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Service Model Innovation for Public Administration: A Case Study of Guizhou Entry-Exit Inspection and Quarantine Bureau

ZHU Qingqing

Thesis submitted as partial requirement for the conferral of the degree of

Doctor of Management

Supervisor:

Professor Elsa Cardoso, ISCTE-IUL, University Institute of Lisbon

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Professor He Zheng, University of Electronic Science and Technology of China, School of Management and Economics

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Abstract

Currently, the enormous amount of merchandise trade in China brings about a huge demand for more efficient inspection and quarantine services. Due to the rigidity from planning economy, many public administrations still behave like before and their traditional managerial models cannot meet the fast development of the Chinese economy. Therefore how to provide more efficient and qualified services for the trading enterprises has become a big challenge to all Chinese Entry-exit Inspection and Quarantine Bureaus (CIQ). The objective of this thesis is to explore an innovative service model for CIQ to provide better and more efficient services to the trading enterprises. There are altogether six chapters and multiple approaches including empirical study and case study are employed to collect required data and to do theoretical analysis. After the introduction of the history and functions of four Chinese provincial CIQ, a large-scale empirical investigation was done to assess the performance of CIQ and to collect the requirements of trading enterprises. Then based on the results of the empirical study, and taking Guizhou CIQ as a case, this thesis suggested to establish an Entry-exit Inspection and Quarantine Service Center (EIQSC) to meet the market demands. A public-private partnerships (PPP) model was suggested to address the ownership issue of the EIQSC and its business model was also analyzed. In particular, four components including value proposition, strategy positioning, key activities, and profiting model were discussed in detail. Finally, the implications of EIQSC were discussed especially its application in other provinces of China.

Key words: Service model innovation, Public administration, Chinese Entry-exit Inspection and Quarantine Bureau (CIQ), Public–private partnerships (PPP), Business model

JEL Classification: H19, H43

Resumo

A atual vasta quantidade de comércio de mercadorias na China determina a elevada procura por serviços de inspeção e quarentena mais eficientes. Muitas administrações públicas ainda se comportam como antigamente, devido à rigidez da economia de planeamento, e os seus modelos de gestão tradicionais não se adaptam ao rápido desenvolvimento da economia Chinesa. Consequentemente, um dos grandes desafios de todas as Agências de Quarentena e Inspeção de Entrada-saída (CIQ) Chinesas tem sido como fornecer serviços mais eficientes e qualificados às empresas de comércio. O objectivo desta tese é explorar um modelo de serviços inovador para as CIQ de forma a fornecer melhores e mais eficientes serviços às empresas de comércio. A tese está estruturada em seis capítulos contendo múltiplas abordagens, incluindo um estudo empírico e um estudo de caso, para a recolha dos dados necessários e realização da análise teórica. Após a introdução do enquadramento histórico e das funções de quatro CIQ de províncias Chinesas, foi realizado uma investigação empírica de larga-escala para avaliar o desempenho das CIQ e para recolher os requisitos das empresas de comércio. Seguidamente, com base nos resultados do estudo empírico, e tomando como exemplo a CIQ de Guizhou, foi sugerido nesta tese a criação de um Centro de Serviços de Quarentena e Inspeção Entrada-saída (EIQSC) para fazer face às necessidades do mercado. Foi sugerida a utilização do modelo de parcerias público-privadas (PPP) para o EIQSC, tendo o seu modelo de negócio sido igualmente analisado. Em particular, quatro componentes foram discutidas em detalhe: proposta de valor, posicionamento estratégico, atividades chave e modelo de lucro. Por fim, foram discutidas as implicações do EIQSC, especialmente a sua aplicação em outras províncias da China.

PALAVRAS-CHAVE: Inovação do modelo de serviço, Administração pública, Agência de Quarentena e Inspeção de Entrada-saída (CIQ) Chinesa, Parcerias público-privadas (PPP), Modelo de negócio

Classificação JEL: H19, H43

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Thank you!

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Chapter 1:Introduction

1.1 Research Background

According to World Trade Organization (WTO), China has been the largest merchandise trade country in the world since 2013. As exhibited in Table 1-1, the total amount of merchandise trade in China reached more than $47000 billion in 2016, accounting for 14.76% of world total amount of trade. Beside China, nearly all main trade countries in the world like United States (US), Germany, Japan, France, and Holland all exhibit decreasing trend in the last three years, showing the weakening of the world market. In addition to the impact of global economy, China is also experiencing the industrial structure upgrade, especially for the energy source industry in which the supply largely surplus the demand.

Table 1-1 The total amount of merchandise trade in the world (unit: billion USD $)

Country	2016		2015		2014	
	Trade	Rank	Trade	Rank	Trade	Rank
China (Mainland & H.K.)(H.K.Hongkong)	4749.66	1	5039.56	1	5426.20	1
US	3705.96	2	3817.87	2	4033.08	2
Germany	2394.54	3	2378.16	3	2701.65	3
Japan	1251.86	4	1272.77	4	1502.40	4
France	1074.29	5	1079.19	7	1257.07	6
Holland	1073.12	6	1082.93	6	1262.11	5
United Kingdom	1045.16	7	1086.52	5	1195.67	7
South Korea	901.62	8	963.26	8	1098.18	8
Italy	865.97	9	868.49	9	1004.09	9

Sources: World Trade Organization

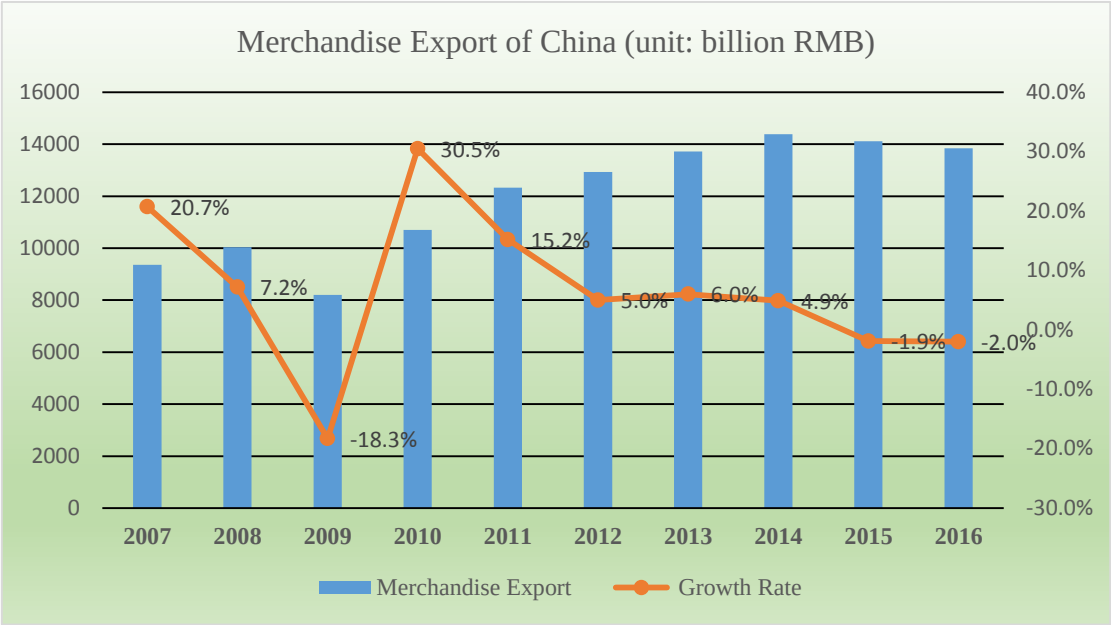

Figure 1-1 Merchandise Export of China: 2007-2016

Source: China Statistical Yearbook (2007-2016)

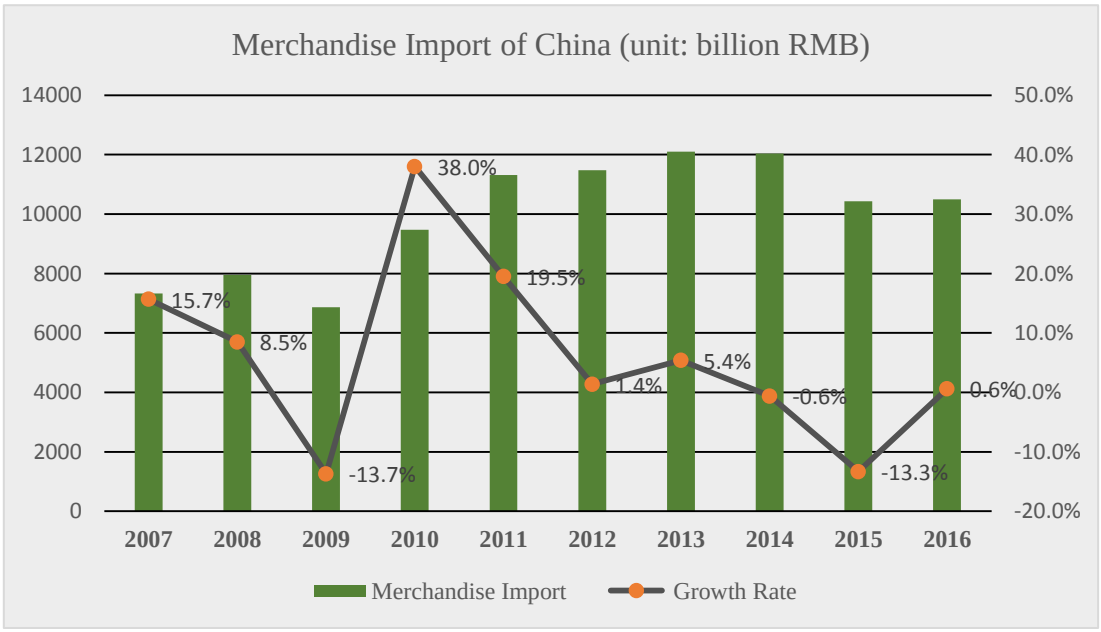

Figure 1-2 Merchandise import of China: 2007-2016

Source: China Statistical Yearbook (2007-2016)

In details, from the merchandise export and import of China in Figures 1-1 and 1-2, we may find that growth rate lines are very similar, illustrating “V” shapes for both export and import, with the lowest rate in 2009 and highest one in 2010. The amount of export or import

both had sharply drops in 2009, reflecting the huge influences of financial crisis in 2008. After 2010, both the export and import mainly show the decreasing trends, in which the growth rates of export first experienced sharp dropping from the highest point 30.5% to 5% and then kept on that level for three years before decreasing to the negative value. By contrast, the growth rates of import also dropped quickly from peak value 38.0% in 2010 to 1.4% in 2012. However, different from the export, the import of China showed a recover in 2016, stopping the continuous dropping tendency.

1.2 Significance of Chinese Entry-exit Inspection and Quarantine Bureau (CIQ)

This enormous amount of merchandise trade in China also brings about the huge demand of the inspection and quarantine. Therefore how to provide more efficient and qualified services for the trading enterprises has become a big challenge to all Chinese Entry-exit Inspection and Quarantine Bureaus. Under transitional economy in China from planning to market economies, enterprises are the central of the market while government has to reposition its role and status. At present, due to the rigidity from planning economy, many public administrations still behave like before and their traditional managerial models cannot meet the fast development of Chinese economy, especially various enterprises' needs. The following are several cases (all information are from the "Journal of China Inspection and Quarantine") that may show the current situation for entry-exit products as well as the importance to improve inspection and quarantine activities.

Example 1: in the first two months of 2014, foreign companies returned 143 batches of export electromechanical products made in Ningbo with value of 6.137 million dollars. Compared with the same period of last year, it was increased about 24.50%, accounting for 81.70% and 89.60% of all returned goods, respectively. Mechanical and electrical products have become the main return commodities, in which small household appliances were in the majority, involving many defaults in terms of safety, health, environmental protection and other issues. These return products were from 119 export-oriented manufactures in Ningbo. Return countries were mainly in Europe and US, including Germany, Canada, France, United Kingdom, covering about 30 countries and regions, showing an increasing trend in North

America but decreasing ratio in Asia and Europe. Among them, the electromechanical products returned by Europe totally valued 2.43 million dollars, accounting for 39.60 % of all the returned products and had with came down 8% by the last year. The returned goods by Asian countries were worth 822 thousand dollars, declining 65% to the last year. However, the return products from North America reached 2.24 million dollars with surprising 89.0% year-on-year growth, in which the US occupied the largest ratio of returns, accounting for 22.60% of the total value and increasing 32.70% to 2013. From the product category, the main returned products were home appliances, lamps, information equipment, lifting and conveying devices, and general machinery, in which small home appliances, such as iron, water dispenser and electric kettle accounted for the largest proportion of 38.20% with value of 2.34 million dollars. Followed by small home appliances were the lamp products including LED and outdoor lamps with the value of 854 thousand dollars, accounting for 13.90% of the total return goods. Additionally, the return equipment in information sector mainly included the remote control, plastic transistor and so on. And the return hoisting and conveying devices included jack and excavator fittings. This example in Ningbo shows how popular and serious for the return issues in Ningbo, which are related to many sectors rather than one or two specific products.

Example 2: At the beginning of 2012, Zhongshan Inspection and Quarantine Bureau provided a special inspection for an enterprise's export tableware according to the EU standards and found that the amount of melamine and formaldehyde were largely exceeded the requirements. However, the company was confident about the quality of their products and questioned the test results. Finally the inspection and quarantine technical in Zhongshan CIQ found since the products were labeled -20℃~120℃, the test was implemented under the strictest environment (120℃) on the basis of EU 10/2011/EC regulation. Consequently, there was no doubt that melamine products cracked and the amount of melamine and formaldehyde was bound to exceed. The CEO argued the testing method and he pointed out that indeed the product could not really be used in such a high temperature like 120℃. The export in CIQ patiently explained that the new EU regulations had a clear regulation on food contact products, that is, all plastic products must be tested under the extreme conditions. After

understanding the requirements, the CEO immediately terminate the export of unqualified tableware and prevent the later transportation loss and actively communicated with customers to change the product identification. Indeed, EU and some other countries have very strict technical regulations on food contact plastic products, requiring the testing to be carried out in the harshest environment. This example exhibits the importance of thorough understanding the different countries' regulations, showing the lack of inspection information for the export enterprises.

Example 3: In April 2016, Taizhou CIQ informed the export return situation in the first quarter of 2015 and 2016 in Taizhou. In 2016, the total returned export industrial products in Taizhou was 435 batches worthy of 21.84 million dollars, with the growing rate of 13.58% and 3.13% respectively. From January to March of 2016, 140 batches of industrial products were returned, increasing 6.87% compared with the same period of last year. The returns of industrial products are mainly concentrated on mechanical and electrical, chemical and light industry, according to the investigation of Taizhou CIQ. Meanwhile, changes in export return country also indicated that though European and American markets are still dominant, the returns from emerging markets increased rapidly. Among them, the product quality was still the major factor for their returns. Furthermore, analysis of Taizhou CIQ showed that some companies even did not understand the product standards or their quality awareness is not enough, so that product quality did not meet the standards or contract requirements. Meanwhile, transportation factors are another main potential reason causing product returns, such as enterprise's carelessness, incomprehensive aftersales network and so on. Thus Taizhou CIQ reminded all export enterprises to enhance the quality control and to speed up upgrading product standards, paying more attention to the product pretest before export. Moreover, electronic enterprises should promptly establish an overseas after-sales service system, which can greatly reduce the transportation, warehousing and other costs in returning process.

From these examples, we may find that though China has been the largest trade country in the world, Chinese import and export enterprises still face many serious problems, in which CIQ as an official organization may play an important role on helping all enterprises to

enhance their global competitive advantages. Due to the rapid changes of international environment, the CIQ services are no longer meeting the demand of enterprises. Thus how to improve the performance of public administration has become an urgent problem for Chinese government. Thus far, many scholars have discussed this transition in public management domain (Nie, 2014; Meng, 2014; Wang, 2012; Zhen, 2013), but few studies explore this problem from business administration perspective, let alone service innovation. Indeed, to construct service–oriented government needs to change the current operation process completely and establish new service model to satisfy the enterprises' needs, which is the topic of this thesis.

1.3 Research Objective and Questions

The objective of this thesis is to explore an innovative service model for Chinese Entry-exit Inspection and Quarantine Bureau (CIQ) to provide better and more efficient services to the import and export enterprises, helping promote their sustainable development especially under the current external environment.

The main research questions are as follows:

(1) What are the current situation and operation models of the Entry-exit Inspection and Quarantine Bureau in China?

(2) To what extent does the current CIQ meet the demands of the trading enterprises?

(3) What are the expectations of the local enterprises for CIQ services?

(4) How to transfer CIQ from regulation government to a service-oriented government?

(5) How to innovate the service model of Entry-exit Inspection and Quarantine Bureau to satisfy the various demands of trade enterprises?

1.4 Structure of the Thesis

Figure 1-3 illustrates the structure of this thesis. Chapter 1 discusses the background and significance of the selected topic. It further summarizes the structure and methods in the research. The contributions of this study are presented in this chapter. Chapter 2 is the

literature review, showing the previous studies on public management theory, government innovation and their functional position.

Chapter 3 introduces the history and functions of CIQ. In particular, taking four provincial CIQ as examples, this chapter analyzes the relationship between CIQ service and the local economy development. Furthermore, the challenges of CIQ are explored to show the necessary requirements for CIQ innovation. At the end of this chapter, US Food and Drug Administration (FDA) is introduced to provide a benchmark or the reference to CIQ.

In Chapter 4, a large-scale empirical investigation is reported to assess the performance of CIQ and to collect the demand of trading enterprises. The aim of this empirical survey is to provide the direction to guide the reform of CIQ administration. Consequently, Chapter 5 focuses on the service model innovation of CIQ. Taking Guizhou CIQ as a case, this study proposes to establish an Entry-exit Inspection and Quarantine Service Center (EIQSC), in which public-private partnership (PPP) is suggested to address its ownership issue. Further, the business model of EIQSC is discussed according to the business model canvas. Especially the strategy position and profiting pattern are analyzed in details.

