877, p<0.001). R^2 also shows that 0.769 of the variation in customer satisfaction is explained by return and exchange. Return and exchange were shown to have a

positive influence on customer satisfaction. In the regression equation, all return and exchange dimensions are significant predictors of cross-border logistics customer satisfaction.

4.9.4 Regression analysis of the influence of information tracking (IT) on customer satisfaction (CS)

Table 4.18
Multiple Regression Analysis for IT Influencing CS

	B	STD. error	Beta	Sig.
(Constant)	0.468	0.080		0.000
Information Tracking(IT)	0.872	0.020	0.898	0.000

Note: R=0.898; R^2=0.807 F=1906.728; Significant level: *p<0.05,**p<0.01
B: Unstandardized coefficient; STD. error**:** Standard error of coefficient
Beta: Beta coefficient

The relationship between information tracking and customer satisfaction is significant (ß=0.898, p<0.001). R^2 also shows that 0.807 of the variation in customer satisfaction is explained by information tracking. Information tracking was shown to have a positive influence on customer satisfaction. In the regression equation, all information tracking dimensions are significant predictors of cross-border logistics customer satisfaction.

4.9.5 Regression analysis of the influence of staff service quality (SSQ) on customer satisfaction (CS)

Table 4.19
Multiple Regression Analysis for SSQ Influencing CS

	B	STD. error	Beta	Sig.
(Constant)	0.416	0.079		0.000
Staff Service Quality (SSQ)	0.884	0.020	0.903	0.000

Note: R=0.903 R^2=0.816; F=2018.372; Significant level: *p<0.05,**p<0.01
B: Unstandardized coefficient; STD. error**:** Standard error of coefficient

Beta: Beta coefficient

The relationship between staff service quality and customer satisfaction is significant (ß=0.903, $p<0.001$). R^2 also shows that 0.816 of the variation in customer satisfaction is explained by staff service quality. Staff service quality was shown to have a positive influence on customer satisfaction. In the regression equation, all staff service quality dimensions are significant predictors of cross-border logistics customer satisfaction.

4.10 Summary

There are 475 valid data from cross-border logistics customers in Sichuan Province, China, with a response rate of 62.39%. After screening out the outliers, the amount of data available for research analysis is 458, and each variable shows a normal distribution. The reliability results of the variables show that Cronbach's Alpha value of each variable is higher than 0.8, and there are even variables higher than 0.9. This result is very acceptable and proves that all variables are reliable. The results of the factor analysis show that all variables are significant, as all variables have KMO values higher than 0.8, and some variables even have KMO values higher than 0.9.

In order to measure the level of cross-border logistics customer satisfaction in southwest China, a mean value analysis was conducted on cross-border logistics satisfaction. The results of the mean value analysis ranged between 3 and 4, representing that the cross-border logistics customer satisfaction in southwest China was between neutral and satisfactory. Its results show that the level of cross-border

logistics satisfaction in southwest China is not low.

To test the correlation between the variables, a correlation analysis was conducted between the variables (shipping cost, delivery time, returns, information tracking and employee service quality) and customer satisfaction. The results of the analysis showed that each of the variables had a strong correlation with customer satisfaction.

In addition, regression analysis was conducted to measure the relationship between the variable (transportation cost, delivery time, return and exchange, information tracking and staff service quality) and customer satisfaction. The results of the regression analysis show that there is a significant positive influence between all the tested variables and satisfaction with cross-border logistics.

CHAPTER FIVE
DISCUSSION, CONCLUSION AND SUGGESTIONS

5.1 Introduction

This chapter discusses the findings of the effects of transportation cost, delivery time, return and exchange, information tracking and staff service quality on cross-border e-commerce logistics customer satisfaction. The first part summarizes the findings of the study, and the second part explains the practical and theoretical implications of this study. Finally, the limitations of this study and suggestions and conclusions for future research are presented.

5.2 Overview of study findings

The purpose of the study is to determine the level of cross-border logistics customer satisfaction, explore the relationship between factors of transportation cost, delivery time, return and exchange, information tracking and staff service quality and cross-border logistics customer satisfaction and determine its impact on cross-border logistics customer satisfaction. Through this study, the performance of cross-border logistics may be improved.

