Factors Influencing Customer Satisfaction in Community Smart Parcel Locker Services in Taiyuan City, China

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ABSTRACT

In recent years, online shopping has become a significant and rapidly growing trend in consumer behavior, imposing higher demands on the cultivation and development of the logistics market. Smart Parcel Lockers, as a product of the Internet of Things (IoT) in conjunction with express delivery services, have been widely deployed throughout communities, effectively addressing the challenges of last-mile delivery in residential areas. However, being a relatively new concept, Smart Parcel Locker services still face numerous issues in terms of service delivery and content. Enhancing customer satisfaction has become a pressing concern for both Smart Parcel Locker operators and consumers.

Keywords: Community, Smart Parcel Locker, Customer Satisfaction

1.1 Background

The rise of e-commerce has strained delivery services, causing issues like high volume and satisfaction. To tackle this, major players are using Smart Parcel Lockers with IoT tech. However, in China's smaller cities, these lockers face low usage due to poor site selection and usability. This paper aims to analyze and improve customer satisfaction in Community Smart Parcel Lockers for better industry operations.

1.2 Research Objective

The primary objective of this study is to investigate the influencing factors of customer satisfaction in Community Smart Parcel Locker services.

1.3 Research Hypotheses

H1: Corporate image has a significant positive impact on customer satisfaction.

H2: Perceived quality has a significant positive impact on customer satisfaction.

H3: Perceived ease of use has a significant positive impact on customer satisfaction.

H4: Perceived value has a significant positive impact on customer satisfaction.

H5: Service quality has a significant positive impact on customer satisfaction.

1.4 Scope of Research

1.4.1 Scope of Content

This research employs a quantitative research method and focuses on the factors influencing customer satisfaction in Community Smart Parcel Locker services.

1.4.2 Scope of Population

The study population consists of 31,420 homeowners in the Jingangli community, Xinghualing District, Taiyuan City, China (Census, 2023).

1.4.3 Scope of Variables

The variables under investigation include Corporate Image, Perceived Quality, Perceived Ease of Use, Perceived Value, and Service Quality. The dependent variable is Customer Satisfaction.

1.4.4 Scope of Period

The study covers the period between January 2023 and September 2023.

1.5 Research significance

(1) Theoretical Significance:

This study contributes to Smart Parcel Locker research by exploring factors affecting customer satisfaction, expanding its research scope. Smart Parcel Lockers play a vital role in smart logistics and last-mile delivery. Chinese scholars have focused on design and site selection, but this paper emphasizes customer-oriented factors. It conducts a survey on Customer Satisfaction with Community Smart Parcel Lockers, enriching the field.

(2) Practical Significance:

This paper offers practical optimization strategies for Community Smart Parcel Locker operators, crucial in a competitive courier industry. Customer satisfaction directly impacts loyalty, making it vital for operators serving communities. Through user surveys and questionnaires, it identifies site selection, layout, and service level issues, proposing targeted optimization strategies. This research is valuable for real-world courier locker operators.

1.6 Definition of variable meaning

1.6.1 Smart Parcel Locker

Smart Parcel Lockers benefit from the development of Internet of Things (IoT) technology. They can identify parcels, temporarily store and manage items inside the lockers, connect to PC servers, upload parcel information, and then send notifications to parcel recipients. Users can retrieve their parcels using a retrieval code (China National Post Bureau, 2020).

1.6.2 Corporate Image

Corporate image refers to the overall impression and evaluation of a company by the general public (Liu, Jianming, Wang, Taixuan, et al., 2018).

1.6.3 Perceived Quality

Perceived quality is the process by which customers evaluate service quality by comparing their actual experiences during service delivery with their prior psychological expectations (Grönroos, K., 1982).

1.6.4 Perceived Ease of Use

Perceived ease of use refers to consumers' perception that it is easier to use a new information technology (Baidu, 2022).

1.6.5 Perceived Value

Perceived value refers to the evaluation of a product or service by customers, considering the perceived benefits minus the costs associated with obtaining the product or service (Baidu, 2022).

1.6.6 Service Quality

Service quality refers to the sum of characteristics and features of a service that can meet specified and latent needs, representing the extent to which service work can satisfy the needs of the service recipient (Wang, Xuewen, 2012).

1.6.7 Customer Satisfaction

Customer satisfaction refers to the degree to which customers feel that their explicit, often implicit, or obligatory needs or expectations have been met (Lu, Xiongwen, 2013).