Finally, Chapter 6 further provides the implication of the proposed service center to other provinces. After that, conclusions of this study are drawn and limitations and further research are suggested at the end of thesis.

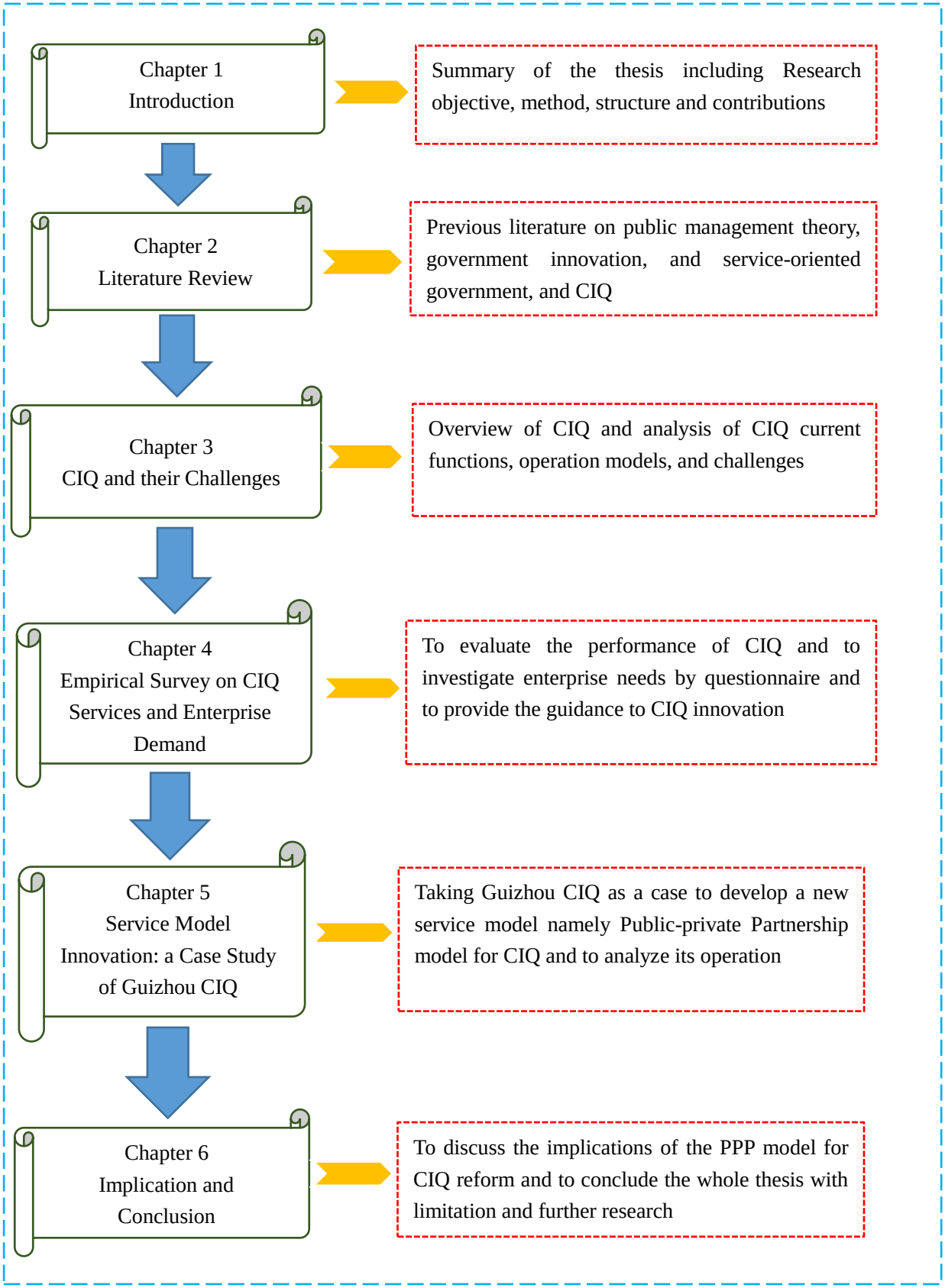

Figure 1-3 Structure and the logic of the thesis

Source: by the author

Chapter 2:Literature Review

2.1 Public Management Theory

2.1.1 New Public Management

Foreign research on public management began in the late seventies of the 20th century. For the various malpractices exposed by traditional control-oriented government, the public sector of western developed countries, such as Britain, the United States and New Zealand started to introduce the operation pattern of enterprise and market spirits into the public management field, attempting to use market force to transform and improve the performance of government. Subsequently, Japan, Canada, the Netherlands, France and other Organizations for Economic Cooperation and Development (OECD) countries also followed: this campaign is called the “new public management” (Zhou, 2008).

In this period, there have emerged a number of famous scholars with fruitful achievements. For example, Hood (1991) first proposes the concept of “new public management” he collectively considers the administrative reform that carried out by Britain and the other OECD countries after mid-seventies in the 20th century and emphasizes output oriented, performance evaluation, clear responsibility and market orientation as “new public management” (Hood, 1995). Pollitt (1995) proposes that the “new public management” is mainly made up of the management principle of classical Taylor doctrine developed in the early 20th century. It underlines the theory, method, technology and mode of business management and induces market competition mechanism to improve the quality of public management and public service (Zhou, 2008). Osborne and Gaebler (1992) reveal the drawbacks of the American bureaucracy, and put forward revolutionary ideas and measures that are characterized by new public management to reform the government, which sets off a wave of repudiating bureaucracy in academia (Wu, 2012).

To summarize, it can be said that the core content of the new public management theory is trying to put the approaches of private sector and commercial enterprise into public sector management and improve the quality of public goods through the "reinventing government"

to make citizens have more and better choices in the service supply and enable the government to regain the trust of citizens.

The distinctions between the new public management and the traditional public administration theory are as follows. First, the power center is different. For the former, government is the power center and moderately separates some powers to the society, however government is the only power center for the latter. Second, the main body of providing public service is different. The government provides all the former's public services; while the government undertakes part of the latter and a third party contracts the other part. Third, the results are different. Traditional management due to various defects will result in inefficient government operations and competition, environmental deterioration on the external relations of administrative system and crisis-ridden public service. However, the new public management will make up for these shortcomings to insure efficient operation and clear authority of government, and ultimately achieve the best combination of fairness and efficiency (Zhou, 2008).

2.1.2 New Public Service

Under the influence of new public management theory, scores of western countries begin the market-oriented reform of public service, for which the forms of renting government business contracts, establishing partnership between government department and private enterprise, making public service community, and selectively implementing the fee system to public service user are mainly taken. Although the reform about the new public management theory has played a great role in promoting the efficiency of government service and public satisfaction, it also gradually exposes some weak points. After entering the 21th century, based on the reflection and criticism to problems exposed by the new public management theory, a new theoretical model came into being - new public service theory. Janet and Robert in The New Public Service: Serving Not Steering first put this theory forward. They integrate some alternative views of the new public management theory and the basic contents in their book are: (1) government's function is to provide services, and not just to supervise; (2) the public interest is target rather than a by-product; (3) in thought, strategic thinking is needed, and in action democracy is needed; (4) service for the civil not for customer; (5) not simple

responsibilities and obligations; (6) pay attention to people not just to productivity; (7) civil rights and public service are more significant than entrepreneurial spirit (Robert and Janet, 2004). Theoretically, the new public service is essentially a discard of the new public management. It attempts to set up a new theory that highlights democratic values and public interests and is more suitable to modern social development and public management practice on the basis of recognizing the important value provided by new public management theory and getting rid of the inherent defects of new public management theory.

Since the end of 20th century, especially after China's accession to the World Trade organization (WTO), the reform of governmental administrative department and public service have attracted considerable attention and research. This reform not only introduced the theories and practices in western developed countries such as new public management theory and new public service movement to reconstruct the government, but also summarized the typical cases and successful experiences achieved in China, aiming to build service-oriented government (Lin, 2010). Thus Chinese scholars' researches on public service focus on the following aspects:

(1) Introducing, interpreting, comparing, or criticizing the theory and practice of western public service. In recent years, the new public service theory has gradually become the hot topic in China and many scholars have begun to introduce and explain to new public service theory. For example, Ding (2004) introduces the new public service theory by comparing the new public management theory and the new public service theory. Gu (2005) proposes some enlightenment to public service reform of our country, namely the humanism service idea, citizen-oriented public service, competition and privatization provided by public service, responsible government and service consciousness. Based on the theory of new public service, Hou (2004, 2005) puts up several methods to construct modern service-oriented government. It includes renewing the administrative concept, transforming government function, streamlining government institutions and so on. However, Zhou (2007) made a critical comment that the new public service theory has many prejudices or misunderstandings to entrepreneurial government theory, and the new public service is just a hypothesis rather than a theory.

(2) Promoting the transformation of government system and strengthening government's public service function. Chi (2005) believes that the transformation of government has become the center and focus of the next stage of reform in China, points out that the construction of public service-oriented government is the basic goal of government reform, and further puts forward some suggestions to set up service-oriented government. Wu (2003) argues that the nation should carry out political reform, construct constitutional procedures that have a clear definition of basic human rights and restrictions to the power of government, open governmental affairs and public information, and promote self-organized ability of community to build a service-oriented government. Gao and Liu (2005) discuss how to improve the quality of civil servants to meet the needs of constructing service-oriented government from political position, service consciousness, and sense of responsibility.

(3) Fostering innovation in public service and then promoting the diversification and marketization. Tang and Cao (2004) define the subjects of public service as government, non-profit organizations, voluntary organizations, mutual beneficial organizations, and even individual citizens, authoritative supply model, business model, voluntary model. Wu (2003) proposes to introduce competition mechanism into the development model of governmental public service. This measure encourages the government to innovate in the field of public service. For instance, the government makes a response in accordance with the needs of customers so that the customers have more choices. In this way, it is possible to reduce cost, save resources and improve the quality and efficiency of governmental public service. And in the marketization of public service, Liu (1999) considers government should gradually evolve from a commander into a server, enhance cooperation consciousness with society and enterprise, and promote the increasing ability of social integration.

2.2 Innovation

2.2.1 Definition

Innovation is a behavior that can obtain some useful results. It is guided by the idea, which is different from the ordinary people's thinking. It uses existing knowledge and materials in a specific environment in line with the needs of the idea or the society to improve

or create new things, methods, and paths in an environment. The essence of innovation is to break the stereotype and conventional precepts. The core of innovation activity is "new", which is the change of a product's structure, performance and external features, or is the creation of style design, contents, form and means, or is to enrich and improve the content (Wu et al., 2012, He, 2010). In philosophy, innovation is the practice or behavior of human, which is re-created as a result of the use of material world's contradiction. Humans create new contradictory relation through the re-creation of the material world, to form a new material form (Chesbrough, 2010).

Innovation is a conceptualization process, which characterized by new thinking, new invention and new description. It originated from Latin with three meanings, that is, to update, to create new things and to change things or ideas. Innovation plays an important role in the fields of economics, technology, sociology, architecture and so on. In economics, Schumpeter (1912) puts forward that innovation is making a new combination of production factors and production conditions to production systems. It includes five kinds of situations: the introduction of a new product; the introduction of a new method of production; opening up a new market; accessing a new source of supply of raw materials or semi-finished products and the new organizational form. Schumpeter's concept of innovation covers a wide range, it relates to technological innovation and non-technological innovation (such as organizational innovation).

In order to better understand innovation classification is needed because only then can we appreciate what is meant by new (Baden-Fuller and Haefliger, 2013). Innovation covers numerous areas, including politics, military, economy, society, culture, science, technology and other fields. Thus, innovation can be divided into scientific and technological innovation, cultural innovation, artistic innovation, business innovation, and so on.

Scientific and technological innovation is the source of the development of social productivity. Technological change always provides the impetus for new and better methods to meet people's requirements. It covers two aspects: the new discovery of natural science and the innovation of technological process. In modern society, universities and other research institutions are the main part of basic science and technology innovation, and enterprise is the

basic subject that applies engineering technology and technological innovation. Technological innovation exists in most advanced societies, which, is a satisfactory and natural reflection of the values of a technologically progressive society (Teece, 2010).

Enterprises are usually composed of production, procurement, marketing, service, technology research and development, finance, human resource management and other departments. So enterprise innovation includes product innovation, production process innovation, marketing innovation, enterprise culture innovation, and enterprise management innovation (Ahmed and Shepherd, 2010).

Inclusive growth has been widely considered as a target of public and business policy. Accordingly, a new concept of inclusive innovation emerges. George et al. (2012) define it as the development and implementation of new ideas, which aim at creating opportunities to boost social and economic wellbeing as well as performance outcome. First, it is acknowledged as the development and implementation of new ideas. Such definition includes all the innovative forms, whether these new ideas in terms of processes, products, institutions, services, business models, or supply chains have only a demand that they are novel to the situation (Schumpeter, 1934; Prahalad, 2006). Second, the opportunities for social and economic wellbeing are focused in understanding certain sections of society that have been prevented from winning happiness.

Innovation is the soul of a nation's progress and a driving force for the prosperity of a country, but could also be the source of the eternal vitality of a political party. Fruitful results achieved in the progress of human civilization in modern times is mainly due to scientific discovery, technological innovation and continuous improvement on engineering and technology which has been as a result of the advanced productive forces formed by the application of science and technology. It can be said that the human society from simple to complex or from primitive to modern, is a process of continuous innovation. Different nations have different speed, phase, and levels of development. The reason is that their innovative ability is diverse (Metcalfe, 2007). Ahmed and Shepherd (2010) stress that innovation is the key factor to strengthen connection between growth and prosperity, is the source of progress and development, is the tremendous impetus to bring rapid and healthy development, is the

best way to win the competition, is the vital factor for personal success, and is an inexhaustible motive force to promote national progress and social development. If a country wants to walk in the forefront of the times, it cannot do without creative thinking and cannot stop all kinds of innovation. It has been realized that companies which have been successful for some time run the risk to fail if they continue doing for too long what used to be right, without adapting their business model to changes in the competitive situation (Doz and Kosonen, 2010).

2.2.2 Business Model Innovation

2.2.2.1 Definition of Business Model

There are many definitions for business model. Typically, Timmers (1998) defined the business model as a framework to integrate product, service and information stream; Amit and Zott (2001) point out that business model describes the relationships among an enterprise and its partnership, especially the architectures, contents and rules of these relations; Magreta (2002) believe the business model needs to answer the following questions: Who are the customers? What is valuable to the customers? How to make money? Teece (2010) views a business model as the overall framework designs in terms of value creation, payment and profit mechanisms. In addition, a business model can also be regarded as a “market device” that can operate the businesses through empirical instrument or practices to make a decision. (Doganova and Eyquem-Renault, 2009). By contrast, Chesbrough and Rosenbloom (2002) believed that business model is a focusing device as well as a kind of innovation, which may mediate the technological innovation and economic development. They emphasized the coherent framework from providers to final customers.

Although the definitions of business model are different, there are still some consistent themes. As Zott et al. (2011) summarized, nearly all literature agrees that a business model is a new unit of analysis that highlights the system level, rather than the individual level, trying to explain the creation of value as well as the whole architecture design in which one or more firms may play critical roles in the business model. From the definitions of a business model, we found that during the beginning stage, studies on business model mainly stayed on the firm level, focusing on entrepreneurship and technology innovation. Gradually, some

researches have changed from firm level to network-embedded level (Bankvall, et al., 2016), showing the concern in business model is much broader than before.

2.2.2.2 Components of a Business Model

From the different definitions of business model, we found that various scholars regard business model from different perspective. A business model is a way by which the company transmits value to customers and further induces them to pay for the value to acquire profit, which only reflects on the financial and organizational structure of a business (Osterwalder and Pigner, 2010). Although, it might be well planted in a business project and in cash flow plans or income statements, it is not a computer model. Thus this notion refers to a conceptual model of the business creation value process of the organization, instead of a financial model of a business (Osterwalder and Pigner, 2010; Teece, 2010). Consequently, there are different understandings for the main components for the business model. Table 2-1 shows some typical ideas on business model components.

As shown in Table 2-1, though scholars considered business model from different perspective, there are still some common things for the component of business model, such as “value”, “structure”, “customer”, and “profit”. These may indicate that the core idea for business model is related to a systematic structure to make money through integrating customer’s need and all suppliers.

Table 2-1 Components for business model

Author	Main components for business model
Hamel (2000)	Customer interface, core strategy, strategic resources, value network
Mahadevan (2000)	Value stream, revenue stream, logistic stream
Mohr &Thomas (2001)	Procedure, customer, supplier, channel, resource, capability
Amit & Zott (2001)	Transaction content, transaction structure, transaction governance
Chesbrough (2003)	Target market, value proposition, internal value chain structure, cost and profit, value network, competitive strategy
Morris et al. (2005)	Factors related to offering, market factors, internal capability factors, economic factors, growth/exit factors
Mason and Spring (2011)	Technology, network architecture, market offering,
Osterwalder & Pigner (2010)	Key partnerships, key activities, key resources, value propositions, customer relationship, channels, customer segment, revenue streams, cost structure.

Source:by the author

Business model innovation is vitally important, and yet very difficult to achieve (Chesbrough, 2010). The barriers of changing the business model are real, and tools such as maps are helpful, but not enough. Moreover, organizational processes must also be changed. Enterprises must employ an effective attitude toward business model experimentation. Some experiments will fail, maybe, but only if the failure brings new approaches and the loss within affordable, which is to be expected and even encouraged. At the same time, the organization's culture must find added ways to come up with the new model, while maintaining the effectiveness of the current business model until the new one is completely ready to take over. Only in this way can business model innovation help companies get away from the 'trap' of their earlier business models, and renew growth and profits (Teece, 2010). In order to keep the competitive advantage resulting from the new business model design, business model analysis is necessary. Moreover, a new business model like new products always leads to lower cost or increased value to the consumer.