This research framework is supported by the marketing theory of the 4Cs and the ACSI model. The marketing theory of the 4Cs argues that firms should put the pursuit of customer satisfaction first. According to Jones and Sasser (1995), firms should put customers first, and satisfied customers are a key factor in the success of a

firm. The ACSI model supports overall satisfaction in a system of causal interactions that are mutually influenced and interrelated. Bryant (2001) argues that customer satisfaction directly affects customer loyalty, which in turn affects a firm's profit level and competitiveness.

In general, the objectives of this study were assessed based on the research questions below：

iii. What is the level of customer satisfaction of the cross-border logistics?

iv. What are the factors leading to customer satisfaction in cross-border logistics?

This study adopted statistical analysis-descriptive statistics, exploratory factor analysis, reliability analysis, correlation analysis, and simple and multiple regression to answer the research questions. The results in Table 5.1 show that all hypothesis were not rejected.

Table 5.1
Summary of All Tested

Hypothesis	Description	Results
H1	Transportation cost have a significant positive relationship with customer satisfaction	Failed to reject H1
H2	Delivery time have a significant positive relationship with customer satisfaction	Failed to reject H2
H3	Returns and exchanges have a significant positive relationship with customer satisfaction	Failed to reject H3
H4	Information tracking have a significant positive relationship with customer satisfaction	Failed to reject H4
H5	Staff service quality have a significant positive relationship with customer satisfaction	Failed to reject H5

In the subsequent chapters, each of these hypotheses will be explained in further

detail based on previous knowledge and newly discovered contributions to the field.

5.3 Discussion of findings

This section discusses the findings on the level of cross-border logistics satisfaction and the direct factors (transportation cost, delivery time, returns and exchanges, information tracking, and staff service quality) related to cross-border logistics customer satisfaction in Southwest China.

5.3.1 Cross-border logistics satisfaction level in Southwest China

In China, there are many cross-border logistics orders that are faced on a daily basis. According to Hameed et al. (2018), satisfaction in the logistics industry has attracted close attention from researchers and practitioners. Uddin (2019) states that customer satisfaction provides a greater advantage to service providers and helps firms to survive in the fierce competition. However, a large body of literature points out that cross-border logistics in China face problems such as poor transportation systems, poor delivery services, and severely damaged parcels, which cause dissatisfaction among cross-border logistics customers. Therefore, this study focuses on the issue of satisfaction in China's cross-border logistics industry.

The main findings based on the data analysis are outlined below:

In determining the satisfaction level of cross-border logistics in Southwest China, it was found that the mean analysis result of the satisfaction level of cross-border

logistics in Southwest China is 3.8715. It is between 3 (neutral) and 4 (satisfactory), which is not a high satisfaction result.

According to previous studies, the level of cross-border e-commerce logistics customer satisfaction in China is generally low (Lu, 2019; Chen, 2019; Zhang, 2021; Dai, 2021). However, the results of this study show that the level of cross-border logistics customer satisfaction in southwest China is between neutral and satisfied, which is a result that is neither high nor low, but not a low satisfaction level. Proving the view of Jiang (2022), Zhou and Zhang (2021), and Lu (2020), China has been trying to improve the level of cross-border e-commerce logistics customer satisfaction.

Based on the results of the analysis of cross-border logistics customer satisfaction, it can be seen that the level of cross-border logistics customer satisfaction in southwest China is not considered high satisfaction. Logistics enterprises should pay more attention to how to improve customer satisfaction in order to survive in the fierce market competition.

Table 5.2
Mean Value of Cross-border Logistics Customer Satisfaction

	Mean	**Median**	**Variance**	**Std. Deviation**
Customer Satisfaction	3.8715	4.1429	0.874	0.93492

5.3.2 The influence of Transportation Costs on Customer Satisfaction

In assessing the hypothesis regarding the relationship between transportation cost

and customer satisfaction of the cross-border logistics, a positive and significant relationship between transportation cost and cross-border e-commerce logistics customer satisfaction was found. The results show that transportation cost illustrates 0.735 of the variance in cross-border e-commerce logistics customer satisfaction. That is, transportation cost has an effect on cross-border e-commerce logistics customer satisfaction.

