



EFFECT OF QUICK RESPONSE AND SUPPLY CHAIN EFFICIENCY TOWARD  
CUSTOMERS SATISFACTION TO USE EXPRESS DELIVERY COMPANY IN  
KUNMING, PEOPLE'S REPUBLIC OF CHINA

By  
Miss Qihan LI

A Thesis Submitted in Partial Fulfillment of the Requirements  
for Master of Engineering ENGINEERING MANAGEMENT  
Department of INDUSTRIAL ENGINEERING AND MANAGEMENT

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Field of Study        ENGINEERING MANAGEMENT  
Advisor                Associate Professor Choosak Pornsing, Ph.D.

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Partial Fulfillment of the Requirements for the Master of Engineering

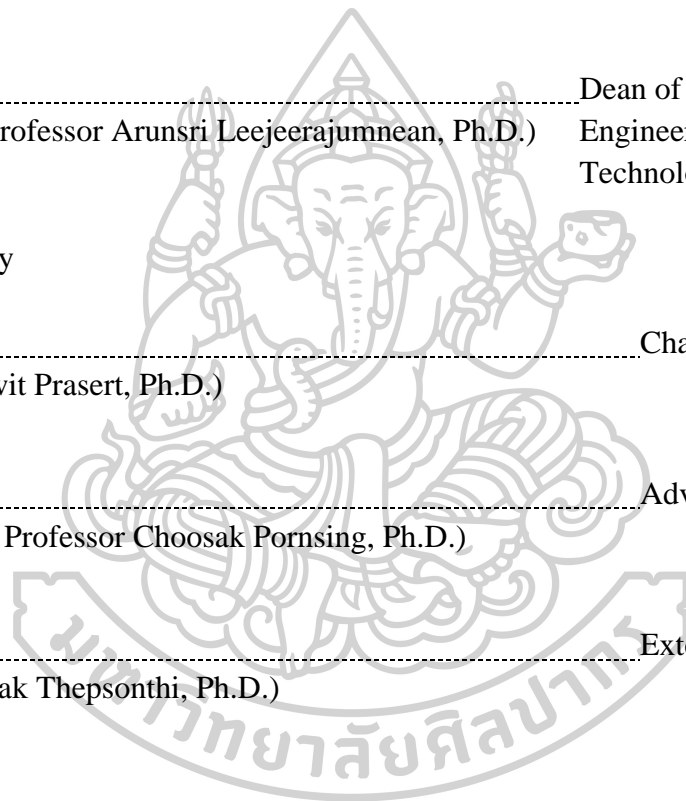
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Miss Qihan LI : EFFECT OF QUICK RESPONSE AND SUPPLY CHAIN EFFICIENCY TOWARD CUSTOMERS SATISFACTION TO USE EXPRESS DELIVERY COMPANY IN KUNMING, PEOPLE'S REPUBLIC OF CHINA Thesis advisor : Associate Professor Choosak Pornsing, Ph.D.

The purpose of this study was 1) to study the importance of quick response patterns and supply chain efficiency and customer satisfaction, 2) to analyze the impact of quick response and supply chain efficiency on customer satisfaction, and 3) to model the causal factors influencing the quick response and efficiency of the supply chain on customer satisfaction using express delivery companies in Kunming, China. It is quantitative research. The sample consisted of 400 customers who have used the express delivery company approach. The research tool is an online questionnaire. Collect data through websites, WeChat, and applications. Data were analyzed by descriptive statistics including mean and standard deviation. Inferential statistics were analyzed with structural equations using Path Analysis.

The results showed that all factors were very important. Sorted from most to least, including supply chain efficiency, quick response, and customer satisfaction. The result of quick response had a direct effect on customer satisfaction, with a path coefficient equal to 0.991, followed by quick response had a direct effect on supply chain efficiency, with a path coefficient equal to 0.341, Lastly, the effect of supply chain efficiency had a direct effect on customer satisfaction, with a path coefficient equal to 0.009. Therefore, for customers who prioritize supply chain efficiency and speedy service, express delivery companies should prioritize their quality of service. They need to have a supply chain system that connects with everyone involved to achieve maximum efficiency.

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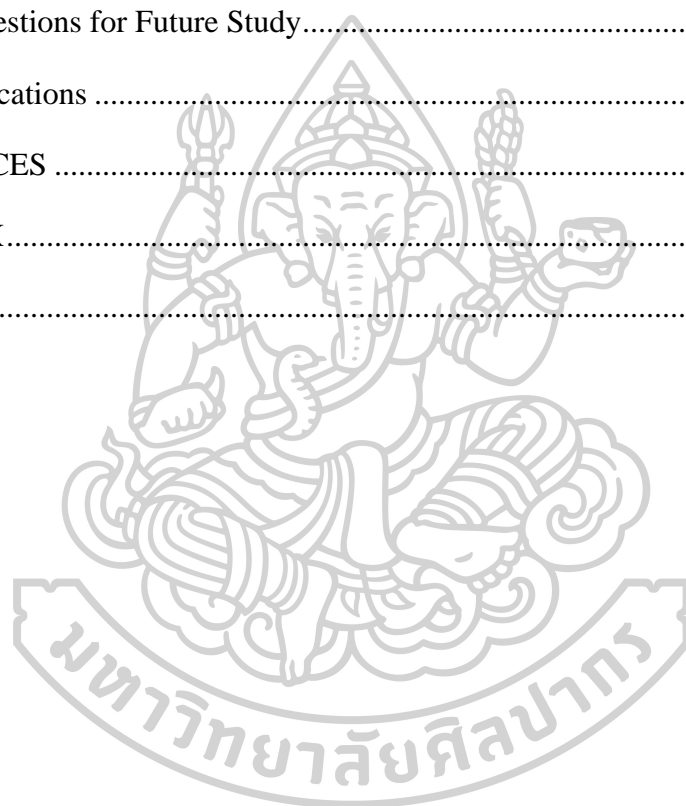
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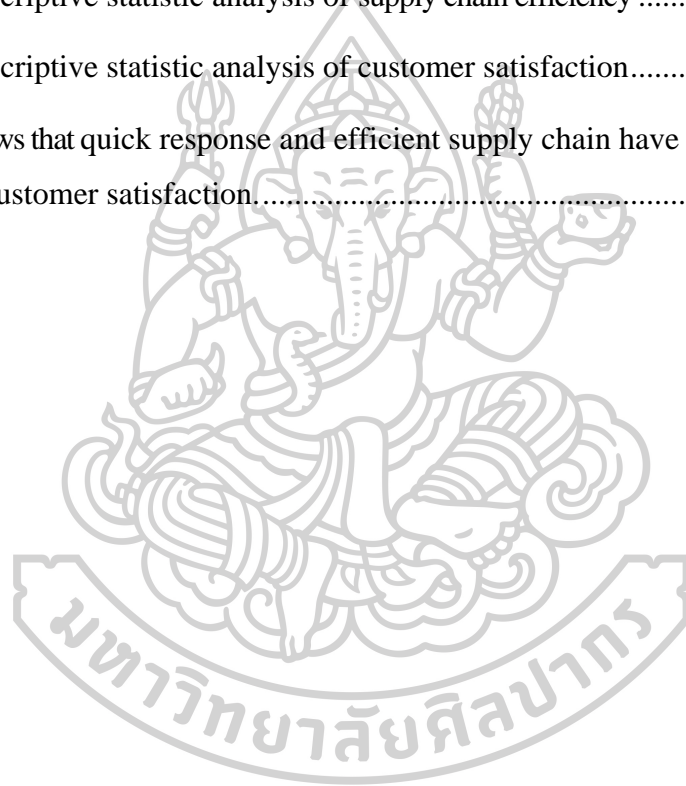
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# CHAPTER 1

## INTRODUCTION

### 1.1 Motivation

Nowadays, this is a state of global competition in a volatile environment. Whether it is an economical, social, or cultural system, transnational politics and government policies of each country make it more complicated for industries to produce with specific maturities. The manufacturing industry is having a hard time adapting to globalization. Proper supply chain management is needed focusing now on customer demand for faster product delivery. For better industry efficiency. In addition, in business management in the past, most executives tend to adhere to management principles that focus on management within the organization by ignoring long-term relationships and mutual interests between external organizations.

Ultimately, it results in high-cost but low-quality products and services. At the same time, funds and resources in management became increasingly rare. As a result, the management style has been changed to allow other departments outside the organization with specific resources and techniques that can perform better specific tasks to come into that position. Finally forming a supply chain leads to a sustainable competitive advantage (Pornsingh et al., 2022).

Therefore, the importance of supply chain management to business. It is a matter of convenience and speed and process optimization in the supply chain, from the procurement of raw materials to the final consumer. Where each process requires a logistics system to be a link in moving, transporting, and transporting goods efficiently and quickly (Filho et al. 2013). Move products from the upstream industry to the downstream industry. It is a system that coordinates as one around the world. Therefore, it plays an important role in the development of businesses connecting to foreign countries, by relying on electronic trading systems and information technology. This will reduce time and cost resulting in lower costs that can increase production efficiency, creating an advantage to increase profits (Hong et al, 2019).

Efficient supply chain management is crucial for businesses to deliver products to the correct location at the appropriate time and at a lower cost. This involves companies that utilize productive resources and ensure timely delivery.

Enhancing supply chain efficiency is a crucial element in the overall management of a business. (Jenkins, 2022). It is important because excellence in this field can save companies money while maintaining customer satisfaction an efficient supply chain means shorter order processing times. Better inventory management and faster delivery always mean higher profits.

Supply chain management is the sequencing of all processes toward customer satisfaction, starting from the procurement process, production, storage, information technology distribution, and transportation. This process doesn't just involve internal departments, but also aims to establish relationships with related organizations in a chain or network. Through ongoing coordination, necessary information and available resources will be shared jointly to achieve the objective of minimizing costs and meeting the needs of the highest consumer (Hong, et al, 2019).

Responding to customers is a strategy that is consistent with the concept of agility. This is based on understanding customer needs to create profitable opportunities. By focusing on creating responsiveness and flexibility in the process. The supply chain is able to adapt to rapidly changing business conditions that are difficult to predict, especially when customer needs are uncertain. However, the strategic aspect of customer responsiveness or the concepts of agility does not focus so much on cost reduction at the cost of the inability to meet customer needs (Opasanon, 2020).

A supply chain is a network between companies and suppliers to produce and distribute specific products to the final buyer. This network contains activities, people, entities, information, and resources in other words. Supply chain is the process of moving and transforming raw materials into finished products. Ship and deliver goods to end users, where companies can measure their supply chain efficiency using supply chain performance metrics.

These metrics often focus on the time it takes for the production flow to happen cost and quality of the final product. Focusing on details, they are:

1. Perfect Order Index: it focuses on the percentage of orders that are delivered on time, complete, and without damage.

2. On-Time Rates or Delivery: emphasizes how often orders arrive within the promised time frame.

3. Inventory turnover ratio: where the business sells inventory. How often during a certain period of time analyzes inventory turnover rates.

4. Order Accuracy: measured by the percentage of orders that are correct and conveyed to the business' production and delivery teams. (Jenkins, 2022)

Quick response, includes four key concepts: the power of time, organizational structure, organization-wide application, and system change (Yusoofa et al., 2022). Long lead times significantly increase labor costs by up to 5 times the cost of work-in-progress and finished goods, and rethinking the organizational structure to accommodate the transformation of traditional functions into an organization that includes linked cells. Because transportation service activities are activities to meet customers' needs for reliability, safety, and cost savings (profitability) by integrating related parts. Merchandise sellers, manufacturers, wholesalers, retailers, customers, and warehousing service providers. Carriers and other stakeholders for customer satisfaction (Asamoah et al. 2021).

However, the research results of Nuankhao (2022) show that important service values include environmental responsibility, service convenience, company image, social responsibility, employee service, and quality. Service quality is the service value of high efficiency. Transport and data processing, in particular, directly and indirectly, affect sustainability. Supply chain efficiency of e-commerce freight forwarders. Indirect influence is conveyed through the perceived value of the service. The results of this study can be used to develop small logistics service providers, that are Thai companies to be able to compete in a sustainable way. In the past, logistics companies focused on the value of fast service and low-cost operations (Jenkins, 2022). but regardless of delivery quality and customer satisfaction.

So it is a big problem for the transport business service providers in Kunming. especially for small and medium service providers. It is necessary to accelerate the adjustment of operating methods to retain existing customers and find ways to create customer satisfaction using the service. Added many new customers for the organization, because now besides competition from competitors in business in China. There are also foreign competitors entering the transport sector. This will give the organization a competitive advantage that responds quickly to service users' needs,

including the entry of new foreign competitors and the economic downturn as operators have large market shares from small and medium operators.

### **1.2 Research Question**

1. How was the importance of quick response, supply chain efficiency, and customer satisfaction using Express Services in Kunming, the People's Republic of China in the past?