2.2.3 Service Innovation

2.2.3.1 Concept

Much attention has been made recently in developing the service innovation concept. In

the past years, many publications have attempted to define what service innovation is. The latest concept of service innovation is based on Schumpeter's theory of innovation. It mainly exploits the two judgment standards of Schumpeter's innovation: innovation as the new idea that is applied in practice and innovation that can generate benefits. For example, Van der Aa and Elfring (2002) feel that general service innovation is the new ideas, practices and targets for manufacturers or potential competitors. Service innovation is made up of cross organizational units, integration of new services, consumers' participation and technical innovation. From the essential characteristics of the service industry, Gadrey et al. (1995) point out that service innovation is a way to solve problem for specific customers, it does not provide a tangible product, but it is the integration of human capital, technology, organization and ability with strong heterogeneity. Alderman (2004) posits that service innovation is producing new service ideas or service systems. It provides customers with more added values by affording improved approaches of problem solving. On the impact factors of service innovation, Van Ark et al. (2003) view service innovation as a new or substantial changed service concept, customer interactive channels, service delivery system or technology. They individually or commonly lead to one kind or many kinds of new services. Thus, services for vendors are new and indeed change the manner in which products are offered to the market. Berry et al. (2006) consider that service innovation activities include increasing new services, expanding existing services and improving service mode. They add that an organization's success depends on whether it is very good to open up new markets through service innovation. Moreover, Oke (2007) proposes that service innovation refers to new developments in service processes involved in delivering core products and services. It can be viewed as a set of improved processes for delivering existing services or products (Michel et al., 2008). Hertog (2010) defines service innovation as "a new service experience or service solution in one or several of the following dimensions: new service concept, new customer interaction, new value system/business partners, new revenue model, new organizational or technological service delivery system."

The above service innovation concepts define that innovation for specific customers is a service innovation activity. Nevertheless, Toivonen and Tuominen (2009) underline the third

standard of Schumpeter's innovation theory: innovation can be copied. They believe that no matter how novel and complex a customized service is, if its elements cannot be copied and applied to other cases, it is not a service innovation. That is, a real innovation is not only beneficial to companies carrying out innovation, but also can be copied to guide other manufacturers to follow. Innovation implements diffusion through imitation, so as to promote the development of other manufacturers and the entire economy. Tidd et al. (1998) divide innovation into two categories: one is radical innovation, which is new to the whole world; the other is gradual innovation, which is also new for a region, sector or country. Innovation represents a continuous change, no matter how small it is to ensure a breakthrough. Sundbo (1997) analyzes the differences between organizational learning and innovation in detail. He deems that learning and innovation are the development phenomenon of enterprises; they enable companies to grow and to face the future challenges of the market in the future. However, innovation is a more widespread phenomenon than learning. The learning process is a smooth and continuous development, but innovation will generate jump.

2.2.3.2 Types of Service Innovation

There are multiple types of service innovation such as product innovation, process innovation and market innovation. But due to the characteristics of service innovation, there are also some unique or more important types of service innovation, such as organizational innovation, recombined innovation and normalized innovation (Yuan, 2009).

Van der Aa and Elfring (2002) highlight that the new service or the combination of new service, the different ways of coping with customers, the cross organizational units and the establishment of a chain are all organizational innovation. It mainly contains the variation of the service organizational elements, the change of organizational form and structure and the update of management methods and means. For instance, the introduction of an incentive system or a flexible organization and the emergence of management team are all organizational innovation. Tidd et al. (1998) stress on the recombined innovation and suppose it is the common type of innovation. Utilizing the existing knowledge or specific technology and restructuring existing service generates this innovation. For example, increasing service elements and combining two or more types of service decomposes existing services. Gallouj

(2000) emphasizes that special innovation needs to put forward a unique solution for a customer's individual problem. He views that special innovation is the most important type of innovation in industries that need considerable interaction between service providers and customers such as consulting and information services industry. In special innovation, service providers use accumulated knowledge and experience with a positive and innovative way to create new solutions to meet the unique needs of customers. Kuusisto and Meyer (2002) further point out that special innovation is frequent, it largely dependents on the communication with customers.

Van der Aa and Elfring (2002) classify service innovation into three kinds, namely product innovation, management innovation and service innovation. Product innovation comprises new product, new production process and the introduction of new technology. Management innovation includes introducing new organizational structure and policy system. Finally, service innovation contains marketing innovation and activities related to finance, guarantee and recycling.

Since the development of the Internet, firms have adopted new information technologies (NITs) to provide customer service and enhance firm value (Chuang and Lin, 2015). Applying NITs to offer services is typically referred to as e-service, which is an Internet information technologies that can improve or create a new business process or system to better satisfy current or potential customers' need (Benaroch and Appari, 2011). In short, e-service innovation represents the type of enterprises that use internet technologies to improve their service and to meet customer demands based on services that are delivered through a virtual existence on the internet. This can enable companies to strengthen interactions with customers and enhance customer service (Chen et al., 2006; Oliveira et al., 2002). E-service innovation creates value by employing service providers to use electronic technologies to improve the interaction between customers and firms and to reduce production service risk (Hinnant and O'Looney, 2003; Tsou and Chen, 2012). It includes two key factors: (1) process innovation, which refers to a corporation's ability to deliver services and improve its processes through internet technologies; and (2) service customization, which points to a firm's capability to provide tailor-made services for customers based on their preferences through internet

technologies (Chuang and Lin, 2015).

2.2.3.3 Characteristics of Service of Innovation

The characteristics of service innovation originated from the unique properties of service such as invisibility, simultaneity of production and consumption, perishability and other aspects (Yuan, 2009) as explained below:

The invisibility of innovation: For the innovation of traditional manufacturing industry, it has a clear carrier, such as new products or new production process. While the service innovation is to provide a new method to solve problems it is often the concept, process and standard like a new insurance regulation that is used to do so (Gadrey et al., 1995).

The customer involvement of innovation: As the service is produced by the cooperation of producer and consumer, customers' demand is the starting and the end point of innovation. Customers participate in the whole process of innovation. A lot of service innovations emerge from the interaction with customers in specific problems (Kuusisto and Meyer, 2002).

The diversity of innovative forms: Technological innovation is leading in the manufacturing industry. The innovative forms are manifold in service innovation. However, many services only have a few relationships with technology innovation such as organizational innovation, restructuring innovation, paradigmatic innovation and specific innovation but the organizational innovation is relatively significant.

The key of human resources: Human resources are the pivotal competitive factors in service innovation. Service innovation regards staff as the carrier. When designing and selecting service products and service delivery systems, the employees should be creative. Whether the service process can proceed smoothly relies on the ability to deal with the problem independently of workers. They represent the image of the service organization at each critical moment (Van Ark et al., 2003). Especially in the knowledge-intensive service industry, service innovation often comes from a concept or an idea of employees, as well as the exchange of knowledge among employees.

Service innovation can offer an effective method to bring about sustainable competitive advantage for a firm and service strategies may help organizations to get over the problem

caused by the circumstance of commoditization as well as the problem of stunted growth in saturated markets (Reinartz and Ulaga, 2008). However, Durst et al. (2015) shows that knowledge on the relationship between service innovation and performance is limited.

2.3 Government Innovation

2.3.1 Definition and Characteristics

Generally speaking, innovation occurs when there is adoption and/or implementation of a new project or policy by the government for the first time (Walker, 1969; Boehmke and Witmer, 2004; Yu and Huang, 2015). Innovation is not only a matter of technical transformation but also entails profound change in socio-economic environment and in the organizational structures (Nelson, 1994; Schumpeter, 2013). It is an important endogenous variable of economic growth (Freeman and Soete, 1997; Baumol, 2002; Metcalfe, 2007; Peters, 2008; Lu et al., 2014). Baumol (2002) emphasizes that innovation is the real source of the unprecedented growth of economy. Government innovation is a creative reform to improve administrative efficiency and promote the public interests, which is a process of constant reform and improvement (Yu, 2005; Wu et al., 2015). As defined by Liu (2002), government innovation is a new method and model of government administration to adapt the new environment. The essence of government innovation is a positive improvement that varieties of public service sectors perfect their work and improve the public interest in the system, measures and actions (Lin, 2014).

According to different perspectives of government innovation, it can be divided into absolute government innovation and relative government innovation (Li and Wu, 2001), diachronic government innovation and synchronic government innovation, narrow government innovation and broad government innovation (Qiao and Rui, 2002). Xie (2005a) believes government innovation not only includes the main body of government innovation, but also contains the object of government innovation, especially the latter, which is government innovation’s starting point and end result. He divides the object of government innovation into static and dynamic. While the static consists of four aspects: (1) theoretical innovation, which refers to the innovation on origin, nature, purpose, standardization,

environment, structure, function, development and other aspects of government; (2) institutional innovation, which is mainly about the innovation in government's democratic system, legal system, economic system, cultural system, and other aspects in structure and function; (3) personnel innovation, which means the continuous improvement and development of officials' administrative ability (Liu, 2004) and (4) operative innovation, which is the government's information or e-government construction. Dynamic government innovation, however, is the innovation of government management practice.

Government innovation mainly has the following three characteristics. First, government innovation has a public nature. The ultimate purposes of government innovation are improving public services and promoting public interests. Second, the beneficiaries of government innovation are the majority of the citizens rather than public sectors. Since the government holds political power in society, the result of government innovation has an extensive and profound impact on society. Finally, government innovation is characterized by political institution. Government innovation is an important part of political reform, which is very sensitive in terms of power and interest relations, and possesses higher risk than other innovative behaviors (Yu, 2005).

Government innovation is a difficult system, very comprehensive and needs to combine multiple aspects, which makes it a long process (Xu, 2004). Improving administrative efficiency is the ultimate goal of government innovation. In general, improving administrative efficiency is to serve the public, promote the citizens' interests, rather than facilitating government agencies and civil servants. Administrative efficiency is an important standard to measure the quality of government services. It is impossible to provide outstanding public services for an inefficient government department (Tong and Zhu, 2011). So we must transform government function, reform administrative management system, promote e-government construction, strengthen administrative supervision, and establish law-based government and so on to improve the efficiency of administrative examination and approval.

2.3.2 Approaches on Government Innovation

2.3.2.1 Transforming Government Function

Transforming an idea is the leading of all innovation as introduced by Tong and Zhu

(2011). Xu (2009) shows that the government needs to transform ideas from regulation to service, from doing thing right to doing right thing.

Establishing public management concept and service-oriented government idea; transforming government's economic management function, strengthening government market service function to build a better market economy environment, speeding up the transformation of government functions, strengthening government public service function; reforming the administrative management system, innovating the administrative management mode, which are the performances of government innovation (He, 2008).

Wang (2012) argues that government function transformation entails necessary restructuration and reform on the original government institution and power structure; otherwise it will not take effect. She emphasizes that service-oriented government function mode requires the government to pay more attention to the service idea, improve service method and service attitude, increase service project, use economic and legal service means instead of controlled and planned government functions under the traditional government administration.

Zhao (2007) points out that government should focus on economic regulation, market supervision, social management and public services, put something out of their duty to enterprises, market, social organizations and intermediary agencies. Moreover, government function transformation should deal with five relations: the relationship between economic development and social development; the relationship between management and service; the relationship between reform and innovation; the relationship between government functions and other main social functions; and the relationship between functions reform and law-based administration (Gao, 2008).

According to Tong and Zhu (2011), we should transform government function, promote the government function innovation, improve economic adjustment and market supervision pattern, change the government management role, so as to guarantee a smooth relationship between government and market, and ultimately achieve the government and market mutual governance model.

2.3.2.2 Reforming Management Style

In order to effectively promote government innovation, the nation should deepen and strengthen administrative management system to improve government officials' quality (Yu, 2005; Xu, 2009). Chi (2009) believes that the government's management system construction should be adapted to the requirements of effectively implementing public service functions. How to integrate the policies' formulation and implementation to improve the supply efficiency of basic public service is an important issue in the reform of administrative management system. It can be achieved by strengthening the division and cooperation of labor between government officials. Yu (2005) contends that the performance of government work depends on the government management system and officials' quality. He proposes that reforming government management system, strengthening the public sector human resource construction, improving the officials' quality will maximize the effectiveness of government management innovation.

Only by continuously reforming management system incompatible with time's request, can the country really ensure sustainable political development and dynamic political stability by Yu (2005). For example, a system is a significant resource to promote social change and system innovation is an intrinsic variable of productivity development; therefore more attention must be given to the key role of government system innovation in social development (Xia, 2010). He suggests that government should take performance evaluation results as a basis of improving work, strengthening management, officials' appointment and reward to make oriented and incentive effect on performance evaluation. Performance evaluation inspects the civil servants' work efficiency and quality, which is a process of strategy implementation. It monitors and supports the management process in the work's various stages and links (Meng, 2014). The modern performance management idea is to form a closed loop management system, which takes the feedback results of performance evaluation, re-act on the performance management process to realize synergy effect and to generate a virtuous cycle of self-excitation system (Wu, 2012).

2.3.2.3 E-government Construction

E-government is a permanent institution committed by the government to enhance the

connection between citizens and public institutions by providing low-cost and efficient services, information and knowledge as defined by the United Nations in 2003. In order to implement this policy, the government must provide the best infrastructure to build an electronic government system. The original intention of the e-government is to build a virtual government by network technology, so that the public can enjoy all kinds of government services at any time (Zhang, 2011). He contends that with e-government, agencies move the information and management service functions to the network, based on organizational change and the transformation between the internal and external relations, to reform the administrative system by using information technology and network as well as other information services. Wang (2013) propounds that e-government is based on information and communication technology and the Internet platform restructures government business process, realizes government information to better provide the public with high quality services, to achieve an efficient, fair, transparent, and honest government.

E-government acts as a quite new form of government affairs and also an effective exploration of government innovation (Wu and Guo, 2015). They prove that government administration can be effectively promoted towards an efficient, honest, open and transparent one. E-government is a strong and strategic tool for governance policy, and improves the effectiveness and efficiency of government functions (Sun et al., 2015).

Government innovation also requires the implementation of e-government (Xie, 2005b). He adds that government's regulations, documents, methods, meetings can be published online to open to citizens and that online reporting and approval can facilitate the public, simplify procedures, and improve efficiency. Moreover, government should increase investment, strengthen the infrastructure construction and popularize network technology. Improving the technical means of basic public service (Chi, 2009), accelerating e-government construction by increasing the system supply, improving the operating institution, expanding service objects (Zhong, 2003) and broadening the knowledge and skills (Fountain, 2005) will achieve government innovation.

Traditional hierarchical system of government cannot meet the needs of new problems in the complex and fast-reforming times. The government can use big data to solve multiple of

public governance problems such as public safety, food safety supervision, intelligent transportation, public health and medical treatment, job employment and so on. The big data has brought tremendous potential application value to government public management (James et al., 2011), but how to effectively utilize this huge data set (collected by different functional departments or management areas and different levels of government and its departments) is an important problem for government innovation (Zhao and Shan, 2014).

Big data is closely related to analytics (Davenport et al., 2010), since it also seeks to gather intelligence from data, generating value to the organization. However, big data applications entail some data requirements, usually described in terms of four V's: volume (referring to large data volumes), variety (including multi-structured data types), velocity (related to the change rate and time-sensitive USge of data), and veracity (stressing the need of data quality and trust) (Michael and Miller, 2013; Moura et al., 2015).

Arduini et al. (2013) put forward the technological, organizational, and contextual factors related to the development of e-government services in Italian local administrations. Failing to associate technical change with appropriate organizational and contextual changes usually contribute to weaken the actual diffusion and adoption of e-government services (Heeks, 1999; 2006; Fountain, 2005). Performance evaluation for e-governance information service needs to establish its value orientation, which is of paramount importance in the case of e-government construction (Wu and Guo, 2015).

2.4 Service-oriented Government

2.4.1 Definition

Researchers have numerous statements and claims about service-oriented government. Zhan (2004) believes that service-oriented government is a government that takes public services as the fundamental purpose of its existence, operation and development. Liu (2004) asserts that service-oriented government is the form of government established in accordance with the will of the citizens under the framework of democratic politics through legal procedures to achieve service functions and take responsibility for service. In other words, the establishment of service-oriented government must comply with the public, devote to build

public interest-oriented values and seek to maximize the public interests of society and citizens under the conception guidance of citizen-oriented, society-oriented and right-oriented (Ding and Lu, 2009). Li (2008) defines service oriented-government as a modern government providing quality public products and public services to meet the social needs. Chi (2010) indicates that service-oriented government is the one that provides the community with basic guaranteed public goods and effective public services to continuously meet the growing demands of the public. Nie (2014) contends that service-oriented government is the conversion of government administration idea and takes the idea of serving the people as a direct manifestation of government in power, which is not only the transformation of the government ruling culture but also the transformation of social management style. Transforming society administration into a social service makes the government's role and position more clear in terms of society management. It means that the public rather than the government determines policy goal, and management objectives should transfer from economic to public services (Hou, 2004).

To summarize, service-oriented government requires government to put citizens' fundamental interests first, serve the people and take their satisfaction degree as the final standard of evaluating government performance. Service-oriented government mode should achieve the transition from regulation to service, establish a perfect service system, and form a convenient, pragmatic and efficient government.

2.4.2 Characteristics

A service-oriented government has some characteristics. Nie (2014) firstly finds that service-oriented government's administrative purpose is to serve the people. Based on the principle of meeting social needs and simplifying procedures, service-oriented government construction should reform from institutions, procedures, policies and other aspects and serve people as the center to improve the satisfaction of the masses. Second, service-oriented government's organizations are simplified and the management trends to flat. The purpose of constructing service-oriented government is to serve the people and the contents are to streamline the organizations and enhance function of government. Third, service-oriented governments are fair, just and open which profits from the reform of agencies and functional

transformation. Fourth, the contents that citizens participate in public decision are rich, including public and personal issues. The public issues involve environment, energy, transportation and so on. And the personal issues comprise education, housing, medical problems and others. Fifth, the problems service-oriented governments faced are closer to the livelihood of the people and their social development needs such as energy, transportation, education, housing and so on.

