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# A Research on Customers' Satisfaction and Loyalty Towards Internet Plus of Express Logistics in Chengdu, China

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## Abstract

**Purpose:** This paper aims to explore the factors influencing the satisfaction and loyalty of express logistics services in the context of "Internet Plus." Based on the literature review and questionnaire survey, the researcher conducted a quantitative survey based on the customers of courier companies as the research object. **Research design, data, and methodology:** A questionnaire survey was conducted with 500 respondents from Chengdu. The conceptual framework proposed a causal relationship between seven variables: service quality, perceived value, brand image, customer relationship management, trust, satisfaction, and loyalty. Structural equation modeling and validated factor analysis were used to analyze the data, including model fit, reliability, and validity of constructs. **Results:** The results show that service quality, perceived value, brand image, customer satisfaction. Additionally, satisfaction and customer relationship management significantly affect customer loyalty of courier companies. Empirical studies have shown that service quality, perceived value, brand image, customer relationship management, and trust factors determine customer satisfaction to some extent and thus influence customer loyalty. **Conclusions:** It is recommended that management and human resource teams provide assessments to measure satisfaction and loyalty to express logistics services to improve logistics service levels.

Keywords: Loyalty, Satisfaction, Express Delivery, Customer Relationship Management, Logistics Service

JEL Classification Code: E44, F31, F37, G15

## 1. Introduction

In the context of "The Internet Plus," e-commerce transactions in China are growing rapidly. As a logistics service provider for the public, express delivery in China only gradually emerged in the 1980s; China's express logistics service has been applied to modern information technology for a short time. China's express logistics service market is emerging, but its development is very rapid (Li et al., 2019).

According to the data released by the National Bureau of Statistics, China's online retail sales will reach 13088.4 trillion yuan in 2021, with 10804.2 billion yuan of physical goods and 812 million online shopping users in June 2021.

The level of online shopping consumption in Sichuan is increasing year by year. According to Jingdong's transaction data, Sichuan ranks fifth in China in purchasing power. With the increasing number of Internet users, the transaction records of e-commerce companies are constantly updated. In 2020, the business volume of express delivery enterprises above a certain size reached 83.358 billion pieces, up 31.2% year on year, and the accumulated revenue reached 879.54 billion yuan, up 17.3% year on year (Xinhua, 2022).

With the rapid development of the Internet, China's online shopping market continues to grow, and the explosive growth of order volume is both an opportunity and a challenge for courier companies; companies want to continue to operate in the fierce competition, and customer

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satisfaction is an important basic requirement (Arora et al., 2021). How customers get high-quality logistics services from logistics service enterprises, including express logistics service enterprises, has become an important basis for choosing logistics and express logistics service enterprises. Courier companies are the only operating unit in direct contact with customers in e-commerce transactions. Customer satisfaction with logistics services will directly affect the customer's online shopping evaluation, thus affecting further purchasing behavior (Sarder, 2021).

In Sichuan province, Chengdu is a magnificent existence. Its GDP accounts for over one-third of the province and more than a quarter of its permanent resident population. A third of Sichuan province's economy is concentrated in Chengdu, and a quarter of the population is installed in Chengdu. In addition, Sichuan has a large area, with 21 cities under its jurisdiction. This study takes customers from Chengdu and conducts a quantitative investigation to promote the rapid economic development of Sichuan (The People's Government of Sichuan Province, 2022). Therefore, the significant of this study is to explore the factors influencing the satisfaction and loyalty of express logistics services in the context of "Internet Plus."

## 2. Literature Review

#### 2.1 Service Quality

Perrault and Russ (1974) propose logistics service quality, which is interpreted as a company's ability to deliver the right products and services to the right place at the right time, in the right way, and at the right price. This is defined at the operational level.

Mentzer et al. (1997) pointed out that logistics service quality consists of the technical quality of the response result and the functional quality of the response process. Nan and Liu (2013) pointed out that logistics services should serve both the production and operation processes of the enterprise as well as the customers. Service quality is divided into individual and general perceptions (Parasuraman et al., 1985). Jiang et al. (2021) proposed that the content of logistics service quality includes business integrity, emergency time handling, timeliness of information updates, and convenience of reverse logistics.

Gupta et al. (2021) proposed that commitment, ability, communication, creativity and customization, coordination, and collaboration are important dimensions to improve the quality of logistics services. He and Lu (2012) collected model validation data through a questionnaire survey. They used the structural equation model to validate and analyze the relationship between influencing factors of logistics service quality and customer loyalty and satisfaction. Lin (2021) studied the influence of logistics service quality on customers' repeat purchases, taking Dingdong as the research object. Thus, a hypothesis is stated:

H1: Service quality has a significant effect on satisfaction.

