INFLUENCE OF THE 4PS MARKETING MIX STRATEGY AND INTELLIGENT LOGISTICS SERVICE ON CONSUMER PURCHASE DECISIONS
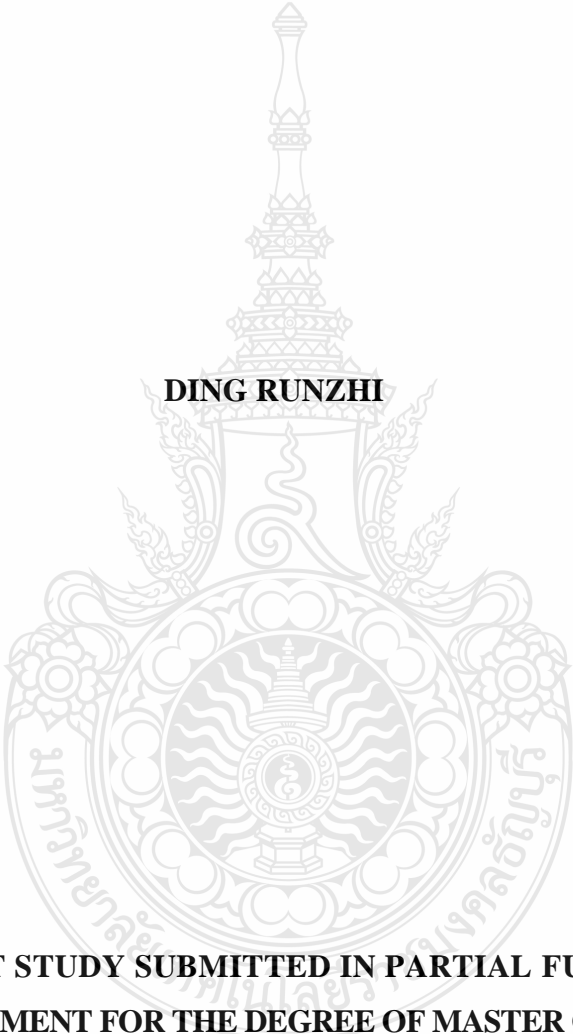
DING RUNZHI

AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION PROGRAM IN GENERAL MANAGEMENT FACULTY OF BUSINESS ADMINISTRATION RAJAMANGALA UNIVERSITY OF TECHNOLOGY THANYABURI ACADEMIC YEAR 2023

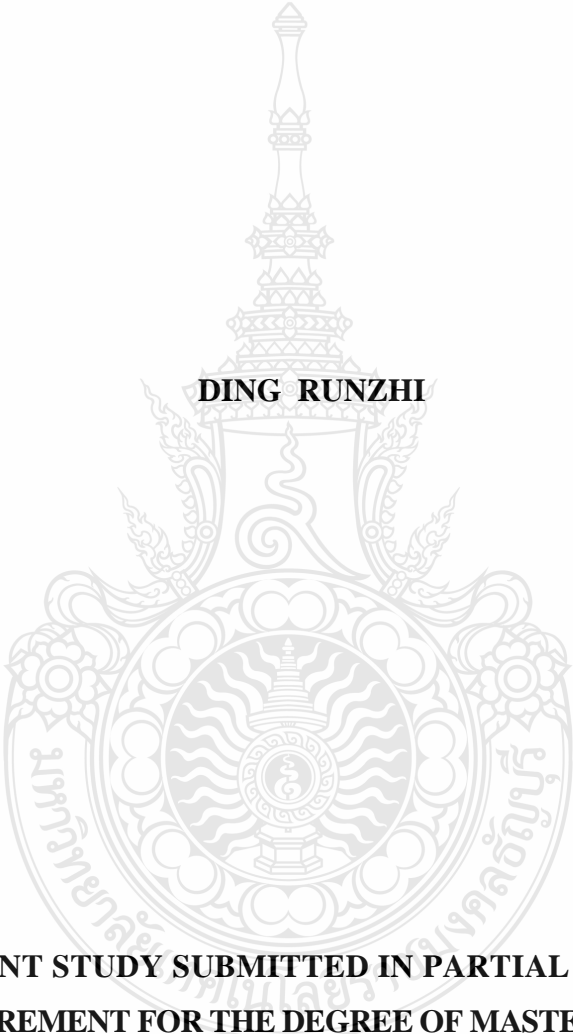# INFLUENCE OF THE 4PS MARKETING MIX STRATEGY AND INTELLIGENT LOGISTICS SERVICE ON CONSUMER PURCHASE DECISIONS

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DING RUNZHI

(.........Mr. Ding Runzhi ....)

Independent Study Title	Influence of the 4Ps Marketing Mix Strategy and Intelligent Logistics Service on Consumer Purchase Decisions
Name - Surname	Mr. Ding Runzhi
Major Subject	General Management
Independent Study Advisor	Assistant Professor Li, Liou-Yuan, Ph.D.
Academic Year	2023

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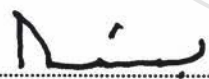|	
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ABSTRACT

This independent study aimed to investigate the influence of 4Ps marketing mix strategy and the intelligent logistics service on consumer purchase decisions in the current logistics market environment.

The sample group used in the study were 406 customers of China Post Zhoushan Branch. The instrument used to collect data was a questionnaire. The statistical methods used to analyze the data were frequency, percentage, mean, reliability and validity analysis, correlation analysis, regression analysis, and mediation effect analysis.

The study made the following findings. Firstly, 4Ps marketing mix strategy perception significantly and positively influenced consumer logistics product purchase decisions. Indeed, there was a significant positive relationship between the product, price, promotion and place of the 4Ps marketing mix strategy and 4Ps marketing mix strategy perception. Secondly, intelligent logistics service quality perception significantly and positively influenced consumer logistics product purchase decisions. Smart logistics service quality perception showed a positive relationship with logistics product repurchase intention. Finally, it was found a partial mediating effect of the 4Ps marketing mix strategy perception on the 4Ps marketing mix strategy of product, price, promotion and place.

Keywords: 4Ps marketing mix strategy, intelligent logistics service, consumer purchase decisions

Acknowledgements

Table of Contents

Table of Contents (Continued)

List of Tables

List of Tables (Continued)

List of Figures

CHAPTER1
INTRODUCTION

1.1 Background of the study

      1.1.1 The rapid development of e-commerce has led to the rapid development, continuous competition and optimization of the express delivery industry

      According to Ma Junsheng, director of the State Post Bureau, China's total express volume reached 50.7 billion pieces in 2018, with parcel express volume exceeding the sum of developed economies such as the US, Japan and Europe, and China's total express volume is expected to exceed 60 billion pieces this year. According to data from the State Post Bureau, China's per capita express use in 2018 was 36.4 pieces, compared to only 4.2 pieces in 2014, with per capita express use increasing nearly eight times between the four years.

      In recent years, thanks to the rapid development of e-commerce, the scale of the express market has also risen. 2018 China's express business volume was 50.71 billion pieces, with business revenue of 603.84 billion yuan, and since 2010, the annual compound growth rate of China's express business volume and business revenue has been around 40%, corresponding to the 43.77% compound annual growth rate of China's online shopping scale during this period. According to institutional research, the proportion of e-commerce express shipments to express business volume has exceeded 80% in 2018. The continued prosperity of e-commerce has provided a constant stream of energy to the express delivery industry. And the continued competition and optimisation of the express industry is further feeding the e-commerce industry.

      1.1.2 The courier industry competition homogenization, courier cost reduction, the price war will continue

      According to the State Post Bureau data calculations, in 2010, the cost of sending a courier in 24 yuan to 25 yuan, and by 2018, the cost of sending a courier is only about 12 yuan, a reduction of more than half. The cost of shipping for e-commerce and merchants, too, has been further reduced. As the digitalisation and intelligence of the logistics industry improves, driving further efficiency in the industry, logistics costs will fall again.

However, against the backdrop of the cost of a single courier falling less than the revenue of a single ticket (the revenue of a single courier), the profits of courier companies have been eroded and the performance of head courier companies has declined. According to a research report by Southwest Securities, in the first half of 2019, the revenue per ticket of Zhongtong, Yuantong, Yunda and Shentong Express was RMB1.74, RMB3.19, RMB3.3 and RMB3.19, respectively, down RMB0.18, RMB0.38, RMB0.04 and RMB0.04 year-on-year. in the first half of 2023, Zhongtong and Yuantong, which experienced a large drop in revenue per ticket, performed less well and experienced a decline, with net profit Shunfeng's market share declined to 7.3% in the first half of 2023, down 1.1 percentage points year-on-year, ranking sixth in terms of market share, behind Tongda and Best. The market share of Tongda and Baishi rose collectively. in the first half of 2023, the combined market share of the five courier companies was at 71.1%, with Zhongtong currently ranking first with a market share of 19.3%.

1.2 Motivation for the study

1.2.1 The quality of logistics services in e-commerce largely affects consumers' shopping experience

In e-commerce, logistics service quality largely affects consumers' shopping experience, and lower service quality leads to dissatisfaction with products and logistics delivery, which in turn leads to return complaints and even negative word-of-mouth, ultimately hindering the brand effect and operational development of merchants and logistics. Based on an empirical study of e-commerce websites, Zheng Bing et al. (2008) suggest that logistics service quality is a predicate variable of relationship quality, and good logistics service quality will make customers trust shopping websites more. Based on the relationship between logistics service quality and consumer loyalty, Lin Liming (2015) found that consumers' perceptions of completeness, punctuality and convenience of logistics services showed a positive relationship with their online shopping loyalty. Hofacker et al. (2007) show that the measurement of online transaction services in a B2C environment needs to pay more attention to consumer perceptions, which can indirectly influence the reputation of a company and its willingness to buy again. At the same time, new technologies such as the Internet of Things, edge computing, cloud computing, big data

11

and artificial intelligence have gradually started to be implemented commercially from scientific concepts and basic sciences, and are gradually integrating deeply with industry. On 31 August 2022, China Internet Network Information Centre (CNNIC) released the 50th Statistical Report on the Development of China's Internet in Beijing, showing that as of June 2022, the size of China's Internet users was 1.051 billion and the Internet penetration rate reached 74.4%. The market consumption characteristics were further upgraded, with users preferring new categories, intelligent and high-quality consumption. CNNIC (2016) online shopping market research data showed that the concern of logistics and express delivery services were shown to be high in express delivery speed (47.3%), express company reputation (43.3%), and high and low express cost (43.2%) respectively, which indicates that consumers in the process of online shopping This shows that logistics and delivery services have an important influence on consumers' decisions during the online shopping process. Therefore, the study of how intelligent logistics services affect customer decisions has important positive significance and role for the further development of e-commerce and logistics industry, which is motivation one.

1.2.2 The price strategy of the 4Ps combined marketing strategy is the main means of competition in the logistics industry

Logistics and marketing are closely integrated. Professor Bauer D Combs in the "other half of marketing" for the first time pointed out that the product marketing process and the process of meeting consumer demand and logistics have an extremely close link; Japan's Professor Chong Hui's in the "strategic marketing theory" that: marketing to achieve the completion of the functional means of adjusting demand, the other extremely important factor relied on is logistics.

The use of 4Ps marketing mix strategy to reduce prices, price war is the most direct and effective means of courier companies to seize market share. At present, as competition in the courier industry is homogenised, the low price advantage is more attractive to customers, and the market share of the leading SF is declining. Yang Daqing believes that the head of the enterprise "side of the fight to change the road", through the price war to win the initiative, homeopathic capital to push the hand to intelligent logistics. In the track of intelligent logistics, will wash away some blood-making ability is not strong courier enterprises, and then realize the express resource gathering, and this

resource gathering or will not be a few single enterprise alone, but similar to the "Cainiao network + express cluster" and other super ecosystem of resource gathering. Therefore, it is important to study how the 4ps marketing mix strategy affects consumers' repetitive purchase intention and purchase decision, which has important positive significance and role for the further development of e-commerce and logistics industry, which is motivation two.

1.3 Research questions

In academic research practice, the research question forms the guide that directs the steps of the investigation. This study derives its hypotheses only after identifying its research questions, which in turn are defined by the aims, objectives and narrow goals of the study. According to Bryman (2007) [11], the research question is a tool that links the theoretical framework of the study to the type of data appropriate for the investigation. The aim of this study is to determine the influence of the 4ps marketing mix and intelligent logistics services in the consumer purchase decision process. The following questions were asked in this study:

1. can the 4Ps marketing mix strategy influence consumer purchase decisions?

2. do smart logistics services influence consumer purchase decisions?

3. Do the 4Ps marketing mix strategy and intelligent logistics services interact in influencing consumer purchase decisions?

1.4 Research objectives and research aims

The specific research objective in this study aims to determine whether the 4Ps marketing mix strategy and intelligent logistics services have a significant impact on consumer purchase decisions in the current logistics market environment. This research objective is proposed because it will help us to better manage and predict consumer purchase decisions.

The research objective of this study is to determine how each factor influences consumer purchase decisions by measuring 4Ps marketing mix strategy perceptions and smart logistics service perceptions separately. Finally, to assess whether the two factors,

13

4Ps marketing mix strategy and intelligent logistics services, interact in influencing consumer purchase decisions. This study therefore has the following objectives:

1. to determine whether the 4Ps marketing mix strategy influences consumer purchase decisions.

2. To determine whether intelligent logistics services influence consumer purchase decisions.

3. to assess whether the 4Ps marketing mix strategy and intelligent logistics services interact when influencing consumer purchase decisions.

1.5 Scope of the study

The scope of the study was limited to the selection of 410 customers of Zhejiang Post Zhoushan Branch, who were contacted using email and telephone. The cycle will last for a maximum of 2 months and will end when 410 customers have been selected or 2 months later. Each customer participating in the study will be asked to complete - a short questionnaire to collect their evaluation of the 4ps marketing mix strategy and smart logistics services.