Further results showed that transportation cost had a significant positive influence on customer satisfaction of the cross-border logistics (β=0.857; $p<0.005$). This result is consistent with previous studies and suggests that transportation cost play a crucial role in determining logistics customer satisfaction. (Shamsudin et al, 2020; Wang and Li, 2018; Xia and Yan, 2016; Zhang, Zheng, and Dong, 2014; He, 2014; Zhang, 2014; Rao, 2011).

Furthermore, according to Bring (1994), standardized regression coefficients can be used to measure the importance of a variable by the magnitude of the regression coefficient. Therefore, the order of importance of each variable can be seen by comparing the results of β (standardized coefficient β). According to the regression results shown in Table 5.3, all items of transportation cost are shown to be significant ($p<0.005$). The order of influence from strong to weak is "clear price", "cross-border logistics price", "price-stable", "discount ", and "return price" (β =0.252, 0.244, 0.198,0.194,0.178).

Table 5.3
The regression analysis of each items of TC on CS

Model	Unstandardized B	Coefficients Std.Error	Standardized Coefficients Beta	Sig.
Clear price	0.198	0.026	0.252	0.000
Price stable	0.155	0.025	0.198	0.000
Return piece	0.135	0.025	0.178	0.000
Discounts	0.148	0.026	0.194	0.000
Cross-border logistics price	0.182	0.027	0.244	0.000
Transportation Cost (TC)	0.820	0.023	0.857	0.000

5.3.3 The influence of Delivery Time on Customer Satisfaction

In assessing the hypothesis regarding the relationship between delivery time and customer satisfaction of the cross-border logistics, a positive and significant relationship between delivery time and cross-border e-commerce logistics customer satisfaction was found. The results show that delivery time illustrates 0.780 of the variance in cross-border e-commerce logistics customer satisfaction. That is, delivery time has an effect on cross-border e-commerce logistics customer satisfaction.

Further results show that delivery time has a significant positive influence on customer satisfaction of the cross-border logistics (β=0.883; $p<0.005$). This result supports the previous study that delivery time is an important factor affecting logistics customer satisfaction. (Okholm et al, 2013; Zhang, Zheng, and Dong , 2014; Teresa & Evangelos, 2015; Gajewska and Zimon, 2018; Zhang, 2018; Du et al, 2018; Zhang and Zhang, 2022).

According to Table 5.4 below, the regression analysis results for each item of

delivery time show that each item of delivery time has a significant correlation with customer satisfaction of the cross-border logistics ($p<0.005$). The strength of DT on CS strong to weak is "Different choice about the delivery time", "Ordering to receiving parcel", "Shipping speed", "Customs clearance time", "Return goods to receiving the new goods", and "Delivery delay time" with Standardized Coefficients Beta of β=0.277, 0.193, 0.189, 0.182, 0.166, 0.089.

Table 5.4
The regression analysis of each items of DT on CS

Model	Unstandardized B	Coefficients Std.Error	Standardized Coefficients Beta	Sig.
Shipping speed	0.151	0.024	0.189	0.000
Ordering to receiving parcel	0.156	0.025	0.193	0.000
Different choice about the delivery time	0.215	0.023	0.277	0.000
Customs clearance time	0.141	0.026	0.182	0.000
Return goods to receiving the new goods	0.131	0.025	0.166	0.000
Delivery delay time	0.072	0.025	0.089	0.000
Delivery Time (DT)	0.869	0.022	0.883	0.000

5.3.4 The influence of Return and Exchange on Customer Satisfaction

In assessing the hypothesis regarding the relationship between return and exchange and customer satisfaction of the cross-border logistics, customer satisfaction of the cross-border logistics and return and exchange was found to be positively and significantly correlated. The results show that return and exchange illustrate a variation of 0.769 in customer satisfaction of the cross-border logistics. In other words, return and exchange have an influence on customer satisfaction of the cross-border logistics.

Further results showed that return and exchange had a significant positive influence on customer satisfaction of the cross-border logistics (β=0.877; p<0.005). The results support previous studies that return management plays a key role in e-commerce to improve customer confidence and satisfaction in purchasing (Jalil, 2019; Ding, Hu and Campos, 2017; Li and Lu, 2019; Liu, 2020; Huang and Zhang, 2022).

According to the results of regression analysis, Table 5.5 shows the correlation between each item of returns and exchanges and customer satisfaction of the cross-border logistics. From Table 5.5, it can be seen that there is a significant correlation between each item of returns and exchanges and customer satisfaction of the cross-border logistics (p<0.005).