#### 2.2 Perceived Value

Duman and Manila (2005). The perceived value results from consumers' evaluation of the time and money invested compared with their experience. Huang and Huang (2007) Perceived value are a comprehensive evaluation of the attributes and expectations of logistics service products based on customers' own consumption experience, knowledge, and preferences. Li and Zhang (2010) Customers' overall assessment of the extent to which logistics services meet their needs based on perceived benefits and losses.

Woodruff (1997). Customer Perceived Value considers that customer value includes use, exchange, and cost value from the economics perspective; from the procurement and materials management perspective, customer value includes use value and goodwill. From the marketing perspective, customer value is represented by customer economic value and use value. Subroto (2005) believes that positioning is the brand's perception among the target customers. Yuan (2008) concluded that customer-perceived service quality positively correlates with customer satisfaction and repeat purchase. Customers have their value evaluation system for the products or services they want to buy. When consumer behavior is about to happen, they will evaluate the target products or services in multiple dimensions according to the evaluation system and quickly estimate the value. Then, they will purchase the highest value according to the perceived gains and losses.

He (2012) believes that perceived value is a comprehensive evaluation of the overall performance of a service or product after weighing the benefits that customers feel with the costs they spend. Cao (2018) Perceived value is the overall process of comparing effort with income in the enjoyment of services. The empirical results of Chang et al. (2018) show that service quality and perceived value positively affect repurchase intention. "The better the service quality and experience, the stronger the customer's repurchase intention. Therefore, it comes to a hypothesis: **H2:** Perceived value has a significant effect on satisfaction.

## 2.3 Brand Image

The definition of subject norms for being an entrepreneur is in his research, Aaker (1991) stated: "A brand is a symbol of products and services introduced by a company and can be seen as a link between a company and a consumer. (Kotler & Gertner, 2002) believes that a brand aims to distinguish a product or work from similar products and works. Kotler (2004) believes that "a brand is the sum of a name, a noun, a design, or a symbol, and the purpose of introducing a brand is to distinguish the products or services it offers from those of its competitors."

Zhang (2023) brand image, as a comprehensive impression of the products and services provided by this company in the public mind, can clearly show the cognition and evaluation of consumers.

Zhang (2023) can be formally divided into brand visual and psychological images. The visual image of a brand is a synthesis of names, symbols, advertisements, designs, and other elements. They are the main elements that distinguish the brand from other brands. The psychological image of a brand is composed of functional, emotional, logical, cultural, and customizable elements, which aim to embed the brand image in the hearts of consumers and win brand loyalty.

Keller and Kevin (1998) pointed out that "brand activation" is the dilemma that the company faces with "brand aging." In order to let the brand strengthen its influence and competitiveness again to produce resources of economic benefits, the means used are to trace back the corporate culture, rejuvenate the product, etc. Lehu (2004) believes that the direct cause of brand aging is that when consumer demand changes, the brand does not cope with such changes, and the newly launched products fail to meet the demand changes in the consumer market. Keller and Kevin (1998) found that the effectiveness of the products and services operated by the enterprise depends on whether the enterprise has a brand, etc. Sun (2021) believes the brand has laid the foundation for effective communication. The role of brand positioning must be addressed. It not only enhances the influence of the brand but also improves the economic benefits of the enterprise.

Sharma and Gupta (2021) take Facebook as the research object and the influence of users' participation on brand trust and purchase intention through social media pages. It is found that consumer participation through Facebook pages will create trust in the brand and thus affect the purchase intention. Jiu (2021) believes Japan's village post is a platform for integrating the three industries. It is a nodal bridge connecting urban and rural areas and explores the role of brands in improving service quality and economic benefits in constructing service areas. Chen and Pan (2021) believe that brand building in service areas has played a certain role in improving the industry's image, improving the service level, and increasing the stickiness of users. Hence, a hypothesis is suggested:

H3: Brand image has a significant effect on satisfaction.

#### 2.4 Customer Relationship Management

Zhu (2004) mentioned in his book on CRM management that customer relationship management is a business strategy, followed by a management process and management technology, and again is a business strategy to maximize customers' interests. Roya Rahimi (2017) believes that CRM comprises people, processes, and technology.

Yang (2019) also believes that due to fierce competition, modern customers' demands for products and services continuously improve and become more detailed. Basic customer management services no longer have competitive advantages. Liu et al. (2019) believe that the formation of CRM capability is a process by which an enterprise transforms resources into competitive advantages through integrating, allocating, and utilizing internal resources. Yang (2019) believes that the customer relationship focuses on maintaining the relationship between the enterprise and the customer.

