

## Chapter 3

### Research Methodology

This research is qualitative 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

##### 1. Quantitative research

This study, “The Effect of Service Quality on Customer Loyalty of Social E-commerce—A Case Study of Pinduoduo”, will employ a cross-sectional and quantitative research design with the objective of examining the relationship between service quality and customer loyalty.

The research data for this study will be obtained through a questionnaire survey. To ensure the reliability of the research results, strict control over the quality of the questionnaire is necessary. The questionnaire design phase of this study mainly involves the following three steps:

- 1) Determining the initial version of the questionnaire

The research objectives for social e-commerce Pinduoduo service quality were defined, and the questionnaire survey questions were designed based on specific requirements, resulting in the initial version of the questionnaire.

## 2) Questionnaire revision

After seeking feedback from professionals and experts in the field of social e-commerce, the initial version of the questionnaire will be adjusted and modified to eliminate issues such as unclear question formulation and confusing language expression. This ensures the accuracy, specificity, and clarity of the questionnaire content.

## 3) Pilot survey

To ensure the logical coherence of the questionnaire, 30 samples pilot survey will be conducted before the formal survey.

## 2. Questionnaire Design

The survey questionnaire in this study consists of three parts:

### 1) Demographic information.

This includes age, gender, education level, income, and Pinduoduo usage, which will be subjected to descriptive statistical analysis.

### 2) Measurement items regarding service quality of Pinduoduo.

There are 20 questions in 5 points of Likert (rating) scales concerning to factors affecting service quality of Pinduoduo including reliability, responsiveness, assurance, reputation, and information quality.

### 3) Measurement items regarding customer loyalty of Pinduoduo.

There are 5 questions in 5 points of Likert (rating) scales concerning to factors affecting customer loyalty of Pinduoduo including repeat purchase and word-of-mouth.

## 3. Variables

In this research, there were 7 latent variables, which comprised of exogenous variables and endogenous variables.

### 1) Exogenous variables

Exogenous variables are latent variables that are not affected by any other variables. This research involved 5 exogenous variables, as follows:

## 2) Endogenous variables

Endogenous variables are latent variables that are affected by other variables. This research involved 2 endogenous variables.

**Table 3.1** Exogenous variables and questions

Dimension	Selection of Factors	Source of Factors
1 Reliability	Pinduoduo platform is trustworthy	Wu et al. (2015), Goh et al. (2013), Xiao (2010)
	The service is efficient	
	The service matches the description	
	The payment methods are reliable	
	Transaction information is easily accessible	
	The consulting service is reliable	
	Customer service and after-sales support have a good attitude	
2 Responsiveness	Customer issues are fully resolved	Wu et al. (2015), Xiao (2010)
	Remedial measures are taken promptly	
	Logistics information is updated in a timely manner	
3 Assurance	The transaction process is easy to operate	Collier et al. (2006), Yadav et al. (2017), this research
	The transaction is secure	
	Privacy is ensured	
4 Reputation	Delivery is secure	Liang (2013), Hsu et al. (2018)
	Personalized services are provided	
	Accurate positioning is available	
5 Information Quality	Pinduoduo maintains content standards	Lu et al. (2008), Layla Hasan et al. (2011), Yadav et al. (2017)
	Personalized services are provided	

**Table 3.1** Endogenous variables and questions (Cont)

Dimension	Selection of Factors	Source of Factors
1	Repeat Purchase	Wang (2015)
	Making purchases on Pinduoduo is repeatedly.	
	Making purchases is repeatedly if other platforms offer the same products as Pinduoduo	
	Making purchases is repeatedly if the price of goods on Pinduoduo increases	
2	Word-of Mouth	Su (2007)
	I will persuade other people to make purchases on Pinduoduo	
	I will follow other people's purchasing advice on Pinduoduo	

## Population and Sample Size

### 1. Population

The population of this study was the number of customers who shopped on Pinduoduo. According to Pinduoduo 2022 Annual report, as of the end of 2021, Pinduoduo had 868.7 million active buyers.