In addition, from Xie's (2005b) point of view, first of all, service-oriented government is a democratic government, which is citizen-oriented and presents the interests of the public. Governments without democracy are like castles in the air, it is difficult to achieve service function (Qiu, 2014). Second, the service-oriented government is a limited government, which not only has limited powers, limited functions, but also has limited responsibility. Third, the service-oriented government is responsible for their actions, the services they have provided and the interests of the people. It requires that the government must respond and take action to meet the basic requirements of the society and the citizens to fulfill legal obligations and take responsibility for the whole society (Zhen, 2013). Fourth, service-oriented government is a law-based government, the government must take the law as the criterion and administrate according to the law. Fifth, service-oriented government is a performance government with efficiency and effectiveness as a benchmark. In sum, service-oriented government is democratic, limited, law-based, responsible and a performing government (Xia, 2010).

2.4.3 Approaches to Service-oriented Government Construction

There are a large number of studies on the approaches to build a service-oriented government. For example, Jing et al. (2008) finds that service-oriented government construction must deal with three basic relations: management and service, official and citizen, government and society. Liu and Xu (2007) summarize five aspects to build a service-oriented government. The administrative concept strengthens service awareness in building populist government whilst the administrative procedure implements open and transparent government. The administrative system has to do with innovating management way and building innovative government. On the administrative rules, the nation should stick to rule by law and

build law-based government. The administrative technology constructs e-government (Xia, 2010). Chi and Fang (2004) establishes that service-oriented government construction should be people-oriented, and provide basic public goods and public services for society (Wei, 2006; Xia, 2010), zealously innovates the supply mechanism of public service (Yu and Gao, 2012), aimed at solving the most prominent economic and social contradictions currently.

After analyzing four major city public governance model (management model, community model, growth promoting model, welfare model), Cai and Pang (2007) held that management and community models emphasize pursuing the public interests, serve the citizens, pay attention to citizenship, put forward to restore the government idea, redefine the government function, foster non-government organization (NGO), and establish market-oriented to form the public governance model of multiple participation. Li (2008) shows that the nation should establish a perfect government response system and effectively responds to public demand. On one hand, the country can establish and improve the communication channels between the government and the public whilst on the other hand; timely and effective responses from both sides are required.

Some researchers introduce performance management, competitive system (Zhan, 2004), accountability system, public finance institution, and social management system (Wei, 2006) to construct the service-oriented government. In order to actively promote the service-oriented government construction, it is urgent to construct a performance management system, taking public service as the main evaluation content and is aimed at improving the efficiency of public service (Bo, 2012). Xia (2010) concludes that the state can develop and improve service-oriented government through an orderly citizen participation system, by the institutional innovations of combating corruption, improving the public finance system to realize the equalization of public service gradually and by promoting the civil service system to enhance the service ability of officials. System reform and institutional innovation is an important guarantee for the service-oriented government construction (Yu and Gao, 2012).

2.5 Research on Entry-Exit Inspection and Quarantine Bureau in China

2.5.1 International Research

The inspection and quarantine works of developed countries, especially the United States, the European Union, and Japan are far superior to China both from the layout and management of the research institutions and from the service to import and export enterprises. On the basis of abundant practical experience, a large number of research results have emerged in the field of inspection and quarantine services. Among them, lots of scholars focus on studying the nature, function, development, and implementation of technical trade barriers for which can greatly affect the development of import and export enterprises and a country's foreign trade and economy. They help the government to formulate various targeted inspection and quarantine barriers by researching existing technology and development trend of the country and other relevant countries to restrict the import of other countries and to protect their own import and export enterprises and the domestic market.

In the early 1960s, the European Community has realized the restriction on technical trade barriers to international trade, and formulates *the general program of eliminating technical barriers to trade* in 1969, in which the trade rules of technical barriers in international trade were first put forward. Western researches on technical barriers to trade began in 1970s, the initial study is to analyze the reason and essence of technical barriers. Baldwin (1970) describes the form of technical barriers to trade as non-tariff barriers. Production quality standards as the means of technical barriers to trade are studied by Kou et al. (2001). They discuss the influence of tariff and quota and minimum standards to the quality of imported goods. Fischer studies the problems of standard and trade protection. Otsuki et al. (2000) analyses the quantification problem influenced by technical barriers and puts forward the framework of empirical analysis. Josling and Roberts (2001) conducts a case study of hormone beef dispute in the United States and other developed countries. The above analyses all show the nature as protectionism of technical trade measures.

Some scholars also analyze the impact of China's inspection and quarantine system on economic and social development from technical standards and barriers perspective. For example, from the perspective of economic theory, Keith and John (2000) outline the situation

of organization, system, standard formulation, management mode and working rule of China Entry-Exit Inspection and Quarantine Bureau (CIQ). It has certain significance to understand the current situation. Fischer and Serra (2000) study standard trade protection measures and deem that the minimum standards set by the government are a kind of trade protection in essence. This paper has a certain value for studying the generation and function mechanism of inspection and quarantine barriers, and how to guide and service exported enterprises to avoid foreign technical trade barriers. From the policy and institution, Araki (2003) analyzes the problems of technical trade barriers with China's accession to the WTO and points out that the formulation and implementation of inspection and quarantine standards lack transparency and the dual system employed by domestic and foreign countries has considerable defects. While there are no specific reform measures are put forward, it can be as a reference to Chinese further reform of inspection and quarantine system.

Comprehensive research on trade development to developing countries has made by Stephenson (1997), he considers that the first choice of developing countries is to adopt existing international standards and guidelines of the international standardized organizations and International Electrical Commission, and the best choice is to adopt the standards used by their major trading partners rather than making their own local standard. This conclusion has some significance to the development on inspection and quarantine policies of developing countries at that time. But now, this view is no longer suitable to the present development situation that the economic sovereignty of developing countries is increasingly independent and economic development is also soaring, whether to adopt or on what extent to adopt the inspection and quarantine standards of other countries depends on the characteristics of different countries.

2.5.2 Domestic Research

The entry-exit inspection and quarantine institution is an important foreign economic law enforcement agency in China; it is authorized by law to exercise the function of inspection and quarantine on behalf of the state. With the deepening of China's reform and opening up and the acceleration of the process in economic globalization, especially after the entrance of WTO, the role of China's entry exit inspection and quarantine institutions has become

increasingly prominent. Domestic scholars and practical workers have carried out a more extensive and in-depth research on the inspection and quarantine work. They mainly focus on perfecting system, reforming supervision mode, optimizing measures for customs clearance, coping foreign technical barriers to trade and other aspects. These researches are of prime importance to speed up the transformation of functions and service efficiency of inspection and quarantine, and promote national foreign economic development.

In terms of improving the inspection and quarantine system, the challenges of inspection and quarantine work in China are found by Chen (2003). By comparing the inspection and quarantine system of China and developed countries, he puts forward more reasonable system in line with international rules. Luo (2006) carefully analyzes the system of CIQ in China, points out its main problems and proposes some countermeasures in legislation, administrative institution setting and enforcement. From a critical standpoint, Ma (2006) reveals more problems on CIQ in China and thinks that port inspection and quarantine work will lead to delay of export time, extruded goods, occupation of human resources and other losses. This will weaken the competitiveness of China's exports. Wu (2014) based on the theory of the government regulation, institutional change, and the governance adopts the methods of literature analysis and comparative research to review the history and transformation process of the import and export commodity inspection systems, point out the shortcomings existing in the current institution, and put forward some proposals and suggestions that the state should focus on the reform of the compulsory inspection system, improve the random inspection system, and strengthen the macro-quality management on further improving the import and export commodity inspection institution by learning from the experiences of developed countries.

In perfecting the supervision mode of inspection and quarantine and measures of customs clearance: Han (2009) believes that the inspection and quarantine in mode, efficiency, fees, testing items, inspection cycle, legal test catalog and other aspects of customs clearance all exist shortcomings. The fundamental reason is that it is bound by the traditional system and mechanism. In order to promote the stable development of foreign trade, it is necessary to deepen the system reform of inspection and quarantine and solve the key problem in the

process of development. Huang (2008) emphasizes that the work of inspection and quarantine should be further strengthened and it can start from accurately grasping the function orientation, straightening out the relationship between check and service, making more strict market access system and other five aspects. Duan (2008) carries out an empirical study of inspection and quarantine to export enterprises in Jiangxi. By comparing domestic and foreign government in corporate governance and combining with the actual situation of exported enterprises in Jiangxi, some countermeasures for the reform to supervision mode of inspection and quarantine are presented. Zhu and Peng (2006) construct a kind of index system, analysis and evaluation model of inspection and quarantine to imported goods, and take a comprehensive evaluation to the risk of imported goods by analytic hierarchy process and fuzzy comprehensive evaluation method. Currently, China's CIQ undertakes excess import and export commodities inspections, that caused by the influence of traditional administrative controls, fund by Qiu (2014). He proposes three ideas to solve this problem: First, CIQ no longer to bear the commodity specific detection functions; second, weakening CIQ export commodities inspection functions; Third, CIQ should be stripped of the functions of inspection to the quality, quantity and weight of the import and export commodities. An (2014) uses public management theory, service-oriented government system theory and performance management theory to describe the development process and functions evolution of China's CIQ, propose inspection and quarantine functions changes motivation in the internal and external, and finally put forward policy recommendations and opinions on changing the functions of inspection and quarantine.

In response to foreign technical trade barriers, Ma (2010) studies the influence of technical barriers to trade on China's exports from its essential characteristics, and suggests that the state should establish a set of systematic perfect information service system and early warning mechanism from government, enterprises and industry associations, and enterprises should positively implement the strategy of market diversification to disperse the risk of fluctuation in export trade, fully play the role of intermediary organization of trade association, and common across the technical barriers to trade. Chen and Ye (2002) point out that the technical barriers to trade are characterized by flexible, camouflage and multitudinous. They

suppose the use of international standards is a vital approach to overcome the technical barriers to trade, at the same time, the works of product certification, quality management system certification and laboratory accreditation cannot be ignored. Zhu (2006) describes the basic theory and nature of the technical barriers to trade, analyzes the current situation faced by China's foreign trade and proposes specific measures to deal with through learning from the successful experience of developed countries. Zhen (2008) takes Guizhou CIQ as an example, analyses the present situation of foreign trade import, main characteristics and existing problems in Guizhou province, as well as the influence of technical barriers to foreign trade based on the theory of technical barriers to trade, and then puts forward the countermeasures and suggestions to deal with technical barriers to trade. The impacts of technical barriers to trade on the textile industry in Shishi, Fujian province are analyzed empirically by Guo (2015) through investigation, interviews and questionnaires, and solutions to foreign technical barriers to trade for China's textile are put forward. These strategies include changing inspection and quarantine methods, modifying the ways of supervision and administration, strengthening the training of subjects who exercise policies, implementing standardized strategy management, establishing a warning mechanism for tackling export textile's technical barriers to trade, promoting the construction of demonstration areas for exported textile safety, advocating certificate of quality system suitable for textile industries, propelling entire green production in enterprises, and assisting enterprises in devising branding strategy.

2.6 Summary

In this chapter, researches on public management theory, government innovation, and CIQ are reviewed. Previous literature mainly focuses on the application of public management theory and the theoretical analysis of CIQ reform. Few comprehensive studies have been done to explore the service model innovation of Chinese Entry-exit Inspection and Quarantine Bureau. To fill this gap, in this study, we will first do some empirical survey to investigate the current problems and the satisfaction of CIQ and then based on the field survey results, taking Guizhou CIQ as a case, an innovative model will be developed to provide more efficient service to all the import and export enterprises.

Chapter 3：China Entry-Exit Inspection and Quarantine Bureau (CIQ) and Their Challenges

3.1 Introduction of CIQ

The China Entry-exit Inspection and Quarantine Bureau (CIQ) is a specialized official department, which aims to deal with entry-exit of goods and personnel affairs. It is responsible for various inspection, quarantine and related managerial activities for import-export products as well as persons and provides the corresponding inspection and quarantine certificate according to government regulations and international rules. CIQ is usually responsible for import-export health quarantine, animal and plant quarantine, and commodity inspection. In China, CIQ plays a significant role in strengthening the management of entry-exit of commodities and personnel, which is a vital part to enhance the scientific and rational management skills for national inspection agency for import and export (Huang, 2014). To better exhibit the function of CIQ in China, here in this thesis, we divide all their activities by Porter's value chain that includes primary activities and supporting activities. Figure 3-1 shows the general function of CIQ.

As shown in Figure 3-1, the major tasks and goals of the CIQ can be grouped into four aspects. Firstly, CIQ inspects and supervises the quality and safety of import and export commodities. It regulates the behavior of inspection and supervision of the branches in each province and protects the legitimate interests of all parties associated with import and export to ensure the rapid development of China's foreign trade. The second function is in charge of the supervision and management on import and export of animals and plants in order to protect the ecological environment especially by preventing the spread of harmful bacteria and virus. The third one is to carry out the inspection and quarantine to the entry-exit persons, transportation luggage and parcels to prevent the safety of the country as well as the spread of infectious diseases. Finally, it helps establish related systems according to the rules of WTO and take effective measures to break the technical foreign trade barriers (Qiu, 2013).

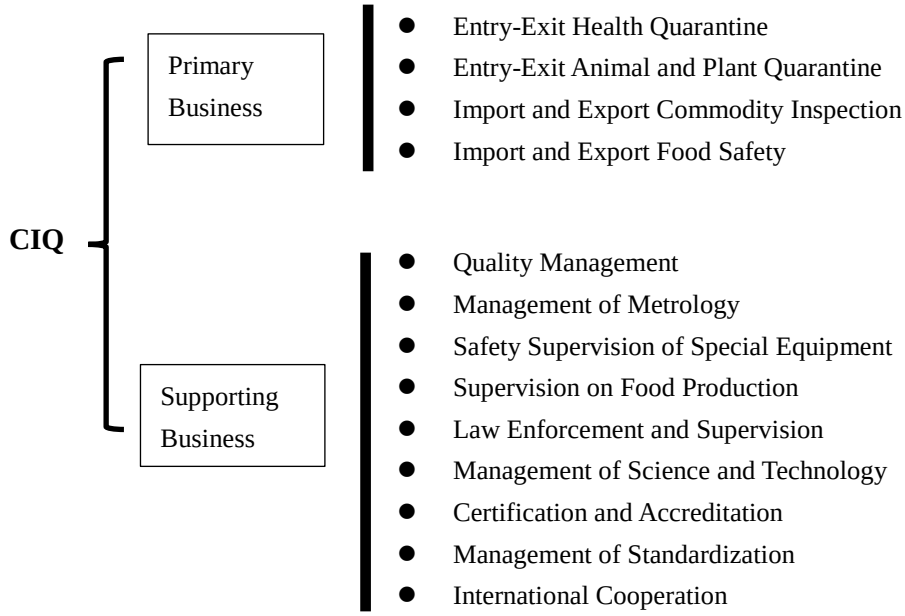

Figure 3-1 Function of CIQ

Source: www.aqsiq.gov.cn

3.2 History of CIQ

3.2.1 Start-up Period (1978-1998)

The China Import and Export Commodity Inspection Bureau, National Health and Quarantine Bureau, and the National Animal and Plant Quarantine Bureau were founded after the establishment of People's Republic of China in 1949. During the "Culture Revolution" decade from 1966 to 1976, import and export inspection and quarantine bureau was badly affected and some agencies were suspended. They were restored after the reform and opened up in 1978. And then the State Council decided to reform the administrative system of commodity inspection, changing the Ministry of Foreign Trade Commodity Inspection Bureau to Administration of People's Republic of China Import and Export Commodity Inspection Bureau in 1980, but remained the National Import and Export Commodity Inspection Bureau of People's Republic of China in 1982, which was responsible for the national entry-exit commodity inspection and managed by the Ministry of Foreign Trade. In the same year, the Animal and Plant Quarantine Office in charge of the National Entry-exit Animals and Plants Quarantine was approved. Subsequently, the National Import and Export

Commodity Inspection Bureau, National Health and Quarantine Bureau, and State Animal and Plant Quarantine Bureau were established one after another (Luo, 2006).

During the development of China's economy, the import and export trade has always been playing an important and non-substituted contribution. The international market admittance regulation and the standard of product quality require that the import and export commodity inspection and the related field must be defined their power and obligations. Thus from 1982 to 1990, the National People's Congress and its Standing Committee promulgated the law of commodity inspection, health quarantine, animal and plant quarantine, and food sanitation which made the work of inspection and quarantine in conformity with the law and laid some good foundation for future development of China's foreign trade (Luo, 2006).

3.2.2 Integrated Period (1998-2001)

To meet the requirement of joining WTO, Chines state government set up the Entry-Exit Inspection and Quarantine Bureau in April 1998. This bureau aims to reduce the occurrence of quality issues in China's foreign trade and to promote the international influence of Chinese brands. It was comprised of the original National Import and Export Commodity Inspection Bureau, National Health and Quarantine Bureau, and State Animal and Plant Quarantine Bureau.

To enhance the supervision of import and export inspection and quarantine, the Chinese central government made a decision to establish a vertical managerial structure as it was first found and authorized it to be in charge of the national entry-exit commodity inspection, animal and plant quarantine, and health quarantine. The sub-bureaus were also set up in different provinces and municipalities. On August 10, 1999, the new inspection and quarantine system was set up with sub-bureau in every province in China. The merger of these three inspections eliminated some disorders coming from institutional overlaps and achieved unparalleled unity of inspection and quarantine. This combination facilitated the development of China's entry-exit inspection and quarantine, leading to the import and export trade a smooth and rapid progress (Luo, 2006).