Table 5.5
The regression analysis of each items of RE on CS

Model	Unstandardized B	Coefficients Std.Error	Standardized Coefficients Beta	Sig.
Return and exchange instructions	0.204	0.028	0.244	0.000
Return and exchange response	0.164	0.026	0.206	0.000
Return and exchange follow-up	0.190	0.028	0.236	0.000
Return and exchange logistics operations	0.158	0.025	0.206	0.000
Return and exchange logistics information	0.128	0.026	0.160	0.000
Return and Exchange (RE)	0.844	0.022	0.877	0.000

From Table 5.5 above, it can be seen that the effects of RE on CS are "Return and exchange instructions", "Return and exchange follow-up", "Return and exchange response", "Return and exchange logistics operations", and "Return and exchange logistics information" in descending order of strength, with standardized coefficients

Beta of β=0.244, 0.236, 0.206, 0.206, 0.160.

5.3.5 The influence of Information Tracking on Customer Satisfaction

In assessing the hypothesis regarding the relationship between information tracking and customer satisfaction of the cross-border logistics, a positive and significant relationship was found between information tracking and customer satisfaction of cross-border logistics. The results show that information tracking illustrates a variation of 0.807 in customer satisfaction of the cross-border logistics. In other words, information tracking has an influence on customer satisfaction of the cross-border logistics.

Further results showed that information tracking had a significant positive influence on customer satisfaction of the cross-border logistics (β=0.898; p<0.005). The results support previous research that information tracking plays a critical role in logistics performance. Furthermore, information tracking is an important determinant of logistics customer satisfaction(Bienstock and Royne, 2010; Song, 2016; Sutrisno et al., 2019; Priento et al., 2020; Tian et al., 2016; Yang and Xiao, 2014; Dai,2021 Jiang, 2022;).

Table 5.6

The regression analysis of each items of IT on CS

Model	Unstandardized B	Coefficients Std.Error	Standardized Coefficients Beta	Sig.
Track logistics information	0.167	0.026	0.204	0.000
Customs clearance status	0.183	0.028	0.223	0.000
Track shipments at all times	0.075	0.027	0.093	0.002
Accurate logistics information	0.155	0.026	0.145	0.000
Feedback of error information	0.160	0.024	0.201	0.000
Timely logistics information	0.177	0.027	0.208	0.000
Information Tracking(IT)	0.872	0.020	0.898	0.000

According to Table 5.6 above, the regression analysis results of each item of information tracking show that there is a significant correlation between each item of information tracking and customer satisfaction of the cross-border logistics ($p<0.005$). The influence of IT on CS is "Customs clearance status", "Timely logistics information", "Track logistics information", "Feedback of error information", "Accurate logistics information", and "Track shipments at all times", respectively, from strong to weak. Standardization coefficient Beta of β =0.223, 0.208, 0.204, 0.201, 0.145, 0.093.

5.3.6 The influence of Staff Service Quality on Customer Satisfaction

In assessing the hypothesis regarding the relationship between staff service quality and customer satisfaction of the cross-border logistics, customer satisfaction of the cross-border logistics and staff service quality was found to be positively and significantly correlated. The results show that staff service quality illustrates a

variation of 0.816 in customer satisfaction of the cross-border logistics. In other words, staff service quality has an influence on customer satisfaction of the cross-border logistics.

Further results showed that staff service quality had a significant positive influence on customer satisfaction of the cross-border logistics (β=0.903; $p<0.005$). That is, the quality of service of employees of logistics companies, i.e., in terms of customers, image, attitude and communication, contributes to the overall service quality of the company (Zhang, 2014; Thai, 2013; Li, 2017). In addition, service quality is one of the foundations of every logistics company, and the quality of services provided by these logistics companies determines customer satisfaction (Zhao and Nan, 2015; Uvet, 2020; Yan, 2014; Zhang, 2021; Jiang, 2022).