2. How was the impact of quick response and supply chain efficiency on customer satisfaction using express delivery companies in Kunming, People's Republic of China, or not?

3. How to find a model of rapid response and supply chain efficiency on customer satisfaction using Express Delivery companies in Kunming, People's Republic of China.

### **1.3 Research Objective**

1. To study the importance of quick response, supply chain efficiency, and customer satisfaction using express delivery companies in Kunming, the People's Republic of China

2. To analyze the impact of quick response and supply chain efficiency, on customer satisfaction, Those, who use the express delivery service in Kunming, the People's Republic of China

3. To model the causal factors influencing the quick response and the efficiency of the supply chain on customer satisfaction using express delivery companies in Kunming, the People's Republic of China

### **1.4 Research Scope**

Studies on the impact of quick response and supply chain efficiency, customer satisfaction. When using express delivery services in Kunming, People's Republic of China. Research can be classified into four aspects as follows

1. The scope of the population is the people who use express delivery services in Kunming, the People's Republic of China, where there are many people to service use.

2. The scope of content is to focus on quick response, supply chain efficiency, and customer satisfaction.

3. Area boundaries; The researcher defined the area in this study as an express delivery company in Kunming, People's Republic of China.

4. Scope of time data collection between June 2023 and December 2023.

### **1.5 Expected Results**

In this study, the researcher classifies the expected results to receive 3 issues as follows:

1. To know the results of the importance of quick response, supply chain efficiency, and customer satisfaction using Kunming Express services, the People's Republic of China.

2. To know the results of the Kunming, People's Republic of China.

3. A model of causal factors influencing rapid response and supply

4. The chain efficiency on customer satisfaction using express delivery companies in Kunming, the People's Republic of the impact of quick response and supply chain efficiency on customer satisfaction using express service companies in Kunming.

### **1.6 Benefits of the Research Study**

1. Service business operators; The Kunming logistics category recognizes the elements of rapid response and supply chain efficiency that predicts customer satisfaction. So that transport operators can plan service strategies that are in line with customer needs and will be able to find ways to respond appropriately to current situations or economic conditions.

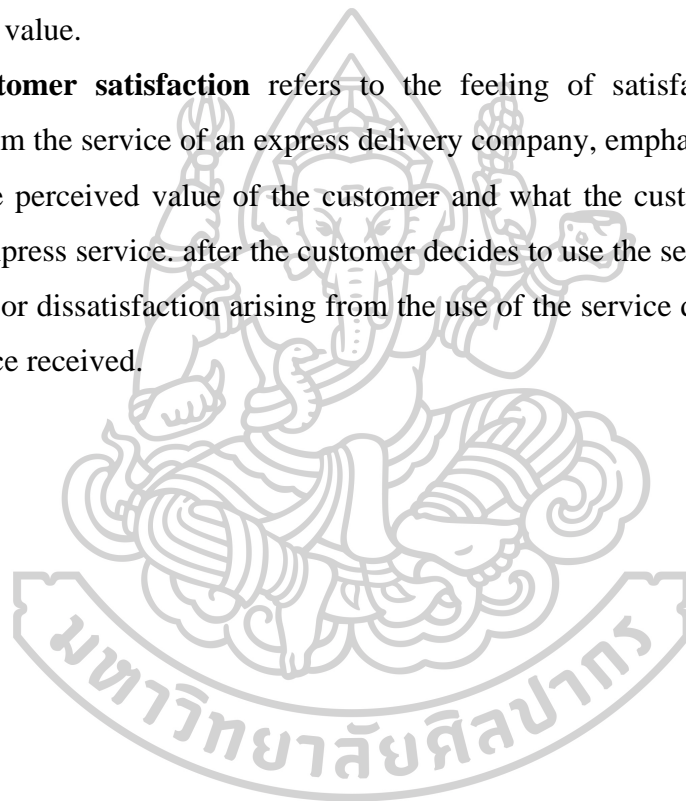
2. Chinese government agencies are involved in the promotion of the market or the transport service industry of enterprises. There should be a model or policy to drive service business operators. Types of transportation to have the ability to compete sustainably.

### 1.7 Definition of Terms

**Quick response** refers to the agility of business operations in response to customer needs. whether it is delivery of products on time Cost and time savings for customers

**Supply chain efficiency** refers to the network of relationships between the company and its business partners in the production and delivery of goods. That shows the process of acquiring products from raw material procurement, production, and transportation to delivery of products or services to customers that focus on savings and value.

**Customer satisfaction** refers to the feeling of satisfaction with what is received from the service of an express delivery company, emphasizing the difference between the perceived value of the customer and what the customer expects before using the express service. after the customer decides to use the service The customer's satisfaction or dissatisfaction arising from the use of the service depends on the value of the service received.



## **CHAPTER 2**

### **LITERATURE REVIEW**

The research focuses on the effect of quick response and efficiency of the supply chain toward the satisfaction of customers using the express delivery company in Kunming, People's Republic of China. The researcher has reviewed the concept. Theories and related literature can be summarized as follows;

1. The Context of Kunming Province
2. The Context of Express Delivery Business Operation
3. Quick Response Concept
4. The Efficiency of the Supply Chain Concept
5. Customer Satisfaction Concept
6. Conclusion

#### **2.1 The Context of Kunming Province**

##### **2.1.1 Introduction**

China's industrial development is largely due to the impact of the environment. Especially in the Kunming area. The “City of Everlasting Spring” is located in southern China and is the capital of Yunnan Province. It is projected that by 2030, the rate of urbanization will reach 65%, which means that the urban population will be around 950 million. Due to this, the cities in China have become the center of economic activity. With just under 30% of the population residing in these cities, the country's 53 metropolitan regions were responsible for producing 67% of the country's GDP in 2007 (OECD Regional Development Working Papers 2013/07). Based on the latest census carried out in 2020, the population of Yunnan province is 47,209,277.

In addition, over 2.5 million Chinese people living outside the province have ancestral roots in Yunnan (Yunnan Population, 2024). The province is well-known for its remarkable ethnic diversity and has the highest number of ethnic groups among all autonomous and provincial regions in China. Many of these groups do not live in concentrated areas and do not meet the official criteria of having a population of at least five thousand to be recognized as an official community within the province.

This population growth makes the traffic more dense social problems and economic problems and the Chinese government needs to find new strategies or solutions in 1982 with the cooperation between Kunming and Zurich. This policy is designed to address water supply and drainage problems. The connection according to this collaboration continued development until 1993 until now. When the master plan for the development of Kunming was established to protect the environment, and the quality of life of the people, in 2022 a total of 47,023,117 people, most of whom are Han Chinese. There are also 25 other ethnic minorities such as Zhuang, Hui, Miao, Zang, Yao, Bai, Wa, Naxi, Dulong, Lisu, and Bulang, which is considered to be China's most ethnically diverse province, and its transportation routes are set to avoid future environmental damage. (Royal Thai Consulate-General, Kunming, China, 2023)

## **2.2 The Context of Express Delivery Business Operation**

China is the largest express delivery company in the world. Covers service areas in more than 200 countries worldwide and has freighter aircraft in service with a network of more than 56 airlines. for example; the valuation of SF Express Delivery Co., Ltd. is more than 229 billion yuan, and is China's most valuable freight company. which is the fourth-highest stock market in Shenzhen. and the world's largest in general, there are 3 types of services as follows:

1. General cargo with corporate customers e-commerce business owners and general customers, In addition to conventional freight, private freight forwarders are expanding. Their services include cold chain products such as fresh foods and medicines. By providing both transportation and cold storage services.

2. Money services including payment apps, credit cards (cooperation between the courier company and China Citic Bank (CITIC), where cardholders enjoy privileges offered by private courier companies Multiplier and payment card provided.

3. E-commerce services provide a trading platform for goods.

The courier company wants to expand its business into the food delivery business, where the courier company's transportation does not include courier car rental services. High-speed trains can deliver goods to different cities, so courier

companies can be considered as a transport company with perfect service and speed. In addition, courier companies have been looking for ways to earn extra income from exclusive goods. COVID-19 situation i.e. Food delivery was testing the system internally for the first time with company employees, as the courier company already had resources in place for all modes of transportation, including airplanes. High-speed trains, small trucks, and electric motorbikes should invest in express delivery companies, combined with testing the food delivery system for people in the country.

Express delivery companies are becoming very popular these days. Modern service and fast delivery of goods. Businesses acknowledge it. In particular, importing products from or shipping to China is currently in demand in the global market. With many products to choose from, we always get good support from our business owners. Express delivery companies provide customer service in various areas, such as sea import services, including ordering products from China, importing goods by car, and providing goods import services by air, and there are also delivery services to China. We also provide remittance services to China via Alipay, WeChat, and QQ, as well as closed container shipping services. Reservation service, visa processing, and domestic transportation.

The company has always paid attention to customers in every detail and process of ordering and transportation, So Express Delivery company has always been a good trust. With a service that reaches your heart, and delivers products quickly to the recipient's hand quickly, Express Delivery Company is a good Chinese transportation company that is regularly supported by business operators, because Express Delivery company does not import pirated products. Illegal goods living things or prohibited goods of all kinds. There is a product check before closing the cabinet customers or users can be confident that the products are in the container. When passing through customs Illegal products will not be found, not subjected to scrutiny, and definitely not be confiscated goods imported from China by an Express Delivery Company, tax payment is correct, and passed inspection. and carry out all legal customs formalities customers or service users can track products and parcels at all times, through an automated platform.

Yunnan Province has opened as a gateway to Southeast Asia and South Asia, and internal provinces of China with Kunming being the center of Yunnan's central

region. Under the strategy "bridgehead" which the Chinese government has approved and included in the 13th National Economic and Social Development Plan (2016-2020) as well as pushing for the construction of 4 economic corridors, namely Kunming-Hanoi, Kunming-Bangkok Kunming-Yangon, and Kunming-Calcutta, and the development of roads and rail systems connecting the inner provinces of China. (Chengdu-Chongqing Economic Zone Pearl River Delta Economic Zone and the Yangtze River Delta Economic Zone), which has Kunming as the center and junction with many cities in China.

Under the "Modern Logistics Development Plan of Kunming," the strategy of all 5 logistics zones is to support the development of the transportation network connecting Yunnan Province. With other important hubs on both sides of the province, Kunming plays an important role as a distribution base for goods from neighboring countries in Southeast Asia, including Thailand and South Asia, to Inner China, especially Western China, including Yunnan, Guizhou, Sichuan, Chongqing, Guangxi, Inner Mongolia, Shaanxi, Gansu, Ningxia, Qinghai, Tibet, and Xinjiang all have a population of about 500 million, accounting for 37 percent of China's population. Its gross domestic product (GDP) value in 2012 was 11.4 trillion yuan. It accounted for 22 percent of China's GDP, expanding more than 14 percent in 2011, and the new round of southbound and western development policies resulted in rapid economic growth.

In the first half of 2013, the GDP of Guizhou and Yunnan provinces grew by 12.5 percent and 12.5 percent year on year. In 2012, China's overall economy grew by 7.8%, establishing itself as a major market. And it has high economic potential. At the same time, the competition is less than in eastern China. This is an opportunity for Thailand to tap into its network of transport links and logistics bases ready to support trade and investment expansion between Southeast Asia and China in the near future.

The development of 5 logistics zones in Kunming. Therefore, it is an important base for product distribution of neighboring countries that came to Yunnan to the western provinces of China. This will be able to support the transportation of goods on the R3A route and the opening of the 4th Mekong Bridge and facilitate the transportation of people and goods across. The Thai-Laos-China border in order to deliver goods from Thailand to the distribution center goods from neighboring

countries will go through the inspection process at the same time as the agency-related (Single-Window Inspection) at that point and in the logistics center investment project at Chiang Khong Industrial Estate, Chiang Rai Province, Thailand to facilitate the transportation of goods of Thailand through R3A in a complete way from the origin to destination of the order.

### **2.3 Quick Response Concept**

Nowadays, the industry is more intensely competitive. Resulting in cooperation between the preparation and delivery of raw materials. It is important to produce the final product and deliver it to the customer or consumer. Most of the former management does not take into account the suppliers, business associates or even competitors, thus making it difficult to manage and survive in the business. Therefore, the concept of overall industry management or supply chain was born, which is a production management perspective, without dividing the organization, But taking into account the flow of materials and the flow of information as a whole. From raw materials to products delivered to customers this supply chain may consist of multiple organizations rather, they are seen as working under the same organization and having common goals and benefits, and making the work more efficient, Efficiency doesn't just mean quality or cost. but with speed, customer needs, and satisfaction come into the main factor in supply chain management. Moreover, speed here does not refer to just time or production speed. It also includes being sensitive to changes in the supply chain and responding to customer needs (Kaviyani-Charatia, et al. 2022). Various changes occurring in this supply chain. It is considered an important factor affecting supply chain management, including uncertainty, Whether it's an internal system or the uncertainty of customer needs.