From this example we can immediately see that the scope of the study limits the sample size to be used and/or the time frame for selecting customers. It also introduces a restriction that only customers from Zhejiang Post Zhoushan Branch are selected; i.e. any customers who are not from Zhejiang Post Zhoushan Branch will be excluded from this study.

In addition, as the method of determining the influencing factors was through a questionnaire. This is a clear definition of how to measure the findings, any other methods are outside the scope of the study and their exclusion may be a limitation of the study.

1.6 Research structure

The findings of Wilaiwan P. et al. (2022) suggest that the marketing mix and price aspects of service quality influence the repurchase decisions of passengers travelling on low-cost airlines. Only the price factor directly influences the repurchase decision, while other marketing factors, including product, location, process and physical evidence, need to be good for the service factor to influence the repurchase decision in the low-cost airline

business. Furthermore, it found that service quality has a direct positive impact on repeat purchases by low-cost passengers. Allwin F and W. Anthony (2018) showed that the 4Ps marketing mix of product and price has an impact on repurchase intentions, in addition to customer satisfaction moderating repurchase intentions in the relationship between product and price. Hofacker et al. (2007) showed that for Flint (2005) suggests that website services should be divided into pre-sales (including real product information, solving consumers' queries, shopping fluency, etc.) and post-sales (including good logistics and delivery, etc.), and finds that The better the quality of service, the stronger the consumer's willingness to buy. Therefore, for consumers, the high or low perception of 4ps combined marketing strategy and the high or low perception of smart logistics services determine the high or low willingness to repurchase. This study adopts a validation approach by collecting data from past literature and questionnaires, and then quantifying, analyzing and validating the information obtained from various indicators to test the hypothesis of this study. The structure of this study consists of independent variables and response variables. The independent variables include the perception of 4Ps marketing strategy and the perceived quality of intelligent logistics services. The dependent variable is the willingness to repurchase. The structure of the study is shown in Figure 1:
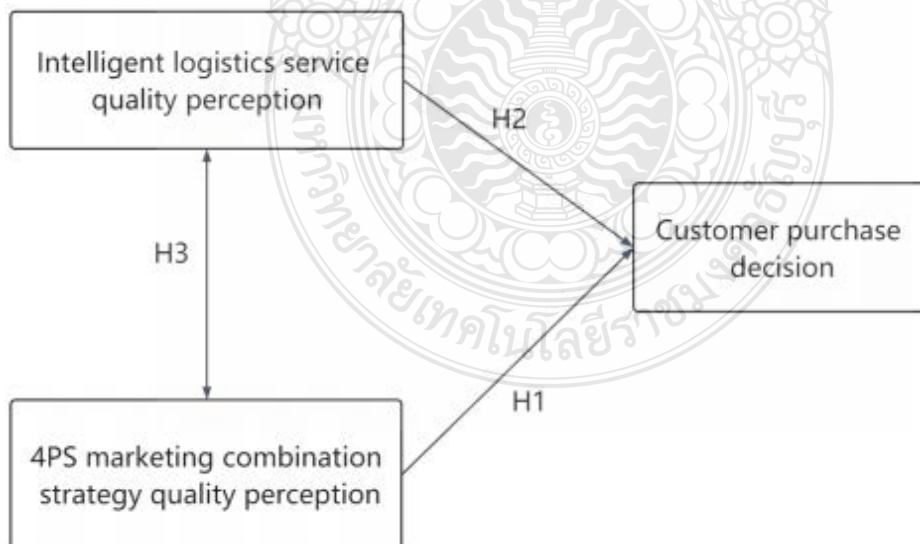
Figure 1.1 Research structure chart

The paths in the research structure chart are described as follows.

H1: Regression analysis to explore the correlation between 4ps marketing strategy and consumers' willingness to repurchase

H2: Regression analysis to explore the correlation between smart logistics services and consumers' willingness to repurchase

H3: Regression analysis to explore the interaction between 4Ps marketing strategy and smart logistics services

CHAPTER 2
REVIEW OF THE LITERATURE

2.1 The 4Ps Marketing Mix Strategy

2.1.1 Introduction

The marketing mix is derived from the single P (price) in microeconomic theory (Chong,2003).McCarthy (1964) introduced the "marketing mix", often referred to as the "4Ps", as a means of translating marketing plans into practice (Bennett, 2003). The 4ps marketing mix strategy, also known as the four P's of marketing, refers to the four key elements of marketing strategy: product, price, channel and promotion. By focusing on the following four components of the marketing mix, companies can maximise the chances of their products being recognised and purchased by customers:

Product. The good or service being sold must meet the needs or wants of the consumer.

Price. An item should be sold at the right price that meets the consumer's expectations, neither too low nor too high.

Promotion. The public needs to know about the product and its features in order to understand how it meets their needs or desires.

Channels. The location where the product can be purchased is important to optimize sales.

The marketing mix is not a scientific theory, but rather a conceptual framework for identifying the key decisions that managers make when configuring products to meet consumer needs, tools that can be used to develop long-term strategies and short-term tactical plans (Palmer, 2004). The idea of a marketing mix is the same as when mixing a cake. The baker will change the proportions of the ingredients in the cake according to the type of cake we want to bake. The proportions in the marketing mix can be changed in the same way and vary from product to product (Hodder Education, nd). Since its introduction in the 1940s, the marketing mix management paradigm has dominated marketing thought, research and practice (Grönroos, 1994) and "as a creator of differentiation" (Van Waterschoot, date unknown). "the sacred quartet of marketing beliefs ...... carved in

stone". The marketing mix has had a great influence on the development of marketing theory and practice (Möller, 2006).

The main reasons why the marketing mix is a powerful concept are that it makes marketing seem manageable, allows marketing to be separated from the rest of the company's activities; and delegates marketing tasks to specialists; components of the marketing mix can change a company's competitive position (Grönroos, 1994). The marketing mix concept has two other important benefits. Firstly, it is an important tool to show that the marketing manager's job is to a large extent to weigh the competitive advantages of one person against the interests of others in the marketing mix. The second benefit of the marketing mix is that it helps to reveal another aspect of the marketing manager's job. All managers must allocate available resources between the various demands, and the marketing manager will allocate these available resources between the various competing devices in the marketing mix in turn. In doing so, it will help to instil a marketing philosophy in the organisation (Low and Tan, 1995).

2.1.2 The history and implementation of the marketing mix

Borden (1965) claimed to be the first to use the term 'marketing mix', which was implied to him by Culliton (1948) when he described business executives as 'ingredient mixers'. An executive is "a mixer of ingredients who sometimes follows recipes, sometimes adjusts them to what is immediately available, and sometimes tries or invents ingredients that no one else has tried before" (Culliton, 1948).

The early concept of marketing was similar to that of the marketing mix, based on the idea of dynamic parameters proposed by Stackelberg (1939) in the 1930s, and subsequently developed by Rasmussen (1955) in what came to be known as parametric theory. Mickwitz (1959) applied the theory to the product life cycle concept. Borden's original marketing mix had a set of 12 elements, namely: product planning; price; branding; distribution channels; personal selling; advertising; promotional activities; packaging; presentation; service; physical handling; fact-finding and analysis. Investigation and analysis. Frey (1961) suggests that marketing variables should be divided into two parts: offer (product, packaging, branding, price and service) and methods and tools (distribution channels, personal selling, advertising, promotion and publicity). On the other hand Lazer and Kelly (1962) and Lazer.Culley and Staudt (1973) proposed three

18

essentials of the marketing mix: the mix of goods and services, the mix of distribution and the mix of communication.

McCarthy (1964) further refined Borden's (1965) ideas and defined the marketing mix as the combination of all factors directed by the marketing manager to satisfy the target market. He regrouped Borden's 12 elements into four elements or 4Ps, i.e. product, price, promotion and location under the direction of the marketing manager to satisfy the target market.

Judd (1987) introduced a fifth P (people) and Booms and Bitner (1980) added three P's (participants, physical evidence and process) to the original four P's in order to apply the marketing mix concept to services. Kotler (1986) added political power and opinion formation to the concept of Ps. Baumgartner (1991) proposed the concept of 15 Ps. MaGrath (1986) suggested adding 3 P's (people, physical facilities and process management). vignalis and Davis (1994) suggested adding S (service) to the marketing mix. Goldsmith (1999) suggests that there should be 8 P's (product, price, place, promotion, participants, physical evidence, process and personalisation).

Möller (2006) has reviewed the five marketing management sub-disciplines (consumer marketing. Relationship marketing. Service marketing), showing the latest in the debate around blending as a marketing paradigm and the main marketing management tool, retail marketing and industrial marketing) and emerging marketing (e-commerce). Most researchers and writers commenting in these areas have expressed serious doubts about the role of Mix as a marketing management tool in its original form and have proposed alternatives, i.e. adding new parameters to the original Mix or replacing it altogether with an alternative framework.

2.1.3 The relationship between the 4Ps marketing mix strategy on consumer purchase decisions

Adedotun T. I. (2022) in his study of the influence of marketing mix factors on consumer purchase decisions found that product strategy, price strategy, channel strategy and promotion strategy all have a positive relationship and influence on consumer purchase decisions. L Elvinda et al. (2019) found that product satisfaction, price satisfaction, and promotion satisfaction have a positive influence on consumer purchase of ventilation helmet products Alfonsius, A. et al. (2021) found that product, price and location had

a positive and significant effect on customer satisfaction, while promotion did not. Muzayyanah Y. (2018) found that the marketing mix had a significant impact on brand loyalty and its effect on purchase intentions and determined that the marketing mix (4Ps) and brand loyalty increased customers' purchase intentions. The pricing strategy used was classified as either psychological or economic depending on the consumer's purchase decision. Zhao et al. (2021) found in a study that the pricing techniques used in the study had a significant impact on the way customers made purchases.The authors analysed the use of odd/even pricing and the role it played in determining how customers bought.More recently, marketers have studied and used psychological pricing techniques. This has been found to influence the psychology of the buyer. Odd/even pricing and competitive pricing are prime examples of psychological pricing that have been found to have some form of influence on customer buying patterns and purchase intentions. The promotional factor is one of the most important factors influencing consumer purchasing behaviour. According to Thabit and Raewf (2018); promotions help to persuade consumers and influence their purchase decisions.Al Badi (2018) in a similar study found that it is one of the most powerful elements of the marketing mix based on the fact that promotions are social factors that influence consumer purchase decisions.The purpose of manufacturing or producing a product is to sell it to consumers. In addition, the product or service must be ready for the consumer in the right place and accessibility (Thabit and Raewf., 2018, p. 124).

2.1.4 Conclusion

The marketing mix management paradigm has dominated marketing since the 1940s, with McCarthy (1964) further developing the idea and refining the principle into what is known today as the 4Ps.However, in the post-Internet boom, marketing managers are learning to cope with a plethora of new marketing elements that have emerged from the online world of the Internet. In some ways, these new marketing elements bear close resemblance to the offline world, but from another perspective; they are revolutionary and deserve a new description in the online marketing mix (or the online marketing delta of the traditional marketing mix) (Kalyanam and McIntyre, 2002).

The marketing mix used by a particular company will change according to its resources, market conditions and the changing needs of its customers. The importance of certain elements of the marketing mix will change at any given point in time. A decision on

one element of the marketing mix cannot be made without considering its impact on other elements (Low and Kok, 1997).

As McCarthy (1960) points out, "the number of possible strategies for the marketing mix is infinite.

However, even if the number of criticisms of the 4Ps is large; it has had a great impact on the development of marketing theory and practice, and there has been too little reflection on the theoretical underpinnings of the large number of normative recommendations in textbooks (Möller, 2006). The marketing mix was particularly useful in the early days of the marketing concept, when physical products made up a large proportion of the economy. Today, as marketing is increasingly integrated into organisations and has a wider range of products and markets, some authors have tried to extend their theories by proposing a fifth P(e.g. packaging. People and processes) to extend its usefulness. However, today, the most common marketing mix is still based on the 4Ps. despite its limitations, and perhaps because of its simplicity, the use of this framework remains strong and many marketing textbooks have been organised around it. Despite its shortcomings the 4Ps are still a staple of the marketing mix (Kent and Brown, 2006).

2.2 Intelligent Logistics Services
2.2.1 Introduction

In 2009, the United States put forward the concept of "Smart Earth", the goal of which is to make full use of information technology in various industries to connect power grids, roads, buildings, etc., to build an Internet of Things, so that people's lives can reach a state of intelligence, improve resource utilization and production levels, and promote the development of human society. In the same year, IBM put forward the concept of "smart supply chain", using sensors, artificial intelligence and other technologies to integrate the Internet of Things, sensor networks and other resources to achieve the automation, visualisation, control, intelligence and networking of logistics. There is no universal definition of this concept, but it is generally considered to be a smarter and more efficient way to plan, manage and control logistics activities using intelligent technologies (Zhang, 2015; Barreto et al., 2017; He, 2017).

Smart logistics is a high-level comprehensive logistics model that applies new-generation information technologies such as the Internet of Things, big data, cloud computing and artificial intelligence to every aspect of logistics operations, simplifying the processes of each link through scientific and effective management, reducing costs and increasing efficiency, and improving service levels.

Intelligent logistics aims to enhance process control, optimize warehouse throughput and minimise facility operating costs through the use of interconnected devices and the collection of all data generated therein. The analysis of this data provides logistics managers with comprehensive information about what is happening in the warehouse before decisions are made.

Intelligent logistics facilitates the replacement of manual systems with automated handling equipment or robots in the most repetitive tasks, such as moving goods, inserting and picking up unit loads and order processing. These operations are coordinated by a warehouse management system (WMS), a software program that limits the risk of errors in a facility and optimizes all operations performed therein, from product location management to operator picking paths.