Table 5.7
The regression analysis of each items of SSQ on CS

Model	Unstandardized B	Coefficients Std.Error	Standardized Coefficients Beta	Sig.
Service attitude is good	0.149	0.025	0.183	0.000
Solve the problem professional and timely	0.150	0.024	0.186	0.000
Proper handling of error situations	0.141	0.024	0.170	0.000
Staff image professional	0.125	0.023	0.156	0.000
Well-versed in the business	0.164	0.027	0.203	0.000
Operate with accuracy and consistency during delivery	0.154	0.025	0.193	0.000
Staff Service Quality (SSQ)	0.884	0.020	0.903	0.000

According to Table 5.7 above, the regression analysis results of each item of staff service quality show that there is a significant correlation between each item of staff

service quality and customer satisfaction of the cross-border logistics ($p<0.005$). The order of influence from strong to weak is "Well-versed in the business", "Operate with accuracy and consistency during delivery", "Solve the problem professional and timely", "Service attitude is good", "Proper handling of error situations" and "Staff image professional". Standardization coefficient Beta of β=0.203 0.193, 0.186, 0.183,0.170, 0.156

The results show that logistics staff service quality has the greatest influence on customer satisfaction of the cross-border logistics. It proves that logistics enterprises should pay more attention to staff service quality and train more talents in the logistics industry. For example, vocational training for staff and improving staff welfare to enhance staff enthusiasm to achieve the purpose of improving customer satisfaction.

5.4 Implications of the Study

This section discusses the implication of the study, which includes the practical implication and the theoretical implication.

5.4.1 Practical Implication

Firstly, this study enriches the management cognition related to transportation cost, delivery time, returns and exchanges, information tracking, and staff service quality, which provides the basis for the model building and the results of hypothesis testing. This study provides an in-depth study of cross-border e-commerce logistics customer satisfaction in southwest China from the perspective of transportation cost, delivery

time, returns and exchanges, information tracking, and staff service quality. In order to help logistics companies, continue to survive in the fierce business environment and competition, more attention should be paid to cross-border logistics customer satisfaction and service quality. Therefore, two suggestions are made in this study: First, logistics companies should understand more about customers' needs and try to improve customer satisfaction. Secondly, logistics companies should train more talents in the logistics industry, such as staff vocational training. Because the results of the study show that staff service quality has the greatest influence on customer satisfaction in cross-border logistics.

The second practical implication of this study is that it provides practical advice for China's cross-border e-commerce logistics industry on how to run a successful cross-border e-commerce logistics business by focusing on the integration of transportation cost, delivery time, returns and exchanges, information tracking, and staff service quality, especially in logistics information technology. According to the results of the study, information tracking ranks second in terms of influence on customer satisfaction of the cross-border logistics, after staff service quality. Cross-border logistics managers must pay more attention to investing in new technologies, such as logistics information technology, to improve information tracking systems. With improved customer data privacy, logistics security and more accurate and timely logistics tracking information, customer satisfaction and confidence in cross-border e-commerce will be enhanced.

In addition, the findings indicate that staff service quality (β=0.903, p<0.005) has the greatest influence on customer satisfaction of the cross-border logistics, which motivates cross-border e-commerce logistics managers to make full use of staff service quality to improve cross-border e-commerce logistics performance. Transportation cost has been shown to have the least impact on cross-border e-commerce logistics customer satisfaction. Therefore, it is only reasonable to focus on the professional training of staff.

Delivery time and return and exchange were also found to have a strong relationship with cross-border e-commerce logistics in this study (β=0.883,0.877, p< 0.005). Therefore, cross-border logistics managers should pay attention to the inbound and clearance policies of each country to reduce the risk of cross-border e-commerce products being seized by customs and appropriate investment to reduce delivery time. In addition, cross-border e-commerce platforms should show the return and exchange regulations to customers and clearly explain the return and exchange process. Cross-border logistics companies should clearly define the price of return logistics and explain the risks to customers and provide accurate and timely logistics information.

5.4.2 Theoretical Implication

From the academic perspective of customer satisfaction, this study illustrates the following findings：

First, the 4Cs marketing theory is supported by empirical evidence in this study. The theory is oriented to customer needs and resets the four basic elements of the marketing mix, namely: customer, cost, convenience, and communication. In addition, the theory argues that firms should prioritize the pursuit of customer satisfaction. Therefore, according to this theory, logistics companies should improve logistics customer satisfaction by understanding customer needs, reducing customer transportation costs, shortening delivery time, simplifying the return and exchange logistics process, providing convenient and reliable information tracking and excellent staff service quality. This helps logistics firms to gain an advantage in the increasingly competitive market.