Literature reviews show that past studies. Shows a quick response mode that varies according to the new model or knowledge presented. when researchers perform quick response checks. There will inevitably be a special use of the oriented qualifications based on the results of the research. The quick response appears to be one of the three operational functions of previous studies:

The first: is a focus on time reduction. It plays an important role in quick responses to meet customer needs. In this view, Quick Response is manifested as a

time-based competitive paradigm (Godinho Filho & Veloso Saes, 2013). Which is a combination of Just-In-Time and information technology systems (Birtwistle et al. 2006), custom manufacturing systems (Fernandes & do Carmo-Silva, 2006), or even zero lead-time cases (Krishnan et al., 2010).

Second: quick responses are characterized by order processing after knowing customer needs (Lin & Parlak Turk, 2012; Wang, et al, 2018). This special capability of quick response brings significant benefits including accurate demand forecasting, resolving the demand uncertainty, and appropriate matching between supply and demand, where ultimately, many studies focus on customer needs.

Finally, a large number of studies focus on the demand for information updating that occurs in quick response. In studies in this past group Bayesian approach is used. This is an analytical model and assumes that retailers can do so by using the market data obtained in the first phase to improve demand data in the second phase when the operator makes decisions about inventory control (Chungsuk, 2019).

### **2.3.1 Quick Response**

A supply chain is a collaboration between suppliers, manufacturers, suppliers, retailers, and customers. The quick response (QR) principle is not just about speeding up and reducing lead times in supply chain activities. But by including speed management with regard to customer needs at the end of the supply chain, as indicated by QR, the supply chain can respond quickly. The success factor depends on the collaboration between partners in the supply chain. An analysis of the external environment that affects organizational management (Lebosse et al. 2017). And what must be considered and held together between allies is:

- 1) sharing data sources without any obscurity between them.
- 2) Having shared management goals.
- 3) The development of trust or trust between each other.
- 4) Establishment of a collaboration agreement.

The ability of partners in the supply chain to work together based on this information. This will inevitably cause flexibility and speed in work. Customer demand information can be quickly transmitted to all relevant departments. The work will be fast and can cause a rapid response within the organization and between

organizations (Kaviyani-Charatia, et al. 2022). If each organization is an ally in the supply chain, it should prepare as follows.

1.1) Preparing information to be shared between departments, including:

1.1.1) Sales/sales forecast.

1.1.2) Customer orders/customer needs.

1.1.3) The decision of each working group needs to be made known to the other parties involved immediately.

1.2) Preparing for the speed of information flow and the use of technology in data management and system management such as Electronic Data Interchange (EDI), Manufacturing Resource Planning (MRPII), Enterprise Resource Planning (ERP), etc.

1.3) The ability of the system both in terms of change management and technology

1.4) Preparing labor and raw materials to meet the needs of customers.

1.5) Getting support from management

In addition, the relationship between allies in the supply chain and outside the organization to promote that rapid response should be developed in terms of data linkage which may be electronic real-time, communication, and collaboration between employees in partner companies. Moreover, suppliers in the supply chain should receive daily or weekly sales data from manufacturers. On the other hand, raw material delivery companies should deliver raw materials on time precisely. This collaboration should be agreed upon from the outset to form a Win/Win Partnership.

### **2.3.2 Ability to Respond**

In addition, the response is fast, according to the changing external environment context Executives or organization managers must take into account the flexibility of work, as the following;

1. Sensitivity to change (Agility). Agility refers to the sensitivity to changes in the supply chain. Uncertainties are common in supply chains and can also be an important factor, that can cause supply chain management to fail. This principle addresses supply chain management to be sensitive to changes and uncertainties (Darwish et al. 2019). which can be summarized into 2 Concepts:

1.1 Responding to both expected and unexpected changes

1.2 Use the changes as a chance to beat your opponent. Zhang and Sharifi (2000) stated that in different organizations.

Uncertainty will occur differently. And affect the system differently, therefore needing the ability to react differently as well. To create agility in a supply chain, it is necessary to understand that agility has three components: Agility drivers, Agility capabilities, and Agility providers, as follows:

2. Agility Drivers: refer to the uncertainties or changes arising from the business environment and are the drivers that the system or supply chain must pay attention to in order to remain competitive. Proactive and reactive are the drivers that use that change to create competitive opportunities. Defensively, it responds quickly to changes that occur. In a business environment, agility drivers are created by the following changing factors;

2.1) Marketing factors: regardless of the marketing structure market demand, market share, product, price, product life cycle, and the purchasing power of consumers.

2.2) Competitive factors: such as the ability of competitors' competitive environment the ability to respond to competitors, etc.

2.3) Customer demand factors: such as changing demands of customers. Customer expectations in terms of price, quality, or delivery time.

2.4) Technology factors: such as changes in technology introduction of new products or technologies, etc.

2.5) Social factors: such as laws, government policies, economic conditions, etc.

2.6) Complexity factors in the system such as the number of products product and process the complexity of the product design, etc.

3. Agility Capabilities: the ability that the supply chain uses to respond quickly to changes or uncertainties, which can be summarized into 4 parts: Responsiveness, Competency, Flexibility, and Speed, by the following:

3.1) Responsiveness: It is the ability to respond to triggers that arise by focusing on operational goals.

3.2) Competency: It is the ability to make an organization work efficiently and effectively, such as strategic vision, appropriate technology use, product quality, quality or efficiency of employees, change management, and introduction of new products. Continuously, cooperation between each other, unity in the organization, etc.

3.3) Flexibility is the ability of employees to do multiple tasks at the same time. Using the same resource flexibility has many meanings depending on the nature of the work, such as in different batches, work process adjustments, organizational changes, capacity adjustments, and personnel that will perform multiple tasks.

3.4) Speed is the ability of employees. Including machines that will work in the shortest possible time, such as delivery speed, production speed, new product introduction speed, etc

Agility Providers: Refers to things in the organization that can bring Agility to be applied in the supply chain, which means 4 main things: organization, people, innovation, and technology, but these 4 elements must be linked and combined by the flow exchange of information.

. In any supply chain, to be sensitive to change, these three components need to be taken into account and linked together to suit the supply chain environment. Successful management of sensitivity depends on collaboration with stakeholders. Stakeholders in supply chains and analysis of problems of uncertainty or change in that supply chain are also included.

This concept of responsiveness arises from the problem of different industries. What is the difference between "speed" and "ability to meet customer needs" should be managed? According to research on the responsiveness of order fulfillment processes (MacCarthy, 1999). This response to the needs of customers must be taken into consideration:

1. Stimuli that force the industry to create the ability to respond (Stimuli)
2. Knowledge of triggers and ways of industrial response (Awareness)
3. Building industrial response capabilities (Capabilities)
4. Response goals (Goals)

## **2.4 The Supply Chain Efficiency Concept**

### **2.4.1 Introduction**

Supply chain efficiency is an organization's core standard of performance. Efficiency measures the ratio of work performed in a process and whether the process is using the best practices and making the most of available resources. supply chain efficiency in action saves money and increases profits business-wide. But an efficient supply chain can be extremely beneficial to an enterprise's bottom line, and help the product reach its destination in the most cost-effective way. In today's global market, it is important to supply chain costs of a business because they are a significant part of the cost. which is reflected in the price offered to the customer After all, if a business's supply chain adds unnecessary costs to the final product, The ability of a business to compete with other companies. that offers the same product to be successful with efficiency, So if a business competitor has a more efficient supply chain competitors will be able to offer the same product at a lower price. ( )

Supply chain efficiency in action saves money and increases profits business-wide. But an efficient supply chain can be extremely beneficial to an enterprise's bottom line, and help the product reach its destination in the most cost-effective way. In today's global market, it is important to supply chain costs of a business because they are a significant part of the cost. which is reflected in the price offered to the customer. After all, if a business's supply chain adds unnecessary costs to the final product, The ability of a business to compete with other companies. that offers the same product to be successful with efficiency. Therefore, if a business competitor has a more efficient supply chain competitors will be able to offer the same product at a lower price.

### **2.4.2 Highlights of an efficient supply chain:**

Optimization may include tailored transport routes. Warehouse locations, personnel, and even business information networks. To get the most out of your existing infrastructure. Whether it's a half-empty truck idle warehouse and repetitive computer systems It's just a dump of business assets, high-quality partner logistics partner involved person stakeholders must be at their best in integrative collaboration. Businesses should have state-of-the-art technology a transparent policy and a proven track record.

Inventory management: too much inventory is costly to purchase; product storage management and keeping track of too little inventory can be costly as well. It can mean wasted production time. Expensive last-minute orders and even customers who had conflicts before an efficient supply chain finds the right balance when it comes to inventory. Customer satisfaction is an important aspect that logistics operators need to be aware of. Supply chain efficiency must be directly linked to customer satisfaction. To encourage products to reach those who need them quickly and at the best price.

### **2.4.3 The Responsive Supply Chain**

A responsive supply chain has to do two things: it has to be responsive to your needs, and it has to be responsive to the needs of your customers.

1) Order-fill accuracy. In today's highly competitive market, a guarantee of quick delivery is a real selling point. If that order arrives quickly but is inaccurate or incomplete, then you've wasted time and money and may have lost a customer as well.

2) Scalable fulfillment, all businesses experience ups, and downs. Sales can be affected by the season, the weather, and the economy. A responsive supply chain is one that can accommodate changing sales volumes.

3) Communication, When you or your customers have questions, problems, or concerns, it's vital that there be open lines of communication.

4) Customer satisfaction, People can sometimes throw a monkey wrench into the best supply chain. They order the wrong thing. They change their minds. They need something sooner, not later. This is when a responsive supply chain really shines. It is flexible enough to handle returns, for instance, and offers high-quality customer service. Customers who feel that their specific needs are being met, and who can reach out for help when there is a problem to be solved, are satisfied customers.

Choi et al (2017) have researchers found that quick responses always benefit the supply chain. When retailers take risks If the retailer is risk averse (Risk-seeking) randomly. Retailers benefit more. While producers will lose less profit. (lose more profit) under quick response research has proven that different supply chain commitments. A strong Pareto in the supply chain can be improved. The ability to improve Pareto under contract will also be negatively impacted.

## 2.5 Customer Satisfaction Concept

Kotler (1980) defines customer satisfaction as a ‘person’s feeling of pleasure or disappointment, which resulted from comparing a product’s perceived performance or outcome against his/her expectations’. Although Kotler uses abstract terms like pleasure and disappointment, the definition is by no means ambiguous. Siddiqe (2022) presents that, in broad terms, customer satisfaction is the state of a customer where they are pleased with their decision to do business with you. In other words, customer satisfaction is the degree of success your business has at meeting customer expectations. Based on this, you might think customer satisfaction is easily obtainable with an awesome product.

The concept of Oliver (1980) found that disconfirmation was positively related to consumer satisfaction. Positive disconfirmation (perceived performance above the expectation) increased consumer satisfaction, while negative disconfirmation (perceived performance below the expectation) decreased consumer satisfaction. Millet (1954) presents the issue of satisfaction that consists of five components: (1) the content of the service (2) data accuracy, (3) current, (4) convenience, and (5) security, etc.

Customer satisfaction with a company's products or services is often seen as the key to a company's long-term success. Competitiveness in the context of customer relationship marketing. Satisfaction is often seen as the central determinant of the customer. Including retaining customers to use the service continuously. The purpose of this paper is to develop a conceptual foundation for monitoring customer retention. There is a supply chain process in the organization based on quick response and the concept of customer satisfaction and relationship quality is used. An examination of the relationship between satisfaction and customer retention found that it depends on the perception of service quality from the perspective of the customer. (Hennig-Thurau, & Klee, 1997).

### 2.5.1 Customer satisfaction importance

Measuring customer satisfaction has always been difficult due to its subjective nature. Hence it takes a lot of thought and creativity to quantify the level of satisfaction of individual customers. Before we get to how that works, here are 3 good reasons why customer satisfaction is important.

### **2.5.2 Customer satisfaction increases retention**

Satisfied customers are usually the last ones to leave you hanging. Customers have a tendency to choose familiarity over the hassle of moving to a new product/ecosystem. So if your product is as good as your competitors, what will be the defining factor? Service and ease of use, of course! The better service you provide post-sales, the easier it is to make these customers stick with you. This is also known as customer retention, and it's by far the most crucial reason to invest in customer satisfaction. Mostly because higher retention rates mean you have less churn. Having less churn means you can ease the gas for new customer acquisition. So when you invest in customer satisfaction you're actually reducing pressure on your customer acquisition process.