3.2.3 Developing Period (After 2001)

After China entered WTO, based on the WTO requirement at that time, the former Prime Minister Rongji Zhu proposed to change government function by sector reform and efficiency improvement. The State Council decided to set up the State Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) on April 30, 2001. It consisted of the National Entry-Exit Inspection and Quarantine Bureau and the National Quality and Technical Supervision Bureau. AQSIQ led to the unification of the two departments from the national level and also pointed out the effort direction of the future reform about provincial import and export inspection department.

AQSIQ is a state administrative organization that is in charge of the state quality standards, entry-exit commodity inspection, entry-exit health quarantine, entry-exit animal and plant quarantine, import-export food safety, as well as the administrative law-enforcement procedure in China. There are 19 departments and 15 affiliates directly under it. In general, there exists 35 Entry-exit Inspection and Quarantine Bureaus in China's 31 provinces with 300 branches and more than 200 local offices over the country. The total number of its employees is more than 30,000 and they are scattered at coastal ports, land border ports and international airports. AQSIQ closely directs all Entry-exit Inspection and Quarantine Bureaus (Han, 2011). The relationships between AQSIQ and its related organizations are shown in Figure 3-2.

The establishment of AQSIQ not only transformed the government functions, meeting the needs of booming market-oriented economy, but also promoted Chinese import and export trade. AQSIQ undertakes to administrate the Certification and Accreditation Administration of the P.R. China (CNCA) and the Standardization Administration of the P.R. China (SAC). Through the authorization from the State Council, CNCA is a department, which is in charge of general management, supervision and comprehensive coordination of certification and accreditation activities across the country. By contrast, SAC, another department, takes up management duties and implements integrated management standards national wide.

With the leadership of AQSIQ, entry-exit inspection and quarantine system strictly performs its duties. It witnesses the growth of China’s import and export trade. Moreover, it constantly innovates to improve its structure and self-organized to better adapt to new

circumstances.

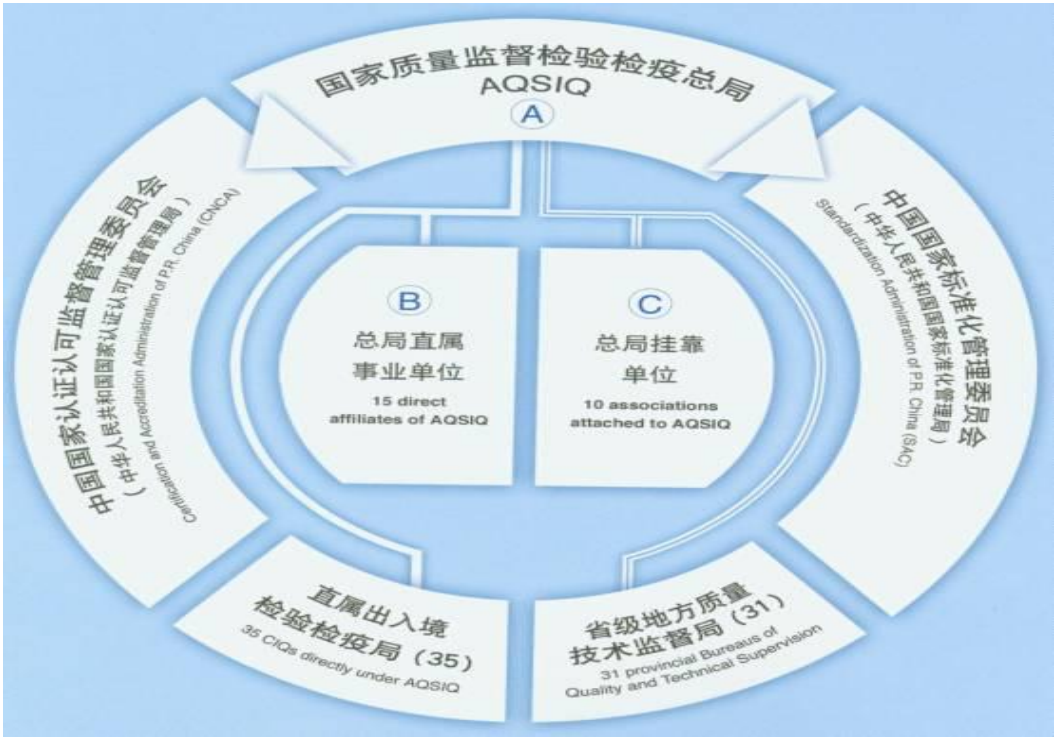

Figure 3-2 Organizational structure of AQSIQ

Source: www.aqsiq.gov.cn

3.3 Primary Functions of CIQ

The main functions of China Inspection and Quarantine Bureau can be divided into the following four aspects (Shi, 2013; Li, 2013; Xie, 2014; Qin, 2014):

(1) To carry out inspection and quarantine laws. This is the basic and most significant function for the inspection and quarantine bureau. Other functions may derive from this one. Inspection and quarantine authorities have a role on administrative management, including setting up standards and supervising their implementation, which are related to many activities such as the entry-exit health quarantine, animal and plant quarantine, and entry-exit commodity inspection. All the activities contain identification, certification, supervision, management, and other administrative law enforcement activities.

(2) To regulate import and export products. This function mainly embodies in improving and optimizing the import and export structure. For example, inspection and quarantine bureau can make strict regulations to prevent inferior quality products, which generally charge

so low price that may destroy the normal market competition. Thus inspection and quarantine bureau also help avoid disorder competition and prevent the fair competition between international and domestic enterprises.

(3) To supervise market. CIQ is not only in charge of the quarantine of import and export animals, plants and relevant products, but also supervise its sub bureaus in different provinces. CIQ is responsible for setting up some rules to guide their daily works. The authority of CIQ is also an important way to formalize different bureaus and improve the efficiency of these organizations.

(4) To provide the service to the important and export enterprises. This role is derived from the basic function of CIQ and can be regarded as the in-directed activities. For example, CIQ may influence the decision of export enterprises by monitoring the new quarantine standards of target countries. Sometimes, CIQ also do some economic analysis to help firms understand the trend of products, adapting to the new regulations in many foreign countries. These analysis results can guide the firms' decisions and avoid some market risk.

3.4 Typical Entry-Exit Inspection and Quarantine Bureaus (CIQ) in China

As we know, since there is at least one inspection and quarantine bureau in each province, altogether there are more than thirty in China and they are all under the leading of CIQ. Due to the similarities of these bureaus, in this thesis, we only select four typical ones to show how they are working. As shown in Figure 3-3, Shanghai, Guangzhou, Inner Mongolia, Heilongjiang Province are representative of the east, south, northwest and northeast of China. These four inspection and quarantine bureaus are chosen as examples to introduce in this section. Figure 3-3 shows the geographic locations of the four bureaus as well as Guizhou one.

Figure 3-3 The geographical location of Inner Mongolia, Heilongjiang, Shanghai, Guangzhou and Guizhou

Source:by the author

In the following section, each typical inspection and quarantine bureau will be discussed. Due to the huge differences among these provinces, it is necessary to associate the development of these bureaus with their own economic background especially the import and export situations.

3.4.1 Inner Mongolia CIQ

3.4.1.1 Introduction

Inner Mongolia Entry-Exit Inspection and Quarantine Bureau was the acquisition of former Inner Mongolia Commodity Inspection Bureau, Inner Mongolia Plant Quarantine Bureau, and Inner Mongolia Health and Quarantine Bureau on August 9, 1999. In April 2001, the National Entry-Exit Inspection and Quarantine Bureau and the State Quality and Technical Supervision Bureau merged to be AQSIQ, and then Inner Mongolia CIQ became its branch. It only had 3 offices and 8 business units with 803 employees at that time. However, its inspection and quarantine equipment was much advanced including a variety of special devices. The total value of fixed assets reached more than 245 million RMB (Lin, 2013).

Inner Mongolia Autonomous Region is located in the northern frontier of China, bordering with Russia and Mongolia. Its borderline is more than 4200 kilometers long. There are 19 fixed ports distributed in 16 cities: Erlianhot, Manzhouli, zeck, Zhuengadabuqi, Ganqimaodu, Laoyemiao, Yarant, Wulasitai, Hongshanzui, Black Hills, Shiwei, Erka, Huret, Ebudouge, Arxan and other ports. Railways and highways are near from these ports and there are airports in Manchuria and Erenhot. The main duty of Inner Mongolia CIQ is to inspect and quarantine entry-exit person's health, infectious disease, animals, plants, commodity, and their means of transportation and to supervise the work of registering certification and accreditation on health, safety, and quality in Inner Mongolia Autonomous Region according to the Law of the People's Republic of China on the Inspection of Import and Export Commodities, Law of the People's Republic of China on the Entry and Exit Animal and Plant Quarantine, Law of the People's Republic of China on Frontier Health Quarantine Inspection, and Law of the People's Republic of China on Food Hygiene (Lin, 2013).

To sum up, the basic function of Inner Mongolia CIQ is to abide by the state laws to combat smuggling, helping local enterprises to enhance their international competitive advantages. It aims to improve the investment environment and to guarantee sustainable growth of the oversea trade by providing better service on inspection and quarantine of infectious diseases and developing more channels for foreign trade. In recent years, in addition to promote the local import and export, Inner Mongolia CIQ also makes extensive use of its information and technology facilities to help adjust the export enterprises' product, upgrading of these firms' product and service structure.

3.4.1.2 Import and Export Environment in Inner Mongolia

Since the activities of CIQ are closely associated to the local economy, it is one of important channels to observe the quality and quantity of local industrial and living standard. To better understand the context of Inner Mongolia CIQ, it is necessary to analyze the economy environment in Inner Mongolia.

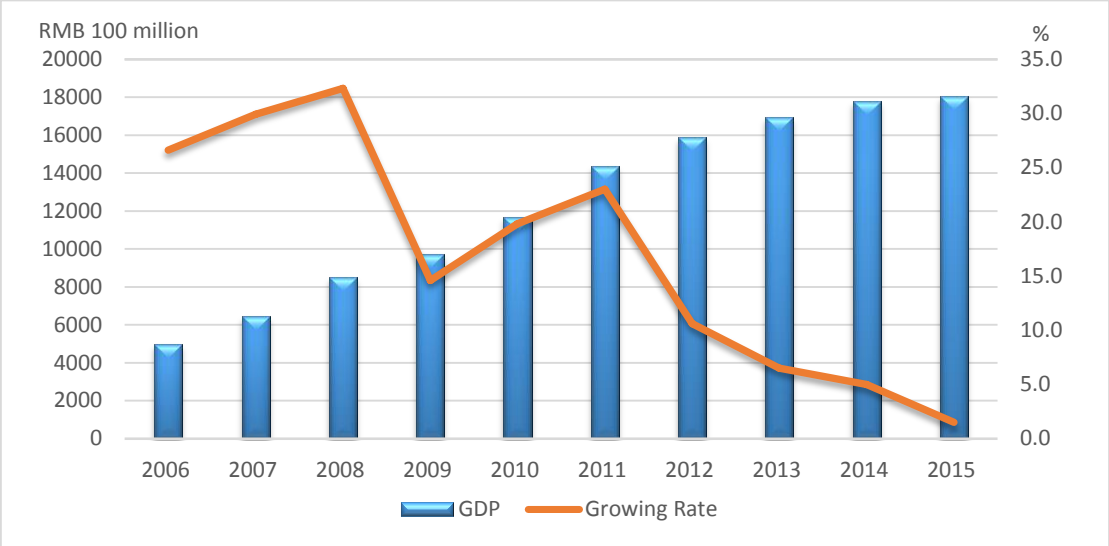

Figure 3-4 GDP and its growth rate in Inner Mongolia: 2006-2015

Source: Inner Mongolia Statistical Yearbook 2007-2016. Statistical Bureau of Inner Mongolia. China Statistics Press.

Figure 3-4 illustrates the GDP and its growth rate in Inner Mongolia during the past decade. We may find that Inner Mongolia's GDP in 2015 reached 1803.3 billion RMB, increasing by 7.7% to 2014. Among these, the output of primary industry increased 161.9 billion RMB with a growth rate of 3.0% compared to 2014. The secondary industry increased by 920.1 billion RMB, which is 8.0% higher than that of the last year. Meanwhile, the tertiary industry had gone up 721.4 billion with a growth rate of 8.1% to 2014.The per capital real GDP rose by 7.4% compared with the last year and reached 71903 RMB.

Table 3-1 Fixed assets investment and its growth rate of Inner Mongolia in 2015

Industry	2015 (RMB 100 million)	Growth Rate (%) (compared to 2014)
Farming Industry	820.5	8.3
Mining Industry	1008.8	-5.8
Manufacturing Industry	3709.8	13.7
Supply of Electricity, Gas and Water	1732.5	42.7
Construction Industry	163.5	47.5
Wholesale and Retail Trade	396.8	4.4
Transportation and Postal Services	1308.6	30.5
Accommodation and Catering Industry	99.6	-12.0
Information Technology Services	84.2	-43.5
Financial Industry	36.4	34.8
Education	140.6	44.5
Health and Social Work	113.5	51.8
Culture, Sports and Entertainment	135.5	1.6
Public Administration	299.1	46.1

Source: Inner Mongolia Statistical Yearbook 2007-2016. Statistical Bureau of Inner Mongolia. China Statistics Press.

Table 3-1 exhibits the fixed assets investment and its growth rate in Inner Mongolia in 2015. As shown in Table 3-1, all industries of Inner Mongolia increased by 793.9 billion RMB in 2015 with a growth rate of 8.2 percent compared to 2014. Industrial enterprises above designated size achieved the goal that the main business income amounted to 1852.3 billion RMB, decreasing by 0.3 percent over the previous year. The output value of construction industry had an increase of 126.3 billion RMB and rose by 6.7%. The value of total sales of consumer goods is greater than 610.8 billion RMB with a growth rate of 8%. The total investment in fixed assets in this region was more than 1382.5 billion RMB, increasing by 14.5% compared with previous year. More than RMB 5 million fixed assets investment reached 1365.2 billion with a growth rate of 14.5%.

Table 3-2 Foreign Trade of Inner Mongolia in 2015

Imports and Exports (RMB 100 million)	2015	Growth Rate (%) (Compared to 2014)
Total imports and exports	790.4	-11.6
Total Exports	350.3	-10.8
General trade	280.9	-9.7
Border trade	30.8	13.8
Processing trade	6.8	-37.0
Total Imports	440.1	-12.2
General trade	160.5	-12.4
Border trade	160.7	-16.4
Processing trade	8.3	59.9

Source: Inner Mongolia Statistical Yearbook 2007-2016. Statistical Bureau of Inner Mongolia. China Statistics Press.

Table 3-2 shows the foreign trade of Inner Mongolia in 2015. The total amount of import and export of Inner Mongolia in 2015 was RMB 79.0 billion, 11.6% lower than the previous year. Among them, export was 35.0 billion RMB, decreasing by 10.8% compared to 2014. Similar to export, the import of Inner Mongolia also exhibited down trend. It declined by 12.2%, reaching 44.0 billion RMB in 2015. To the main channels, general trade accounted for 55.8% of the total import and export, reaching 44.1 billion RMB. Beside the general trade, border trade was 191.5 billion RMB and the amount of processing trade reached 15.1 billion RMB. The direct investment for foreign trade achieved USD 3.8 billion and declined by 15.4% in 2015.

3.4.2 Heilongjiang CIQ

3.4.2.1 History of Heilongjiang CIQ

As we know, generally speaking, there are three components for each CIQ including commodity inspection, animal and plant quarantine, and health quarantine. The development of Heilongjiang Entry-Exit Commodity Inspection Bureau had a sync pace with the establishment of People's Republic of China. In January 1948, approved by the Northeast Bureau of Central Committee of Communist Party of China, the Sino-Soviet Joint Laboratory of Manzhouli and Suifen River was established. This was the first commodity inspection authority established under the leadership of the Communist Party of China, as well as the first commodity inspection agency in Heilongjiang. After 1949, the Chinese central

government set up a commodity inspection office to uniformly manage national commodity inspection. In 1950, Commodity Inspection Bureau of Northeast China was built by Ministry of Trade in Dalian, which was the biggest port in northeast of China at that time. It was in charge of import and export commodity inspection in Liaoning, Jilin, Heilongjiang, Songjiang, and Inner Mongolia. Subsequently, Harbin commodity inspection sub-bureau of the Northeast Commodity Inspection Bureau was found in 1951 and Harbin Commodity Inspection Bureau was built in 1956 (Qin, 2014).

Compared to the commodity inspection, Heilongjiang Entry-Exit Animal and Plant Quarantine has an even longer history. In 1903, the Railway Veterinary and Quarantine Office was established by the Middle East Railway Authority and it was responsible for quarantining a variety of meat products imported from Russia. In 1927, the government set up some work places in Manzhouli and Northeast Suifen River to inspect exported wool, leather and meat. After the establishment of new China, Heilongjiang government accepted and transformed the original Commodity Inspection Bureau. Harbin Plant Quarantine Station of the Ministry of agriculture of the People's Republic of China was built in 1964 and it used the personal plant protection stations located in Heilongjiang. After many years' reconstruction, Harbin Entry-Exit Animal and Plant Quarantine was built in 1992 which was responsible for the import and export animal and plant quarantine and pests quarantine of agricultural products and livestock (Qin, 2014).

Different from the long history of the above two organizations, the Harbin Health and Quarantine Station was founded by the Ministry of Health in 1980. Through a series of rectification, Harbin Health and Quarantine Bureau was established in 1991 and it was mainly in charge of the work about health quarantine and epidemic prevention and control in Heilongjiang.

Heilongjiang Entry-Exit Inspection and Quarantine Bureau was merged by the former Heilongjiang Commodity Inspection Bureau, Heilongjiang Import and Export Health and Quarantine Bureau, and Heilongjiang Animal and Plant Quarantine Bureau in August 1999. It is a direct affiliated institution of AQSIQ and responsible for the import and export commodity inspection, health quarantine, animal and plant inspection, certification and

accreditation and other works in Heilongjiang. There are 16 offices, 8 agencies and 15 branches with a comprehensive multi-disciplinary professional and scientific teams in which 95.8% of the staff have received higher education and 74% are technicians in these fields such as science, engineering, agriculture, forestry, medicine and so on. Besides, it is equipped with 49 planning laboratories, 33 physical laboratories including 8 state key laboratories. More than 2900 sets of equipment are worth than 300 million RMB and can provide qualified tests over 8000 items, covering nearly 400 kinds of food and agricultural products experiments in physics, chemistry, microbiology and transgenic areas.