Tillett and David (2018) proposed that the professional management of customers by enterprises will enable enterprises to understand the recent situation of customers quickly, shorten the response time to customer demands, and thus greatly improve the service efficiency of commercial banks. Yang (2020) believes that introducing big data mining methods can help enterprises analyze customer information quickly, help enterprises maintain and attract customers, and rely on various information-based means of big data technology can also help enterprises make profits and develop quickly. Wang and Zhang (2020) suggested that enterprises should strengthen the collection of customer transaction data. Through the collection and processing of these data, the analysis of these data can obtain a large amount of valuable information, which is of great help to enterprises to improve customer satisfaction and enhance competitiveness. Sun (2021) also agrees that a good customer relationship can help an enterprise to build a marketing network and obtain market dynamics promptly, which plays an important role in the development of an enterprise. Customer relationship management is a strategic idea that advocates customer orientation. Through systematic induction and collection and analysis of customer information, corresponding upgrading and optimization are carried out according to customer needs to provide customers with more satisfactory product and service content. In addition, a harmonious and active interaction between enterprises is formed, which will ultimately improve overall customer satisfaction with the evaluation of the enterprise, enhance customer loyalty, and further form a more stable profit source for the enterprise.

Wu and Li (2021) believe that customer relationship management should be considered strategically, strengthen the coordination of various links, accelerate the transformation of outlets, and improve the efficiency of outlets. Liu et al. (2019) believe that the formation of CRM capabilities is a process in which enterprises transform resources into competitive advantages through integrating, allocating, and utilizing internal resources. Accordingly, this research frames a hypothesis:

**H4:** Customer relationship management has a significant effect on satisfaction.

#### 2.5 Trust

Roger et al. (1995) believed building trust requires a dynamic process. Trust is a subjective tendency and desire with a risky nature (Das & Teng, 2004). Lei (2015) believes that trust has the vulnerability characteristic of being "easy to destroy and difficult to rebuild." It requires a long period of mutual understanding and sincerity between the two sides before establishing a trust relationship. According to Liu et al. (2017), trust relationship is dynamic and can be strengthened. Trust plays a prerequisite and crucial role in establishing a good business relationship (Camen et al., 2006). A positive trust relationship positively impacts business growth and information flow (Liang et al., 2013).

The formation of trust relationships between organizations is a dynamic process of continuous interaction and satisfaction of organizational expectations (Laura et al., 2016). There is a dynamic process from conflict generation to resolution in building trust relationships (Song et al., 2022). Yao (2009) for consumers, it is necessary to improve their user experience to build a positive trust relationship. Yang (2010) A good trust relationship can enable enterprises to benefit from having scarce resources, improve overall competitiveness and accelerate operation efficiency. Consequently, a hypothesis is pointed:

H5: Trust has a significant effect on satisfaction.

#### 2.6 Satisfaction

Zhang (2001). Customer satisfaction is mainly used to measure users' perception of products. After the end of the purchase behavior, the customer will generally have a subjective evaluation of the purchase process and the quality of products and services, which is a quantitative description. Li (2011) Customer Satisfaction Index (CSI) is an index that measures customer satisfaction from an overall and comprehensive perspective, that is, consumers' evaluation of a company, industry, or even a country in terms of meeting customer needs. Hu (2023) believes that because everyone's needs are not static, with the change of age, environment, experience, and other factors, customers' feelings and satisfaction with products and services will also change.

Kazuhiro Esaki (2013) investigates the effect of price on customer satisfaction and believes that the estimation and prediction model based on product price can be applied to improve the overall customer satisfaction of system products. Li (2009) believes there is a positive correlation between customer satisfaction and customer loyalty; there is a significant correlation between the relationship between customers, the company, and its employees and customer satisfaction and customer loyalty. The higher the customer satisfaction, the more frequent the repeat purchase, and the longer the brand loyalty can be maintained. Li et al. (2016) believes that companies can effectively improve customer loyalty by improving customer satisfaction, and the degree of improvement does not show a simple linear trend. Zhuang and Zhou (2021) studied a specific sample of enterprises in Luckin coffee. Through empirical analysis, it was found that customer loyalty was significantly affected by customer satisfaction, and customer satisfaction promoted enterprise customer loyalty to a certain extent. It proved that customer satisfaction promoted customer loyalty from a more practical point of view. Thereby, a hypothesis is developed based on previous literatures:

H6: Satisfaction has a significant effect on loyalty.

## 2.7 Loyalty

Gremler and Browns (1996). Customer loyalty refers to the degree of a customer's preference to purchase a particular service provider repeatedly. Johnson (2015) Customer loyalty is represented by the positive emotional attitude of customers, that is, the love for a particular brand or product. An efficient and safe logistics experience is important for retail companies to maintain customer loyalty (Lin, 2022). Han and Liu (2010). Customer loyalty refers to the preference for the products or services of a specific enterprise; even if the price of the products or services of the enterprise is high, it will not affect the buying behavior of customers.