### **2.5.3 Customer satisfaction promotes loyalty**

Customer Satisfaction is the measurement of happiness that customers have with products or services of various businesses whether they can meet customer expectations or not. This satisfaction data can be collected by giving customers a questionnaire or by looking at customer behavior after using the service. Some customers may tell or recommend someone close to use the service, or maybe it's the customer who comes back to use the service again. The information obtained will help companies know in what ways they need to improve their products or services in order to satisfy customers. Therefore, when customers come back often, they eventually develop loyalty. There will also be positive mentions of the company or compliments on the product, service and company always.

Customers buying from you aren't always going to become loyal advocates. It's about developing a sense of uncompromised reliability. When you go the extra mile for your customers, it converts into satisfaction. Only when you've been there for your customers through uncertainty and satisfied them will you develop trust. Trust is what turns customers into advocates. All of this starts with customer satisfaction and that is what you should aim for in the long run.

## 2.6 Customer Satisfaction Index

### 2.6.1 Introduction

The calculation of the national satisfaction index is based on the multi-equation econometric model, with three main factors determining satisfaction: (1) customer expectations, (2) quality in the eyes of consumers (perceived quality), and (3) perceived value or popularity in the eyes of consumers (perceived value). If this satisfaction index is in a positive direction, it will ultimately lead to customer loyalty, But if the indicator is negative, it will result in dissatisfaction and customer complaints as well. As illustrated in Figure 1, the model of ACSI.

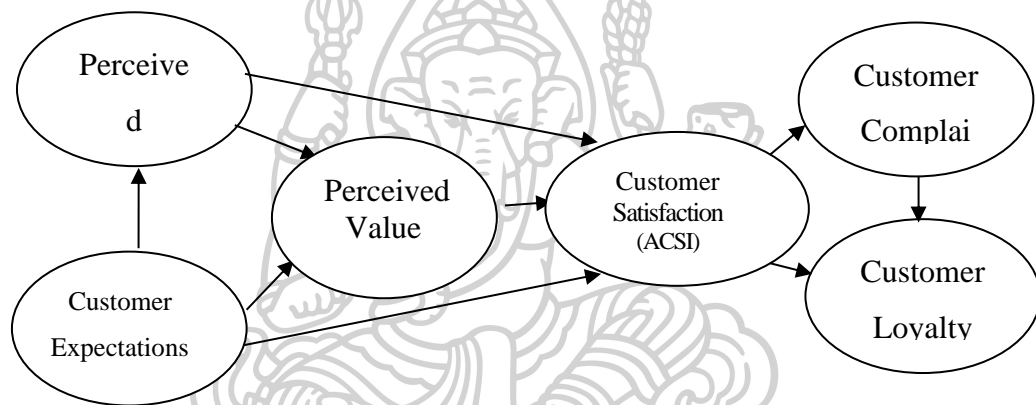


Figure 1 the model of ACSI.

Source: American Customer Satisfaction Index (1994)

From Figure 1, The ACSI model has six components: customer expectations; perception of service quality in the eyes of consumers perceived value of consumer satisfaction, customer complaints, and customer loyalty details are summarized as follows:

2.6.1.1 Customer expectations: often arise from the experience of using (American Customer Satisfaction Index, 1994) products or services. Including information received through advertising media. and sales promotion staff.

2.6.1.2 Perceived quality of service in the eyes of consumers (Service Perceived Quality) can be assessed by having 3 important questions: (1) overall quality, (2) reliability/durability, and (3) consistency with the needs. consumer

2.6.1.3 The perceived value of consumers can be assessed with two questions: (1) satisfaction with the price at the current quality level and (2) satisfaction with the quality at the current price level from Figure 1. The ACSI model assumes that perceived value has a direct impact on customer satisfaction, while at the same time being influenced by perceived quality and receipt value.

2.6.1.4 Customer satisfaction can be assessed from the level of customer feedback that they like, or dislike of products and services.

2.6.1.5 Customer complaints are measured by the proportion of consumers. People who respond to surveys with complaints or dissatisfaction with products and services.

2.6.1.6 Customer loyalty can be checked from the probability of returning to repeat purchases of products and services in the future.

Thus, it can be concluded that the ACSI model has 6 elements, which are very important to the user because of the impression. Satisfaction or delight in a product or service as a result of the experience gained through physical and biological contact, etc.

In addition, Pratomsiripaisan and Kobjaiklang (2017) research supports that the courier service that the respondents use most is Express Services 92.3%, the respondents using this service at least once a month 90.5%, the last time used Express Services a week ago 83.8%, the purpose of using courier services is for business 92.3%, the reason to choosing online Express Services because brand or reputation 71.3% and online express services that the respondents are using are Kerry Express Services for 77.3%. This research result found that most of the respondents in Bangkok aren't satisfied with the online express services by providing their personal information and debit/credit card numbers, so the result would be rejected.

## 2.7 Conclusion

Today's business operations must focus on quick response due to the changing external environment. Especially in terms of economy, government policy, competitive situation, cross-cultural society, politics of each country, technology disruption, and consumer behavior with more diverse needs. As a result, businesses must adapt quickly and flexibly according to the context or needs of stakeholders. Company's equity through the company's supply chain management so that all parties involved are satisfied.

Satisfaction is the result of motivation, which is an internal behavior that drives a feeling of liking, satisfaction, liking, joy convenience happiness, or positive attitude when needs are met and expectations that arise from learning directly from the experience of doing activities or use of services in order to achieve the desired response according to the goal. In particular, gaining additional interaction and cost-effectiveness. Therefore, if the business has efficient supply chain management by managing every process, with maximum efficiency. It prevents the supply chain or the supply chain from being wasted or caused by waste. Supply chain management focuses on preventing wastage and preventing businesses from having higher overall costs. Take into account the flow of the process, divided into 3 Flows: material flow, information flow, and financial flow, so that stakeholders, both inside and outside the company, are satisfied.

Therefore, this research examines the factors influencing customer satisfaction using Express Delivery Company in Kunming, People's Republic of China, in order to find a long-term customer relationship strategy to achieve continuous use of the service repeatedly. This may ultimately develop into customer loyalty in the transportation business.

## CHAPTER 3

### RESEARCH METHODOLOGY

In this chapter, the research design and its methods are introduced. The research design can be developed on the basis of the research objectives.

#### 3.1 Population and Sample

##### 3.1.1 Population

The population studied consists of Chinese consumers who have experience using an express delivery company in Kunming, the People's Republic of China. The questionnaire is only intended for consumers who have experience using an express delivery company, as indicated by the screening questions. It should mention gender and age also.

##### 3.1.2 Sample

The researcher has calculated the sample size using the formula of Cochran (1977) at a confidence level of 95%. The sample size can be calculated as 384.16. The researcher defines the sample as 400 people.

When the population is not known, we can determine the sample size required for accurately estimating proportions by taking into account the standard normal deviation at a 95% confidence level (1.96), the percentage of people selecting a particular choice or response (50% = 0.5) and the confidence interval (0.05 =  $\pm 5$ ). The formula is:

$$N_0 = \frac{Z^2 * p(1 - P)}{e^2}$$

n = sample size

Z = the z-value, extracted from a z-table<sup>62</sup>

p = the fraction of the population (as a percentage) that displays the attribute

e = desired level of precision, the margin of error

d = acceptable error 5% (0.05)

$$n_0 = \frac{1.96^2 * 0.5 * (1-0.5)}{0.05^2}$$

$$= 384.16 \text{ or } 400 \text{ people}$$

How to find the value of  $z$  from a  $z$ -table. The procedure is:

1. Convert the confidence level from percent form to decimal form as a value between 0 and 1. (95%  $\rightarrow$  0.95)
2. Subtract the value from 1 and divide by 2 to find out how much is half (1 - 0.95 = 0.05; 0.05/2 = 0.025)
3. Add the value from 2) to the value from 1) (0.95 + 0.025 = 0.975)
4. Look for the value obtained in step 3) in table values. The value sits at the intersection of the row labeled 1.9 and the column labeled 0.06.
5. Determine the value of  $z$  by adding the value for the column with the value for the row obtained in step 4 (1.9 + 0.06 = 1.96).

### 3.2 Research Method

This research methodology is divided into 3 parts as follows:

First of all, this study examines the related concepts of customer satisfaction, quick response, and supply chain efficiency used by an express delivery company in Kunming, China. The questionnaire then focused on quick response, supply chain management, and customer satisfaction. The population of this study is customers from an express delivery company in Kunming. Then, the traditional method of delivering questionnaires online from the perspective of all customers asking for opinions or important priorities taken by the company for the Kunming Express delivery company's ideal solution.

Secondly, Research tools, and online questionnaires to customers used by Express Delivery Company in Kunming, including branches.

Finally, Data analysis for statistics

In this study, The researcher used descriptive statistics and inferential statistics to analyze the data with the following;

1. Descriptive statistics in the analysis of percentage, mean, and standard deviation.

2. Inferential statistics with Structural Equation Model (SEM) by path analysis technique. The dependent variable is customer satisfaction of Express Delivery Company in Kunming.

Finally, the summary of quantitative research results.

### 3.3 Research Tools

The research tool is an online questionnaire developed from the literature review to check the validity of the contents of the questionnaire. Checking the quality of tools used in research for this study evaluated the instruments in two stages. First, it assessed the instruments for validity, reliability, and language smoothness prior to the survey. Second, it evaluated the overall confidence of the questionnaire after conducting the survey. As below.

3.3.1 Questionnaire about quick response and supply chain management variable, the following dependent variable is customer satisfaction. The questionnaire is designed to review concepts, theories, and research related to stakeholder responsiveness in the relevant supply chain management, and the company's ability to work collaboratively to support customers who have used the express delivery company approach.

3.3.2 There are 3 categories of 8 questions per category (24 Items) to ask customers who use express delivery company, including the branch in Kunming.

3.3.3 Checking the quality of the tools before the actual survey. The instrument used was a questionnaire which was tested for validity and reliability as follows:

1) To ensure content validity, the researcher presented the questionnaire to three academic experts for examination. They assessed the language used in the research and checked for consistency, including item-objective congruency (IOC). The content of the business management questionnaire was evaluated by experts who hold academic positions, such as Assistant Professors. Service businesses rely heavily on management science to be applied in business management, hence the involvement of logistics management experts and consultants for transport business operators. The experts are also researchers in logistics management and have received research funding from the National Research Council of Thailand. They make use of

suggestions to improve the accuracy and comprehensiveness of the questions, based on the main question elements specified. The literature reviewed above supports these findings. The research funding received from the National Research Council of Thailand has contributed to academic success. It is important to consider any suggestions and use them to improve the accuracy and comprehensiveness of the questions, based on the specified main question elements and the literature reviewed above. Internal consistency's measurement accuracy was evaluated by assessing its reliability and determining confidence levels, following the model outlined below:

Experts determine the scores using the following process.

+1 means the questions are related to the variables' stories.

-1 means the questions are not related to the variables' stories.

0 means I'm not sure if the question aligns with the storyline of the variation.

The criteria for interpretation are listed below:

$IOC < .50$  means the questions are consistent with the research objectives.

$IOC < .50$  means the questions are not consistent with the research objectives.

The researcher received assistance from three experts in evaluating the consistency between the questions and the intended research objectives.

2) The validity of the content is consistent between the question and the objective. (Index of Item-Objective Congruence; IOC) for three-point were (1) quick response, (2) supply chain efficiency, and (3) customer satisfaction with using an express delivery company. Let's measure the validity of the content by analyzing the consistency between the question items and the objectives (IOC) and the consistency between the questions (Rovinelli & Hambleton, 1997). Expert opinions are taken into consideration when determining the Intra-Observer Correlation (IOC) for each question. Only questions with an IOC value ranging from 0.50 to 1.00 are selected. The questions with an IOC value below 0.50 are improved based on suggestions and then further reviewed by an advisor for additional guidance. The results of the analysis to determine the reliability of the questionnaire. The average index of compliance IOC is between 0.77-1.00. Table 1 provides further details.

Table 1 Content validity of the scale

Scale	Content validity
1. Information technology and websites have been introduced to the world, which can assist in managing businesses	0.96
2. The company has access to various channels through which they can provide information. These channels are used to share information quickly and efficiently	0.96
3. The company focuses on providing fast service to its customers and network/partners	1.00
4. The staff members are very enthusiastic and always willing to provide assistance	1.00
5. The company utilizes technology to enhance customer service quality	1.00
6. The express delivery service will have a more efficient network infrastructure due to innovative solutions implemented by the company	0.77
7. Business partnerships and joint ventures can help companies to operate more efficiently and at a faster pace	0.77
8. The company places great importance on ensuring accuracy in the preparation of goods declarations and other related documents for their customers	0.77
9. Management process is key in overseeing and regulating the transportation of goods from origin to destination	1.00
10. The product distribution of the company you use is speedy and efficient.	1.00
11. The parcel delivery company you choose to use has a good reputation and image	1.00
12 Customers have the option to check the transportation routes available for availing services through any channel they prefer	1.00

Table 1 (continued)

<b>Scale</b>	<b>Content validity</b>
13 The parcel delivery companies that you choose to use provide safe and damage-free delivery of your parcels	0.77
14 The company has consolidated its services to a single point in order to offer customers greater convenience	1.00
15 The focus to provide automated services using modern tools, which results in saving time and valuable resources	1.00
16 The service staff is friendly and leaves a positive impression on service recipients	1.00
17 The staff providing the service is friendly, and they leave a positive and favorable impression	1.00
18 The company's staff is willing to provide assistance beyond the service process.	0.77
19 The service provided by the company's employees is in compliance with the standards and expectations	1.00
20 I am pleased with the company's prompt delivery of their products	1.00
21 Customers who use the parcel delivery service are content with its performance	1.00
22 Please rate your satisfaction with the efficiency of the employees providing the service	1.00
23 I am pleased with the affordable prices offered for express delivery services	1.00
24 I am pleased to be using the express delivery service again	1.00

From Table 1, it is found that the questionnaire has a reliability value higher than 0.50 in all aspects, indicating that the questionnaire has high reliability.