In recent years, Heilongjiang CIQ has cooperated with many government departments to carry out a lot of research projects, such as Chinese Academy of Inspection Department with, Academy of Military Medical Sciences, Russian Health and Quarantine Department and Provincial Medical Research Institute. These cooperation in various fields has produced fruitful results. It undertook 4 national research projects, 28 provincial and ministerial projects, join to formulate 13 national standards and 33 industrial standards in inspection and quarantine and won 23 provincial awards. Especially on Lyme disease, biological media survey of rodent borne diseases and etiology in Sino-Russian border, Heilongjiang CIQ made the major contribution and received considerable attention from World Health Organization (Qin, 2014).

3.4.2.2 Economic Environment in Heilongjiang

Figure 3-5 illustrates the GDP and its growth rate in Heilongjiang during the past decade. As shown in Figure 3-6, the economy of Heilongjiang has maintained steady growth after 2010. In 2015, the GDP ran up to RMB 1503.9 billion RMB, increasing by 5.6% to 2014. Among them, the primary industry increased by 265.9 billion RMB with a growth rate of 5.6%; the secondary industry rose by 559.2 billion RMB, which is 2.8% higher than that of 2014. The amount of the tertiary industry grew to 678.8 billion RMB which had an increasing of 9.0% compared to 2014. The contribution of the primary, secondary and tertiary industry to the GDP growth account for 11.1%, 24.2% and 64.7% respectively. Meanwhile, the per capita real GDP of 2015 is increased by 5.6% over the last year, reaching RMB 39226. The output value of non-public sectors of the economy increased by 786.2 billion RMB with a growth

rate of 7.1%, accounting for 52.3% of the GDP.

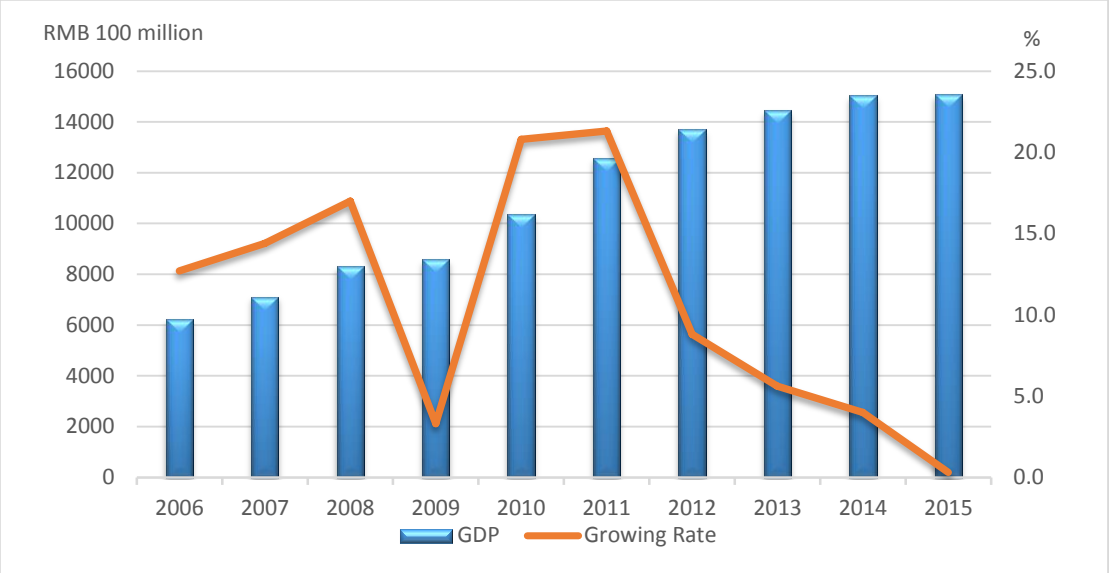

Figure 3-5 GDP and its growth rate in Heilongjiang: 2006-2015

Source: Heilongjiang Statistical Yearbook 2007-2016. Statistical Bureau of Heilongjiang. China Statistics Press.

Table 3-3 shows the foreign trade of Heilongjiang in 2014. As we can see, the total value of import and export of Heilongjiang in 2014 ran up to 38.9 billion RMB with 0.1% higher than the previous year. Among them, the total amount of export reached 17.3 billion RMB with a growth rate of 6.8% and the import was 25.6 billion RMB, declining by 4.8%. Totally, the import and export of general trade reached 28.1 billion RMB, increasing by 0.6% compared to previous year. While the border trade reached 9.1 billion RMB in 2014, going down 3.8% to the previous year, the processing trade increased by 5.9%, reaching 0.9 billion RMB. Regarding to the type of enterprises, the amount of import and export of state-owned enterprises (SOEs) and foreign-funded enterprises achieved USD16.5 billion and 1.3 billion RMB, decreasing by 7.7% and 5.6% to the last year respectively. Different from the trend of SOEs and foreign-funded enterprises, the import and export of private enterprises reached 21.1 billion RMB with a growth rate of 7.5%.

Considering the trade of different countries to Heilongjiang, the total value of import and export with Russian reached 23.3 billion RMB, increasing by 4.1% over the previous year; the trade with the United States was 2.2 billion with a growth rate of 9.8%. However, the trade with India was only 0.5 billion RMB, going down by 17.7%. From the commodities

perspective, the value of export machinery and electronic products reached USD 5.6 billion with an increasing of 17.2% than the last year and high-tech products export achieved 0.3 billion RMB, going up 16.4% to 2013.

Table 3-3 Foreign trade of Heilongjiang in 2014

Item	2014	Growth Rate (%)
Total Value of Import and Export (RMB 100 million)	**389.0**	**0.1**
Form of Trade		
General Trade	281.3	0.6
Border Trade	91.2	-3.8
Processing Trade	8.5	5.9
Enterprise type		
State-owned Enterprises	164.9	-7.7
Private Enterprises	210.8	7.5
Foreign-Funded Enterprises	13.4	-5.6
Country		
Russia	232.8	4.1
The United States	21.5	9.8
India	5.0	-17.7
European Union	18.5	-19.2
Brazil	9.5	-31.5
Malaysia	5.5	-9.5
South Korea	4.4	0.1
Japan	3.7	-14.3
Singapore	4.2	13.3
Commodity category		
Machinery and electronic products	56.2	17.2
High-tech Products	3.4	16.4
Total amount of Export	**173.4**	**6.8**
Total amount of Import	**215.6**	**-4.8**

Source: Heilongjiang Statistical Yearbook 2007-2016. Statistical Bureau of Heilongjiang. China Statistics Press.

Table 3-4 Import and export commodities inspected by Heilongjiang CIQ: January –June, 2015

Indicators	2015 (Jan.-Jun.)	Growth Rate (%)	Unqualified Rate (%)
Import and Export Inspection			
Number of Inspection (batch)	101437	6.1	
Value of Inspection (million USD)	5171.8	-35.2	
Number of the Unqualified (batch)	7755		7.6
Value of the Unqualified (million USD)	68.2		1.3
Export Inspection			
Number of Inspection (batch)	21412	-5.5	
Value of Inspection (million USD)	779.7	4.8	
Number of the Unqualified (batch)	142		0.7
Value of the Unqualified (million USD)	3.0		0.4
Import Inspection			
Number of Inspection (batch)	80025	9.7	
Value of Inspection (million USD)	4392.1	-39.3	
Number of the Unqualified (batch)	7631		9.5
Value of the Unqualified (million USD)	65.3		1.5

Source: Heilongjiang Statistical Yearbook 2007-2016. Statistical Bureau of Heilongjiang. China Statistics Press.

To further show the activities of Heilongjiang CIQ, this thesis investigated the inspected import and export commodities in the first half of 2015. As shown in Table 3-4, totally 101437 batches of import and export commodities were inspected, increasing by 6.1% over the past year. All these inspected commodities were worth than 5171.8 million RMB. Among them, the number of export was 21412 batches with a down rate of 5.52%. This value of export reached 779.7 million RMB with a growth rate of 4.81%. The import included 80025 batches, increasing by 9.68% with the value of 4392.1 million RMB. Among them, the number of unqualified goods is 7755 batches with value of 68.2 million RMB. The unqualified rates of export commodities and import commodities were 7.64% and 1.31% respectively. While the number of unqualified exported goods was 142 batches with value of 3.0 million RMB, the number of failure detection of import goods was 7631 batches, accounting for 9.53% of all import goods. These unqualified import goods were worth of 65.3 million RMB, accounting for 1.5% of all the import value.

3.4.3 Shanghai CIQ

3.4.3.1 Brief Introduction

The former of Shanghai Entry-Exit Inspection and Quarantine Bureau is Shanghai Import and Export Commodity Inspection Bureau, Shanghai Animal and Plant Quarantine Bureau, and Shanghai Health and Quarantine Bureau. It is directly governed by AQSIQ that led and supported its inspection and quarantine activities. Shanghai CIQ equips a number of advanced inspection and quarantine instruments and equipment. Therefore, it is a leading inspection and quarantine authority in China. The basic roles of Shanghai CIQ include supervision and management to individuals, entry-exit animal and plant, import and export goods, vehicles and so on (Jin, 2014).

Thus far, Shanghai CIQ has set up 14 sections: General Office; Legislation and General Affairs Department; the Institution for Health Inspection and Supervision; Supervision Department of Animal and Plant; Supervision and Inspection Department; Department of Supervision and Certification; Supervision Department of Food Safety; Department of Science and Technology; Personnel Department; State-owned Office; Financial Department; Department of Government Affairs; Department of Supervision and Audit; Department of Managing Retirees. Six direct subordinate institutions includes Science and Technology Center for Animal, Plant and Food Inspection and Quarantine; Science and Technology Center for Industrial Products and Raw Materials Inspection; Science and Technology Center for Machinery and Electronic Appliances Inspection; Shanghai Audit Center of China Quality Certification Center; Shanghai International Travel Health Care Center; Administrative Service Center. Fifteen branches: Pujiang Entry-exit Inspection and Quarantine Bureau; Putong Entry-exit Inspection and Quarantine Bureau; Shanghai International Airport Entry-exit Inspection and Quarantine Bureau; Wusong Entry-exit Inspection and Quarantine Bureau; Shanghai Yangshan Entry-exit Inspection and Quarantine Bureau; Minhang Development Zone of Entry-exit Inspection and Quarantine Bureau; Waigaoqiao Entry-exit Inspection and Quarantine Bureau; Fengxian Entry-exit Inspection and Quarantine Bureau; Chongming Entry-exit Inspection and Quarantine Bureau; Songjiang Entry-exit Inspection and Quarantine Bureau; Nanhui Entry-exit Inspection and Quarantine Bureau; Waigaoqiao

Free Trade Zone Branch of Shanghai Entry-exit Inspection and Quarantine Bureau; Jinshan Entry-exit Inspection and Quarantine Bureau; Shanghai Entry-exit Inspection and Quarantine Bureau Chemical Industrial Zone Office; Shipping Exchange Center Office (Jin, 2014).

The major responsibilities are as follows: Inspection, supervision and administration of import and export commodities; providing safety quality license for import commodities; inspection and supervision of the waste; providing quality license for export commodities; supervision and inspection sanitation installment of import food; quarantine of entry and exit animals and plants; inspection of transport packaging for export commodities (including hazardous substance); assessment of foreign investment assets; Cargo stowage and harmfulness survey; Health quarantine and supervision of entry-exit individuals; Sanitary quarantine and treatment of entry-exit means of transport and goods; issuance and management the Origin of GSP Certificate; certification and accreditation of quality system; supervision and administration of foreign-oriented inspection, quarantine, assessment and certification institutions (Jin, 2014).

3.4.3.2 Economic Environment in Shanghai

Figure 3-6 illustrates the GDP and its growth rate of Shanghai during the past decade. The economy in Shanghai has maintained steady and continuous growth and the living standards of people in Shanghai have been lifted to a high level in 2015. The GDP of Shanghai reached 2496.5 billion RMB in 2015, increasing by 6.9% over the past year. Among them, the primary industry increased by 11.0 billion RMB and the secondary industry rose to 794.1 billion RMB with a growth rate of 1.2%. The tertiary industry accounted for 67.8% of the whole GDP with an increasing of 1691.5 billion RMB, which was 10.6% higher than that of the last year. The Per Capital Real GDP of Shanghai reached 103100 RMB in 2015. While the public economy achieved to 1204.6 billion RMB with a growth rate of 7.2%, the non-public economy accounted for 51.8% of the whole GDP, reaching 1292.0 billion RMB with an increasing by 6.7%.

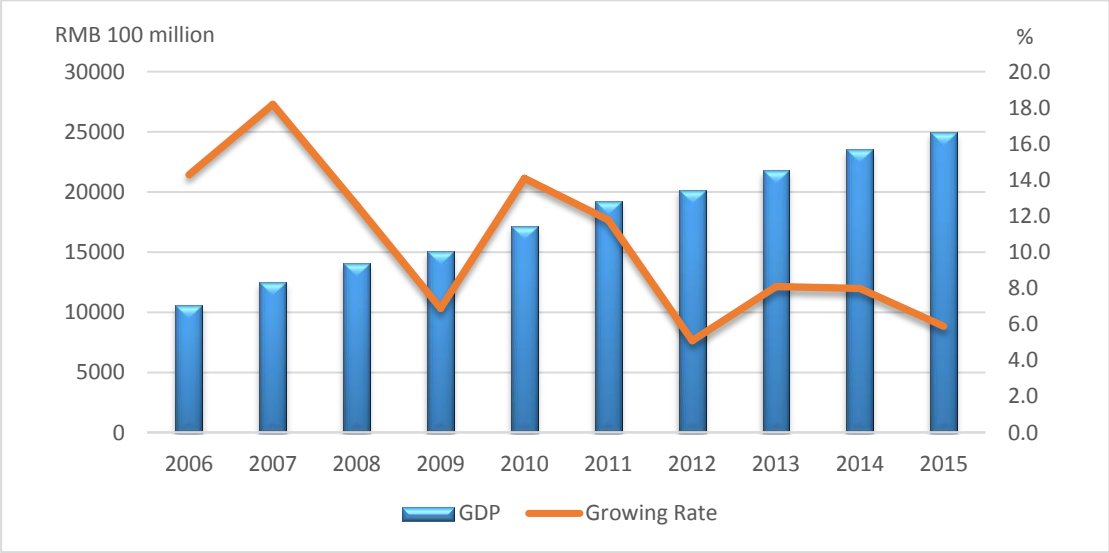

Figure 3-6 GDP and its growth rate of Shanghai (2006-2015)

Source: Shanghai Statistical Yearbook 2007-2016. Statistical Bureau of Shanghai. China Statistics Press.

Table 3-5 exhibits the six main industries in Shanghai and their outputs. As shown in Table 3-5, all industries in Shanghai reached 3321.2 billion RMB in 2015, decreasing by 0.5%. The output of the industries above designated size was 3105.0 billion RMB, decreasing by 0.8%.The six main industries accounted for 66.9% of the total output, achieved 2076.9 billion RMB with a down rate of 0.2% to the last year. Among six industries,only half industries were growing than the last year while another half were even lower than 2014. For example, the steel manufacturing industry achieved 116.0 billion RMB with 7.6% declining to 2014 and the complete equipment manufacturing industry was 400.2 billion RMB with a growth rate of 0.3%.The biological medicine manufacturing industry reached 90.5 billion RMB, going up by 2.0% to the last year. By contrast, electronic-information- manufacturing industry was 616.0 billion RMB with a drop rate of 1.8%;automobile manufacturing industry was 516.8 billion RMB with decreasing by 2.3%; petroleum and fine chemical industry reached 337.5 billion RMB, which was 7.1% higher than that of the last year.

Table 3-5 The six main industries in Shanghai and their growth rate: 2015

Item	2015	Growth Rate (%)
Total Value	**20769.4**	**-0.2**
Electronic and Information Manufacturing Industry	6159.6	-1.8
Automobile Manufacturing Industry	5168.2	-2.3
Petroleum and Fine Chemical Industry	3375.3	7.1
Steel Manufacturing Industry	1159.5	-7.6
Complete Equipment Manufacturing Industry	4001.9	0.3
Biological Medicine Manufacturing Industry	904.9	2.0

Source: Shanghai Statistical Yearbook 2007-2016. Statistical Bureau of Shanghai. China Statistics Press.

Furthermore, this thesis investigated the amount of import and export in Shanghai, which is the largest trade port in China. As shown in Table 3-6, the total value of import and export goods of Shanghai in 2015 was RMB 2806.1 billion with a 2.1% declining over the last year. Among them, the import achieved 1583.2 billion RMB, growing by 0.5% and the export reached 1222.9 billion RMB decreasing 5.3% over the last year. The amount of import from EU was 351.4 billion RMB, dropping 11.9% and export to the EU reached 225.0 billion RMB, also dropping 5.8% to 2014. By contrast, the import from United States was 177.3 billion RMB with an increase of 8.7% and the corresponding export achieved 283.0 billion RMB dropping by7.6%. The value of import reached 194.8 billion RMB, increasing by 4.4% and the export was 136.7 billion RMB dropping 5.0%. The value of import from Japan was 177.3 billion RMB with a decreasing of 7.6% and the export reached 132.5 billion RMB, declining by7.5%.