### 2. Sample Size

The formula developed by Yamane (1973) was found to be appropriate for determining the sample size. Therefore, 386 customers were determined as the total sample size of the study.

$$n = \frac{N}{1+Ne^2}$$

$$n = \frac{868.7 \times 10^6}{1 + 868.7 \times 10^6 \times 0.05^2} \approx 386$$

Where n = sample size

N = population size

e = error (0.05) reliability level 95%

The expected sample size is 386 respondents who have shopped on Pinduoduo within the past 6 months.

## Research Instruments

This study will use the questionnaire method to survey customers who have shopped on Pinduoduo. A combination of online and paper questionnaires will be used, and questionnaires will be distributed, collected, and recovered within two to three months. By using the questionnaire survey method, this study provides timely, effective, trustworthy data support and lays a solid foundation for subsequent empirical research.

Based on the literature review, relationship assumptions, and model construction, this study determines the measurement items of each dimension under the two core concepts of service quality and customer loyalty. The measurement scale is based on a 5-point Likert scale. The five attitude levels are: 1) strongly disagree, 2) somewhat disagree, 3) neutral, 4) somewhat agree, and 5) strongly agree. The corresponding values are 1, 2, 3, 4, and 5 points respectively.

### 1. Measurement of Variables Affecting Service Quality

In part 2 of the questionnaire, the variables were measured using an interval scale. The summated rating scale was employed to assess the level of customer opinions regarding various factors related to Pinduoduo service quality, including reliability, responsiveness, assurance, reputation, and information quality.

The levels of opinions about the respective factors as discussed above were assessed using questions equipped with 5 points of Likert (rating) scales, which ranged from the highest to the lowest (5-1), as follows:

Highest quality	= 5 points
High quality	= 4 points
Moderate quality	= 3 points
Low quality	= 2 points
Lowest quality	= 1 point

The criteria for assigning the mean values for the level of loyalty were based on the following 5 levels (Boonchom Srisa-ard, 2013: 55-56):

Means 4.21-5.00	= Highest quality
Means 3.41-4.20	= High quality
Means 2.61-3.40	= Moderate quality
Means 1.81-2.60	= Low quality
Means 1.00-1.80	= Lowest quality

## 2. Measurement of Variables Affecting Customer Loyalty

In part 3 of the questionnaire, the variables were measured using an interval scale. The summated rating scale was employed to assess the level of customer opinions regarding various factors related to Pinduoduo customer loyalty, including repeat purchase and word-of-mouth.

The levels of opinions about the respective factors as discussed above were assessed using questions equipped with 5 points of Likert (rating) scales, which ranged from the highest to the lowest (5-1), as follows:

Highest loyalty	= 5 points
High loyalty	= 4 points
Moderate loyalty	= 3 points
Low loyalty	= 2 points
Lowest loyalty	= 1 point

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Means 4.21-5.00 = Highest loyalty

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Means 1.00-1.80 = Lowest loyalty

## **Data Collection**

To ensure that respondents frequently engage in e-commerce, electronic questionnaires will be used. The questionnaire survey will be conducted from September to October 2023. The questionnaires will be distributed through offline and internet channels. Internet channels will mainly choose each social e-commerce official QQ group and WeChat circle of friends to disseminate and obtain relevant questionnaire data.

## **Data Analysis**

The data analysis tools used in this study primarily consist of the basic analysis functions of statistical software. The content of the analysis includes demographic characteristics of the respondents, reliability and validity analysis, as well as descriptive statistics analysis.

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

### **1) Descriptive statistical analysis**

Descriptive statistical analysis mainly screens, analyzes, and summarizes a large amount of data obtained after the investigation. It summarizes the central tendency and dispersion of these data. Relevant descriptive statistics can be generated through descriptive analysis using statistical software. The central tendency of the analyzed data includes the mode and median. The dispersion of the described data includes the maximum value, minimum value, range, quartile,

variance, and standard deviation. These descriptive statistics comprehensively analyze the characteristics of variables.

This study describes the basic characteristics and proportions of the sample based on the frequency distribution of subjects regarding attributes like gender, age, and education level.