Ramanathan (2010) uses the structural equation model to analyze the model empirically. The research results show that customer satisfaction has a significant positive impact on customer loyalty. Wen (2019) believes that customer relationships and satisfaction can significantly affect customer loyalty. In contrast, customer relationship is more important. Bi (2020) pointed out through the empirical study of the offline consumption market that customer relationship management is the fundamental factor affecting customer loyalty, and enterprises should focus on existing customer relationships to improve online customer loyalty.

Yan et al. (2006) pointed out that private express delivery companies need to implement a differentiation strategy to break through the dilemma, focusing on differentiation in customer relationship management, differentiation in valueadded services and service details, and differentiation in service awareness and capability. Wang (2021) studies the current situation of the development of the express delivery industry. The research results show that modern express delivery companies should enhance customer relationship management. Aiming at customers' needs, we will strive to provide personalized express logistics services to achieve mutual benefit and win-win development with our customers. Subsequently, a hypothesis is set:

**H7**: Customer relationship management has a significant effect on loyalty.

## 3. Research Methods and Materials

## **3.1 Research Framework**

The conceptual framework of this study was carefully constructed based on existing theories and previous empirical studies. By synthesizing the results of previous research, especially on customer satisfaction and logistics service quality, we successfully constructed four theoretical models. We combined them to form the research framework of this study. Ammari and Soliman (2016) examined the impact of CRM implementation on profitability in the pharmaceutical industry. Hong and Swinder (2008) empirically tested the proposed customer satisfaction model in e-services. The third study was conducted by Jorge et al. (2020) on the factors influencing satisfaction and loyalty in online group purchasing. A fourth study was conducted by Lin and Zhao (2020) on the impact of e-commerce logistics service quality on customer satisfaction. The conceptual framework of this study is illustrated in Figure 1.



Figure 1: Conceptual Framework

**H1:** Service quality has a significant effect on satisfaction. **H2:** Perceived value has a significant effect on satisfaction.

H3: Brand image has a significant effect on satisfaction.

**H4:** Customer relationship management has a significant effect on satisfaction.

**H5:** Trust has a significant effect on satisfaction.

H6: Satisfaction has a significant effect on loyalty.H7: Customer relationship management has a significant effect on loyalty.

## 3.2 Research Methodology

The researchers used the method of random sampling to distribute questionnaires to the target group-Chengdu express consumers, through online questionnaires or paper questionnaires. The data are collected and sorted out to analyze the key factors affecting satisfaction and loyalty in logistics services. The questionnaire includes two screening questions, seven demographic questions, and 29 measuring items.

First, seven proposed variables, ranging from very dissatisfied (1) to very satisfied (5), were measured with a Likert scale, which was used to analyze all seven hypotheses. Demographic questions included background tests such as gender, age, education level, and time spent using express service. The assessment of item-objective congruence (IOC) revealed that all scale items achieved a score of 0.6 or higher, as determined by three expert raters. Subsequently, the pilot test conducted with a sample size of 30 participants demonstrated robust internal consistency for all items, with Cronbach's alpha coefficients exceeding or equaling 0.7 (Sarmento & Costa, 2016).

The questionnaire was distributed to the target group after testing the validity, reliability, and acceptability. The researchers analyzed the data collected through Jamov and AMOS 26.0 again and then used factor analysis (CFA) to test convergence and accuracy. Finally, the researchers used a structural equation model (SEM) to check the influence of the variables.

#### **3.3 Population and Sample Size**

The target population can be defined as the specific population that the researcher intends to study, interpreting the population as the object that the researcher intends to analyze (Stangor, 2014). The target group of this paper is the consumers of express delivery services in Chengdu and employees of logistics companies. The sample size of the structural equation model indicated that at least 425 respondents (Kline, 2011) should participate in the study. The questionnaire was distributed to 550 participants. After data screening, 500 respondents were used in this study.

## **3.4 Sampling Technique**

The researchers selected the top three logistics companies in the Chengdu postal express delivery industry 2021: SF Holdings (SZ 002352), Jingdong Logistics, and YTO Express (SH 600233), by judgmental sampling. Then, quota sampling is adopted, as proportionated in Table 1. The researchers used a convenience sampling method and distributed questionnaires online and offline.

| Names of enterprises | The Number<br>of Active in<br>Chengdu<br>(thousand) | Proportional<br>Sample Size |
|----------------------|---|-----------------------------|
| SF                   | 16061   | 136                         |
| JD                   | 19621   | 167                         |
| УТО                  | 23182   | 197                         |
| Total                | 58864   | 500                         |

**Table 1:** Sample Units and Sample Size

Source: Constructed by author

## 4. Results and Discussion

## 4.1 Demographic Information

The demographic target was 500 participants; the conclusions are presented in Table 2. Among them, 46.8% accounted for men and 53.2%; of the respondents, 62.2% were less than 35, and 37.8% were over 35. Most respondents were undergraduates, accounting for 67%, followed by a master's degree or above, accounting for 28.2%, and transportation industry and intelligent manufacturing accounted for more than 20%. Most used express services for a long time. Among the respondents using express service for more than three years, accounting for 86.4%; monthly online shopping expenditure exceeds 1000-yuan, accounting for 80%, and monthly online shopping more than three times, accounting for 80%.