First, complete the revised questionnaire that has been reviewed by three experts. Then, administer the questionnaire to 30 individuals who have the same qualifications as the people who using an express delivery services in Guangxi

Province but who are not a part of the research sample. Use the resulting data to calculate the reliability value, or alpha coefficient ( $\alpha$ -coefficient), using Cronbach's method. The overall confidence value should be 0.7 or higher, as recommended by Nunnally (1978), which indicates a reliable measure of 0.70 or greater. The Cronbach's alpha coefficient of the between score = 0.862 to 0.858, The questionnaire has a total value of 0.867, exceeding the acceptable threshold of 0.70 based on Nunnally & Bernstein's criteria (1994). The details are presented as shown in Table 2 as follows.

Table 2 Cronbach's alpha coefficient of scale

Scale	Cronbach's alpha
1. Information technology and websites have been introduced to the world, which can assist in managing businesses	.858
2. The company has access to various channels through which they can provide information. These channels are used to share information quickly and efficiently	.858
3. The company focuses on providing fast service to its customers and network/partners	.858
4. The staff members are very enthusiastic and always willing to provide assistance	.869
5. The company utilizes technology to enhance customer service quality	.859
6. The express delivery service will have a more efficient network infrastructure due to innovative solutions implemented by the company	.859
7. Business partnerships and joint ventures can help companies to operate more efficiently and at a faster pace	.860
8. The company places great importance on ensuring accuracy in the preparation of goods declarations and other related documents for their customers	.873

Table 2 (continued)

Scale	Cronbach's alpha
9. Management process is key in overseeing and regulating the transportation of goods from origin to destination	.867
10. The product distribution of the company you use is speedy and efficient.	.868
11. The parcel delivery company you choose to use has a good reputation and image	.867
12 Customers have the option to check the transportation routes available for availing services through any channel they prefer	.869
13 The parcel delivery companies that you choose to use provide safe and damage-free delivery of your parcels	.865
14 The company has consolidated its services to a single point in order to offer customers greater convenience	.864
15 The focus to provide automated services using modern tools, which results in saving time and valuable resources	.868
16 The service staff is friendly and leaves a positive impression on service recipients	.869
17 The staff providing the service is friendly, and they leave a positive and favorable impression	.859
18 The company's staff is willing to provide assistance beyond the service process.	.859
19 The service provided by the company's employees is in compliance with the standards and expectations	.859
20 I am pleased with the company's prompt delivery of their products	.860
21 Customers who use the parcel delivery service are content with its performance	.858

Table 2 (continued)

Scale	Cronbach's alpha
22 Please rate your satisfaction with the efficiency of the employees providing the service	.860
23 I am pleased with the affordable prices offered for express delivery services	.860
24 I am pleased to be using the express delivery service again	.860
<b>Total average scale</b>	<b>.867</b>

It will be an online questionnaire about quick response, supply chain management, including customer satisfaction, and the questionnaire is a rating scale of 5 levels (Rating Scale) applied according to Likert's method (Likert, 1967, p. 76), which specifies 5 levels as follows:

The questions is a 5-level rating scale (Rating Scale) applied according to the Likert method (Likert, 1970), which determines 5 levels of importance as follows:

Very highly important level	Score 5
Highly important level	Score 4
Moderately important level	Score 3
Low important level	Score 2
Very low important level	Score 1

The questionnaire will have different questions depending on the status of the respondents, which our customers use the express delivery company, including the branch in Kunming.

### 3.4 Data analysis

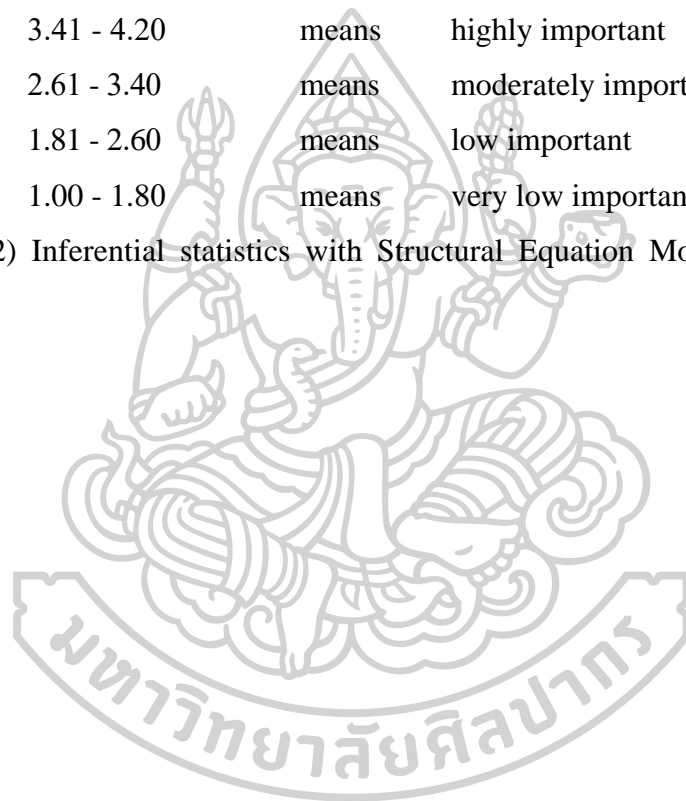
In this study, the researcher will apply descriptive statistics and inferential statistics to analyze the data with the following:

3.4.1) Descriptive statistics in the analysis of frequency, percentage, mean, and standard deviation.

Then the scores received were analyzed. To find the average and interpret the average according to the level of importance, which has score values as follows:

4.21 – 5.00	means	very highly important
3.41 - 4.20	means	highly important
2.61 - 3.40	means	moderately important
1.81 - 2.60	means	low important
1.00 - 1.80	means	very low important

3.4.2) Inferential statistics with Structural Equation Model (SEM) by Path Analysis.



### 3.5 Research Process Flow Chart

There are 10 steps in this research as follows: See Figure 2.

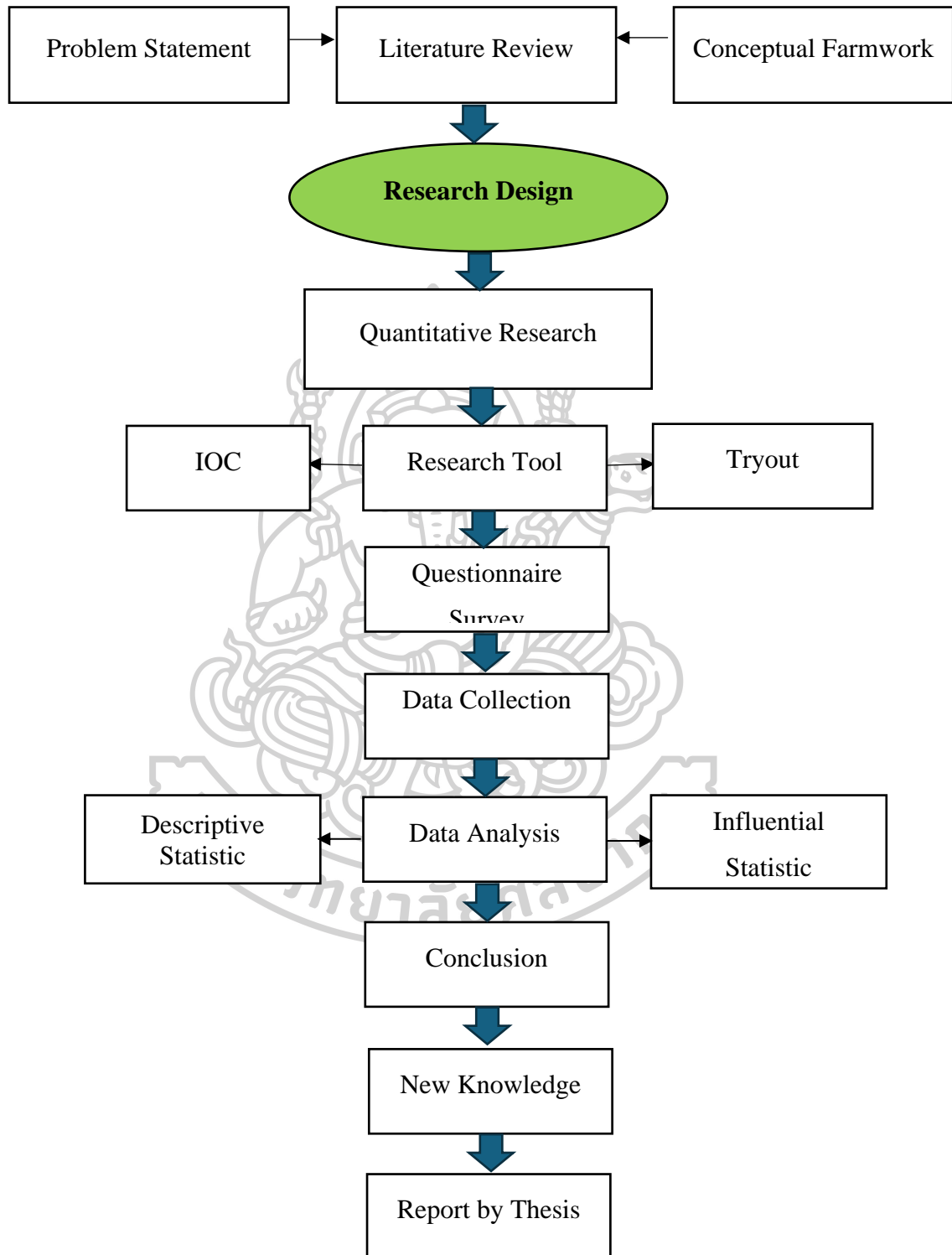


Figure 2 Research Process Flow Chart

Source: developed by researcher

### 3.6 Conceptual Framework

The result of the concept review, theories, and related literature review shows that quick response had a direct effect on customer satisfaction: Hypothesis:1, the quick response had a direct effect on the supply chain management, Hypothesis:2, and supply chain management had a direct effect on customer satisfaction, Hypothesis:3. The research conceptual framework is shown in Figure 3

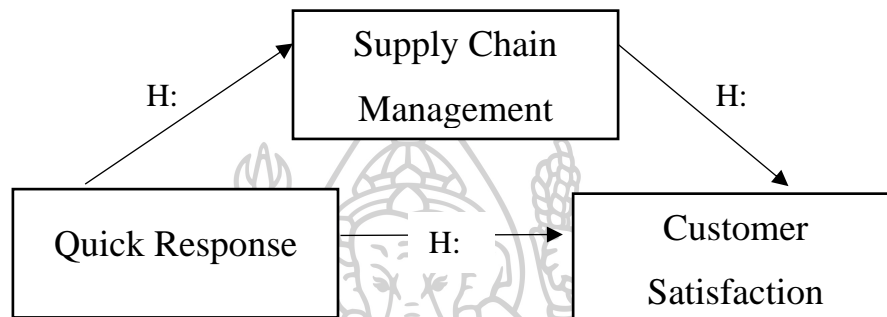


Figure 3 Conceptual Farmwork

### 3.7 Research Hypothesis

- H:1 Quick response had a direct effect on customer satisfaction
- H:2 Quick response had a direct effect on supply chain management
- H:3 Supply chain management had a direct effect on customer satisfaction

## CHAPTER 4

### RESULTS AND ANALYSIS

The key points to study the effect of quick response and supply chain efficiency toward customer satisfaction to use express delivery company in Kunming, People's Republic of China. This paper uses a questionnaire as a main tool in order to collect the data.