As shown in Figure 2, there are four characteristics of the use of technologies such as the Internet of Things (IoT), big data analytics and human intelligence for smart logistics versus traditional logistics: (1) Intelligence: Smart technologies, such as artificial intelligence, apply automation technology and information and communication technology (ICT) to the entire logistics process, improving the automation of logistics operations and enabling intelligent decision-making on common logistics management problems. (2) Flexibility: Smart logistics is the result of more accurate demand forecasting. Better inventory optimization and more efficient transport routes lead to greater flexibility. The increasing ability to solve unexpected problems in smart logistics increases customer satisfaction. (3) Logistics integration: through the Internet of Things, ICT and other technologies, information sharing between various entities in the logistics process is achieved, relevant business processes can be centrally managed, and the synergy of different logistics processes is enhanced. (4) Self-organization: real-time monitoring and intelligent decision-making enable logistics systems to operate without extensive human intervention, thus bringing higher efficiency to logistics operations.

Figure 2.1 Intelligent Logistics

2.2.2 Research on intelligent logistics services

As a new type of logistics industry, the operation mode of intelligent logistics is also a focus of attention for many scholars. Some scholars have also put forward a series of different views on the intelligent logistics model at present. Sun Gebing and Zhang Hui (2020) studied the development path of smart logistics models in China, they proposed three models of platform-based smart logistics, general-purpose smart logistics and professional smart logistics, and put forward the meaning and development path of different logistics models, as well as the relevant safeguard path to enhance the whole smart logistics system. Zheng Qiuli (2019) analyses the business model and operation process of smart logistics, and believes that a complete business model of smart logistics should be based on the Internet of Things as the basic bottom layer, the network layer with the network medium as the interaction intermediary, and the application layer to complete logistics services for customers, while the operation process of smart logistics is based on the above basic framework, and the smart operation mainly depends on the level of automation of physical equipment. Intelligent decision-making depends mainly on the level of cloud computing technology. Meng Ke (2021) divides the intelligent logistics mode into four types: integrated logistics service mode, networked logistics service mode, virtualized logistics service mode and mobile logistics service mode according to different

23

platform methods, and analyzes the value-added points under these modes one by one, so as to derive the value-added mechanism of intelligent logistics mode.

In addition, in recent years, the planning of intelligent logistics systems has led to some interesting model-based research. Data collected by IoT technologies has become the focus of this research stream. In order to explore the use of data resources, Andersson and Jonsson (2018) conducted a case study and literature review to explore the application of in-use process data in demand planning. The data were divided into five categories corresponding to eight application areas. In addition, Kovalsky and Miieta's (2017) study provides methodological support for solving planning problems in smart logistics. They identify the necessary logistics capability factors and analyse the advantages and disadvantages of static and dynamic approaches to automated logistics planning using tracking data.

On the basis of the smart logistics model, scholars have also conducted research in terms of development practices, ecosystem construction and factor support. Xing Wenxi (2020) proposed a path for the construction of an intelligent logistics ecosystem based on the new retail context. Xu Chun, Wang Zhao and Wang Dong (2021) studied the combination of elements for the development of disruptive innovation in smart logistics, and concluded that the combination of elements of good reputation and conceptual guidance is the basic condition, and conceptual guidance, agile response and technological innovation are the advantages of ensuring the long-term effectiveness of smart logistics.

2.2.3 Logistics Service Quality

Logistics Service Quality (LSQ) is recognised as an important tool in modern markets. In recent years, several studies in this area have developed rapidly. Numerous papers have been published in various industries and observation foci. Different methods have been applied to a large number of dimensions.Huo et al. (2016) extend the concept of SCQM to SCQl, investigating how organisations implement quality and performance management systems with their upstream suppliers and downstream customers.

Studies on SCQI have also highlighted the assessment of product quality from both an internal quality perspective and an external perspective. Delivery quality. Flexibility and cost of quality approaches, including B2B relationships with customers and suppliers (Zhang et al., 2017; Huo et al. ,2016). Service performance measurement studies are often

industry-specific, for example focusing on the healthcare industry (Gustavsson et al., 2016; Hu et al., 2010), omnichannel (Murfield et al., 2017; Rao et al.; 2011), medical device products (Ma et al.,2019), mass market products (Zhang et al., 2017), and the pharmaceutical industry (Sharma and Modgil, 2020).

In the field of logistics and supply chain management, service performance has been described as a key driver for creating value and gaining competitive advantage (Stank et al., 2003; Mentzer et al., 1999, 2001). In particular, Stank et al. (2003) classify logistics service performance into operational and related dimensions, while Rafele (2004) proposes a framework for measuring logistics service performance, considering in particular three logistics quality dimensions: physical components. Fulfilment methods and information behaviour.

With regard to measurement methods, referring in particular to LSQ and its contribution to customer satisfaction, several studies have analysed B2B relationships and outsourcing of logistics services.Maltz and Ellram (1997) investigated the total cost of relationships in logistics outsourcing decisions.Rahman (2006), Gotzamani et al. (2010) and Kuei et al. (2011) analysed the link between logistics service outsourcing and TQM and SCQM theories, highlighting the relationship between outsourcing, LSQ and operational financial performance.Kilibarda et al. (2016) apply the SERVQUAL technique to logistics and freight forwarding, while some authors apply the Kano model to assess LSQ (Sohn et al., 2017; Gustavsson et al. 2016; Mikulic and Prebezac, 2011), confirm a consistent convergence between TQM and SCM measurement systems. However, in most of these studies; the unit of analysis is the buyer-supplier relationship.

As highlighted by Bask (2001), in the context of logistics service providers, LSQ should not be addressed from this binary perspective; but rather in a "logistics triad" involving buyers, suppliers and logistics service providers in a 3PL (Vouzas and Katsogianni , 2018; Sohn et al., 2017). From this perspective, the complexity of the relationship makes

it difficult to assess outsourcing performance (Leuschner et al., 2014; Knemeyer and Murphy, 2004) and few empirical studies have addressed LSQ and customer satisfaction by considering 3PL providers (Selviaridis and Spring, 2007).

Logistics services are often analysed from the perspective of logistics services, but it is a very complex phenomenon that needs to be viewed from the perspective of logistics

services and the wider community (Lu, 2003; Thai, 2013; Martinez Caro, Martinez Garcia, 2007). A detailed analysis of logistics and business processes from the perspective of a logistics company is important. From the perspective of the wider community, it is important to explore the links between L. SQ and the living and working environment. In the context of new technologies and trends (e.g. 3D printing, digital logistics, Internet of Things, e-commerce, smart technologies, etc.), there are not enough papers covering (Bienstock et al. 2008; Gil Sauraet al. 2008a; Micu et al. 2013, etc.). Kilibarda, M., Andrejić, M., & Popović, V. (2020) point out that the above-mentioned trends directly affect logistics service fulfilment and customer expectations, and that future research should investigate new dimensions of LSQ and customer satisfaction, with particular emphasis on the important components in demand creation and service fulfilment. For service-based organizations, perceptions of service quality and satisfaction are key performance indicators (Morrison-Coulthard, 2004). A particular aspect of customer focus is the analysis of customer satisfaction and loyalty. A large number of papers in this group share a common feature of measuring differences in perceptions and expectations of LSQ. In the literature, customer satisfaction with different logistics services has been investigated (Gil Saura et al. 2008b). For customer satisfaction and loyalty, the level of relationship is very important (Juga et al. 2010). The only exception is the paper by Bouzaabia et al. (2013). They compare Romanian and Tunisian customers' perceptions of LsQ in retail and identify which aspects of LSQ have the greatest impact on customer satisfaction and loyalty. murfield et al. (2017) investigate the impact of LSQ on customer satisfaction and loyalty in multichannel retail. There are also papers that assess L. SQ from the perspective of logistics providers. the first direction is oriented towards logistics processes (Harding 1998; Mentzer et al. 1989; Andersonet al. 1998; Mentzer et al. 2001, etc.), while the second direction is oriented towards relationships, partnerships and collaborations (Thai 2008; Liu,Wang 2015; Sharma,Kumar 2015, etc.). Qian, Hui-Min, Dong, Ze and Qu, Hong-Jian (2019) used mediating variables, constructed a model of the influence of logistics service quality on customer loyalty, and used regression analysis to empirically analyse the influence of smart logistics service quality on customer loyalty and the mediating effect played by customer trust.

26

2.2.4 The relationship between smart logistics services on consumer purchase decisions

Promoting logistics services can positively constitute a positive marketing element. Improved logistics standards contribute to higher satisfaction while indirectly influencing customer retention and thus consumer purchase decisions (Querin, Francesco; Göbl, Martin , 2017). Smart logistics services offer a higher quality of service compared to traditional logistics services, therefore this thesis namely investigates the relationship between the perceived quality of smart logistics services on consumer purchase decisions. There is some academic research on service quality perceptions and consumer purchase intentions. Zhang and Li (2018) argue that the last metric delivery segment, which is the key connection point between e-commerce companies and consumers, directly influences consumers' purchase decisions. Logistics service is an important factor influencing consumers to purchase products online. rohwiyati R. (2019) argues that price perception and customer satisfaction have a positive and significant impact on repurchase intentions. zeithaml et al. (1988) argue that there is a significant relationship between service quality and customer purchase behaviour, and that the higher the level of service quality, the stronger the positive intentions. Xu Chunhua (2017) examined the impact of logistics and delivery service quality on consumers' willingness to repurchase based on whether consumers' purchase goals were clear when shopping online, from two dimensions: logistics and delivery quality and product quality, thereby examining the logistics factors affecting consumers' purchase decisions. The results of this study showed that clear purchase goals had a strong moderating effect on logistics and delivery service quality and product quality perceptions, pick-up distance, pick-up time and pick-up method significantly influenced consumers' perceptions of smart logistics service quality, and product price and product brand positively influenced consumers' perceptions of product quality and ultimately influenced consumers' repurchase intentions. In a study on dynamic pricing and service quality decisions in product service supply chains considering consumers' strategic behavior, Wang Dafei, Zhang Xumei, and Palm Shuguang et al. (2022) considered the issue that service providers' improvement of service quality would affect strategic consumers' purchase decisions, showing that service providers would improve consumers' service utility by improving service quality, which in turn would affect consumers' purchase

decisions. In addition, Wen, Biyan et al. (2001) and Kennth (2005) as well as Camana (2002) and Wei, F. (2003) have relevant empirical studies demonstrating that service quality affects consumers' shopping intentions as well as repurchase behaviour. research by McFarlane, D., Giannikas, V., Lu, W. (2016) suggests that in logistics more The prospect of a greater focus on customer needs seems strong and inevitable, and commercial logistics providers are already exploring innovations such as drone-based deliveries and putting deliveries in the trunk of a car as a way to increase customer convenience. As these and other new things become mainstream in software systems for managing logistics operations, they will need to evolve accordingly.

2.2.5 Conclusion

Promoting logistics services can positively constitute a positive marketing element. Improved logistics standards help to meet customer needs and increase satisfaction, while indirectly influencing customer retention and thus consumer purchase decisions. Smart logistics optimizes the supply chain to improve timeliness, enhances service quality by providing a variety of services such as goods enquiry and tracking, makes receiving goods faster and more convenient for consumers, increases consumer confidence in purchasing while boosting consumption, and ultimately has a positive impact on the overall market. Smart logistics solves problems that traditional logistics cannot handle, and during the epidemic prevention and control period, consumers are more interested in non-contact services, providing a great opportunity for the development of the logistics industry and e-commerce industry. China's digital logistics market is showing high growth and intelligent logistics upgrading is imperative. However, the application of new generation information technology in logistics business scenarios is still inadequate, and a large number of logistics operations still remain at the primitive stage. Therefore, logistics enterprises should keep pace with the new era and further popularise intelligent logistics to all aspects of logistics operations, reduce costs and increase efficiency, improve logistics services, meet customer needs, improve customer satisfaction, increase customers' willingness to repurchase, and ultimately improve the core competitiveness of the company.

2.3 Consumer purchase decisions

2.3.1 Consumer Decision Process

In the book Consumer Behaviour, Blackwell et al. (2006) provided a roadmap encapsulating in an ordered and structured format the idea of a series of activities that occur when a decision is made by a consumer (see Figure 3). The current model is an extended version of the one incorporated by EngelKollat and Blackwell (1978) of Ohio State University, called the EKB model. As the model evolved, it reached its current level of formation and was referred to as the EBM model by authors Blackwell et al. (2006). The model describes seven different stages that consumers go through in the decision making process; need identification, information search, pre-purchase evaluation of alternatives, purchase, consumption, post-consumption evaluation and disinvestment. This model is supported in structure and content by Kotler and Keller (2016) and Stankevich et al. (2017) who propose an identical sequence with five-stage model of the consumer purchase process with the same decision structure, although being slightly named DIFFERENT has the same overall meaning behind it. Compared to Blackwell et al.'s (2006) EBM model, some steps or parts of the model may be named differently, but the overall content is very similar and supports the proposition of the EBM model (Blackwell et al., 2006). It is worth noting that the model does not cover the consumption stage, which is implied in the work of Kotler and Keller (2016) in the disposition stage. The consumer decision process is reduced to these stages, and the various factors that influence each stage. The main reference in this paper is to the purchase decision stage.

Figure 2.2 Consumer Decision Process Model (EBM) (Blackwell et al., 2006)

2.3.2 Consumer Purchase Decision

The consumer purchase decision is the process of analysing, evaluating, choosing and implementing the best purchase option among two or more options available to the consumer in order to satisfy a certain need, and the post-purchase evaluation. After the purchase decision has been made, the consumer goes through two stages. In the first stage, the consumer chooses a purchase place, such as a specific retailer, website, etc., in a competitive process. This step is referred to as the "purchase decision" in Kotler and Keller's (2016) purchase decision process. The second stage includes in-store selection, either symbolically or literally, which can be influenced by salespeople, website banners, media, point-of-purchase advertising, etc. (Stankevich et al., 2017), and consumers can go through these stages based on their preconceptions and plans and purchase the product or brand they initially intend to buy, so there is often a delay between the consumer's decision to buy and the actual there is usually a delay between the decision to purchase and the actual transaction (Stankevich et al., 2017). Stankevich et al. (2017) further note that the time between the purchase decision and the actual transaction can be short when purchasing non-durable goods. There are also instances where consumers' purchases do not coincide with their initial plans, an example of this would be when a shop they normally never shop at is having a sale on an item they want, or when their favorite shop is out of stock. When it comes to in-store purchases, salespeople may persuade or dissuade consumers from making a particular purchase (Blackwell et al., 2006; Stankevich et al., 2017).