#### Table 2: Demographic Profile

| Demograph | hic and General Data<br>(N=500)    | Frequency | Percentage |
|-----------|------------------------------------|-----------|------------|
| Gender    | Male                               | 234       | 46.8       |
|           | Female                             | 266       | 53.2       |
| Age       | Less than 24 years old (inclusive) | 34        | 6.8        |
|           | 25-34years old                     | 277       | 55.4       |
|           | 35-44 years old                    | 173       | 34.6       |
|           | More than 45 years old             | 16        | 3.2        |
| Education | Below high school                  | 9         | 1.8        |
|           | senior high school                 | 15        | 3          |

| Demograp               | hic and General Data<br>(N=500) | Frequency | Percentage |
|------------------------|---------------------------------|-----------|------------|
|                        | student                         |           |            |
|                        | undergraduate                   | 335       | 67         |
|                        | Master degree or<br>above       | 141       | 28.2       |
| Industry               | Smart manufacturi<br>ng         | 130       | 26         |
|                        | Public institutions             | 11        | 2.2        |
|                        | Internet                        | 23        | 4.6        |
|                        | transportation<br>industry      | 109       | 21.8       |
|                        | other                           | 227       | 45.4       |
| Time to use<br>express | Less than 3 years (inclusive)   | 68        | 13.6       |
| service                | 3-5 years<br>(inclusive)        | 110       | 22         |
|                        | More than 5 years               | 322       | 64.4       |
| Consumer<br>spending   | Below 500 yuan<br>(inclusive)   | 58        | 11.6       |
| on online              | 501-1000 yuan                   | 37        | 7.4        |
| shopping               | 1001-1500                       | 142       | 28.4       |
|                        | 1501-2000                       | 155       | 31         |
|                        | More than 2001<br>yuan          | 108       | 21.6       |
| Number of<br>online    | Less than 3<br>(inclusive)      | 66        | 13.2       |
| purchases              | purchases 4-5 (inclusive)       |           | 40         |
|                        | 6-7 (inclusive)                 | 154       | 30.8       |
|                        | 8 or more                       | 80        | 16         |

Source: Constructed by author

#### 4.2 Confirmatory Factor Analysis (CFA)

In this study, researchers evaluated the reliability and validity of each variable among 500 respondents. The statistical Program analysis analyzes the results of Cronbach's Alpha for each parameter. As shown in Table 3, according to the range where the Alpha coefficient is greater than 0.7, the results highly confirm the construct's internal consistency and the questionnaire's reliability (Sarmento & Costa, 2016).

Convergence validity measures the relationship between variables within the same structure (Marakarkandy et al., 2017). Fornell and Larcker (1981) proposed three measurement methods to evaluate convergence validity, namely factor load at > 0.5, composite reliability (CR) at > 0.7, and average variance extraction (AVE) at > 0.4.

|--|

| Variables                              | Source of Questionnaire<br>(Measurement Indicator) | No. of<br>Item | Cronbach's<br>Alpha | Factors<br>Loading | CR    | AVE   |
|--|--|----------------|---------------------|--------------------|-------|-------|
| Service Quality (SQ)                   | Lehtinen and Lehtinen (1982)                       | 6              | 0.869               | 0.552-0.825        | 0.872 | 0.535 |
| Perceived Value (PV)                   | Zeithaml et al. (2013)                             | 4              | 0.798               | 0.596-0.784        | 0.800 | 0.503 |
| Brand Image (BI)                       | Morrison (2001)                                    | 4              | 0.793               | 0.662-0.751        | 0.792 | 0.488 |
| Customer Relationship Management (CRM) | Schmidt et al. (2000)                              | 3              | 0.757               | 0.674-0.762        | 0.757 | 0.510 |
| Trust (T)                              | Hong and Cho (2011)                                | 4              | 0.805               | 0.492-0.951        | 0.819 | 0.549 |
| Customer Satisfaction (CS)             | Howard and Sheth (1969)                            | 3              | 0.805               | 0.728-0.798        | 0.806 | 0.581 |
| Customer Loyalty (CL)                  | Reichheld and Schefter (2000)                      | 5              | 0.863               | 0.676-0.813        | 0.864 | 0.560 |

Additionally, the findings shown in Table 4 indicate that all the important thresholds for the absolute fit indicators, such as CMIN/DF, GFI, AGFI, and RMSEA, along with the incremental fit measurements like CFI, NFI, and TLI, meet the necessary criteria. As a result, all of these goodness-of-fit measurements utilized in the confirmatory factor analysis (CFA) assessment suggest a satisfactory fit.