#### 4.1 Part 1 Result

The respondent profile is shown in Figure 5, It shows information about the demographics of people who use express delivery services by providing the frequency and percentage of each. The research results are summarized as follows:

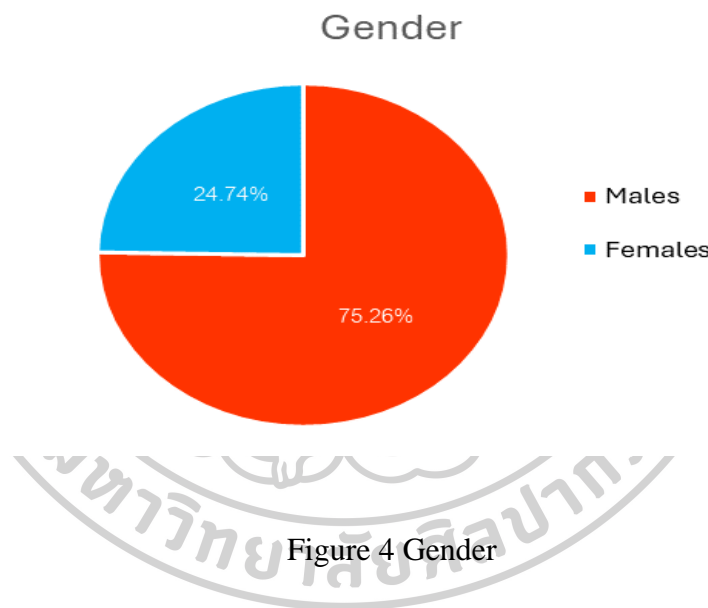


Figure 4 Gender

Figure 4 classifies gender into two types. First, (159),75.26% of males and (241), 24.74% of females were customers who used an express delivery company in Kunming, People's Republic of China. Most of the respondents are 400 customers.

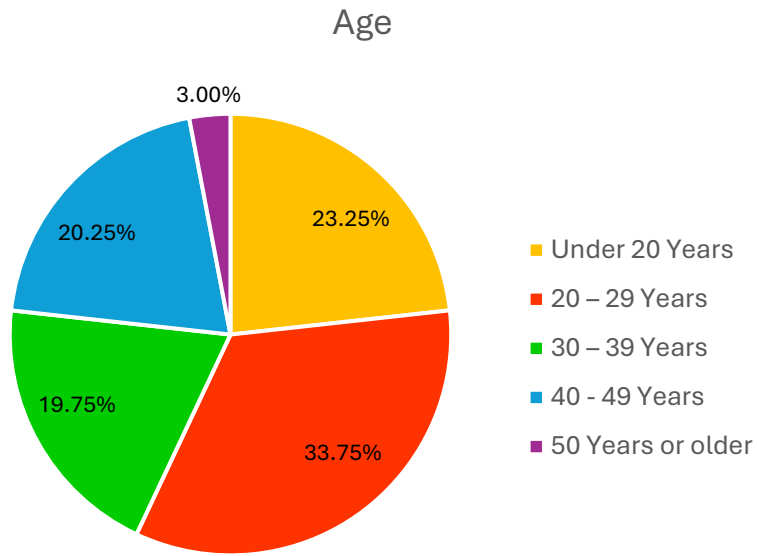


Figure 5 Age

Figure 5, The age is classified into five types. First, 20-29 Years were (135), 33.75%, Followed by under 20 Years were (93), 23.25%, 40-40 Years were (81), 20.25%, 30-39 Years were (79), 19.75%, and 50 Years or older were (12), 3.00% were customers who used an express delivery company in Kunming, People's Republic of China. Most of the respondents are 400 customers.

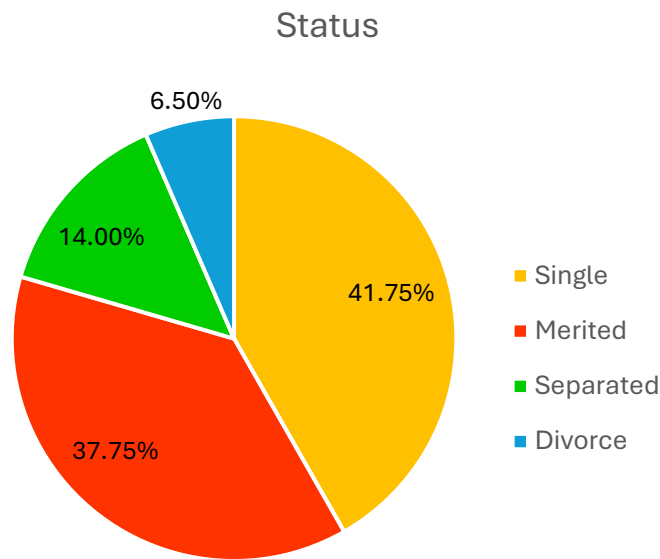


Figure 6 Status

Figure 6, the status is classified into four types. First, single was (167), 41.75%, Followed by merited were (151), 37.75%, separated were (56), 14.00%, and divorced were (26), 6.50%. These were customers who used an express delivery company in Kunming, People's Republic of China. Most of the respondents were 400 customers.

### Education

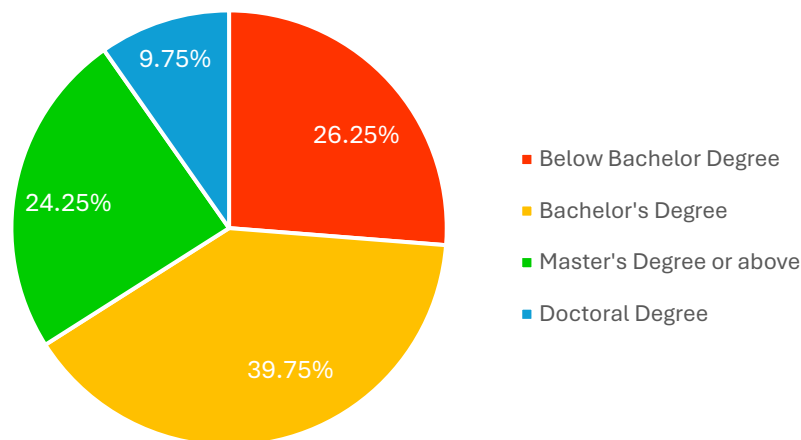


Figure 7 Education

Figure 7, the status is classified into four types. First, Bachelor's Degree was (159), 39.75%, Followed by Below Bachelor's Degree at (105), 26.25%, Master's Degree or above at (97), 24.25%, and Doctoral Degree at (39), 9.75%. These were customers who used an express delivery company in Kunming, People's Republic of China. Most of the respondents were 400 customers.

### Occupation

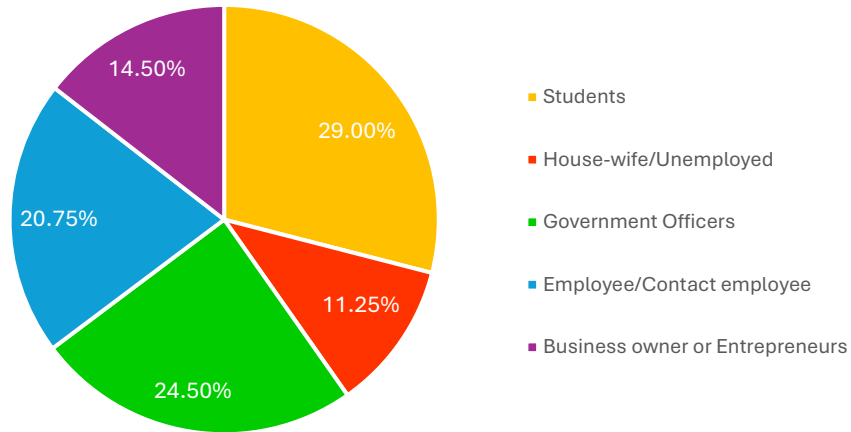


Figure 8 Occupation

Figure 8, the occupation is classified into five types. First, students were (116),29.00%, Followed by at (980,24.50%, Employee/ Contact employee at (83)20.75%, business owners or entrepreneurs at (58),14.50%, and the least, house-wife/unemployed at (45), 11.25%. These were customers who used an express delivery company in Kunming, People's Republic of China. Most of the respondents were 400 customers.

### Income per month

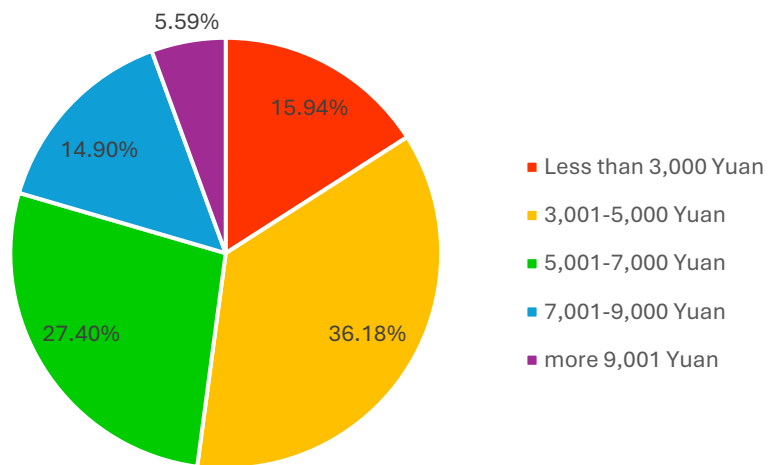


Figure 9 Income per month

Figure 9, Income per month is classified into five types. First, 3,001-5,000 Yuan were (136),34.00%, Followed by 5,001-7,000 Yuan were (103),25.75%, Less than 3,000 Yuan were (84), 14.98%, 7,001-9,000 Yuan were (56), 14.00%, and the least, more 9,001 Yuan were (21), 5.25%. These were customers who used an express delivery company in Kunming, People's Republic of China. Most of the respondents were 400 customers.

What media did you know about the company?

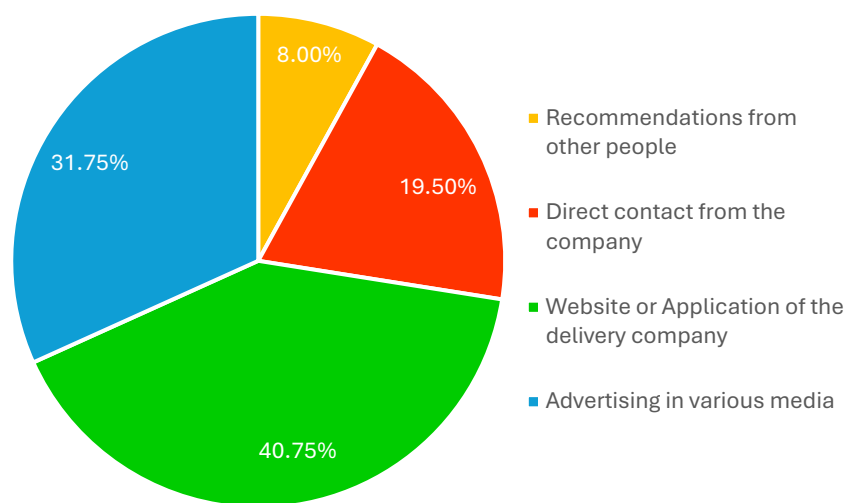


Figure 10 The media published information about the company

Figure 10, The media published information about the company is classified into four types. First, Website or Application of the delivery company were (163), 40.75%, Followed by Advertising in various media were (127), 31.75%, direct contact from the company were (78), 19.50%, and recommendations from other people were (32), 8.00%. These were customers who used an express delivery company in Kunming, People's Republic of China. Most of the respondents were 400 customers.

### Period of using the company's services

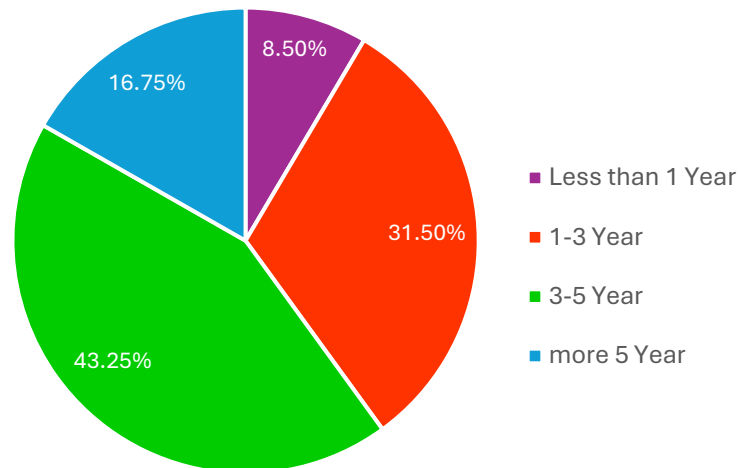


Figure 11 Period of using the company's services

Figure 11, Period of using the company's services is classified into four types. First, 3-5 Year were (173), 43.25%, Followed 1-3 Year were (126), 31.50%, more 5 Year were (67), 16.75%, and the least, Less than 1 Year were (34), 8.50%. These were customers who used an express delivery company in Kunming, People's Republic of China. Most of the respondents were 400 customers.