2.3.3 The concept of consumers' willingness to buy

Generally, willingness is a thought as well as an attitude that a person has prior to the decision-making process. In contrast, willingness in a purchase situation (i.e., purchase intention) is based on the state of mind that facilitates the choice to consume a good. Kotler (2000) states that consumers' purchase decisions and purchase behavior are based on their own psychological state and other personal traits. Blackwell et al. (1993) define purchase behavior as follows: the act of using or acquiring a Schiffman et al. (2000) argue that purchase intention is a measure of how likely a consumer is to purchase a good, and Boyd et al. (1999) argue that consumers' purchase intention can be measured based on the amount of time they spend purchasing the product. Therefore,

merchants must further explore the relationship between product attributes and merchant services and consumers' purchase intentions in order to develop their businesses (Lee HN et al., 2013). Based on the conceptualization of purchase intentions by domestic and international scholars, this paper summarizes the following:

Table 2.1 Overview of the concept of purchase intention

The concept of purchase intention	scholar
Likelihood of willingness to make a purchase	Fishbein (1975)
As a psychological state of consumption, it reflects whether to buy goods	Miller (1996)
Purchase Likelihood and Subjective Probability	Dodds et al. (1997)
Purchasing a prelude state in line with psychological expectations	Zhu Zhixian (2006)
Based on a certain income, the subjective attitude of buying at an appropriate price	Wang Zang (2011)

Source: Compiled by the author

As can be seen from the table above, scholars at home and abroad give different definitions based on different perspectives, which basically agree that consumers' willingness to buy is a possibility associated with the act of buying.

1. The concept of repurchase intention

Repurchase intention has been developed from social psychology and marketing (Zhu Yanhong,2008). Repurchase intention is usually associated with consumer satisfaction and loyalty, and Patterson et al. (2000) based on empirical analysis, point out that repurchase intention can be considered as the basis of the final repurchase decision. This is summarized as follows:

Table 2.2 Overview of the concept of repurchase intention

The concept of repurchase intention	Research
The consumer's subjective tendency to choose to buy the product again in a merchant	Fomell (1992)
Based on subjective evaluation and current needs, choose the idea of continuing to buy	Zeithaml (1996)
Satisfaction after purchasing a product again	Lervik et al. (1999)
A tendency to continue spending at the merchant	Chen Mingliang (2002)
Subjectivity of choice again, presenting loyalty	Lee et al. (2007)
A tendency to continue choosing based on past experience	Li Han and Shi Gang (2011)

Source: Compiled by the author

In summary, it can be seen that the willingness to repurchase is a subjective attitude, and based on the fact that the subject of this paper is the logistics customers of the China Post, the use of Zeithaml's (1996) viewpoint: "the idea of choosing to continue buying based on subjective evaluation and current needs".

2. Influencing factors of repurchase intention

Brady et al. (2000) empirically analyze the relationship between service quality and loyalty based on a model and argue that the use of enhancing consumers' willingness to repeat purchases to promote merchants' business revenue. Gomes et al. (1989) propose that quality perception, as an important antecedent of customers' willingness to repurchase, has a direct impact on the level of their Schrank et al. (2006) also found, based on empirical analysis, that perceived quality is one of the important factors influencing consumers' willingness to repurchase, which also includes cost and brand preference factors, etc. Mattsson et al. (2002) found that brand preference and experience with the product are two important factors driving consumers' willingness to repurchase. Mattsson et al. (2002) found that brand preference and product experience were two important factors driving

consumers' willingness to repurchase. Wang Gao (2004) suggested that consumers' personal factors and their brand perceptions together influence consumers' willingness to repurchase.

2.4 Howard-Sheth Model theory

The model was first proposed by Howard in 1963 and was formalised in a revised conceptual model (Howard & Sheth, 1969). The model combines knowledge from various disciplines (including psychological, social and managerial) to provide an overview of consumer buying behaviour and suggests that four major factors influence consumer decisions: stimulus (or input) factors, extrinsic factors, intrinsic factors and output (or response) factors.

The Hoytscher model is based on the concept of "stimulus-response". The consumer's purchase behaviour is stimulated by the stimulus or input and extrinsic factors, and the decision is mediated by the combined effect of the stimulus and experience, which begins to selectively receive and respond to external stimuli. The perceptual and learning processes take place in the 'dark box', which is a description of the subjective perceptions that are formed internally by the consumer after receiving a stimulus (or information) and eventually forming a will. The intrinsic factors are followed by output perception variables, brand perception variables, attitude variables, willingness and purchase behaviour variables. The perceived value (i.e. the 'dark box') of the model is the intrinsic perception and learning aspect of the consumer, indicating that the consumer makes a purchase decision after perceiving the benefits of the purchase.

The Howard Sheth model is more structured and more complete, making it a valuable reference. Although the model has many variables, it is highly operational and the variables are easy to measure. Most domestic scholars have conducted research through this model to achieve more satisfactory results (as shown in Figure 4). Therefore, the theoretical model in this paper will be borrowed from the Howard I. Sheth model and modified to form the final theoretical model of this study.
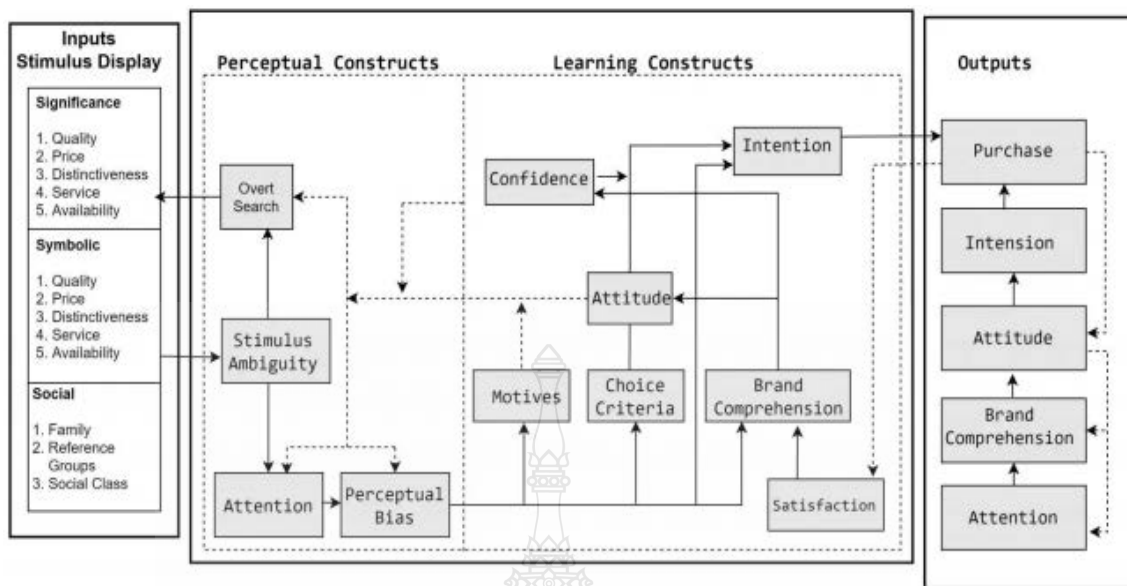
Figure 2.3 Howard Sheth model

2.5 Conclusion

Repurchase intentions are an important part of consumers' purchase decisions. Scholars generally agree that repurchase intention is one of the dimensions of purchase intention measurement. Repurchase intention can be influenced by many factors, such as performance expectations, effort expectations, self-efficacy, trust, or perceived quality, cost and brand preference. There has been much research on repurchase intentions by domestic and international scholars. By studying consumer behavioural motivations can help us to better formulate and modify decisions to adapt to the existing market environment, improve customer satisfaction and enhance the competitiveness of our products. In the e-commerce environment, most of the factors that influence consumers' purchasing decisions are focused on individual dimensions such as web design, consumer perception and logistics services. The influence of smart logistics service quality perceptions on repurchase intentions under the 4ps marketing strategy framework is unknown, so in constructing the model, 4ps marketing strategy perceptions and smart logistics service quality perceptions are used as two measurement perspectives to analyse their influence on consumer purchase decisions.

CHAPTER 3
RESEARCH METHODOLOGY AND DESIGH

3.1 Research framework

Wilaiwan P. et al. (2022) showed that the marketing mix and the price aspect of service quality influenced the repurchase decision of passengers travelling on low-cost airlines. Only the price factor directly influences the repurchase decision, while other marketing factors, including product, location, process and physical evidence, need to be good for the service factor to influence the repurchase decision in the low-cost airline business. Furthermore, it found that service quality has a direct positive impact on repeat purchases by low-cost passengers. Allwin F and W. Anthony (2018) showed that the 4Ps marketing mix of product and price has an impact on repurchase intentions, in addition to customer satisfaction moderating repurchase intentions in the relationship between product and price.Hofacker et al. (2007) showed that for Flint (2005) suggests that website services should be divided into pre-sales (including real product information, solving consumers' queries, shopping fluency, etc.) and post-sales (including good logistics and delivery, etc.), and finds that The better the quality of service, the stronger the consumer's willingness to buy. Therefore, for consumers, the high or low perception of 4ps combined marketing strategy and the high or low perception of smart logistics services determine the high or low willingness to repurchase. This study adopts a validation approach by collecting data from past literature and questionnaires, and then quantifying, analysing and validating the information obtained from various indicators to test the hypothesis of this study. The structure of this study consists of independent variables and response variables. The independent variables include the perception of 4Ps marketing strategy and the perceived quality of intelligent logistics services. The dependent variable is the willingness to repurchase. The structure of the study is shown in Figure 1:
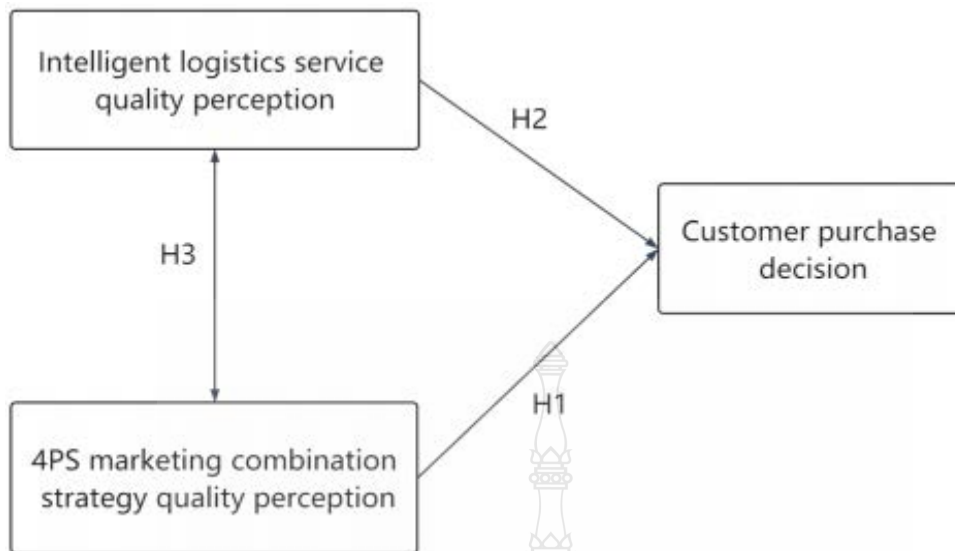
Figure 3.1 Research structure chart

The paths in the research structure chart are described as follows.

H1: Regression analysis to explore the correlation between 4ps marketing strategy and consumers' willingness to repurchase

H2: Regression analysis to explore the correlation between smart logistics services and consumers' willingness to repurchase

H3: Regression analysis to explore the interaction between 4Ps marketing strategy and smart logistics services

3.2 Research hypothesis

This study is an exploration of the existing literature, and based on the research objectives, the hypotheses of the research structure are proposed for the study as follows:

H1: 4ps combination marketing strategy significantly and positively affects consumers' willingness to repurchase

H2: Smart logistics services significantly and positively influence consumers' willingness to repurchase

H3: 4Ps marketing mix strategy and smart logistics services interact

3.3 Main Research Methodology

In order to verify the importance and scientific validity of the full-text hypothesis, the following specific research methods were decided to be used to conduct the study:

1) Literature collation and synthesis analysis method. Through a large number of domestic and foreign research literature on the relationship between 4Ps marketing mix strategy, intelligent logistics service quality and consumer purchase decision, and to do a combing of scholars' research results and practice sources to do an overview of the comparison, and then the research process and the latest state of the research content of this paper to have an overall grasp, and to find out the shortcomings of the previous research, to summarize the 4Ps marketing mix strategy and intelligent logistics The definition and measurement of the impact of service quality perception on consumers' purchasing decisions, as a basis for the content when designing the questionnaire.

2) Questionnaire survey method. This study is to discuss the influential nature of the 4Ps marketing mix strategy, smart logistics service quality perceptions and consumer purchase decisions. Based on the proven measurement scales from previous studies, the design was purposefully improved and resulted in the questionnaire for this paper. The sample data was collected in the form of a designed questionnaire distributed to customers of the Zhoushan Post Office Branch in Zhejiang Province. Because the empirical analysis needed to ensure the authenticity and reliability of the research data, a large number of samples were collected, mainly by means of online distribution, supplemented by paper distribution.