Secondly, the ACSI model was also supported in this study. This model places overall satisfaction in an interacting, interrelated system of causal interactions. Therefore, according to this model, customer satisfaction has a direct influence on customer loyalty. Logistics firms that provide highly satisfied logistics services will receive higher ratings from their customers, which is beneficial for logistics firms to retain existing customers as well as acquire new customers through high word-of-mouth, thus affecting profit levels and competitiveness (Alihe Kaur, 2018; Hanif, 2010; Ahmed et al., 2019).

Many empirical studies on Chinese cross-border e-commerce logistics (Liang, 2020; Yang and Yang, 2019, Shi, 2020; Liu et al., 2021) have suggested that Chinese cross-border e-commerce firms have deficiencies in their ability to return goods. The

main reason for this is the change in the role of customers in return logistics from the consignee to consignor, while the complex cross-border logistics process and longer return logistics cycle cause customer dissatisfaction.

There is a lot of logistics literature that discusses the customer as a consignee, but a few literatures that discuss the customer as a consignor. Therefore, the third theoretical implication of this study is to include the return logistics of cross-border e-commerce in the model affecting cross-border logistics satisfaction. This study shows that returns have a positive and significant influence on customer satisfaction of the cross-border logistics. The lack of returns and exchanges directly reduces the satisfaction of cross-border e-commerce platforms and cross-border logistics and decreases customer confidence in cross-border shopping, hindering the development of cross-border e-commerce and cross-border logistics. This suggests that returns can be a variable for future research on cross-border e-commerce and cross-border logistics.

5.5 Limitations and Suggestions for Future Studies

Despite a comprehensive review of the entire body of literature, this study has some limitations like other empirical studies.

The first limitation is that the study focused only on the Sichuan province and not on China as a whole because of the obvious difficulties in pursuing the latter. If the study had been able to collect data from the whole of China, it would have been

possible to obtain more valuable responses and to better envision the influence of each variable on customer satisfaction of the cross-border logistics. Future research could examine the relationships presented in this study by focusing on other countries and other sectors.

Secondly, there are also limitations in the sample of this study. Since cross-border e-commerce is very popular in China. Therefore, the range of cross-border e-commerce user groups in China is very large. However, the sample size of this study only represents the satisfaction of some cross-border e-commerce logistics customers and is not sufficient to represent the majority of cross-border e-commerce logistics customers. Future studies can try to select as many research participants as possible, and the research results will be more representative and stable.

Finally, this study is cross-sectional, which means that there may be some changes over time that are not captured. In addition, this study used only a quantitative study design focusing on the associations between transportation cost, delivery time, return and exchange, information tracking and staff service quality and cross-border e-commerce logistics customer satisfaction. Future studies could explore the correlations between other factors and cross-border e-commerce logistics customer satisfaction, such as cross-border e-commerce logistics for SMEs (Huang, 2019) and factors that determine the success or failure of cross-border e-commerce (Hazarika and Mousavi, 2021).

5.6 Conclusion

This study has examined the relationship between several factors (transportation cost, delivery time, return and exchange, information tracking and staff service quality) and customer satisfaction in cross-border e-commerce logistics in Southwest China. Among them, the return factor has received little attention in the previous literature on cross-border e-commerce logistics customer satisfaction. Therefore, this study significantly advances knowledge of each factor's influence and understanding of cross-border e-commerce logistics. The research framework of this study is derived from the 4Cs marketing theory and the ACSI model, a perspective that recognizes that firms can improve customer satisfaction by enhancing different factors to increase their profit level and competitiveness.

In this study, the level of customer satisfaction in cross-border e-commerce logistics in southwest China was assessed using the mean value analysis method. Meanwhile, this study used regression analysis to assess the research hypothesis of the relationship between five factors that is transportation cost, delivery time, return and exchange, information tracking and staff service quality and customer satisfaction of the cross-border logistics.