Table 3-6 Import and export commodities of Shanghai in 2015

Item	2015	Growth Rate (%)
Total Value of Import and Export (RMB 100 million)	**28060.9**	**-2.1**
Total Import	**15832.3**	**0.5**
State-owned Enterprises	2860.5	21.8
Foreign-Funded Enterprises	10543.0	1.7
Private Enterprises	2316.1	-0.8
General Trade	8101.2	-0.2
Processing Trade	2161.4	-5.0
Mechanical and electrical products	8185.4	-4.3
High-tech Products	5266.7	4.6
the United States	1772.7	8.7
the EU	3514.1	-11.9
ASEAN	1948.5	4.4
Japan	1772.7	-7.6
Total Exports	**12228.6**	**-5.3**
State-owned Enterprises	1577.6	-8.0
Foreign-Funded Enterprises	8201.5	-5.7
Private Enterprises	2337.0	-2.4
General Trade	5204.2	-3.7
Processing Trade	5233.9	-7.4
Mechanical and electrical products	8573.5	-4.1
High-tech Products	5354.7	-2.1
United States	2829.6	-7.6
EU	2250.1	-5.8
ASEAN	1366.7	-5.0
Japanese	1325.0	-7.5

Source: Shanghai Statistical Yearbook 2015-2016. Statistical Bureau of Shanghai. China Statistics Press

In addition to analyze the import and export in Shanghai, this thesis further investigated the inspection situation by Shanghai CIQ. Table 3-7 compares the inspection of Shanghai CIQ from 2000-2014. Taking 2014 as an example, the number of inspected import goods in Shanghai was 1.5 million batches with the value of USD 1586.4 billion. There were 43495 batches of unqualified commodities, accounting for 2.9% of the total batches. The value of the unqualified was USD 5.3 billion, accounting for 3.4% of the total value of the trade. The number of the inspection of export goods reached 166528 batches, with the value of USD 9.4 billion. The number of unqualified was 360 batches with the worth of USD 9.0 million.

Table 3-7 Import and export inspection by Shanghai CIQ: 2000-2014

Item	2000	2010	2013	2014
Import Inspection				
Number of Inspection (batch)	51,940	1,205,446	1,538,478	1, 492, 507
Value of Inspection (million USD)	76.2	1, 326.7	1, 605.8	1, 586.4
Number of the Unqualified (batch)	1, 539	5, 562	33, 817	43, 495
Percentage in Total (%)	3.0	0.5	2.2	2.9
Value of the Unqualified (100 million USD)	1.0	9.8	61.0	53.2
Percentage in Total (%)	1.3	0.7	3.8	3.4
Export Inspection				
Number of Inspection (batch)	344,138	728, 946	547, 253	166, 582
Value of Inspection (100 million USD)	100.9	238.8	235.8	93.8
Number of Unqualified (group)	564	202	188	360
Value of Unqualified (million USD)	11.0	6.0	4.0	9.0

Source: Shanghai Statistical Yearbook 2015-2016. Statistical Bureau of Shanghai. China Statistics Press

3.4.4 Guangzhou CIQ

3.4.4.1 Brief Introduction

Guangzhou Entry-exit Inspection and Quarantine Bureau was merged by the Guangzhou Import and Export Commodity Inspection and Quarantine Bureau, Guangzhou Entry-exit Health Inspection and Quarantine Bureau, Guangzhou Entry-exit Animal and Plant Inspection and Quarantine Bureau in November 1999. It is affiliated with Guangdong Entry-exit Inspection and Quarantine Bureau and a deputy departmental-level administrative unit with a unique post office and a business exhibition center. Guangzhou CIQ has set up 5 administrative offices and 8 business management offices (Wu, 2012).

Figure 3-7 shows the organization structure of Guangzhou CIQ. In addition, it is also responsible for the work of inspection, verification, supervision and management to entry-exit health, animal and plant and commodities according to related laws.

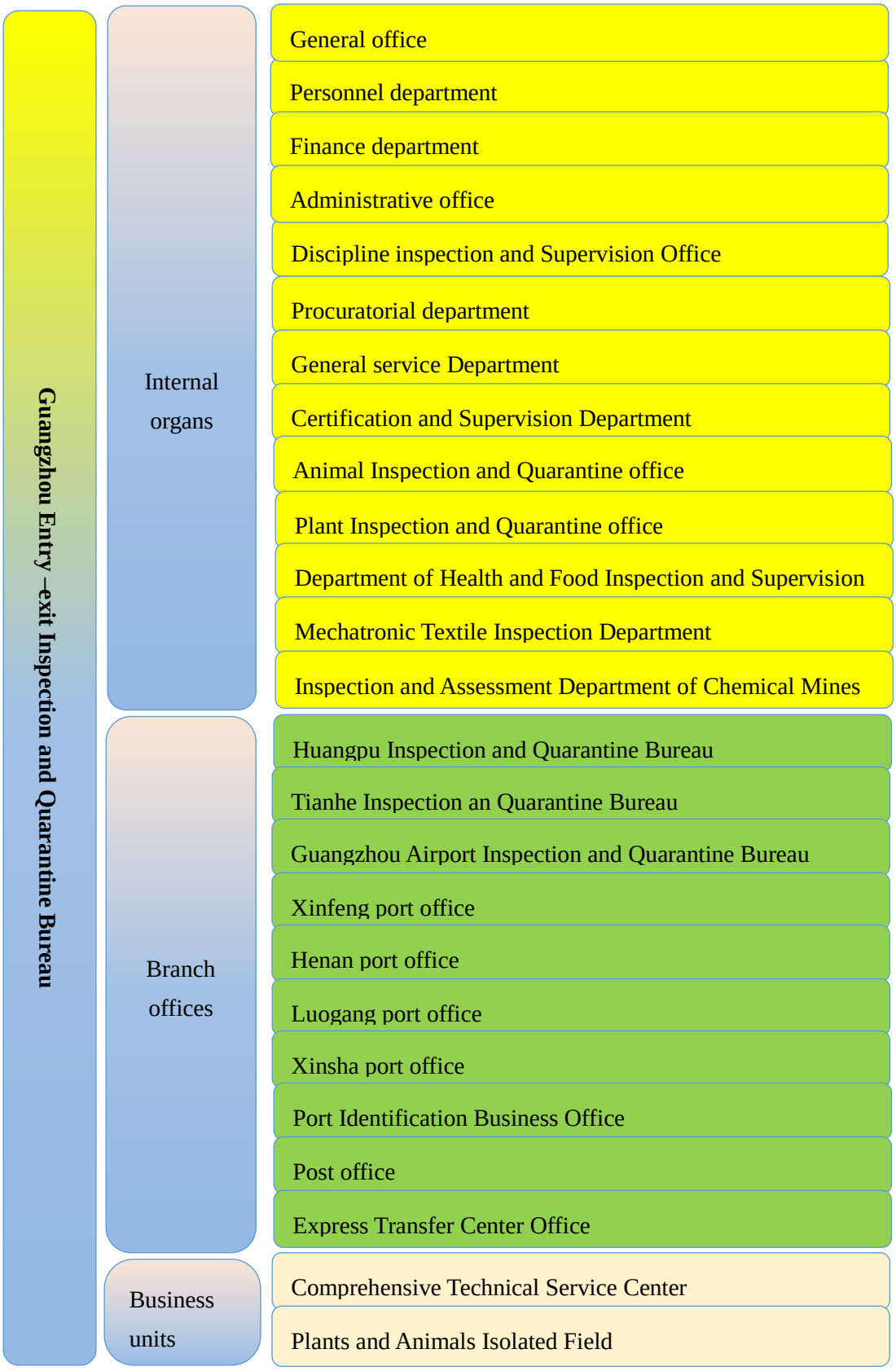

Figure 3-7 Organization structure of Guangzhou CIQ

Source: www.gz.gdciq.gov.cn

Guangzhou CIQ, as the largest branch bureau of Guangdong Inspection and quarantine system, always puts foreign trade service in the first position. Taking its advantage on inspection and quarantine technology, it continues to explore innovation pattern of inspection and quarantine service. At the beginning of the establishment, Guangzhou CIQ was approved by AQSIQ. With the leadership of Guangdong CIQ, it carried on business reform as the central task to execute in-depth investigation and put forward some feasible measures, which were capable of making preferable coordination between business sectors, and dealt with the problem on business integration. According to its strategy, in the next few years, in order to meet the need of rapid development on business and institutions, Guangzhou CIQ will try to combines with its own reSource and capabilities to adjust quickly and to reconstruct the original business division, business processes and operational documents. It will also develop a series of business guidance measures to explore electronic supervision mode, improve the service effectiveness of inspection and quarantine, and accelerate the evolution of customs clearance (Wu, 2012).

3.4.4.2 Economic Environment in Guangdong

Figure 3-8 illustrates the GDP and its growth rate of Guangdong in the last decade. As shown in Figure 3-9, Guangdong's GDP achieved RMB 7281.3 billion in 2015 and increased by 8.0% over the last year. Among them, the primary industry rose to 334.5 billion RMB, which was 3.4% higher than that of the last year while the secondary industry reached 3251.2 billion RMB with a growth rate of 6.8%. To be fastest development, the tertiary industry achieved 3695.6 billion RMB with an increase of 9.7% to 2014.

From the industry perspective, compared with 2014, the wholesale and retail sales industry only increased by 5.0% and the accommodation and catering sector grew by 3.0%. However, the financial and real estate industry still kept very fast growth rates with 15.6% and 11.4% respectively, accounting for 57.1% of GDP. In addition, the high-tech manufacturing industry also has shown strong increase, reaching 817.2 billion RMB with a growth rate of 9.8%. The advanced manufacturing industry was 1471.3 billion RMB with a growth rate of 10%.The modern service industry reached 2233.8 billion RMB, increasing by 11.9% than the previous year. The real GDP per capita was 67503 RMB.

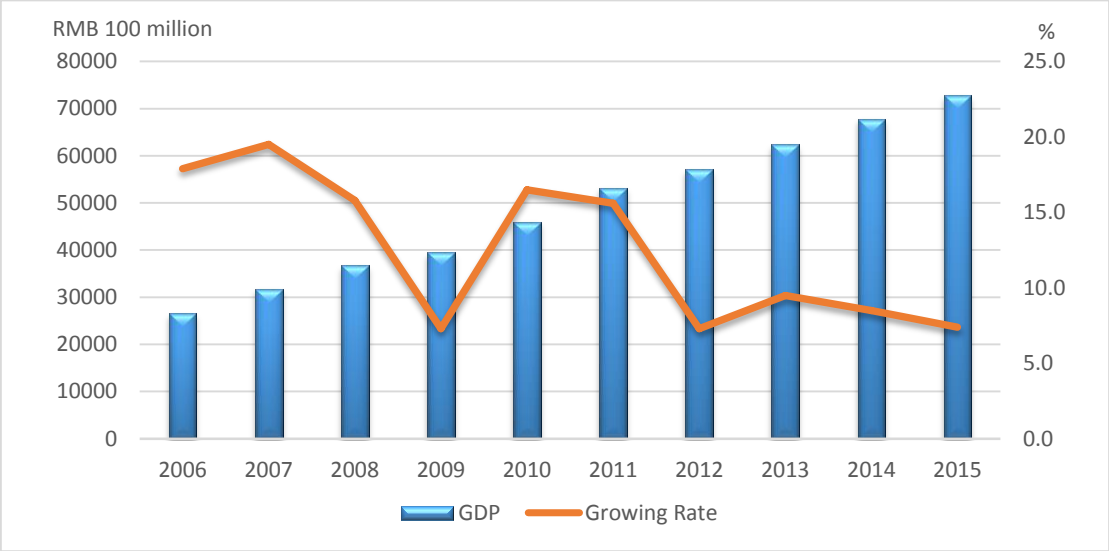

Figure 3-8 GDP and its growth rate of Guangdong: 2006-2015

Source: Guangdong Statistical Yearbook 2015-2016. Statistical Bureau of Guangdong. China Statistics Press

Figure 3-9 illustrates the import and export and their growth rates from 2010 to 2015. The total import and export of Guangdong in 2015 was RMB 6356.0 billion, decreasing by 3.9% over the previous year. Among them, the import was 2357.7 billion RMB, dropping 10.8% and the export reached 3998.3 billion RMB with a growth rate of 0.8% to the last year. Overall, the growth rate of total import and export experienced a sharp decline from 2010 to 2015.

Furthermore, Table 3-8 exhibits the import and export of Guangdong province in details in 2015. The value of import and export balance was 1640.6 billion RMB and had an increase of 317.2 billion RMB. As shown in Table 3-8, generally speaking, the export was better than import. There are only hi-tech products that have a small increasing both in import and export, showing that hi-tech products are becoming critical support of local economy. Taking import as an example, the import of general trade achieved 963.3 billion RMB with a decreasing of 5.4%. The processing trade was 988.7 billion RMB, dropping 19.4%. According to the type of enterprises, the import of state-owned enterprises achieved 189.2 billion RMB, decreasing by 19.0%. The private enterprises gained 865.4 billion RMB with a decline of 11.8%. The foreign-funded enterprises achieved 1303.0 billion RMB, decreasing by 8.9%. From the category of commodities, the import of mechanical and electronic products was 1547.5 billion RMB, dropping 0.9%. By contrast, only the import of hi-tech products was 1201.8 billion

RMB, which had an increase of 1.2%. For the export of Guangdong in 2015, however, only foreign-funded enterprise and processing trade showed negative growth rate, which may imply the adjustment of economy structure. Since most of processing trade are low value-added, the drop of its export may also reflect the upgrade of Guangdong economy.

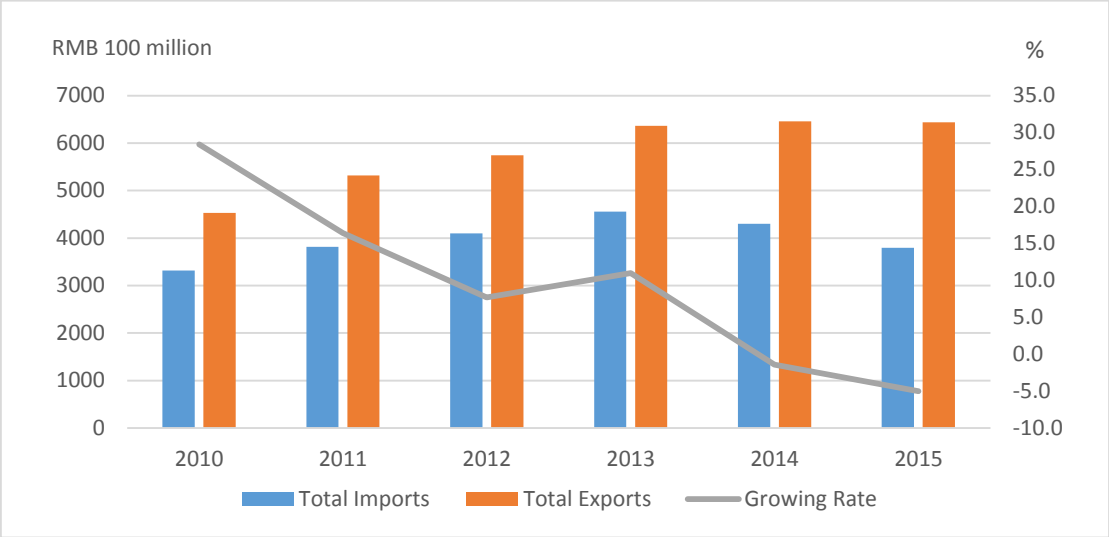

Figure 3-9 Import, export, and their total growth rate in Guangdong: 2010-2015

Source: Guangdong Statistical Yearbook 2015-2016. Statistical Bureau of Guangdong. China Statistics Press

Table 3-8 Import and export inspected by Shanghai CIQ : 2015

Item	2015	Growth Rate (%)
Total Import and Export (RMB 100 million)	**63559.7**	**-3.9**
Total Import	**23576.6**	**-10.8**
State-owned Enterprises	1892.1	-19.0
Foreign-Funded Enterprises	13030.2	-8.9
Private Enterprises	8654.3	-11.8
General Trade	9633.4	-5.4
Processing Trade	9886.9	-19.4
Mechanical and electronic products	15474.8	-0.9
High-tech Products	12018.3	1.2
Total Export	**39983.1**	**0.8**
State-owned Enterprises	3080.3	0.8
Foreign-Funded Enterprises	20686.7	-5.4
Private Enterprises	16216.1	9.9
General Trade	17146.4	11.7
Processing Trade	17472.9	-11.3
Mechanical and electronic products	27223.4	3.4
High-tech Products	14467.1	2.0
Balance	**16406.5**	**24.0**

Source: Guangdong Statistical Yearbook 2015-2016. Statistical Bureau of Guangdong. China Statistics Press

3.5 Challenges of CIQ in China

3.5.1 Interview to the Four CIQ

From the introductions of the above four CIQ, we may find that there are still many challenges faced by them. Especially under the fast changing and unstable international context and the downward pressure of domestic economy, how to restructure provincial and city CIQ to help promote the development of local economy has become an urgent and big problem.

To further figure out the problems that each CIQ is faced with, this study interviewed eight top managers of the above four provincial or city CIQ between May and August, 2016.

For each CIQ, two interviewees were performed. The in-depth interviews for every manager spent on more than half an hour. Table 3-9 shows interview results for the CIQ in Inner Mongolia, Heilongjiang, Shanghai and Guangzhou. We may find that there are many external and internal factors that influence the CIQ such as the complexity of inspection and quarantine activities, the change of economic environment, the influence of traditional management system, a lack of supervision and other reasons. Under these new environment, nearly all CIQ are faced with serious challenges like mixed positions, lack of advanced inspection equipment and talents, unsatisfied service quality, and unsuitable supervision mode. The field survey results are also consistent with some Chinese literature by Li (2013), Xie (2014), and Qiu, (2014).