3) Mathematical and statistical quantitative analysis method. This paper is based on the data collected from the measurement of variables in the theoretical model as the basis of analysis to verify the model, combined with the results of spss analysis, making the conclusions more convincing. The first step is to carry out a descriptive statistical analysis of the sample data and to standardize the data to remove any abnormalities. In the second step, the final initial sample data were analyzed for reliability and validity, correlation analysis and regression analysis to determine the relationship between the variables in the model. The third step is to test the hypotheses and draw conclusions from the study.

3.4 Definition and measurement of variables

3.4.1 Definition of variables

Based on the previous research literature, the definition of each variable in this paper is stipulated as shown in the following table：

Table 3.1 Definition of variables involved in the model

variable	definition	references
4Ps marketing mix strategy perception	A comprehensive review of the 4Ps marketing mix strategy, based on expectations and actual perceptions, can influence consumer satisfaction.	"Management Science and Technology Terms"
Intelligent logistics service quality perception	Comprehensive reviews made after receiving smart logistics services, based on expectations and actual perceptions, will affect consumers' shopping satisfaction.	Cooke (1999)
Willingness to repurchase	Based on past shopping experience, consumers choose repeat purchase attitude	Seiders (2005)

3.4.2 Measurement of questionnaire variables

According to the theoretical research framework proposed earlier in this paper, the variables in this study include the perceived quality of 4Ps marketing strategy, the perceived quality of intelligent logistics services, and the willingness to repurchase products. The questions in the questionnaire are based on existing research findings, with some scientific modifications to individual questions based on the research context and the opinions of teachers and students.

1）Perceived quality of 4Ps marketing strategy

Table 3.2 Measurement of perceived quality of the 4Ps marketing strategy

variable	Dimensionality	item
4Ps Marketing Mix Strategy Perception	product	The product I purchased is the leading product in its category in terms of volume
		The reliability of logistics products is very high (whether it can be delivered on time)
		The logistics product has very attractive features (such as late payment, faster speed, lower price, etc.)
		Does the company provide you with a variety of logistics products to choose from (standard express, express parcel, Hong Kong, Macao and Taiwan express, international EMS, etc.)
	price	I purchased logistics products at a transparent and reasonable price
		I mailed the item once, and the overall insured price received is very suitable
		I think postal charges are directly proportional to services (such as value-added services, express delivery, EMS, etc.)
	promotion	China Post promotes its products through print media such as newspapers and magazines
		China Post also promotes its products through outdoor advertising
		Postal companies communicate via television and the Internet
		The company regularly advertises its products
		The company also sells directly through its sales staff The company regularly attends exhibitions/fairs

Table 3.2 Measurement of perceived quality of the 4Ps marketing strategy (Cont.)

variable	Dimensionality	item
	promotion	Postal companies carry out promotional activities at business outlets
		Postal sales staff have provided me with sufficient service information (patiently introduce you to express products, prices, service contents, insurance fees, etc.)
		The company's website provides sufficient information
	place	Postal companies sell express products through multiple channels
		Postal outlets provide an attractive atmosphere for purchase
		After-sales contact process is simple
		Postal after-sales service is satisfactory

2）Intelligent logistics service quality perception

Table 3.3 Measurement of intelligent logistics service quality perception

variable	item
Intelligent logistics distribution service quality perception	you use express delivery and other logistics methods frequently?
	you know about smart logistics (such as smart distribution, smart network management, smart dispatch)
	Have you ever used smart customer service in logistics services?
	Your satisfaction with the above intelligent robot customer service
	How satisfied are you with the delivery services in Smart China (such as unmanned vehicle delivery, drone delivery, and intelligent robot delivery)

40

Table 3.3 Measurement of intelligent logistics service quality perception (Cont.)

variable	item
Intelligent logistics distribution service quality perception	Your satisfaction with the guarantee service of the smart logistics data-based security system (take JD.com as an example)
	How satisfied are you with JD.com's multi-location warehousing and intelligent scheduling network services?
	Your satisfaction with JD.com's intelligent system for visual tracking of the whole process of transportation and distribution
	Have you ever used Jingdong cold chain logistics service?
	Do you think the effect of intelligent temperature control and fresh-keeping service of cold chain service in smart logistics is obvious (take JD.com as an example)
	Your satisfaction with the overall service of the current smart logistics

3) Purchase Intention

Table 3.4 Measures of purchase intention

variable	item
Purchase Intention	I am willing to use the logistics service of China Post
	I may continue to use the service of China Post
	In the future, I am willing to increase the purchase volume of China Post logistics services

3.5 Questionnaire design

In order to test whether the hypothesis model in the previous chapter is correct, this chapter carries out the design of the questionnaire to obtain relevant research data through the questionnaire, in order to prepare for the following test hypothesis. Based on the extensive research literature at home and abroad, and with reference to previous research on the factors affecting consumers' intention to purchase products on

41

platform-based shopping websites, and with reference to the information from the previous test questionnaires, the final questionnaire design was completed by consulting the tutor and fellow students, using the customers of Zhoushan Post Office in Zhejiang Province as the research target. In order to ensure the reliability and validity of the measurement, this study drew on the existing literature for relevant or identical questions, while combining the hypotheses and research objectives of this paper to make targeted modifications, and finally formed this paper's empirical analysis of the factors influencing consumers' purchase decisions questionnaire.

3.5.1 Questionnaire Design Ideas

In empirical research, whether the questionnaire is scientifically designed or not, and whether it is well designed or not, has a key role in the final research results. Based on this, in order to ensure that the questionnaire in this paper adheres to a scientific and rigorous design method and minimises data bias, this chapter will follow the following principles in the design of the questionnaire.

1) The principle of clarity of purpose. (1) Clarity of purpose. The focus of the questions will be clarified according to the actual situation, and the questions will be set in a concise manner, while unnecessary and irrelevant questions will be deleted.

2) The principle of logical clarity. The arrangement of the questions is logical and in line with the subject's thinking process. The questions are usually set in the order from simple to complex, from easy to difficult, from concrete to abstract.

3) The principle of easy to understand. When designing a questionnaire, the questions should be designed with a wide range of potential respondents in mind to ensure that they can understand the questions and respond positively. Subjects have different cultural backgrounds and if the terminology is too difficult to understand, they may misunderstand the questions and thus affect the accuracy of the sample data. Therefore, when designing the questionnaire, the survey questions were phrased in simple and easy-to-understand language, and the use of jargon was minimised.

4) Handle the principle of convenience. After the questionnaire is issued and collected, in order to facilitate the determination of whether the questionnaire is practical as well as correct, the design of the preliminary stage should be considered to facilitate the

testing of data collection at a later stage as well as data collation and analysis, which in turn leads to the results of the survey and survey data.

3.5.2 Structure of the questionnaire

Based on the theoretical assumptions and the measurement of variables section, the content of the study was determined: the questionnaire title, the questionnaire introduction, the subject background information section and the specific questions section.

The title of the questionnaire is: Questionnaire on the experience of smart logistics services.

The introduction section of the questionnaire: describes the main purpose of the survey and indicates the confidentiality of the subject's information to improve the relevance and authenticity of the survey.

Background information section of the research subject: background information of the respondents who participated in the questionnaire, such as gender, age, education, income, etc.

Questionnaire items section: 4Ps marketing mix strategy quality perception measurement scale, intelligent logistics service quality perception scale, and goods purchase intention scale.

3.5.3 Content design of the questionnaire

The data for this study was collected through a questionnaire. Therefore, it is particularly important to design a good questionnaire. As the theoretical model of this study is based on the research of domestic and international scholars, the content of the questionnaire for this paper was determined after considering the definition and measurement of the variables in the model and the research hypothesis. The research in this paper is based on the 4Ps marketing mix strategy and the impact of smart logistics services on the perceived quality and purchase intention of smart logistics services, combined with the existing scales developed by the previous researcher to form the questionnaire in this paper.

The first part of the questionnaire is an investigation into the impact of consumer perceptions of the quality of the 4Ps marketing mix strategy in smart logistics services. Based on previous research findings and research scales, the 4Ps marketing mix strategy quality perceptions were measured in four areas: product, price, promotion and channel,

with a total of 19 items. As shown in (Table 3.2). The second part is the measurement of the perceived quality of smart logistics services, which is 11 items. This is shown in (Table 3.3). The third item is a measure of consumers' willingness to purchase, based on the influence of consumers' perceptions of the quality of the 4P3 marketing mix strategy and the quality of smart logistics services on the factors of consumers' willingness to purchase (Table 3.4). Based on previous research findings, this paper decided to use the Likert (Likert) seven-level scale and based on real-life situations, designed according to -3 = strongly disagree; -2 = disagree; -1 = less agree; 0 = unsure; +1 = more agree; +2 = agree; +3 = strongly agree, with categorisation options according to single choice.

Table 3.5 4Ps Marketing Mix Strategy Quality Perception Measurement Scale

variable	Questionnaire dimensions	Questionnaire content
4Ps Marketing Mix Strategy Perception	product	The product I purchased is the leading product in its category in terms of volume
		The reliability of the product is very high
		The product has very attractive features
		The company offers a wide range of products
	price	I purchased the product at a reasonable price
		I purchased the product at a reasonable price I received a good overall price deal
		The company offers the option to buy in instalments
	promotion	The company promotes its products through print media such as newspapers and magazines
		The company also advertises its products through outdoor advertising
		The company communicates through television and the internet
		The company regularly advertises its products

Table 3.5 4Ps Marketing Mix Strategy Quality Perception Measurement Scale (Cont.)

variable	Questionnaire dimensions	Questionnaire content
4Ps Marketing Mix Strategy Perception	promotion	The company also sells directly through its sales staff The company regularly attends exhibitions/fairs
		Point-of-purchase promotions take place
		The sales staff have provided me with sufficient information about their services
		The company's website provides sufficient information
	place	The company sells its products through a variety of channels
		The point of purchase provides an attractive atmosphere
		After-sales contact process is simple
		The after-sales service works satisfactorily

Table 3.6 Measurement table of intelligent logistics service quality perception

variable	questionnaire content
Intelligent logistics service quality perception	you use express delivery and other logistics methods frequently?
	you know about smart logistics (such as smart distribution, smart network management, smart dispatch)
	Have you ever used smart customer service in logistics services?
	Your satisfaction with the above intelligent robot customer service
	How satisfied are you with the delivery services in Smart China (such as unmanned vehicle delivery, drone delivery, and intelligent robot delivery)

Table 3.6 Measurement table of intelligent logistics service quality perception (Cont.)

variable	questionnaire content
Intelligent logistics service quality perception	Your satisfaction with the guarantee service of the smart logistics data-based security system (taking the postal service as an example) you with the networked service of multi-location warehousing and intelligent scheduling similar to postal services?
	Your satisfaction with the intelligent system of visual tracking of postal transportation and distribution
	Have you ever used the postal cold chain logistics service?
	Do you think the effect of intelligent temperature control and fresh-keeping service of cold chain service in smart logistics is obvious (take the postal service as an example)
	Your satisfaction with the overall service of the current smart logistics

Table 3.7 Measurement table of purchase intention perception

variable	questionnaire content
Purchase Intention	I am willing to use the logistics company service
	I may continue to use the logistics company service
	In the future, I am willing to increase the purchase volume of this logistics service

The last part of the questionnaire is the background information of the respondents, which mainly includes: gender, age, education level.

Table 3.8 Measuring table of respondents' personal information

Basic Information	questionnaire content		
1. Your gender	□ male	□ female	
2. Your age	□Under 20 years old	□21-30 years old	□31-40 years old
	□41-50 years old	□51 years old and above	
3. You or your organization's monthly bill for using our company's logistics services (RMB/Yuan)	□Below 500	□501-2000	□2001-5000
	□5000-10000	□10000 or more	
4. Your education level	□High school students	□College students	□Undergraduate students
	□Master students	□Doctoral students	
3. How many times do you or your organization purchase logistics services from our company in a month?	□0-5 times □6-10 times	□11-20 times	□20 times or more

3.6 Distribution and collection of questionnaires

This research paper mainly selects the customers of Zhejiang Zhoushan Postal Branch as the main research object. The questionnaire was designed in accordance with the requirements of the tutor, and a total of 400 copies were expected to be distributed, with 400 customers participating in the completion of the questionnaire respectively, with the sample being randomly selected and the proportion of men and women being coordinated.

In order to ensure the maximum validity of the questionnaire, a brief introduction was made to the purpose, content and scientific significance of the answers before the

questionnaire was distributed, and requirements were put forward for them to fill in the questionnaire carefully. 410 copies of the questionnaire were distributed among the customers of Zhoushan Postal Branch in Zhejiang Province, and 409 copies were collected. The questionnaire survey lasted for half a month, specifically from February 16, 2023 to March 1, 2023. After collecting the questionnaires, the questionnaires were initially screened for validity and completeness, excluding questionnaires with the same options, incomplete questionnaires and questionnaires with incomplete background information, etc. Finally, 406 valid questionnaires were obtained, and the recovery rate of valid questionnaires was 99.02%. Further analysis of the availability of the sample data was carried out by using the "Analyse, Describe Statistics, Describe - Save Standardised as Variable Z" command in the spss software and selecting the corresponding test variables to generate new variables. When the absolute value of the new variable exceeded 2, it was definitely a sample outlier and the data was excluded. This resulted in 406 valid initial analysis data.

CHAPTER 4
DATA ANALYSIS AND RESULT

4.1 Descriptive statistical analysis of the sample

In this section, descriptive statistics will be conducted on the sample characteristics of the questionnaire to discover the intrinsic links in the study data through the mean and standard deviation, and then use scientifically appropriate methods to further analyses the data.

The concept of descriptive statistical analysis of samples is to analyses the basic characteristics of the data collected and to describe the characteristics of the sample and the population as a whole, usually based on the mean, standard deviation and percentages of the sample structure and sample layout, including the gender structure of the sample, the age structure of the sample and the educational structure of the sample. The analysis of data on the characteristics of the respondents facilitates and visualises individual and group differences, and in turn provides data to support differences in consumer purchasing decisions.