The results of the study rejected the first study's objective and hypothesis. This is because the results of the study showed a low level of satisfaction among Chinese cross-border e-commerce logistics customers, between neutral and satisfied, but not a low satisfaction level. In addition, the study results satisfied the second and third

research objectives and hypotheses. The research results show that transportation cost, delivery time, return and exchange, information tracking and staff service quality have positive and significant effects on Chinese cross-border e-commerce logistics customer satisfaction. Therefore, in the increasingly competitive cross-border e-commerce logistics industry, the five factors of transportation cost, delivery time, return and exchange, information tracking and staff service quality are crucial to producing much profit in the market.

In conclusion, the results of the study show that the level of customer satisfaction in cross-border e-commerce logistics in China is not high. Moreover, in addition to the four influencing factors, transportation cost, delivery time, information tracking and staff service quality, which are frequently mentioned in the e-commerce logistics literature, this study also examined the return and exchange factor. The findings indicate that all five factors have an impact on cross-border e-commerce logistics customer satisfaction in the Chinese context. However, these influencing factors may change over time. Therefore, more research is needed to investigate other factors that may have an impact on cross-border e-commerce logistics customer satisfaction to further improve the understanding of issues in the cross-border e-commerce logistics field.

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APPENDICES A Sample of Questionnaire

THE KEY FACTORS OF CROSS-BORDER E-COMMERCE LOGISTICS ON CUSTOMER SATISFACTION IN SOUTHWEST REGION, CHINA

关于中国西南地区跨境电商物流客户满意度的关键因素

Questionnaire

调查问卷

A Master Research Survey

研究生论文调查

This questionnaire consists of two sections. There is no right or wrong question. Answer of every question is essential.

Section 1: Personal Information

第一部分：背景调查

Below questions belong to the personal data. Please tick the box which is best applicable to you.

以下的问题属于个人资料，请您在符合您情况的方框内打勾。

Gender ☐ Male ☐ Female

性 别 ： 男 女

Age (Years old) ☐ 0-19 ☐ 20-24 ☐ 25-29 ☐ 30-34 ☐ 35-40 ☐40+

年 龄 ：

Highest Education Level ☐ High School ☐ Junior Collage

最 高 学 历 ： 高中 大专

☐ Undergraduate ☐ Master ☐ PHD

本科 硕士 博士

Income Rate (Yuan) ☐ 0-1999 ☐2000-3999 ☐4000-5999

月 收 入 （元）： ☐ 6000-9999 ☐10000+

Occupation ☐ Employed ☐ Retired

职 业 ： 上班族 已退休

☐ Self-Employed ☐ Others

个体经营 其他（学生、失业等无收入人群）

Location ☐ Sichuan ☐ Others

所 在 地 ： 四川省 其他

Cross-border e-commerce shopping experience ☐ Yes ☐No

跨境电商购物经验 ： 是 否

Section 2: Cross-border E-Commerce Logistics Services

第二部分：跨境电商物流服务

This section is related to the cross-border logistics services. Please read the following statement and mark accordingly:

1= Strongly Disagree, 2= Disagree, 3=Neutral, 4= Agree, 5= Strongly Agree

这个部分是关于跨境电商物流服务。请阅读以下的陈述并且打分：

非常不同意 1 分，不同意 2 分，中立 3 分，同意 4 分，非常同意 5 分。

transportation cost

物流相关价格

No.	Items	1	2	3	4	5
1.	The logistics company have a clear list of costs 物流公司有明确的费用清单					
2.	The logistics company has a perfect price system, and the price is relatively stable 物流公司有完善的价格体系，价格相对稳定。					
3.	I am satisfied that the customer pays for shipping costs in the event of a return or exchange 我对发生退换货时顾客承担运费情况感到满意					

4.	The logistics company has different discounts according to the different logistics service 物流公司针对不同情况的物流服务有不同的折扣					
5.	I am satisfied with the cost of cross-border logistics transportation 我对跨境物流运输费用感到满意					

delivery time

物流运输时间

No.	Items	1	2	3	4	5
1.	I am satisfied with the speed of the merchant's delivery after the order was successful 我对订单成功后商家的发货速度感到满意					
2.	I am satisfied with the time from ordering to receiving parcel 我对从下单到接收到包裹的时间感到满意。					
3.	There are different options for delivery time, and buyers are free to choose 对交货时间有不同的选择，买家可以自由选择					
4.	I am satisfied with the customs clearance time of cross-border e-commerce logistics 我对跨境电商物流的清关时间感到满意					
5.	I am satisfied with the time from the return of the goods from the logistics to the receipt of the new goods 我对从物流退回货物到收到新货物的时间感到满意					
6.	I am satisfied with the delay in receiving goods during peak periods compared to normal periods 我对高峰期收货相较于普通时期延迟的时间感到满意					