Table 4: Goodness of Fit for Measurement Model

| Fit Index        | Acceptable Criteria                                | Statistical<br>Values                   |  |
|------------------|--|---|--|
| CMIN/DF          | < 5.00 (Al-Mamary & Shamsuddin, 2015; Awang, 2012) | 1.799                                   |  |
| GFI              | ≥ 0.85 (Sica & Ghisi, 2007)                        | 0.919                                   |  |
| AGFI             | ≥ 0.80 (Sica & Ghisi, 2007)                        | 0.902                                   |  |
| NFI              | $\geq$ 0.80 (Wu & Wang, 2006)                      | 0.907                                   |  |
| CFI              | $\geq$ 0.80 (Bentler, 1990)                        | 0.956                                   |  |
| TLI              | $\geq$ 0.80 (Sharma et al., 2005)                  | 0.950                                   |  |
| RMSEA            | < 0.08 (Pedroso et al., 2016)                      | 0.040                                   |  |
| Model<br>Summary |  | In harmony<br>with<br>empirical<br>data |  |

**Remark:** CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index, and RMSEA = root mean square error of approximation

To ascertain discriminant validity, the square root of the Average Variance Extracted (AVE) was computed following the method proposed by Fornell and Larcker (1981). The results from this study indicate that the calculated discriminant validity surpasses all inter-construct/factor correlations, as illustrated in Table 5, thereby affirming its presence and support. All estimates are significant. The convergence validity of this study is shown in Table 5.

Table 5: Discriminant Validity

|         | SQ    | PV    | BI    | CRM   | Т     | CS    | CL    |
|---------|-------|-------|-------|-------|-------|-------|-------|
| SQ      | 0.731 |       |       |       |       |       |       |
| PV      | 0.077 | 0.709 |       |       |       |       |       |
| BI      | 0.119 | 0.523 | 0.698 |       |       |       |       |
| CR<br>M | 0.150 | 0.448 | 0.501 | 0.714 |       |       |       |
| Т       | 0.204 | 0.359 | 0.382 | 0.480 | 0.740 |       |       |
| CS      | 0.216 | 0.368 | 0.407 | 0.412 | 0.356 | 0.762 |       |
| CL      | 0.279 | 0.466 | 0.504 | 0.508 | 0.386 | 0.518 | 0.748 |

**Note:** The diagonally listed value is the AVE square roots of the variables

Source: Created by the author.

#### 4.3 Structural Equation Model (SEM)

Structural equation model (SEM) analysis combined with the principle of multivariate analysis is a way to find out its cause and relationship. The SEM can test the causal relationships between the variables (Wanichbancha, 2014). Causal relationships or effect pathways were determined using AMOS 26 software, and the refined models were analyzed (Sumsiripong, 2016). The SEM approach is suitable because it can simultaneously examine various relationships between variables. However, other statistical techniques can only evaluate the relationship between each structure individually. (Hossain et al., 2021). The SPSS AMOS26 version performed the calculation and adjustment model, and the results of the fitting index are shown in Tables 4.5 and 4.6. Figures 4.2 and 4.3 present the structural model before and after modification to ensure the model's fitness.

The model fit was evaluated. The statistical values of indices were CMIN / DF =3.292, GFI =0.844, AGFI = 0.816, NFI = 0.822, CFI = 0.868, TLI = 0.856, RMSEA = 0.068, respectively, Acceptable values are shown in Table 4.5, From the values, indices of GFI were not acceptable. Therefore, the structural model was modified and recalculated good-of-fit. The results of statistical values were CMIN / DF =3.172, GFI =0.85, AGFI = 0.823, NFI = 0.830, CFI = 0.87, TLI = 0.863, RMSEA = 0.066. As shown in Table 6.

Table 6: Goodness of Fit for Structural Model

| Index   | Acceptable   | Statistical<br>Values<br>Before<br>Adjustment  | Statistical<br>Values After<br>Adjustment |  |
|---|--|--|---|--|
| CMIN/DF<br><pre>&lt; 5.00 (Al-Mamary &amp;<br/> Shamsuddin, 2015;<br/> Awang, 2012)</pre> |  | 3.292  | 3.172                                     |  |
| GFI   | ≥ 0.85 (Sica & Ghisi, 2007)  | 0.844  | 0.85                                      |  |
| AGFI  | $\begin{array}{c} \mathbf{AGFI} \\ \geq 0.80 \text{ (Sica \& Ghisi,} \\ 2007) \end{array}$ |  | 0.823                                     |  |
| NFI   | $\geq$ 0.80 (Wu & Wang, 2006)  | 0.822  | 0.830                                     |  |
| CFI   | ≥ 0.80 (Bentler, 1990)   | 0.868  | 0.876                                     |  |
| TLI   | $\geq$ 0.80 (Sharma et al., 2005)  | 0.856  | 0.863                                     |  |
| RMSEA   | < 0.08 (Pedroso et al., 2016)  | 0.068  | 0.066                                     |  |
| Model<br>Summary  |  | Not in<br>harmony<br>with<br>empirical<br>data | In harmony<br>with empirical<br>data      |  |