The data was analyzed using the "Analysis - Descriptive Statistics - Frequency" command in SPSS. The results of this analysis were summarized and integrated into Table 4.1. In addition, the detailed descriptive statistics analysis is presented in Table 4.1.

Table 4.1 Statistical analysis of consumer sample data

variable name	variable classification	Frequency	Proportion
gender	male	211	51.97
	female	195	48.03
age	under 20 years old	39	9.606
	21-30 years old	134	33.005
	31-40 years old	116	28.571
	41-50 years old	86	21.182
	51 and over	7.635	100

Table 4.1 Statistical analysis of consumer sample data (Cont.)

variable name	variable classification	Frequency	Proportion
Monthly bill/yuan	Below 500	89	21.921
	501-2000	80	19.704
	2001-5000	123	30.296
	5000-10000	76	18.719
	More than 10000	38	9.36
education level	high school student	52	12.808
	college student	85	20.936
	undergraduate	231	56.897
	master	30	7.389
	doctoral student	8	1.970
Number of purchases	0-5 times	42	10.345
	6-10 times	163	40.148
	11-20 times	164	40.394
	more than 20 times	37	9.113
total		406	100

Next, to further test the hypothesis, statistical analysis of the sample data will be done through spss software, specifically: reliability analysis, correlation analysis, regression analysis and analysis of interactions.

4.2 Reliability and validity analysis

Reliability and validity analysis is a common method used in empirical analysis to test the internal consistency and stability of the results of research questionnaires. The following is a reliability and validity analysis of the collected sample data using spss software to investigate the reliability and validity of the data.

4.2.1 Reliability analysis

In statistics, reliability is a method of analysing the reliability of question indicators in a survey questionnaire and is one of the important indicators for evaluating the quality of the empirical questionnaire design. In other words it is the degree of consistency of the results of questionnaire indicators when the same method is used to measure the same object repeatedly. Generally, there are three types of reliability analysis methods: the retest reliability method, the half-measure reliability method and the Cronbacha reliability coefficient method. The most common method used today is to measure the reliability of a scale using the value of the reliability coefficient (a coefficient greater than 0.6 is considered reliable). The Cronbacha coefficient was used for the reliability test after comparison. The Cronbacha coefficients for each variable were calculated using the "Analyse a Measure, Analyse Reliability" command in SPSS and the final results are summarised in Table 4.2.

Table 4.2 Results of reliability Analysis

research variable	Measurement items	Cronbacha 's Alpha value for items that were removed	Cronbacha 's Alpha
4Ps marketing mix strategy perception	product		
	Product1	0.867	
	Product2	0.871	0.898
	Product3	0.869	
	Product4	0.867	
	price		
	Price1	0.839	
	Price2	0.823	0.879
	Price3	0.826	
	promotion		
	Promotion1	0.865	
	Promotion2	0.862	
	Promotion3	0.863	
	Promotion4	0.857	
	Promotion5	0.861	0.878
	Promotion6	0.851	
	Promotion7	0.866	
	Promotion8	0.865	
	place		
	Place1	0.834	
	Place2	0.82	0.865
	Place3	0.829	
	Place4	0.826	

Table 4.2 Results of Reliability Analysis (Cont.)

research variable	Measurement items	Cronbacha 's Alpha value for items that were removed	Cronbacha 's Alpha
Intelligent logistics service quality perception	Intelligent LogisticsPerception1	0.835	
	Intelligent LogisticsPerception2	0.855	
	Intelligent LogisticsPerception3	0.856	
	Intelligent LogisticsPerception4	0.86	
	Intelligent LogisticsPerception5	0.866	
	Intelligent LogisticsPerception6	0.869	0.897
	Intelligent LogisticsPerception7	0.858	
	Intelligent LogisticsPerception8	0.859	
	Intelligent LogisticsPerception9	0.862	
	Intelligent LogisticsPerception10	0.853	
	Intelligent LogisticsPerception11	0.857	
Willingness to repurchase	Re-PurchaseIntention1	0.813	
	Re-PurchaseIntention2	0.811	0.862
	Re-PurchaseIntention3	0.794	
	overall	**0.917**	

As the reliability coefficient of the questionnaire is acceptable above 0.6, some of the questionnaire indicators are acceptable. In summary, from the reliability test results, it is clear that the data collected by the questionnaire in this study have good reliability and can be analyzed in the next step.

4.2.2 Validity analysis

Validity, as another important indicator in the evaluation of empirical research questionnaires in statistics, indicates whether the questionnaire can truly measure what the researcher expects it to measure. In other words, the closeness of the measurement to the expected value. Validity analysis includes: face validity analysis, content and structural validity analysis, etc. Questionnaire validity is related to the objectives of the study and is usually analysed in a "qualitative, quantitative" way. Content validity refers

to the extent to which the questionnaire items represent the content being measured and the intended responses they elicit. As most of the questionnaires in this study were based on similar or identical questionnaires that have been used and validated in the past, this questionnaire can be considered to have good content validity. Structural validity refers to the degree to which a questionnaire actually measures the structure or psychological characteristics of the test subjects. Generally, a research questionnaire with high structural validity indicates a high correlation between the questionnaire items for the same concept, but not if the correlation between the items for the same concept is not high.

Based on this, the validity of the questionnaire will be tested based on the KMO sample measure and Bartlett's sphericity test in the spss software. The KMO sample measure is based on the sum of squares of the correlation coefficients and the sum of squares of the partial correlation coefficients to determine whether the sample is suitable for further factor analysis. If the absolute value of the correlation coefficient between the variables is high and the absolute value of the bias correlation coefficient is low, then the questionnaire is suitable for factor analysis because the high correlation between the variables is probably due to a third variable and the correlation is likely to be multivariate linear. The closer the value is to 1, the higher the correlation between the variables and the lower the degree of bias, thus indicating that the sample is more suitable for factor analysis. In general, MSA values above 0.9 indicate good suitability; 0.8 to 0.9 indicate suitability; 0.7 to 0.8 indicate fair suitability; 0.6 to 0.7 indicate fair suitability; 0.5 to 0.6 indicate poor suitability for factor analysis; and 0.5 or less indicates very poor suitability for factor analysis. The chi-square statistic, degrees of freedom and significance values for Bartlett's spherical test. When the significance (P) is below 0.01, it indicates that the sample is not a unit matrix. In turn, the larger the chi-square value, the stronger the correlation between the variables. When the questionnaire meets the structural validity analysis, the proposed common factor needs to be the same as the questionnaire setting and its cumulative variance contribution should be greater than fifty percent. The final collation is as follows.

Table 4.3 Validity Analysis Results of Questionnaire Variables

factor		Number of indicators	KMO	Cumulative Variance Contribution Rate	Bartlett
4Ps marketing mix strategy perception	product	4	0.849	84.8%	0.000***
	price	3	0.744	80.6%	0.000***
	promotion	8	0.922 (0.773)	62.3%	0.000***
	place	4	0.83	71.1%	0.000***
Intelligent logistics service quality perception		11	0.91	56.49%	0.000***
Willingness to repurchase		3	0.736	89.8%	0.000***
overall		**33**	**0.908**	**63.3%**	**0.000***

From the above table (Table 4.3), it can be obtained that the KMO values of the variables in the questionnaire are all above 0.6. Also the P(sig.) of these variables are all significant at 0.000, and the least cumulative variance contribution of each variable is 50.9% to meet the validity criteria. In summary, it can be concluded that the questionnaire design of this paper is valid and subsequent statistical analysis can be conducted to test the hypothesis.

4.3 Correlation analysis

Based on the reliability and validity analyses, we can see that the questionnaire designed in this study is valid and reliable, and the following correlation analysis is done using SPSS. Correlations are generally based on functional relationships, which indicate that the degree and direction of change in two things in the process of change is a random relationship (Jia, 2012).

Generally, when doing correlation statistical analysis with SPSS, scholars use the Pearson correlation method to test the degree of association of variables in the model. The correlation coefficient (r) between variables is greater than -1 and less than 1, and the positive and negative signs represent positive and negative correlations, respectively.

Table 4.4 Test table of r value

r value	test result
$0<|r|<0.2$	irrelevant
$0.2<|r|<0.4$	very weak correlation
$0.4<|r|<0.6$	weak correlation
$0.6<|r|<0.8$	moderately relevant
$0.8<|r|<1$	strong correlation

Note: If the r value is positive, it is a positive correlation, and if the r value is negative, it is a negative correlation)

If the path correlation coefficient of the two variables passes the statistical significance test, that is, based on statistical significance, the path coefficient is not equal to zero, indicating that the two variables are related, otherwise they are not related.

If sig.<0.05, then it is significantly correlated; if sig.<0.01, then it is significantly correlated; and for sig.>0.05, it is basically considered that there is no significant correlation between the variables.

Table 4.5 Test table of sig value

Sig. value	test result
Sig.<0.01	Significant correlation
0.01<Sig.<0.05	obviously related
Sig.>0.05	Weak correlation, basically irrelevant

In general, relevance analysis allows for a simple test of the hypotheses of the theoretical model, therefore, the following is a specific analysis of the theoretical model for this study.

4.3.1 4Ps marketing mix strategy perception and smart logistics service quality perception correlation analysis

In this paper, it is necessary to study the relationship between the perception of 4Ps marketing mix strategy and the perception of smart logistics service quality, and the correlation between the perception of smart logistics service quality and the willingness to repurchase. Therefore, the following analysis is done.

Table 4.6 The correlation between 4Ps marketing mix strategy perception, intelligent logistics service quality perception and repurchase intention

		4Ps marketing mix strategy perception	Intelligent logistics service quality perception	Willingness to repurchase
4Ps marketing mix strategy perception	Pearson correlation	1	0.414 **	0.668 **
	Significance (two-sided)		0.000	0.000
	N	406	406	406
Intelligent logistics service quality perception	Pearson correlation	0.414 **	1	0.412 **
	Significance (two-sided)	0.000		0.000
	N	406	406	406
Willingness to repurchase	Pearson correlation	0.668 **	0.412 **	1
	Significance (two-sided)	0.000	0.000	
	N	406	406	406

Note: * *, significant correlation at 0.01 level (two-sided)

From the above table, it can be seen that, at the 0.01 level (two-sided),the r values between all variables are above 0.2.The correlation between 4Ps marketing mix strategy perception and smart logistics service quality perception is 0.414**(Sig. is 0.000),4 the correlation between smart logistics service quality perception and repurchase intention is 0.668**(Sig. is 0.000),smart logistics Service quality perception and repurchase intention show significant correlation, and hypothesis H1, H2 can be tested initially.

4.4 Regression analysis

Correlation analysis can indicate whether and to what extent the dependency relationship exists between the variables, but all the variables in the model are of equal status, that is, the dependent variable and the independent variable cannot be distinguished, so it cannot meet the requirements of further rigorous and in-depth scientific research, and doing regression analysis on the variables in the model can realize the judgment of the dependent variable and the independent variable as well as the degree of mutual influence between the variables. Therefore, after correlation analysis, regression analysis is also required to determine the quantitative relationship between the variables. As an example, if there are two variables and X is assumed to be the independent variable and Y is the dependent variable, regression analysis can be performed to determine the direction and degree of influence of the independent variable on the dependent variable Y, i.e. how changes in X will affect changes in Y. The final relationship is more accurate than the results of correlation analysis. At the same time, the use of regression analysis also allows the hypothesis of correlation to be tested.

4.4.1 Regression analysis of perceived 4Ps marketing mix strategy and repurchase intentions

Using spss software, "analysis a regression a linear", a stepwise approach was used to do a regression analysis with 4Ps marketing mix strategy perception as the independent variable and purchase intention as the dependent variable.

57

Table 4.7 Summary of the regression model of 4Ps marketing mix strategy perception
on repurchase intention

| model | R | R² | Adjusted R² | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
					R²Change	F Change	df1	df2	Sig. F change	
1	0.668 ᵃ	0.446	0.445	0.68697	0.446	325.423	1	404	0.000	2.057

(a. predictor variable: (constant), 4Ps marketing mix strategy perception. b. dependent
variable: repurchase intention)

From the above table, it can be seen that the significant variable 4Ps marketing
mix strategy perception enters into the regression equation. And the correlation coefficient (R)
is 0.668 and the coefficient of determination R2 is 0.446, that is for indicating that the
regression equation obtained explains 44.6% of the total variables and the regression
model explains F change 325.423, presenting significant.

Table 4.8 Regression matrix of 4Ps marketing mix strategy perception on repurchase
intention

| model | Unstandardized Coefficients | | Standardized Coefficients | t | P (sig.) | Collinearity Statistics | |
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	0.519	0.068		7.646	0.000		
Intelligent logistics service quality perception	0.909	0.050	0.668	18.039	0.000	1.000	1.000

(a. Dependent variable: willingness to repurchase)

From the analysis of the results of the data in the table above, the results of the
analysis meet the test criteria because the P (Sig.) is 0.000<0.05, and the R2 of the
regression analysis is 0.446, which indicates that the independent variables tested explain the
dependent variable better, i.e. as indicating that the data are suitable for regression
analysis.