2.1 Concept Framework
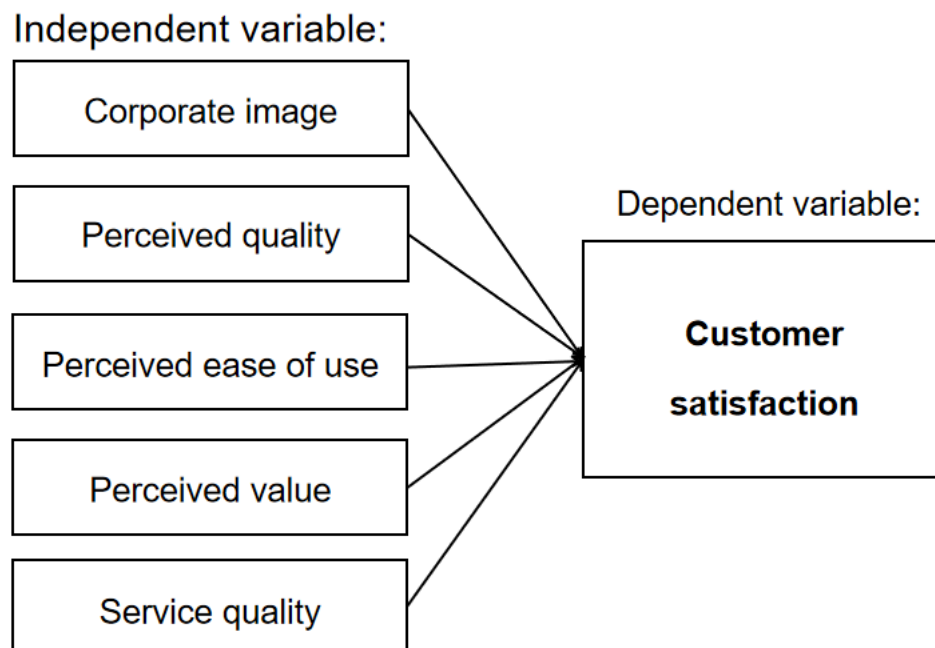
The details are as follows:

Figure 2.7 Conceptual Framework

3.1 Population and samples

There are a total of 36,470 property owners in the Jingangli Community, Xinghualing District, Taiyuan City, China (Census, 2023). The survey sample consisted of 396 property owners from the Jingangli Community, Xinghualing District, Taiyuan City, China. Researchers employed a simple random sampling method, and the sample size was determined using Taro Yamane's formula (Yamane, 1973) with a confidence level of 95%. The tolerance of the sample is at the level of 0.05

3.2 Research tools

3.2.1 Steps in Creating the Questionnaire

Based on the research objectives of this study and relevant previous research, concepts, theories, and research data were established. A survey questionnaire for this study was designed.

3.2.2 Scoring

In this study, all variables were measured using a Likert five-point scale, with responses ranging from 1 to 5, where 1 represents "Strongly disagree," 2 represents "Disagree," 3 represents "neutral," 4 represents "Agree," and 5 represents "Strongly agree" (Sullivan & Artino, 2013). Therefore, the scoring values in a questionnaire with five opinion levels are

determined as follows:

Scoring 5 points means Strongly agree

Scoring 4 points means Agree

Scoring 3 points means Neutral

Scoring 2 points mean Disagree

Scoring   1point means Strongly disagree

3.3 Collection of data

3.3.1 Data collection approach

This study used a questionnaire survey to sample 396 owners in Gangli Community, Xinghualing District, Taiyuan City, China.

3.3.2 Analysis and conclusion of research results

In this study, 36,470 owners in Gangli Community, Xinghualing District, Taiyuan City, China. An empirical study based on the study objectives and study hypotheses will be elaborated in chapters 4 and 5.

3.4 Data analysis

This study used data statistics software to analyze and study the collected questionnaire data, whose analysis module involves reliability analysis, descriptive statistical analysis, S.D. value, correlation analysis and regression analysis.

3.4.1 Descriptive statistical analysis

Statistical software of descriptive statistical analysis module is mainly for the research samples of the demographic characteristics focus on gender, age, income, education, monthly delivery frequency, use Smart Parcel Locker frequency, the number of different layers and the percentage of the specific description of the total, but also for some items score the mean and standard deviation to make some calculation, to intuitive present data fluctuations.

3.4.2 Reliability analysis

The study employs statistical software to analyze questionnaire reliability using Cronbach's alpha. A higher value (closer to 1) indicates greater reliability; typically, 0.6 or higher meets research standards. This survey assesses five variables: Corporate Image, Perceived Quality, Perception and Ease of Use, Perceived Value, and Service Quality.

3.4.3 Analysis of sample mean and standard deviation

Descriptive stats like average and standard deviation help understand how independent variables impact corporate image, perceived quality, perception, perceived value, and service quality in surveys. Higher averages indicate stronger support for studied variables, while larger standard deviations show greater variability or dispersion in the data.

3.4.4 Correlation analysis

This study is necessary to analyze the relationship between the direction of change and the influence of the different variables, so as to find out the internal law of the interaction between the variables. The output of the regression analysis includes the results of the correlation analysis that can be presented and studied separately.

3.4.5 Multiple regression analysis

Correlation analyzes relationships between variables, while regression delves into how independent variables impact a dependent one. For this study, Customer satisfaction is the dependent variable. Regression helps understand how the five independent variables affect Customer satisfaction specifically.

4.1 Summary the results of the reliability test of the questionnaire.

The reliability test results for this study indicate that Cronbach's alpha values range from 0.652 to 0.724, with an overall value of 0.715. Looking at each independent variable individually, it can be observed that Perceived value has the highest reliability (0.724), followed by Service quality (0.699), and Customer satisfaction has the lowest reliability (0.652).

4.2 Summary the results of the demographic characteristics

Gender: Nearly balanced between males (49.75%) and females (50.25%).

Age: Majority (57.07%) are aged 19-45, followed by 29.80% over 45-66.

ncome: Most (32.58%) earn 5001-10000 yuan monthly, 30.56% earn 3001-5000 yuan.

Education: Highest (32.32%) have a bachelor's degree, followed by 26.52% with a high school education.

Delivery Frequency: 36.87% receive over 8 deliveries monthly, 30.05% receive 3-5 times.

Usage Frequency: Most (32.07%) use multiple times a month, 31.57% use multiple times a week.

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