**Remark:** CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index, and RMSEA = root mean square error of approximation

#### 4.4 Research Hypothesis Testing Result

The research model is calculated as the significance of each variable from its regression weights and R2 variances. The result in Table 7 postulated that all hypotheses were supported with a significance at p = 0.05. CS has the strongest influence on CL, which resulted in 0.511; CRM has the strong influence on CS ( $\beta = 0.352$ ), brand image ( $\beta = 0.285$ ), service quality ( $\beta = 0.235$ ), perceived value ( $\beta = 0.209$ ), customer relationship management ( $\beta = 0.16$ ), trust ( $\beta = 0.123$ ).

**Table 7:** Hypothesis Results of the Structural Equation Modeling

| Hypothesis  | (β)   | t-Value | Result    |
|-------------|-------|---------|-----------|
| H1: SQ→CS   | 0.235 | 3.938*  | Supported |
| H2: PV→CS   | 0.209 | 5.032*  | Supported |
| H3: BI→CS   | 0.285 | 5.146*  | Supported |
| H4: CRM→CS  | 0.163 | 3.408*  | Supported |
| H5: T→CS    | 0.123 | 3.276*  | Supported |
| H6: CS →CL  | 0.511 | 8.052*  | Supported |
| H7: CRM →CL | 0.352 | 6.836*  | Supported |
|             |       |         |           |

Note: \* p<0.05

Source: Created by the author

The results in Table 7 can be refined: **H1** results support that the service quality of express delivery positively affects the satisfaction of express delivery, and the standard coefficient of the structural path is 0.235. Lin (2021) studied the impact of logistics service quality on customer repurchase.

The **H2** results proved that perceived values are a key factor affecting satisfaction. Yuan (2008) concluded that customer-perceived value was positively associated with customer satisfaction. The represented standard coefficient value is 0.209.

**H3** agrees that brand image has a significant impact on satisfaction. Chen and Pan (2021) believe, brand building in the service field has played a certain role in enhancing the industry's image, improving the service level and user stickiness. A good brand image can improve customer satisfaction, resulting in a standard system value of 0.285.

H4 assumes that CRM significantly impacts satisfaction, and the standard value represented is 0.163. Sun (2021) also believes that good customer relationships can help enterprises establish marketing networks, timely obtain market dynamics, provide customers with more satisfactory products and service content, and finally improve the overall satisfaction of customers to enterprise evaluation.

The **H5** results support that trust (T) significantly impacts satisfaction. Its standard coefficient is 0.123. According to Yang (2010), a good trust relationship can make enterprises benefit from scarce resources and improve customer satisfaction and the overall competitiveness of enterprises.

27

The results of the **H6** analysis demonstrate that customer satisfaction has a significant positive impact on customer loyalty. The standard coefficient value is 0.511. This discussion agreed with Li (2009) that customer satisfaction positively correlates with loyalty. The relationship between the customers, the company, and their employees was significantly associated with customer satisfaction and loyalty.

**H7** proves the positive influence factor of customer relationship management (CRM) on loyalty, and the standard coefficient for revealing its relationship is 0.352. Li (2009) believes that the relationship between customers, the company, and employees is significantly associated with customer satisfaction and loyalty.

## 5. Conclusion and Recommendation

#### 5.1 Conclusion and Discussion

Based on theoretical research and literature review, hypotheses are proposed and used as a conceptual framework to investigate express service quality, customer perceived value, brand image, customer trust, customer relationship management, and how to impact customer satisfaction and loyalty significantly. The questionnaire was prepared and sent to the target samples for data analysis. The validity and reliability of the conceptual model were measured and tested using a confirmatory factor analysis (CFA). Therefore, we applied the structural equation model (SEM) to analyze the influencing factors affecting customer satisfaction and loyalty. The study findings are described below.

Through the analysis of the results, it is found that all five dimensions positively affect customer satisfaction, and all two dimensions positively impact customer loyalty. Among them, customer satisfaction has the highest impact on customer loyalty, followed by customer relationship management on customer loyalty; based on the research results, the following suggestions are put forward for how express enterprises will improve satisfaction and loyalty of express enterprises.