58

To test for co-linearity of the independent variables, since the Tolerance of the independent variable 4Ps marketing mix strategy quality is 1 and VIF is also 1, it shows that there is no co-linearity between the variables. And since the standardized regression coefficient in terms of β 4Ps marketing mix strategy quality is 0.668** (Sig. is 0.000), the regression equation is: 4Ps marketing mix strategy perception = 0.668*place. In summary, it can be seen that the hypothesis H1 proposed in this study was tested, 4Ps marketing mix strategy perception has a significant positive correlation on the willingness to repurchase, that is, for 4Ps marketing The higher the perception of the combination strategy, the stronger the willingness to repeat the purchase of the product and the higher the possibility of eventual purchase. In summary, the following figure can be obtained:
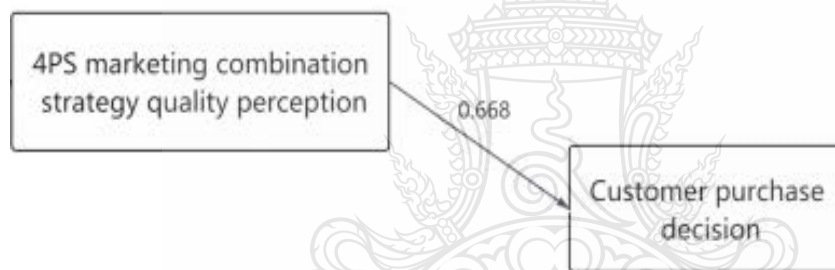
Figure 4.1 Regression coefficient of 4Ps marketing mix strategy perception on repurchase intention

4.4.2 Regression Analysis of Intelligent Logistics Service Quality Perception and Repurchase Intention

Using spss software, "analysis a regression a linear", using a step-by-step approach to 4Ps marketing mix strategy perception as the independent variable, thought the purchase intention as the dependent variable to do regression analysis, the analysis results are collated as follows:

Table 4.9 Summary of the regression model of intelligent logistics service quality

　　　　　perception on repurchase intention

| model | R | R² | Adjusted R ² | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Wastson |
					R²Change	F Change	df1	df2	Sig.F change	
1	0.534ᵃ	0.285	0.283	0.79830	0.285	160.794	1	404	0.000	1.978

(a. Predictive variable: (constant), perception of intelligent logistics service quality.

b. Dependent variable: willingness to repurchase)

　　　From the above table, it can be seen that the significant variable, perceived quality of intelligent logistics services, enters into the regression equation. The correlation coefficient (R) is 0.534 and the coefficient of determination R^2 is 0.285, which means that the regression equation obtained can explain 28.5% of the total variables and the regression model explains F change 160.794, which is significant.

Table 4.10 Regression Matrix of Intelligent Logistics Service Quality Perception on

　　　　　Repurchase Intention

| model | Unstandardized Coefficients | | Standardized Coefficients | t | P (sig.) | Collinearity Statistics | |
	B	Std. Error	Beta			Tolerance	VIF
1　(Constant)	0.589	0.084		6.981	0.000		
Intelligent logistics service quality perception	0.766	0.060	0.534	12.680	0.000	1.000	1.000

(a. Dependent variable: willingness to repurchase)

　　　From the analysis of the results of the data in the table above, the results of the analysis met the test because P (Sig.) was 0.000<0.05, and the independent variables explained the dependent variables better, i.e. for indicating that the data were suitable for regression analysis.

The test for covariance of the independent variables, as the Tolerance of the independent variable smart logistics service quality perception is 1 and the VIF is also 1, then it indicates that there is no covariance between the variables. And since the standardized regression coefficient in terms of β Intelligent logistics service quality perception is 0.534** (Sig. is 0.000), the regression equation is:4Ps marketing mix strategy perception = 0.534*place. In summary, it can be seen that the hypothesis H2 proposed in this study was tested, and the intelligent logistics service quality perception has a significant positive correlation on the willingness to repurchase, that is, for intelligent logistics The higher the perception of service quality, the stronger their willingness to repeat purchase for the goods, and the higher the possibility of final purchase. In summary, it can be obtained that：

Figure 4.2 Regression coefficient of intelligent logistics service quality perception and repurchase intention

4.4.3 Regression analysis of 4Ps marketing mix strategy perception, intelligent logistics service quality perception and repurchase intention

Using spss software, "analysis a regression a linear", using a step-by-step approach to 4Ps marketing mix strategy perception as the independent variable, thought the willingness to buy as the dependent variable to do regression analysis, the analysis results are organized as follows:

Table 4.11 Summary of the regression model of 4Ps marketing mix strategy perception
and intelligent logistics service quality perception on repurchase intention

| model | R | R² | Adjusted R² | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Wastson |
					R²Change	F Change	df1	df2	Sig F change	
1	0.668 ᵃ	0.446	0.445	0.68697	0.446	325.423	1	404	0.000	2.057
2	0.534 ᵇ	0.285	0.283	0.79830	0.285	160.794	1	404	0.000	1.978

(a. Predictive variable: (constant), 4Ps marketing mix strategy perception. b. Predictive variable: (constant), intelligent logistics service quality perception. c. Dependent variable: repurchase intention)

From the above table, it can be seen that 4Ps marketing mix strategy perception entered into the regression equation with a correlation coefficient (R) of 0.668 and a determination coefficient R^2 of 0.446, which means that the regression equation obtained can explain 44.6% of the total variables, and the regression model explained F change of 325.423, showing significant. The perceived quality of intelligent logistics services enters into the regression equation. The correlation coefficient (R) is 0.534 and the coefficient of determination R^2 is 0.285, which means that the regression equation obtained can explain 28.5% of the total variables and the regression model explains 160.794 changes in F, which is significant.

Table 4.12 The regression matrix of 4Ps marketing mix strategy perception and intelligent logistics service quality perception on repurchase intention

| model | Unstandardized Coefficients | | Standardized Coefficients | t | P (sig.) | Collinearity Statistics | |
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	0.570	0.086		6.600	0.000		
4Ps marketing mix strategy perception	0.068	0.067	0.057	1.011	0.003	0.551	1.813

Table 4.12 The regression matrix of 4Ps marketing mix strategy perception and intelligent logistics service quality perception on repurchase intention (Cont.)

model		Unstandardized Coefficients		Standardized Coefficients	t	P (sig.)	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0.570	0.086		6.600	0.000		
	Intelligent logistics service quality perception	0.711	0.081	0.495	8.740	0.000	0.551	1.813

(a. Dependent variable: willingness to repurchase)

From the analysis of the data results in the table above, the analysis results meet the test criteria as Sig. < 0.05, and the independent variables tested explain the dependent variable better, i.e. as an indication that the data are suitable for regression analysis.

The test for co-linearity of the independent variables, as the tolerance of the independent variables in terms of the way the goods are taken is less than 1 and the VIF value is less than 5, then it indicates that there is no co-linearity between the variables. And since the standardized regression coefficient in terms of β 4Ps marketing mix strategy perception is 0.068** and smart logistics service quality perception is 0.711**, the regression equation is: Repurchase intention = 0.068*4Ps marketing mix strategy perception + 0.711*smart logistics service quality perception. So hypothesis H1, H2 was tested and holds. That is, 4Ps marketing mix strategy perception, intelligent logistics service quality perception and repurchase intention respectively show significant positive correlation, 4Ps marketing mix strategy perception, the higher the intelligent logistics service quality perception, the stronger consumers choose to repurchase intention, then the higher the final purchase possibility.
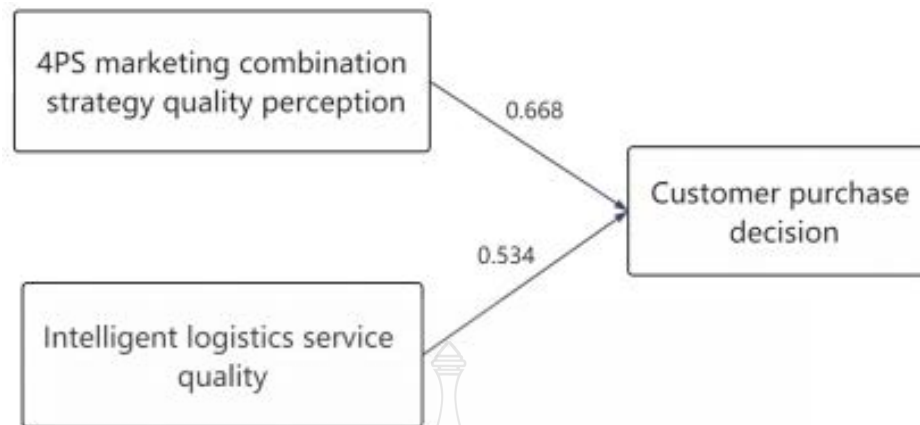
Figure 4.3 Regression coefficients of 4Ps marketing mix strategy perception, intelligent logistics service quality perception and repurchase intention

4.5 Interaction analysis of 4Ps marketing mix strategy perception, smart logistics service quality perception and willingness to repurchase

Using spss software, "analysis of a general linear model and a univariate", regression analysis was conducted using 4Ps marketing mix strategy perception, smart logistics service quality perception as the factor variables and purchase intention as the dependent variable.

Table 4.13 Interaction effect test between perception of 4Ps marketing mix strategy, perception of smart logistics service quality and willingness to repurchase

Dependent Variable: willingness to repurchase

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	564.681a	392	1.441	2.043	.070
intercept distance	823.766	1	823.766	1168.250	.000

Table 4.13 Interaction effect test between perception of 4Ps marketing mix strategy,
perception of smart logistics service quality and willingness to repurchase
(Cont.)

Dependent Variable: willingness to repurchase

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
perception of 4Ps marketing mix strategy *perception of smart logistics service quality	564.681	392	1.441	2.043	.070
Error	9.167	13	.705		
Total	1428.333	406			
Corrected Total	573.848	405			

a. R Squared = .984 (Adjusted R Squared = .502)

   There is no evidence of a statistically significant difference between the levels of the two 'factor' variables 4Ps marketing mix perception and smart logistics service quality perception, as Sig.>0.05. There is no interaction between 4Ps marketing mix perception and smart logistics service quality perception.

65

4.6 Summary and analysis of test results

4.6.1 Summary of test results

Based on the results of the data analysis above, the hypotheses between the quality of logistics and distribution services and consumer goods purchase decisions were collated and summarized, and the results are shown in the table below:

Table 4.14 Summary of tests of research hypotheses

suppose	content	Test result
H1	The 4Ps marketing mix significantly and positively influences consumers' purchase decisions	Set up
H2	Intelligent logistics services significantly and positively influence consumers' purchase decisions	Set up
H3	4Ps marketing mix strategy and intelligent logistics services interaction	Not set up

4.6.2 Analysis of test results

This paper mainly analyzes and discusses the correlation between 4Ps marketing mix strategy, intelligent logistics service quality and purchase decision, and then draws some conclusions with theoretical significance and practical value. Through the study of literature and the summary of practical experience, it is found that in the process of purchasing postal logistics services, there is a certain correlation between consumers' perceptions of the 4Ps marketing mix strategy and the final purchase decision. There is also a correlation between the consumer's perception of smart logistics services and the consumer's purchase decision. In order to determine the scientific validity of this relationship, after constructing the theoretical model and formulating the research hypothesis, a questionnaire was designed and distributed to collate the collected data. The spss software was used to process and analyse the sample data to validate the research hypothesis and ultimately prove the scientific validity and correctness of the model. According to the results of the data analysis, it can be found that (1) 4Ps marketing mix strategy perception significantly and positively affects consumers' logistics product purchase decision. 4Ps marketing mix strategy perception and logistics product repurchase intention show a positive correlation. (2) Smart

66

logistics service quality perception significantly and positively influences consumers' logistics product purchase decisions. (3) There is no interaction between 4Ps marketing mix strategy and smart logistics service in influencing re-purchase intention.

CHAPTER 5

DISCUSSION AND RECOMMENDATIONS

5.1 Main findings of the study

Based on the previous research literature, this paper designed the theoretical model of this study, and through the design of questionnaires for sample data collection, and the use of spss software for statistical analysis, and finally two hypotheses were tested to be valid, and one hypothesis was not valid. Therefore the conclusions of this research can be summarised as follows.

(1) 4Ps marketing mix strategy perception can promote the purchase intention of logistics customers. Therefore, the 4ps marketing mix strategy is still adapted to today's fierce logistics market, logistics enterprises should, under the premise of the 4Ps marketing strategy as the basic framework, develop suitable marketing strategies, produce products suitable for sale in line with the sales, build reasonable channels, adjust to determine the development of price strategies, through effective promotional activities to attract consumers and influence the customer's purchase decision.

(2) Intelligent logistics service quality perception and consumers' willingness to buy show a positive correlation. Therefore, logistics enterprises should rely on big data and artificial intelligence to accelerate the construction of digitalization and intelligence to provide better logistics services, so as to improve the quality of intelligent logistics services.

5.2 Limitations of the study

Although this paper finally also verifies the hypothesis proposed in the previous paper about the relationship between 4Ps marketing mix strategy, intelligent logistics services and consumer decision, but because the sample chosen is mainly Zhoushan postal customers, but because of the sample selection and the design of the questionnaire has some differences, so to some extent, the research of this paper will have some limitations and restrictions.

Firstly, as the main research method of this study is a questionnaire survey, and in order to ensure the scientific and rational nature of the questionnaire items, most of the

questionnaires are derived from foreign languages and previous established scales, but due to the limited ability of personal written translation, there may be problems in the process of translation back and forth, such as the subjects' understanding bias, which may have a certain impact on the survey data.

The results of this study are based on the descriptive statistics of the sample, which reveal that the age of the subjects in this study is mainly 20-40 years old undergraduate students, and that there may be some differences in the personal consumption habits and consumer attitudes of consumers of different ages and education levels. The findings of this study will need to be further explored for all ages and education levels of consumers. In addition, this study did not allow for valid questions to be answered when completing the questionnaire, which may have reduced the validity of the responses.

Finally, this study mainly sampled within Zhoushan postal customers, and it is possible that the differences between different education levels and consumption levels may affect their final purchasing behaviour and perceptions of purchase. There may be variability in consumers' perceptions of the 4Ps marketing mix strategy and the quality of smart logistics services in other regions. Therefore, the applicability of the results of this study may be limited to a certain extent, but it has some reference value and practical significance to the purchasing decisions of logistics company customers.