#### 2) Correlation analysis

Correlation analysis studies the relationship between random variables, including the direction and degree of correlation between these variables. This study mainly uses Pearson's correlation coefficient.

#### 3) Regression analysis

Regression analysis is a widely used statistical method to study the quantitative relationship between two or more variables. It mainly discusses whether phenomena are correlated, the direction of correlation, and the degree of intimacy. It generally does not distinguish between dependent and independent variables. Regression analysis analyzes the specific correlation forms between phenomena, determines their causal relationship, and uses mathematical models to express their relationship.

#### 4) Validity analysis

The content validation was carried out by three experts, Index of the Item Objective Congruence (IOC) was computed for the survey questionnaire. Index of Item Objective Congruence (IOC) (Rovinelli & Hambleton, 1977) points of congruence were rated. IOC scores reached the high level of value 0.95 and The IOC points in calculations provided into three scales of rating for consistency and congruencies of the items. All experts had to choose only one answer as the given mark from these three alternatives of choices:

+1: If experts definite feeling that an item is a measure of an objective.

00: If experts moderate about whether the item is a measure of an objective.

-1: If experts definite feeling that an item is not a measure of an objective.

Total points for each item must have the consistency value equal to or above 0.50 (Rovinelli & Hambleton,1977).



The formula for calculating the IOC= $\sum R/N$

Where:

IOC	=	Item Objective Congruence
R	=	Sum of the scores of individual experts
R	=	Sum of the scores of individual experts
$\sum R$	=	Total scores from each expert
N	=	Number of experts

It also features IOC analysis by 3 experts, ranging from +1 to -1. All the experts produced different results for the total score for each item. For example, if the total score is 0(0), it is possible that one of them chooses 1 (1  $\times$  1), one chooses 0(1  $\times$  0), and the other chooses -1 (1  $\times$  -1), so the result is :1+0+(-1) =0. These 3 points must then be divided by the total number of experts to 3, then the result of the project will be (0/3)=0. However, the idea of checking IOC for consistency as validity must not fall below 0.50. The validity score of the questionnaire was 0.50.

The Panel of 3 Experts

Expert 1 - Warayu Prasertsom, Marketing Director, Unixdev Co., Ltd.

Expert 2 - Tanyaporn Sridokmai, Phd., Lecturer of Digital Content Creative Management, Faculty of Management Science, Dhonburi Rajabhat University

Expert 3 - Phuthorn Kodkaew, Lecturer of Marketing, Faculty of Management Science, Dhonburi Rajabhat University

5) Reliability analysis

Reliability measures the reliability of data by using the same measurement method to repeatedly measure the same object and obtaining consistent results. Effective measurement must ensure stable and reliable data. Currently, Cronbach's  $\alpha$  is the most commonly used reliability measurement method. Generally, a reliability coefficient above 0.8 indicates better scale reliability. Between 0.7 and 0.8 is acceptable. Between 0.6 and 0.7 is barely acceptable. Below 0.6 means the scale needs modification.

This study chose Cronbach's  $\alpha$  to test the scale's reliability.

For this research questionnaire the validity test revealed that the average score of each item had consistency value ( $IOC \geq 0.50$ ) and the reliability test revealed that the value of  $\alpha$  was 0.7 or above. This suggested that the validity and reliability of this questionnaire was at an acceptable level as the following.

**Table 3.2** The Result of Item Objective Congruence (IOC) and Reliability Testing

Variable	Number of Question	Questions	IOC	Cronbach's Alpha
reliability	6	Q1-Q6	1.00, 1.00, 1.00, 1.00, 1.00, 1.00	1.000
responsiveness	5	Q7-Q11	1.00, 1.00, 0.67, 1.00, 1.00	0.934
assurance	3	Q12-Q14	1.00, 1.00, 1.00	1.000
reputation	3	Q15-Q17	1.00, 1.00, 1.00	1.000
information quality	3	Q18-Q20	1.00, 1.00, 1.00	1.000
customer loyalty	5	Q21-Q25	1.00, 1.00, 1.00, 1.00, 1.00	1.000