The discussion section of the paper provides an in-depth analysis and interpretation of the results obtained from the study on the factors influencing the satisfaction and loyalty of express logistics services in the context of "Internet Plus." The discussion highlights the significance of the findings, their implications, and their alignment with the existing literature.

The results of the study affirm the significance of service quality as a determinant of customer satisfaction. This finding is consistent with previous research (insert relevant references here) that has consistently identified service quality as a crucial factor affecting customer perceptions and satisfaction. In the context of express logistics services, it is evident that customers place a high value on the reliability, speed, accuracy, and responsiveness of these services.

The study also reveals that perceived value is a significant predictor of customer satisfaction. This outcome is in line with previous research (insert relevant references here) that emphasizes the importance of customers feeling that they receive good value for their money. In the context of express logistics, customers assess the benefits of using these services against the costs incurred, including monetary expenses and time. A positive perception of value contributes positively to satisfaction.

Brand image emerges as another key determinant of customer satisfaction in the context of express logistics services. This finding underscores the importance of brand reputation and customer perceptions of the courier companies. Positive brand image not only influences satisfaction but can also contribute to customer trust and loyalty.

The study highlights the role of customer relationship management (CRM) and trust in influencing customer satisfaction. Effective CRM practices enhance customer experiences and interactions with courier companies, leading to higher satisfaction levels. Trust in the service provider is also critical, as customers need to feel confident in the reliability and security of their deliveries.

The study finds that satisfaction significantly affects customer loyalty to courier companies. This result aligns with the well-established link between satisfaction and loyalty (insert relevant references here). Satisfied customers are more likely to remain loyal to a service provider, make repeat purchases, and recommend the service to others.

## 5.2 Recommendation

At present, the online shopping market is developing rapidly. The consumer demand presents differentiation and personalized trend, the competition in the industry is fierce, the market environment of express enterprises outside the industry is becoming increasingly complex, and the express industry has new opportunities and new challenges.

First, service quality attaches importance to creating unique service quality online shopping. Customer satisfaction is a partial intermediary in the impact mechanism of service quality of express delivery companies on customer loyalty. Only by grasping the service quality can express delivery enterprises keep pace with the times, innovate, and better meet the high-quality service needs of consumers, which is an important means to enhance customer satisfaction and loyalty. There is also a need to innovate the service quality. For example, strengthen cooperation with merchants and platforms to create personalized online shopping services jointly.

Second, we will promote win-win cooperation through all-round and multi-angle service enhancement and optimization to improve the accuracy of customer expectations, such as creating scale advantages in price, location advantages in service outlets, and speed advantages in revenue acquisition.

Third, pay attention to customer satisfaction and improve customer loyalty. Customers' final satisfaction degree is related to a certain service experience and the cumulative result of each experience. Moreover, the opportunities and frequency of customers' direct contact with express delivery companies are increasing with the expansion of the online shopping market. Therefore, on the one hand, we should pay attention to the customer's service experience every time and avoid false and exaggerated service quality marketing. No matter what form of publicity, it is not as good as word-ofmouth spread over time to prevent customers from having too high expectations.

Fourth, improve consumers' trust in enterprises. By inviting experts in the industry to provide professional guidance to express service workers, improve their business skills, standardize the service process, and improve consumers' trust in the enterprise, it is also possible to carry out a competition among business experts within the enterprise and include them in the year-end appraisal, to motivate the staff's enthusiasm for learning.

Fifth, focus on customers, build good and sustainable customer relationships, and improve customer loyalty. Express delivery companies should also pay attention to maintaining and managing customer relationships and enhancing customer loyalty by operating customer relationships, whether by considering the service experience of consumers themselves or long-term cooperation with merchants or platforms.

Sixth, strengthen the corporate brand effect. Merchants and customers can quickly and accurately realize the delivery of goods according to the logistics information. For errors in the distribution process, customers can timely inform the merchants through information tracking, establish the corporate brand, and do a good job in brand promotion and publicity.

#### 5.3 Limitation and Further Study

This study takes the logistics service of express delivery on Internet Plus as the research context. The influencing factors of customers' satisfaction and loyalty to express delivery enterprises are discussed through theoretical analysis, questionnaire design, and data processing. Some conclusions with certain reference values are obtained, and targeted suggestions are put forward for express delivery enterprises, but more research is needed.

The measurement scale of online shopping express delivery companies needs to be further enriched and improved. In this study, the determination of satisfaction and loyalty dimensions of online shopping express delivery companies is summarized through domestic and foreign literature research, which is suitable for the present. However, with the in-depth development of information technology, such as artificial intelligence and big data, express delivery services also show intelligence and technology. At the same time, the consumption upgrade will also force express delivery companies to provide more personalized and diversified services. Therefore, the measurement dimensions also need to keep pace with the times.

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