## 4.2 Part 2 Result

### 4.2.1 Analysis result of research objective 1

1) To study the importance level of implementing quick response and supply chain efficiency toward customer satisfaction by using an express delivery Company in Kunming, the People's Republic of China.

Table 3 Descriptive statistic analysis of quick response

<b>1. Quick response</b>	<b>Mean</b>	<b>S.D.</b>	<b>Level of importance</b>
1.1 Information technology and websites have been introduced to the world, which can assist in managing businesses	4.24	0.678	Very highly
1.2 The company has access to various channels through which they can provide information. These channels are used to share information quickly and efficiently	4.26	0.699	Very highly
1.3 The company focuses on providing fast service to its customers and network/partners	4.25	0.703	Very highly
1.4 The staff members are very enthusiastic and always willing to provide assistance	3.97	0.698	high
1.5 The company utilizes technology to enhance customer service quality	4.28	0.656	Very highly
1.6 The express delivery service will have a more efficient network infrastructure due to innovative solutions implemented by the company	4.31	0.663	Very highly
1.7 Business partnerships and joint ventures can help companies operate more efficiently and at a faster pace	4.32	0.653	Very highly
1.8 The company places great importance on ensuring accuracy in the preparation of goods declarations and other related documents for their customers	4.23	0.648	Very highly
<b>Total average</b>	<b>4.23</b>	<b>0.476</b>	<b>Very highly</b>

According to Table 3, quick response is very highly important. The total average score was 4.23 with a standard deviation of 0.476. which indicates a very highly level of importance. When analyzing the factors, it was found that business partnerships and joint ventures can help companies operate more efficiently and at a faster pace were the most important factors, with a mean score of 4.32 and a standard deviation of 0.653. Following this, the express delivery service will have a more efficient network infrastructure due to innovative solutions implemented by the company, with a mean score of 4.31 and a standard deviation of 0.663. Lastly, The company utilizes technology to enhance customer service quality, with a mean score of 4.28 and a standard deviation of 0.656.

Table 4 Descriptive statistic analysis of supply chain efficiency

<b>2. Supply chain efficiency</b>	<b>Mean</b>	<b>S.D.</b>	<b>Level of importance</b>
2.1. Management process is key in overseeing and regulating the transportation of goods from origin to destination	4.25	0.576	Very highly
2.2. The product distribution of the company you use is speedy and efficient.	4.24	0.584	Very highly
2.3. The parcel delivery company you choose to use has a good reputation and image	4.32	0.631	Very highly
2.4 Customers have the option to check the transportation routes available for availing services through any channel they prefer	4.25	0.648	Very highly
2.5 The parcel delivery companies that you choose to use provide safe and damage-free delivery of your parcels	4.29	0.626	Very highly
2.6 The company has consolidated its services to a single point in order to offer customers greater convenience	4.33	0.661	Very highly

Table 4 (continued)

<b>2. Supply chain efficiency</b>	<b>Mean</b>	<b>S.D.</b>	<b>Level of importance</b>
2.7 The focus to provide automated services using modern tools, which results in saving time and valuable resources	4.30	.653	Very highly
2.8 The service staff is friendly and leaves a positive impression on service recipients	4.15	.687	High
<b>Total average</b>	<b>4.27</b>	<b>0.633</b>	<b>Very highly</b>

According to Table 4, supply chain efficiency is very highly important. The total average score was 4.27 with a standard deviation of 0.633. which indicates a very highly level of importance. When analyzing the factors, it was found that the company has consolidated its services to a single point in order to offer customers greater convenience, with a mean score of 4.33 and a standard deviation of 0.661. Following this, the parcel delivery company you choose to use has a good reputation and image, with a mean score of 4.32 and a standard deviation of 0.631. Lastly, the focus is to provide automated services using modern tools, which results in saving time and valuable resources, with a mean score of 4.30 and a standard deviation of 0.653.

Table 5 Descriptive statistic analysis of customer satisfaction

<b>3. Customer satisfaction</b>	<b>Mean</b>	<b>S.D.</b>	<b>Level of importance</b>
3.1 The staff providing the service is friendly, and they leave a positive and favorable impression	4.25	.576	Very highly
3.2 The company's staff is willing to provide assistance beyond the service process.	4.24	.584	Very highly
3.3 The service provided by the company's employees is in compliance with the standards and expectations	4.32	.631	Very highly
3.4 I am pleased with the company's prompt delivery of their products	4.25	.648	Very highly
3.5 Customers who use the parcel delivery service are content with its performance	4.29	.626	Very highly
3.6 Please rate your satisfaction with the efficiency of the employees providing the service	4.33	.660	Very highly
3.7 I am pleased with the affordable prices offered for express delivery services	4.30	.653	Very highly
3.8 I am pleased to be using the express delivery service again	4.15	.687	Very highly
<b>Total average</b>	<b>4.28</b>	<b>.506</b>	<b>Very highly</b>

According to Table 5, customer satisfaction is very highly important. The total average score was 4.28 with a standard deviation of 0.506. which indicates a very highly level of importance. When analyzing the factors, it was found that please rate your satisfaction with the efficiency of the employees providing the service, with a mean score of 4.33 and a standard deviation of 0.660. Following this, the service provided by the company's employees is in compliance with the standards and expectations, with a mean score of 4.32 and a standard deviation of 0.631. Lastly,

customers who use the parcel delivery service are content with its performance, which results in saving time and valuable resources, with a mean score of 4.29 and a standard deviation of 0.626.

## 2) Analysis result of research objective 2

The result of the analysis is the impact of quick response and supply chain efficiency on customer satisfaction using the express delivery companies in Kunming, China.

Table 6 shows that quick response and efficient supply chain have a direct and indirect impact on customer satisfaction.

Independent	Co-efficient	Dependent					
		Supply chain efficiency			Customer satisfaction.		
		TE	DE	IE	TE	DE	IE
Quick response	b	0.34**	0.34**	-	0.99**	0.99**	0.003**
	S.E.	0.02	0.02	-	0.06	0.07	0.07
	$\beta$	0.40	0.40	-	0.95	0.06	0.99
Supply chain efficiency	b	-	-	-	0.01	0.01	-
	S.E.	-	-	-	0.06	0.06	-
	$\beta$	-	-	-	0.15	0.54	-
R <sup>2</sup>		0.1161			0.9890		
Adjust R <sup>2</sup>		0.1143			0.9889		
Conformity index		$\chi^2 = 0.01$ , RMSEA = SRMR/RMR = 0.05-0.08					

From Table 6, in summary, based on empirical data, it has been found that quick response and supply chain efficiency have a direct and positive impact on customer satisfaction. These factors explain 98% of the variance in customer satisfaction. The quick response has a significant positive impact on customer satisfaction at the significance level of 0.01. Similarly, supply chain efficiency also has a positive statistically significant influence on customers at the significance level of 0.01. Additionally, supply chain efficiency has an indirect effect on customer satisfaction.

the index of mean square residuals  $RMSEA = SRMR/RMR = 0.05-0.08$ , suggest indirect effects through supply chain efficiency.

The results showed that quick response had directly influenced customer satisfaction, with a path coefficient equal to 0.991, followed by quick response directly influenced supply chain efficiency, with a path coefficient equal to 0.341, and the last supply chain efficiency directly influenced customer satisfaction, with a path coefficient equal to 0.009 of customers using express delivery companies. as Figure 12

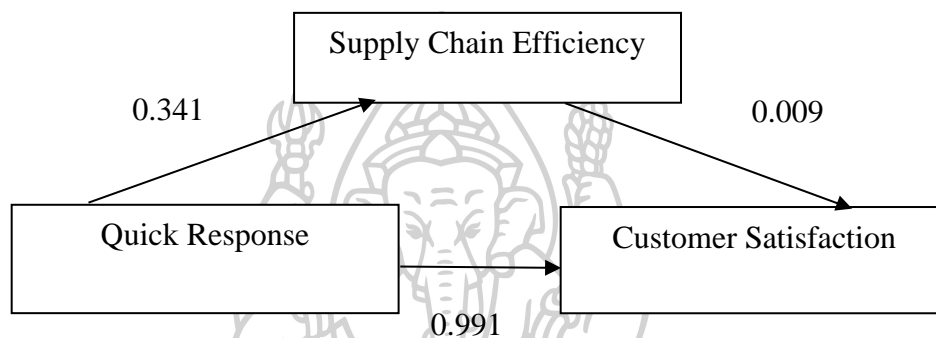


Figure 12 The result of path analysis

### 3) Analysis result of research objective 3

Analysis result of objective 3 The model of the causal factors influencing the quick response and the supply chain efficiency on customer satisfaction using the express delivery companies in Kunming, China.

According to research, customer satisfaction when using express delivery companies is influenced by several factors. These factors include quick response, which involves meeting customer needs, and efficient supply chains. By prioritizing these factors, companies can gain several benefits, such as cost savings, faster delivery times, higher customer satisfaction, and increased competitiveness in the market. To achieve this, companies continuously strive to improve their supply chain efficiency through technology adoption, process improvements, and strategic partnerships. Therefore, if entrepreneurs focus on quick response through supply chain efficiency, it will result in a customer satisfaction model that highlights the causal factors influencing customer satisfaction. as Figure 13.

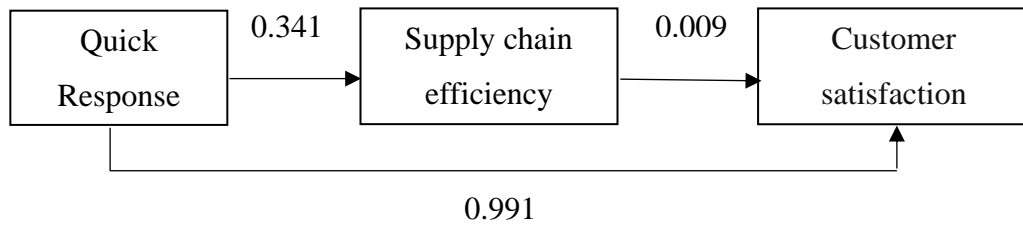
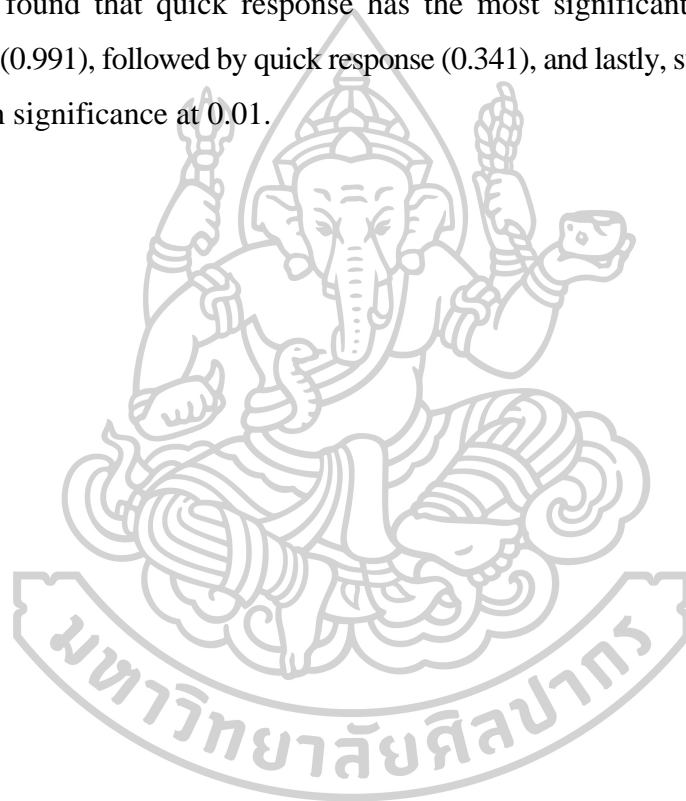


Figure 13 The model of the causal factors influencing customer satisfaction

From Figure 6 The model of the causal factors influencing customer satisfaction found that quick response has the most significant effect on customer satisfaction (0.991), followed by quick response (0.341), and lastly, supply chain efficiency (0.009), with significance at 0.01.



## **CHAPTER 5**

### **CONCLUSIONS**

This final chapter will be covers the summary of this study and seeks to propose some recommendations for future studies that can be conducted to expand on this research.

#### **5.1 The Results of Research Objective 1**

To study the importance level of implementing quick response and supply chain efficiency toward customer satisfaction by using an express delivery Company in Kunming, the People's Republic of China. The results of this study indicate that there are 24 components of a total of three variables, summarized in importance from the perspective of Chinese consumers who have experience using an express delivery company in Kunming as follows:

5.1.1 The quick response is very highly implementation. The total average score was 4.23 with a standard deviation of 0.476. which indicates a very highly level of importance. When analyzing the factors, it was found that business partnerships and joint ventures can help companies operate more efficiently and at a faster pace were the most important factors, with a mean score of 4.32 and a standard deviation of 0.653. Following this, the express delivery service will have a more efficient network infrastructure due to innovative solutions implemented by the company, with a mean score of 4.31 and a standard deviation of 0.663. Lastly, The company utilizes technology to enhance customer service quality, with a mean score of 4.28 and a standard deviation of 0.656.