In addition, this study does not subdivide the intelligent logistics services, and it is hoped that future generations can subdivide the intelligent logistics services.

5.3 Innovation points of the study

This study is based on reading through the theoretical results of previous research, from which we find the uninvolved research about the 4Ps marketing mix strategy and intelligent logistics services in consumer purchase decision, and find that there is no interaction between the 4Ps marketing mix strategy and intelligent logistics services in influencing the repurchase intention. This study analyses the effect of the 4Ps marketing mix strategy on consumer decision making and the effect of intelligent logistics services on consumer purchase decision making from the consumer's perspective. Previous studies have mostly investigated the impact of factors such as transportation, order response, delivery location, delivery mode, and last-mile delivery services on consumer purchase

decisions. Since 2022, the smart logistics scenario has been aided by artificial intelligence and its intelligence has made great progress, and this study focuses on the impact of this new factor on consumer purchase decisions in the logistics industry.

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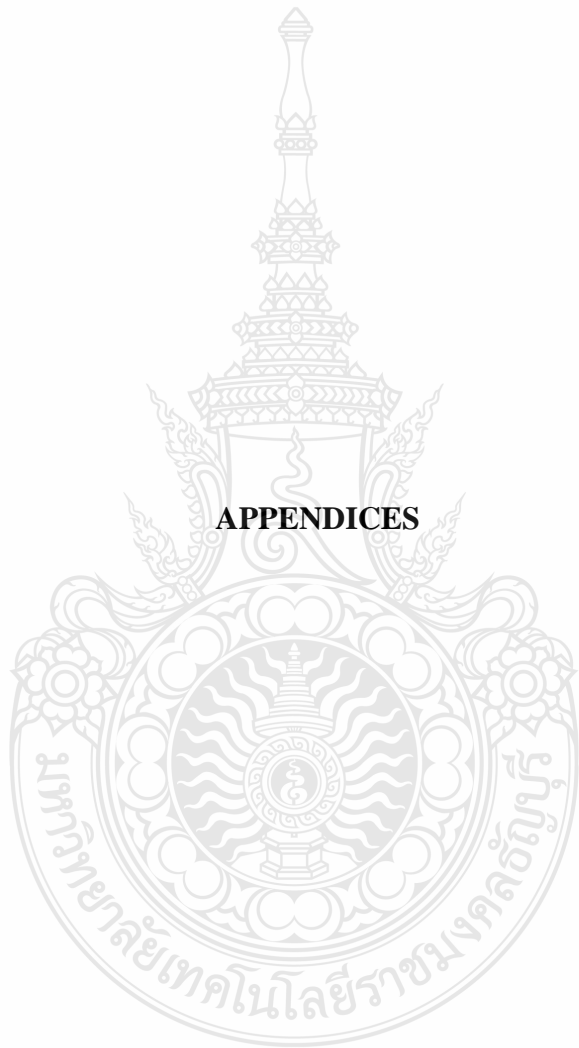
APPENDICES

APPENDICES A

Questionnaire
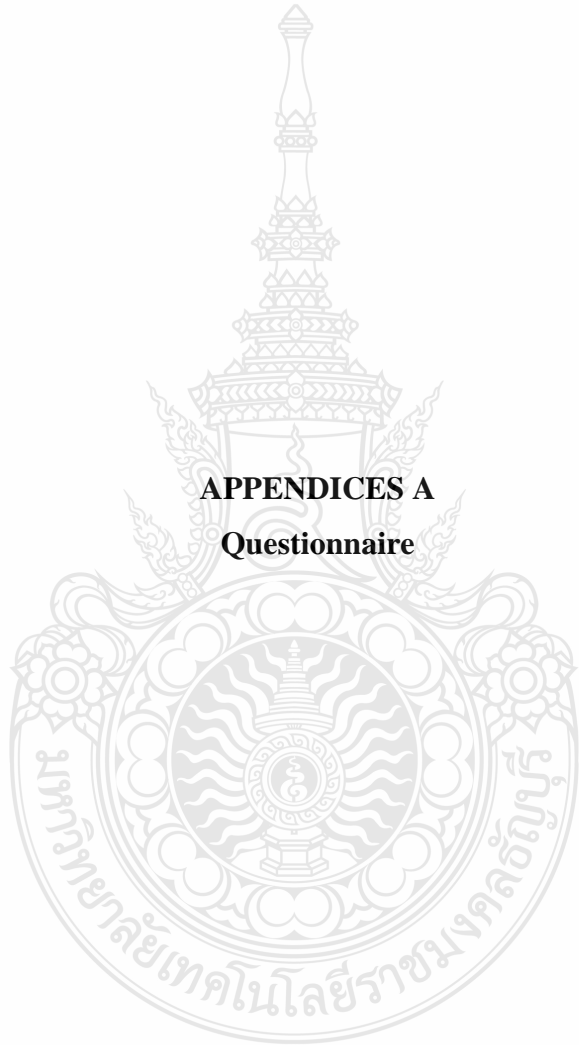
Title: Influence of the 4Ps Marketing Mix Strategy and Intelligent Logistics Service on Consumer Purchase Decisions

Dear Madam/Sir, Hello!

The purpose of this survey is to investigate the influence of the 4Ps combined marketing strategy and intelligent logistics services on consumers' purchasing decision to purchase Postal Standard Express in today's market environment. Thank you very much for participating in this survey. The information you have provided is purely for academic research purposes and we solemnly promise not to disclose any personal information, so please feel free to answer. This questionnaire is anonymous and is for academic analysis only. All respondents' personal information will be kept confidential and will not be disclosed to the public. We wish you good health and all the best.

Thank you for participating.

Ding Runzhi

Rajamangala University of Technology, Thanyaburi, Thailand
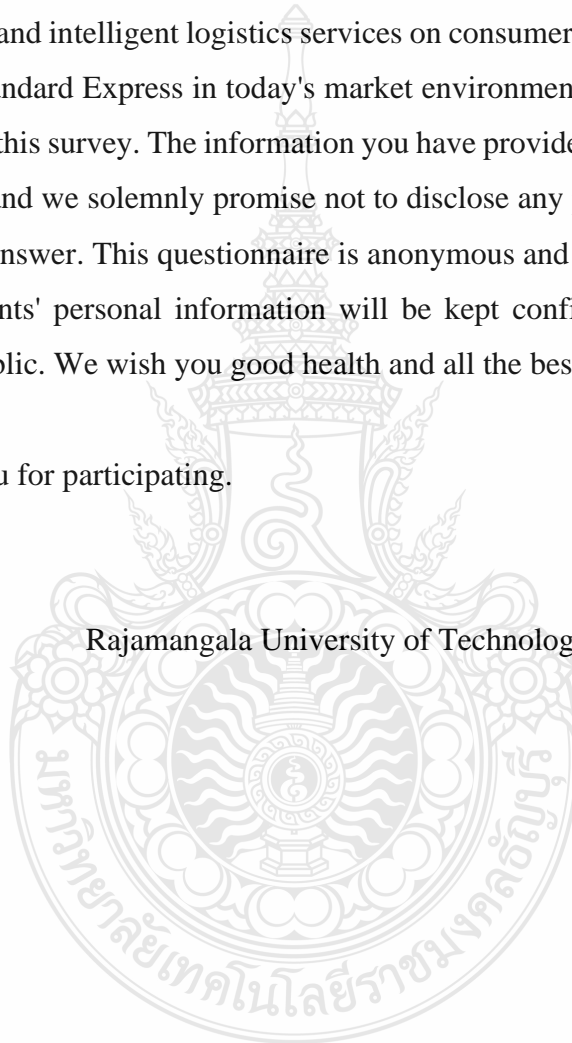
I. Product, price, promotion and channel evaluation (Instructions: Please rate your 4Ps combination marketing strategy by ticking the appropriate box, -3 a strongly disagree; -2 = disagree; -1 = less agree; 0 = not sure; +1 = - more agree; +2 = agree; +3 = strongly agree).

product							
Problem Description	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**
1.The product I purchased is the leading product in its category in terms of volume							
2. The reliability of logistics products is very high (whether it can be delivered on time)							
3. The logistics product has very attractive features (such as late payment, faster speed, lower price, etc.)							
4. Does the company provide you with a variety of logistics products to choose from (standard express, express parcel, Hong Kong, Macao and Taiwan express, international EMS, etc.)							
price							
Problem Description	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**
1. I purchased logistics products at a transparent and reasonable price							
2. I mailed the item once, and the overall insured price received is very suitable							
3. I think postal charges are directly proportional to services (such as value-added services, express delivery, EMS, etc.)							

Promotion							
Problem Description	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**
1. China Post promotes its products through print media such as newspapers and magazines							
2. China Post also promotes its products through outdoor advertising							
3. Postal companies communicate via television and the Internet							
4.The company regularly advertises its products							
5.The company also sells directly through its sales staff The company regularly attends exhibitions/fairs							
6. Postal companies carry out promotional activities at business outlets							
7. Postal sales staff have provided me with sufficient service information (patiently introduce you to express products, prices, service contents, insurance fees, etc.)							
8.The company's website provides sufficient information							
place							
Problem Description	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**
1. Postal companies sell express products through multiple channels							
2. Postal outlets provide an attractive atmosphere for purchase							
3. After-sales contact process is simple							
4. Postal after-sales service is satisfactory							

II. Evaluation of the perceived quality of smart logistics services (Instructions: Please rate the smart logistics services by ticking the appropriate box, -3 a strongly disagree; -2 = disagree; -1 = less agree; O = not sure; +1 = - more agree; +2 = agree; +3 = strongly agree)

Intelligent logistics service quality perception							
Problem Description	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**
1. How often do you use express delivery and other logistics methods?							
2. Do you know about smart logistics (such as smart distribution, smart network management, smart dispatch)							
3. Have you ever used the smart customer service in the logistics service?							
4. Your satisfaction with the above intelligent robot customer service							
5. How satisfied are you with the delivery services in Smart China (such as unmanned vehicle delivery, drone delivery, and intelligent robot delivery)							
6. Your satisfaction with the guarantee service of the smart logistics digital security system (take the postal service as an example)							
7. How satisfied are you with the networked service of multi-location warehousing and intelligent scheduling similar to postal services?							
8. How satisfied are you with the intelligent system for visual tracking of postal transportation and distribution?							
9. Have you ever used postal cold chain logistics services?							

Intelligent logistics service quality perception							
Problem Description	-3	-2	-1	0	1	2	3
10. Do you think the effect of intelligent temperature control and fresh-keeping service of cold chain service in smart logistics is obvious (take the postal service as an example)							
11. Your satisfaction with the current overall service of smart logistics							

III. Assessment of willingness to purchase logistics products (Note: Assess your propensity to purchase the product based on your use of the service by ticking the appropriate box, -3 = strongly disagree: -2 = disagree; -1 = less agree; 0 = not sure; +1 = more agree; +2 = agree; +3 = strongly agree).

Evaluation of purchase intention of logistics products							
Problem Description	-3	-2	-1	0	1	2	3
1. I am willing to use the logistics service of China Post							
2. I may continue to use the service of China Post							
3. In the future, I am willing to increase the purchase volume of China Post logistics services							

V. Basic personal information (Note: Please tick the relevant box according to your own basic situation)

1. Your gender: ☐ Male   ☐ Female

2. Your age: ☐ under 20 years old   ☐ 21-30 years old   ☐31-40 years old
                  ☐ 41-50 years old   ☐ 51 years old and above

3. The monthly bill (RMB/Yuan) for you or your organization using our company's logistics services:

<div style="text-align:center">

□ Below 500   □ 501-2000   □ 2001-5000

□ 5000-10000   □ 10000 or more

</div>

4. Your education level: □ High school student   □ College student

                                 □ Undergraduate students   □ Master students

                                 □ Doctoral students

3. The number of times you or your organization purchases the company's logistics services in a month is approximately:

<div style="text-align:center">

□ 0-5 times   □ 6-10 times   □ 11-20 times   □ 20 times or more

</div>
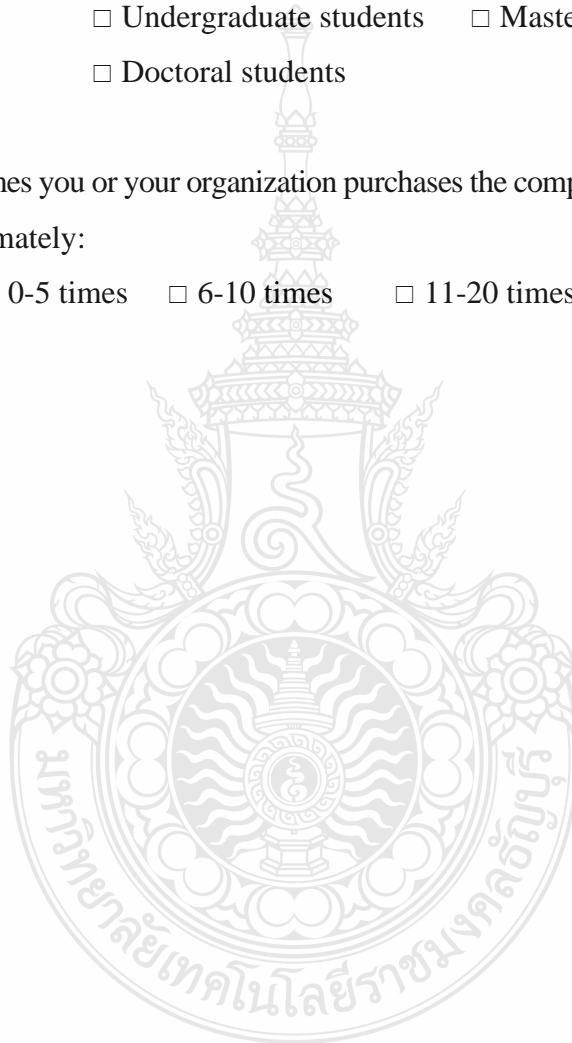
Biography

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