Chapter 3

Research Methodology

This study is a quantitative research. The details about the research method as follows:

1. Research Design
2. Population and Sample Size
3. Research Instruments
4. Data Collection
5. Data Analysis

Research Design

This study, "Service Quality of Cold Chain Logistics based on Customer Relationship Management: A Case study of Shun Feng Express Co., Ltd" adopts a quantitative research design to explore the influencing factors of logistics service quality in customer relationship management.

The research data of this study will be obtained through questionnaire survey. In order to ensure the research results reliable, the questionnaire's quality should be strictly controlled. The questionnaire design stage of this study mainly involves the following three steps:

1) Determine the questionnaire's initial version

The research goal of SF Express cold chain service quality is defined, and questionnaire questions are designed according to specific requirements, forming the initial questionnaire.

2) Questionnaire revision

After seeking feedback from professionals and experts in the field of that logistics services, the initial version of the questionnaire will be adjusted and modified to eliminate problems such as unclear question expression and language confusion. This ensures the accuracy, specificity and clarity of the questionnaire content.

3) Pilot investigation

In order to ensure the logical consistency of the questionnaire, a small pilot survey will be conducted before the formal survey.

The questionnaire for this study consists of three parts:

1) Demographic information.

Including age, sex, education level, etc., these will be subject to descriptive statistical analysis.

2) Shun Feng Express cold chain logistics service quality measurement project.

Shun Feng Express cold chain logistics service quality factors include tangible assets, reliability, responsiveness, assurance, empathy, a total of 5 points, a total of 20 questions.

3) Shun Feng Cold Chain logistics customer relationship management measurement project.

The questions of Likert scale relate to the factors affecting Shun Feng cold chain logistics customer relationship management, such as the ability to sign contracts and the price of SF cold chain logistics.

4) Customers' supplementary suggestions on Shun Feng Express cold chain logistics services

Population and Sample Size

1. Population

The research group is the customers who use ShunFeng Express cold chain logistics. According to the statistical report of SF Logistics, ShunFeng Express has 537 million individual customers.

2. Sample size

According to Yamane (1973, pp. 727-728), the formula is as follows:

$$n = \frac{N}{1+N(e^2)}$$

$$= \frac{5.37 \times 10^7}{1+5.37 \times 10^7 \times 0.05^2} \approx 400$$

Where n = sample size

N = Population size = 5.37×10^7

e = Error (0.05) Reliability level 95%

The calculated result is 399.9970205, so the sample size of the study is 400.

Research Instruments

In this study, questionnaire survey, SERVQUAL model form, Internet data access and other tools were used to write the paper.

This study will use questionnaire survey to investigate customers who use Shun Feng Express cold chain logistics services.

The questionnaires will be distributed, collected and returned within two months. This study adopts the questionnaire survey method, which provides timely, effective and credible data support for subsequent empirical research, and lays a solid foundation for subsequent empirical research.

On the basis of literature review and relationship hypothesis, this study determined the measurement items of each dimension under the two core concepts of service quality and customer relationship degree. The measurement scale is based on Likert scale. The five attitude levels are: 1) strongly dissatisfied, 2) somewhat dissatisfied, 3) neutral, 4) somewhat satisfied, and 5) very satisfied. The corresponding values are 1, 2, 3, 4, and 5 points.

1. Measurement of variables affecting service quality

In the second part of the questionnaire, the variables were measured using the interval scale. The comprehensive rating scale is used to assess the level of customer opinion on various factors related to PINDUodeau's service quality, including reliability, responsiveness, assurance, reputation and information quality.

Use a Likert (rating) scale to assess the level of opinion on each of the above factors, ranging from highest to lowest (5-1), as follows:

Very satisfied = 5   Somewhat satisfied = 4

Neutral = 3   Somewhat dissatisfied = 2 points

Strongly dissatisfied = 1 point

The criteria for interpreting the meaning of the mean from the data analysis (Siljaru, 2017, p. 77) are as follows:

Mean 4.51 – 5.00 means the highest opinion level.

Mean 3.51 – 4.50 means a high level of opinions.

Mean 2.51 – 3.50 means moderate opinion level.

Mean 1.51 – 2.50 means low level of opinion.

Mean 1.00 – 1.50 means the lowest level of opinion.

2. Measurement of variables affecting customer relationship

In the third part of the questionnaire, the variables were measured using the interval scale. The comprehensive rating scale is used to evaluate the level of customers'

opinions on various factors related to SF Cold chain logistics customer relationship management.

Use a Likert (rating) scale to assess the level of opinion on each of the above factors, ranging from highest to lowest (5-1), as follows:

Very satisfied = 5   Somewhat satisfied = 4

Neutral = 3   Somewhat dissatisfied = 2 points

Strongly dissatisfied = 1 point

Data Collection

The questionnaire will be distributed to users who have used SF Express cold chain logistics in the past six months. The electronic questionnaire will be conducted between June and July 2023 and will be distributed through offline and Internet channels. The main Internet channels are Wechat, Sina Weibo, QQ and other platforms for questionnaire survey to collect relevant questionnaire data. The sample is 400 customers who have had SF cold chain logistics services in the first half of 2023.

Data Analysis

The data analysis tools used in this study mainly include the basic analysis functions of Questionnaire Star. The analysis includes demographic characteristics of respondents, reliability and validity analysis, and descriptive statistical analysis.

This study will use data processing software for data analysis, including descriptive statistical analysis, reliability analysis, validity analysis, correlation analysis, etc.

1. Descriptive statistical analysis

Descriptive statistical analysis is mainly to screen, analyze and summarize a large number of data obtained after investigation. This study describes the basic characteristics and proportion of samples according to the frequency distribution of subjects' gender, age, education level and other attributes.

2. Reliability analysis

This paper uses internal consistency reliability test to verify the questionnaire's reliability and validity. Cronbach's alpha coefficient is the standard for internal consistency reliability testing and is most commonly used in Likert scales. A higher alpha coefficient means that the internal consistency of the scale is better and

the scale is more stable. First, if the Cronbach 'sa coefficient of the scale is less than 0.7, it indicates that the scale's reliability is low. Cronbach's sa coefficient was between 0.7 and 0.8, indicating that the scale reliability met the requirements and the scale results were acceptable. If Cronbach's a coefficient is greater than 0.8, meaning that the scale has high reliability.

Cronbach's **α** was selected to test the reliability of the scale in this study.

3. Validity

It was verified by three experts and the "project objective alignment" (IOC) index of the questionnaire was calculated. Consistency points are assigned according to the project objective Consistency Index (IOC) (Rovinelli & Hambleton, 1976). IOC scores reached the highest level of 0.95 and 1. The IOC in the calculation is divided into three scoring schemes to ensure the consistency and consistency of the project. All experts must select only one answer from the following three options as the grade provided:

If specialists are certain that an item is a measure of an objective, add one point.If the expert is unsure whether the item is a measure of the goal, the score is 0.If the expert determines that an item is not a measure of the goal, then the item is not a measure.The consistent value of the total score for each item must be at least 0.50 (Rovinelli & Hampleton, 1976).

IOC is calculated using the formula R/N, where: IOC is equal to project objective compliance

R　　= The sum of the scores of different experts

ΣR　= The total rating of each authority

N　　= Number of experts

In addition, three experts evaluated it for IOC analysis, ranging from +1 to -1. The sum of all the experts' ratings for each item led to different results. However, the concept of checking IOC consistency as validity cannot be lower than 0.50. The result of this project is 0.97.

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