5.1.2 The supply chain efficiency is very highly important. The total average score was 4.27 with a standard deviation of 0.633. which indicates a very highly level of importance. When analyzing the factors, it was found that the company has consolidated its services to a single point in order to offer customers greater convenience, with a mean score of 4.33 and a standard deviation of 0.661. Following this, the parcel delivery company you choose to use has a good reputation and image, with a mean score of 4.32 and a standard deviation of 0.631. Lastly, the focus is to

provide automated services using modern tools, which results in saving time and valuable resources, with a mean score of 4.30 and a standard deviation of 0.653.

5.1.3 The customer satisfaction is very highly important. The total average score was 4.28 with a standard deviation of 0.506. which indicates a very highly level of importance. When analyzing the factors, it was found that please rate your satisfaction with the efficiency of the employees providing the service, with a mean score of 4.33 and a standard deviation of 0.660. Following this, the service provided by the company's employees is in compliance with the standards and expectations, with a mean score of 4.32 and a standard deviation of 0.631. Lastly, customers who use the parcel delivery service are content with its performance, which results in saving time and valuable resources, with a mean score of 4.29 and a standard deviation of 0.626.

## **5.2 The Result of Research Objective 2.**

5.2.1 To study the impact of quick response and supply chain efficiency on customer satisfaction using the express delivery companies in Kunming, China.

These findings suggest that quick response and supply chain efficiency have a direct and positive impact on customer satisfaction. These factors explain 98% of the variance in customer satisfaction. The quick response has a significant positive impact on customer satisfaction at the significance level of 0.01. Similarly, supply chain efficiency also has a positive statistically significant influence on customers at the significance level of 0.01. Additionally, supply chain efficiency has an indirect effect on customer satisfaction. the index of mean square residuals  $RMSEA = SRMR/RMR = 0.05-0.08$ , suggest indirect effects through supply chain efficiency.

The results showed that quick response had directly influenced customer satisfaction, with a path coefficient equal to 0.991, followed by quick response directly influenced supply chain efficiency, with a path coefficient equal to 0.341, and the last supply chain efficiency directly influenced customer satisfaction, with a path coefficient equal to 0.009 of customers using express delivery companies.

### **5.3 The Result of Research Objective 3**

5.3.1 The model of the causal factors influencing the quick response and the supply chain efficiency on customer satisfaction using the express delivery companies in Kunming, China.

5.3.2 The model of the causal factors influencing customer satisfaction found that quick response has the most significant effect on customer satisfaction (0.991), followed by quick response (0.341), and lastly, supply chain efficiency (0.009), with significance at 0.01.

### **5.4 The Result of Research Question**

5.4.1. According to the research, customer satisfaction is the most crucial factor compared to other freelancers. As a result, service business owners must prioritize creating guidelines to ensure maximum satisfaction among service users. Fast response and efficient supply chain management should also be given importance.

5.4.2 Customer satisfaction is a crucial aspect of any business that aims to achieve long-term success. Satisfied customers are more likely to make repeat purchases, spend more, and even refer new customers to a business. Positive customer experiences not only boost customer loyalty but also contribute to a strong brand reputation, which can attract new customers and enhance credibility in the market. Businesses that prioritize customer satisfaction often outperform their competitors by attracting and retaining more customers. This, in turn, leads to increased profitability, sustainable growth, and a stronger position in the marketplace. Therefore, businesses should strive to provide the best possible customer experience to achieve higher levels of customer satisfaction.

5.4.3 The find a model of quick response and supply chain efficiency on customer satisfaction using express delivery to achieve customer satisfaction through Express Delivery companies in Kunming, it is crucial to establish a model of quick response and supply chain efficiency. This requires a focus on internal management systems to ensure supply chain efficiency, which is a key factor that connects quick response to customer satisfaction. Due to competition, Express Delivery operators must prioritize these aspects to excel in the market.

## 5.5 Conclusion

The results of the research concluded that objective 1, To study the importance level of implementing quick response and supply chain efficiency toward customer satisfaction by using an express delivery Company in Kunming, the People's Republic of China. Customer satisfaction is very important. The total average score was 4.28 with a standard deviation of 0.506, which indicates a very highly level of importance. The supply chain efficiency is very highly important. The total average score was 4.27 with a standard deviation of 0.633. The quick response is very highly implementation. The total average score was 4.23 with a standard deviation of 0.476. All factors were of descending importance.

The results of the research concluded that objective 2, the quick response, had directly influenced customer satisfaction, with a path coefficient equal to 0.991, followed by quick response directly influenced supply chain efficiency, with a path coefficient equal to 0.341, and the last supply chain efficiency directly influenced customer satisfaction, with a path coefficient equal to 0.009 of customers using express delivery companies. These factors explain 98% of the variance in customer satisfaction. The quick response has a significant positive impact on customer satisfaction at the significance level of 0.01. Similarly, supply chain efficiency also has a positive statistically significant influence on customers at the significance level of 0.01.

The results of the research concluded that objective 3, the model of the causal factors influencing customer satisfaction, found that quick response has the most significant effect on customer satisfaction (0.991), followed by quick response (0.341), and lastly, supply chain efficiency (0.009), with significance at 0.01.

## 5.6 Provide Responses to Research Inquiries

Data collection for this research was conducted over a period of one month, but only 400 responses were received. The study focuses on express delivery companies, which is just one business model in the transportation industry. Even though it is a small and medium-sized business, it is still significant. However, this is also a limitation of the research since the express delivery service is vast and has many complex factors that need to be considered. To expand the results of this research and cover express delivery issues more comprehensively, the researcher

should collect information from all types of transport business operators. This information will help in planning strategies to ensure that the overall express delivery service remains competitive.

### **5.7 Suggestions for Future Study**

As a suggestion for future research, it is highly recommended to investigate the impact of quick response on customer satisfaction, which holds a high significance level of 0.991. Therefore, it is crucial for express delivery service operators to develop guidelines or strategies for quick response to create customer satisfaction and build strong relationships with business partners. This will ultimately lead to the diversification of service businesses and result in electronic word of mouth, which will help in building customer loyalty towards the service.

### **5.8 Implications**

Entrepreneurs, partners, and managers, including branch managers, in express delivery companies need to focus on improving supply chain efficiency. This is because customers expect more from express delivery operations and entrepreneurs must adjust their systems to meet these expectations in order to remain competitive. The system needs to be flexible and fast in providing services, and companies should also prepare for future international joint ventures.

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**APPENDIX**



**Questionnaire**

**Research Title**

**Effect of Quick Response and Supply Chain Efficiency Toward Customer Satisfaction to Use Express Delivery Company in Kunming, People's Republic of China**

This questionnaire is divided into three parts, which are as follows:

**Part 1.** Demography

**Part 2 .** To study the importance level of quick response, supply chain efficiency, and customer satisfaction to use the express delivery company in Kunming, People's Republic of China

**Part 3 .** Suggestions about quick response and supply chain efficiency toward customer satisfaction to use the express delivery company in Kunming.

Please respond to all items Researcher

QIHAN LI

Student ID.....

Master's Degree Program in Engineering Management

Department of Industrial Engineering and Management

Graduate School, Silpakorn University

**Instruction:** Please tick (✓) in the  that represents the fact.

**Part 1:** Demography of customers who use the express delivery company in Kunming

**1. Gender** 1.  Males

**2. Age**

1.  Under 20 Years
2.  20 – 29 Years
3.  30 – 39 Years
4.  40 – 49 Years
5.  50 Years or older

**3. Status**

1.  Single
2.  Merited
3.  Separated
4.  Divorce

**4. Education**

1.  Below Bachelor Degree
2.  Bachelor's Degree
3.  Master's Degree
4.  Doctoral Degree
5.  Other (Please specify).....

**5. Occupation**

1.  Students
2.  House-wife/unemployed
3.  Government officers
4.  Employee/Contact employee
5.  Business owners or entrepreneurs

**6. Income per month**

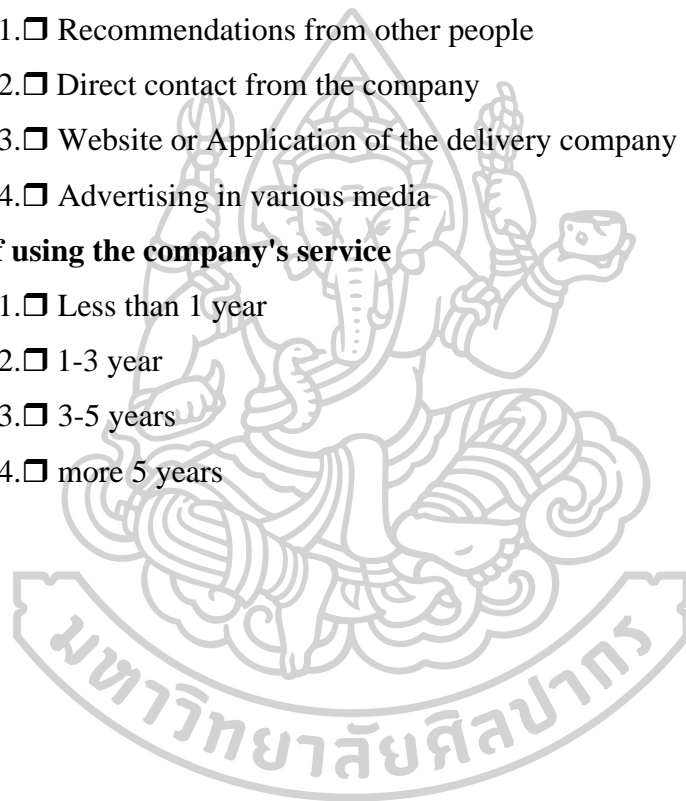
1.  Less than 3,000 Yuan
2.  3,001-5,000 Yuan
3.  5,001-7,000 Yuan
4.  7,001-9,000 Yuan
5.  more 9,001 Yuan

**7. What media did you know about the company?**

1.  Recommendations from other people
2.  Direct contact from the company
3.  Website or Application of the delivery company
4.  Advertising in various media

**8. Period of using the company's service**

1.  Less than 1 year
2.  1-3 year
3.  3-5 years
4.  more 5 years



**Part 2.** To study the importance level of implementing quick response and supply chain efficiency toward customer satisfaction by using an express delivery Company in Kunming, the People's Republic of China.

**Instruction:** Please tick (✓) in the columns that represent the fact.

Item	Level of important				
	5 Very High	4 High	3 Moderate	2 Low	1 Very Low
<b>Quick response</b>					
1. Information technology and websites have been introduced to the world, which can assist in managing businesses					
2. The company has access to various channels through which they can provide information. These channels are used to share information quickly and efficiently					
3. The company focuses on providing fast service to its customers and network/partners					
4. The staff members are very enthusiastic and always willing to provide assistance					
5. The company utilizes technology to enhance customer service quality					
6. The express delivery service will have a more efficient network infrastructure due to innovative solutions implemented by the company					
7. Business partnerships and joint ventures can help companies operate more efficiently and at a faster pace					
8. The company places great importance on					

Item	Level of important				
	5 Very High	4 High	3 Moderate	2 Low	1 Very Low
ensuring accuracy in the preparation of goods declarations and other related documents for their customers					
<b>Supply chain efficiency</b>					
1. Management process is key in overseeing and regulating the transportation of goods from origin to destination					
2. The product distribution of the company you use is speedy and efficient.					
3. The parcel delivery company you choose to use has a good reputation and image					
4. Customers have the option to check the transportation routes available for availing services through any channel they prefer					
5. The parcel delivery companies that you choose to use provide safe and damage-free delivery of your parcels					
6. The company has consolidated its services to a single point in order to offer customers greater convenience					
7. The focus to provide automated services using modern tools, which results in saving time and valuable resources.					
8. The service staff is friendly and leaves a positive impression on service recipients					
<b>Customer satisfaction</b>					
1. The staff providing the service is friendly,					

Item	Level of important				
	5 Very High	4 High	3 Moderate	2 Low	1 Very Low
and they leave a positive and favorable impression					
2. The company's staff is willing to provide assistance beyond the service process.					
3. The service provided by the company's employees is in compliance with the standards and expectations					
4. I am pleased with the company's prompt delivery of their products					
5. Customers who use the parcel delivery service are content with its performance					
6. Please rate your satisfaction with the efficiency of the employees providing the service.					
7. I am pleased with the affordable prices offered for express delivery services					
8. I am pleased to be using the express delivery service again					

**Part 3** Suggestions about quick response, supply chain efficiency, and customer satisfaction by using an express delivery Company in Kunming, the People's Republic of China.

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**VITA**

**NAME**

Qihan LI