Returns and Exchanges

退换货

No.	Items	1	2	3	4	5
1.	Cross-border e-commerce platforms have detailed return and echange instructions (such as providing clear return terms, processes, rules, etc.) 跨境电商平台有退换货说明详细（如提供清晰的退货条款、流程、规则等）					

2.	I am satisfied with the prompt response and reply from customer service after requesting a return operation 我对请求退货操作后，客服人员的及时响应和回复表示满意					
3.	After applying for a return operation, customer service can take the initiative to consult your request and follow up on your satisfaction 申请退货操作后，客服能主动咨询您的要求，并对您的满意度进行跟进					
4.	The entire return logistics operation process is easy and fast 整个退货物流操作流程方便快捷					
5.	After applying for the return operation, the system provides timely updates of the return logistics tracking information 申请退货操作后，系统提供的退货物流跟踪信息的更新很及时					

information tracking

物流信息追踪

No.	Items	1	2	3	4	5
1.	I can track the logistics information of my orders in real time 我可以实时跟踪我的订单的物流信息					
2.	I can check the status of my product's customs clearance in real time 我可以实时查询我的产品的清关情况					
3.	Logistics companies provide consumers with the ability to track the location of their products at all times 物流公司为消费者提供随时跟踪其产品的位置					
4.	Logistics companies can give accurate logistics and transportation information 物流公司可以给予准确的物流运输信息					
5.	I am satisfied with the feedback of error information after the error occurs 我对出现误差后，误差信息反馈情况感到满意					
6.	Timely and reliable feedback on order logistics information 订单物流信息反馈及时且可靠					

Staff Service Quality

员工服务质量

No.	Items	1	2	3	4	5
1.	The logistics staff has a positive attitude and good communication abilities. 物流人员态度好，沟通能力强					
2.	Logistics staff can solve my problems professionally and timely 物流人员能专业、及时地解决我的问题					
3.	In the case of a wrong delivery, an incomplete receipt, or other issues, logistics staff can manage them appropriately. 物流人员在出现错误送货、不完全收货等情况时能妥善处理					
4.	The logistics staff presents a professional image by being well-dressed and well-behaved. 物流员工衣着得体，举止大方，展现出专业形象					
5.	The logistics staff is well-versed in their profession and is well-versed in the business. 物流人员精通他们的专业，对业务很熟悉					
6.	To protect the consignee's rights and interests, logistics staff operate with accuracy and consistency during delivery. 为了保护收货人的权益，物流人员在运送过程中的操作准确、一致					

Cross-border Logistics Customer Satisfaction

跨境物流顾客满意度

No.	Items	1	2	3	4	5
1.	I am satisfied with the quality of cross-border logistics. 我对跨境物流的质量感到满意					
2.	I am satisfied with the price of cross-border logistics. 我对跨境物流的价格感到满意					
3.	I am satisfied with the cross-border logistics service. 我对跨境物流服务是满意的					
4.	I am satisfied with the door-to-door cross-border logistics service. 我对上门的跨境物流服务是满意的					

5.	I am satisfied with the reputation of cross-border logistics. 我对跨境物流的声誉是满意的					
6.	I am satisfied with the after-sales service of cross-border logistics. 我对跨境物流的售后服务是满意的					
7.	In general, I am satisfied with my shopping experience using cross-border logistics 总的来说，我对使用跨境物流的购物体验感到满意					

-End of Questions-

Thank you for your time and cooperation in completing this questionnaire.

APPENDICES B Statistics Analysis

Statistics

	N		Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis
	Valid	Missing				
Total Logistics-related Price	458	0	-1.332	0.114	0.760	0.228
Total delivery time	458	0	-1.359	0.114	0.631	0.228
Total Return and Exchange	458	0	-1.421	0.114	0.960	0.228
Total information tracking	458	0	-1.507	0.114	1.132	0.228
Total Staff Service Quality	458	0	-1.541	0.114	1.248	0.228
Total Cross-border Logistics Customer Satisfaction	458	0	-1.511	0.114	1.182	0.228