Table 3-9 Some interviewing results for CIQ

CIQ / Questions	Inner Mongolia	Guangzhou	Shanghai	Heilongjiang
Do you think organization structure is easy to change by market need?	Very difficult to change	Difficult to change	Not easy to change	Very difficult to change
Do you think you testing equipment or technology can meet the enterprise's need?	Cannot meet the need of enterprises	We still need to buy some advanced instruments	Still need to improve	A long way to improve our equipment
Do you think the service standard is very clear?	Not very clear	Clear	Very clear	Not very clear
Do you lack qualified technological talents?	Lack both technological and managerial talents	Lack technological talents	Need first-class technological talents	Difficult to retain the talents
Does the supervision mode adapt to new environment?	Not yet. Need reform supervision mode	It is difficult to change. Due to the organization structure rigidity	We are trying to reform the mode, but still has many difficulties.	Not yet. We hope to change but still have many problems.
Do you satisfy the service of CIQ?	Have improved a lot but still cannot meet the need of	Much better than before but still have much space to improve	Have to innovate to adapt to fast changing demand and situation	Though it is better, there are still many problems

Source: by the author

3.5.2 Common Problems

Although the four CIQ are chosen from different regions, they still have some common problems as follows.

(1) Mixed positions

This is a common issue for all investigated CIQ. As Li (2013) pointed out, since all CIQ are public organizations, it is difficult to adjust the rapid changing environment compared to the enterprises. From the previous introduction, we find that these CIQ were established

during the transitional economy, their function and managerial level can't meet the demand of socialist market-oriented economy very well. Nowadays, even though there are many agencies in China, which have the ability to inspect import and export commodities, only few of them get qualifications. Under this circumstance, the CIQ as the legal organization shares some similar and overlapping functions with local inspection companies. To be a competitor to these agencies, it is hard to act both the player as well as the judge, rendering it difficult to supervise the inspection and quarantine industry.

These mixed roles of CIQ may stem from the merge of commodity inspection, sanitation inspection, animals and plants inspection. Jin (2014) believed that all CIQ in China has a strict hierarchy system, which may bring about some limitation for CIQ development. For example, it may not invest some advanced instrument according to the market needs. Thus the dual positions also leads to ambiguous supervision and management, making is hard to concentrate on most important activities. The responsibility of CIQ is unclear and law enforcement is not so strict (Wu, 2012).

This confusion coming from the mixed positions of CIQ also affect its related organizations like large ports. In particular, as the port management was hard to adapt to modern logistics and other problems in large ports, making the reform of regional customs clearance difficult and risky to inspection and quarantine. Policies and regulations of port management cannot meet the demand of rapid economic. The port inspection agencies did not closely linked with each other, leading to the current release pattern of inspection and quarantine not satisfy the need of international logistics and foreign trade.

On one hand, because of its public property, the composition of the detection system in China is mainly controlled by the government. Compared with some developed countries, which usually establish routine inspection system to carry out the whole process of inspection (Li, 2013), it is often difficult for CIQ to be sensitive to the external environment and market demand due to lack of entrepreneurship and survival pressure. On the other hand, institutional duplication leads to the waste of resources. Because of the lack of unified development plan of inspection agencies, low level and redundant constructions are very common. The government spends much time and money on regulation without expected results.

(2) Lack of advanced inspection equipment and talents

By interviewing, we found that nearly all CIQ are short of the technical barrier system to copy with the development of trade in inspection and quarantine activities compared with advanced countries. This kind of situation can be partly explained by the comparatively limited technology in China (Jin, 2014). For instance, many measuring and testing techniques have lower degree of accuracy than the world first-class countries. In addition, Wu (2012) argued that the frequent adjustment to CIQ structure had made some departments unclear of their functions and roles in the organization.

Although Guangzhou CIQ has paid more attention to the technology and qualified talents, there still exists many problems (Wu, 2012). These shortages bring about many difficulties in forming and implementing their regulations and standards. For example, the lack of talents has made it impossible to be familiar with general international standards and to carry out technical management measures timely and comprehensively. In addition, it lacks special funds and talents with insufficient implementation and support to companies and defensive and passive countermeasures.

Currently, the managerial systems in CIQ also influence the improvement of technology as well as the incentive or enrollment of needed talents. Qin (2014) stated that the administrative intervention also results in the inferior position of professional departments, which deteriorate the value and enthusiasm of technological personnel. Taking Heilongjiang CIQ as an example, over the years, the inspection and quarantine systems have long been unbalanced (Qin, 2014). The detection capacity in some affiliated agencies are very weak and their equipment is also out of date, which often leads to the inaccurate testing result or very long process of inspection. Besides the technology, these CIQ also lack professional technical talents. The skills of the professional staff in laboratory for inspection and quarantine lag behind the developed countries in many aspects. This has seriously affected the effectiveness and efficiency of inspection and quarantine authority of CIQ. Furthermore, there also exist communication and cooperation problems in CIQ. In many cases, the local government and relevant departments in CIQ cannot work very well, leading to unbalanced distribution of resources in Heilongjiang CIQ.

The contradiction between the growth in business volume and shortage of necessary talents has become an obvious phenomenon in nearly all CIQ, which is consistent with the findings by Jin (2014). From the interview, we may find that the inadequate human resources have obviously hindered the development of foreign trade to some extent. Since CIQ is a government department, its organization structure nearly follows the other public organization. However, the special roles of CIQ determine that it have to compete to other private inspection and quarantine agencies. Therefore, CIQ have to compete with other rivals for the talents. However, the institutional system of CIQ may lead to a disadvantage position when competing with enterprises. All these deteriorate the competitive advantages of CIQ as well as its rapid development.

(3) Unsatisfied service quality

The service contents of CIQ mainly include providing information, consulting, technology assessment, and supervising trading enterprises. In recent years, Inner Mongolia CIQ has provided a number of specific service measures, which have positive social impact. However, some CIQ did not strictly follow the legal procedures to test and negatively affect the trade of entry-exit companies (Li, 2013).

Taking Guangzhou and Shanghai CIQ as cases, while the foreign inspection institutions no matter official or private ones pay more attention to service and product strategy, CIQ has weak service senses to the import and export companies. Instead of providing good services to the enterprises, they tend to show their authorities and powers. China's inspection and quarantine organizations have more bureaucracy and irrational understanding of products (Jin, 2014). Meanwhile the final inspection identification is very simple.

In recent years, customs, ports, airports, railways and other joint inspection transport departments actively promote rapid clearance mode to simplify customs procedures and improve clearance rate and service level. However, taking the overall operation of ports into account, the joint inspection transport departments often fail to cooperate with each other because of their different interests. Further, it is unable to achieve the goal to form the joint law enforcement and resource integration due to the lack of effective communication and cooperation mechanism (Wu, 2012).

China has been gradually changing from the planned economy to the socialist market-oriented economy. Enterprises have become the subject of market and will share more responsibilities than before. Previous reform of institutional organizations like CIQ emphasized more on their administration function, ignoring their service property. They often replaced market mechanism with administrative command to improve service quality. During this period of time, some law enforcement agencies appeared. They focused on supervising the products of trading enterprises, rather than thinking of how to provide better service to the local economy (Qin, 2014).

With the rapid development of China's foreign trade, the current traditional supervision mode of inspection and quarantine has become increasingly unsuited to the trade (Wu, 2012). For instance, for the high-tech products, due to their continuous innovation, it is much difficult to use traditional method to detect. At present, China is lagged behind in the formulation of regulation policy on some advanced technology, new import and export commodity inspection and quarantine. The testing standard and regulation of relevant products leave much to be desired.

(4) Unsuitable supervision mode

The rapid globalization has broken the traditional balance between customers and suppliers. In particular, Internet and new communication has accelerated the international trade, in which customers have much more choices than before. Taking Inner Mongolia CIQ as an example, located in autonomous region, though Inner Mongolia CIQ has made great effort on service, its current supervision mode still cannot meet the need of fast changing environment. At present, the Inner Mongolia entry-exit inspection and quarantine agencies still use the original supervision mode to inspect import and export commodity. For example, because Russia and Mongolia frequently build different technical barriers to trade for various reasons like making a very strict safety and health rules to restrict imported agricultural products from China, traditional supervision and inspecting procedures and approaches are difficult to meet their standards, resulting in the large losses of Chinese export enterprises and the low efficiency of practice of customs clearance.

The rapid changing context especially the higher requirement to improve the efficiency

of practice of customs clearance leads to the continuous changes of inspection and quarantine procedures and requirements, making some laws and regulations difficult to follow in practice. Inspection and supervision are the two essential management functions of CIQ. However, it is always not easy to balance these dual functions due to the limited resources and capabilities. CIQ often stresses the inspection of finished product and neglects the regulation on production process. For example, the Guangzhou CIQ emphasized on technology and professional abilities but d the administrative supervision, leading to the deficiency for mandatory sanction. Two reasons may account for this unsatisfactory service: one is that the procedure and content of technical regulation are not standardized and another is that the structure of technical regulation is unreasonable because of the ability (Wu, 2012). Similar to Guangzhou CIQ, Heilongjiang CIQ also emphasized more on inspection than supervision (Qin, 2014). This makes Heilongjiang inspection and quarantine departments lag behind in management of raw materials, production technology, and business management.

3.5.3 Specific Problems

Above we summarize the common problems in CIQ from the in-depth interview. Besides them, we still find some specific one for each CIQ. For instance, the catalog of product inspection is too complex in Shanghai CIQ (Jin, 2014). The inspection and quarantine supervision system in Shanghai CIQ has strong Chinese characteristics, which is supervised by General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ), which involves a range of goods. The test project focuses on appearance, quality, packaging, quantity, specification and the section of the safety, health, and environmental protection. There are more than 6000 items in China and this situation is rare in the world.

The institution pays more attention to import than export in Heilongjiang CIQ. The supervision of import is much better than export due to the production capacity and high quality of foreign enterprises (Qin, 2014). In recent years, Heilongjiang inspection and quarantine departments has continuously carried out a serious of special rectification activities to focus on improving the products quality of export enterprises and establishing an effective supervision system. Even though the supervision and inspection of export goods have been strengthened, the regulation on export is still weaker than that on import.

3.6 US Food and Drug Administration (FDA)

3.6.1 Brief Introduction

The Food and Drug Administration (FDA) is a department of Health and Human Services of America. It consists of one Commission office and four directories, which supervise the primary works of the agency: Medical Products and Tobacco, Foods and Veterinary Medicine, Global Regulatory Operations and Policy, and Operations. The funds of FDA mainly come from the federal budget. In addition, according to the US "Prescription Drug User Fee Act (PDUFA)", FDA charges examination fees for the drug manufacturers who apply new drugs in pharmaceutical industry. There are also some similar charge regulations in "Medical Device User Fees and Modernization Act" (MDUFMA). However, these costs can be reduced for some small manufacturers. FDA is responsible for protecting the public health by assuring the effectiveness, quality, and security of human and veterinary drugs, vaccines, other biological products and medical devices in the US domestic and imported products (http://www.fda.gov/default.htm.). The FDA is also responsible for the safety of food supply, all cosmetics, dietary supplements and products that give off radiation. It assures safe and proper label to cosmetics and dietary supplements, regulates tobacco products and advances the public health by helping to accelerate product innovation. FDA's responsibilities extend to the 50 states, the District of Columbia, Puerto Rico, Guam, the Virgin Islands, American Samoa, and other US territories (Huang, 2014).

The regulation of FDA for most products is based on a series of open standards and a number of instruments. Most of the federal laws enforced by FDA have been incorporated into the "Federal Food Drug and Cosmetic Act", namely "Title 21 of the United States Code". Other laws executed by FDA include "the Public Service Act", "Controlled Substances Act", "Federal Anti-Tampering Act", and "Family Smoking Prevention and Tobacco Control Act". FDA implements a wide range of safety supervision (http: //www.fda.gov/default.htm.). For example, the regulation of prescription drugs involves every aspect from drug testing, manufacturing, labeling, advertising, marketing, effectiveness to drug safety. FDA has a great influence in the United States and even all around the world. Today, it has become the patron saint of the world's food and drug safety (Wang et al., 2013).

3.6.2 Characteristics of FDA and Its Enlightenment to China

The main characteristics of FDA are as follows (Huang, 2014):

(1) Completed food safety supervision organization;

(2) Strong food safety laws and regulations;

(3) Strict port inspection, diverse means, and the high check rate;

(4) Highly open and transparent food safety information;

(5) Extensive application of network technology;

(6) Positive role of a variety of social groups and news media in food safety supervision.

The system of laws and regulations for import and export products in the United States is comparatively perfect (Wang et al., 2013). The federal government has a variety of laws and regulations, which are constantly being revised according to various changes of the world and published every year in the form of federal code. They have become the only legal basis for the inspection and quarantine standards. The United States also sets special channels and the staff in international airport immigration customs to carry out inspection through goods declarations form, oral questioning, open-package inspection, and animal quarantine. The sampling ratio ranges from 70% to 80%.

Making use of network technology, FDA can timely release various instructions through network to ensure the consistency of national policies in 24 hours, guaranteeing the coerciveness of laws and regulations (Huang, 2014). Besides, all information of inspection and quarantine results can also be easy accessed through Internet or even officers may make a decision with the help of artificial intelligent systems. The technological improvement provides much convenience and a large amount of information, extremely enhancing the transparency of various inspection and quarantine activities.

3.6.3 Implication of FDA on CIQ

From the above introduction on FDA, we may find that, CIQ still have a huge gap to catch up with the developed countries like the US (Huang, 2014; Wang, et al., 2013). The implications of FDA on CIQ are as follows:

- The inspection and quarantine organizations of CIQ in China may learn from FDA

to clarify the regulatory functions and responsibilities of all departments and timely improve the related policies.

- CIQ should make use of Internet technology to enhance the propagation of various policies and laws. Meanwhile, CIQ may develop some computer system to help decision-making. This can save labor force and provide more comprehensive network service based on the demand of trade and commerce.
- China should draw lessons from the previous experience and learn from the successful experience of the United States in the process of food safety supervision. The state should detect food safety from the source, implement hazard analysis system, and establish complete market access system including tracking system of food sales and recall system of defective food to achieve the all-round monitoring from production, process, package, transportation and to marketing, which covers the entire food production chain.
- China should cultivate an independent industrial association. Because most of Chinese associations of products industry are semi-official, in many cases, it is very hard for them to provide objective evaluations to the government supervision. The industrial association should be independent from the government departments, and play the role of non-governmental organizations to supervise the departments of government products safety supervision. CIQ also need to regulate the impartially reports especially on the internet, which may destroy the reputation of trading enterprises.

3.7 Summary

This chapter is to introduce the main function and development of the CIQ. Four typical local CIQ were chosen to investigate their current situation as well as challenges. Through the interview, we found that nearly all four CIQ are facing with some common problems such as mixed position, lack of advanced inspection equipment and talents, unsatisfied service quality, and unsuitable supervision mode. In addition, FDA was discussed as a benchmark of CIQ. All these studies will help to guide the service model innovation of CIQ.

Chapter 4:Empirical Survey on CIQ Service and Demands of Enterprises

As mentioned in the previous chapters, CIQ is faced with serious challenges in the current global turbulent environment. In order to improve the service performance of CIQ, we need to investigate the demands of import and export enterprises to further provide the principles for the service innovation of CIQ. Therefore, in this chapter, an empirical study method including questionnaire and in-depth interview was employed to investigate problems of CIQ from the perspective of promoting the economy.

4.1 Objective of the Empirical Study

The main purpose of this empirical study is as follows:

(1)To assess the service satisfaction of CIQ;

(2)To identify the main obstacles faced by import and export enterprises;

(3)To investigate the demands of the entry and exit enterprises to CIQ;

(4)To explore the factors which affect the service level of CIQ.

4.2 Research Design

To achieve the purposes presented in the previous section, we designed a questionnaire to investigate the state of CIQ service as well as the demand of import and export enterprises. This questionnaire consists of four parts, that is, the basic information of the enterprises, the service provided by CIQ, satisfaction to CIQ service and the enterprise demand for CIQ. The details can be found in *Appendix 1*. *Table 4-1* presents the main items included in the questionnaire.

For *Q Ⅲ-2* and *Q Ⅳ-1*, we used a 7-point Likert scale to measure the weight of each activity. In addition to the questionnaire, we also performed some interviews with enterprises to confirm the accuracy of the questionnaire answers as well as to investigate the demand of enterprises.

Table 4-1 Main Items in the Questionnaire

	Question number	Items
Section Ⅰ Profile	Q Ⅰ-1	Enterprise ownership
	Q Ⅰ-2	Sector of the enterprise
	Q Ⅰ-3	Total revenue
	Q Ⅰ-4	Number of annual inspection and quarantine batch
Section Ⅱ Trading service to the enterprise	Q Ⅱ-1	Understanding of the trade policy
	Q Ⅱ-2	Channels to know the related policy
	Q Ⅱ-3	CIQ activities on policy publicity
	Q Ⅱ-4	Communication way with CIQ
	Q Ⅱ-5	Foreign technical barrier impact
	Q Ⅱ-6	Channel to know the foreign technical requirement
	Q Ⅱ-7	Obstacles in export
	Q Ⅱ-8	Extent to know the import and export standards
	Q Ⅱ-9	Activities needed for CIQ to do
Section Ⅲ Satisfaction for CIQ	Q Ⅲ-	Service provided by CIQ
	Q Ⅲ-2	Evaluation to CIQ services (including 10 questions)
Section Ⅳ Demand of the enterprise	Q Ⅳ-1	Enterprise Demand to CIQ (including 8 questions)

Source:by the author

4.3 Data Collection

As shown in Section 4.1, the main purpose of this field survey is to acquire first-hand information or responses from the trading enterprise to guide the improvement of CIQ. Therefore, considering the accessibility of the data, in this study, all important and export enterprise in Guizhou province were chosen to collect necessary data. We first find the name

list of all trading companies from Guizhou CIQ and then contact the CEO of each firm for their support. Since this survey concern about the trade situation of the company, key informants chosen is crucial to the quality of questionnaire. Thus for each company, the top manager who is in charge of import and export was selected to answer the questionnaire. Since Guizhou CIQ supported this survey, it is easy to find the contact information of these managers. We first called these managers to explain the purpose of this study and get their permission to join this survey, then the questionnaires were sent to them by emails. The good communication with key informants guarantees the quality of questionnaires and allows the researcher to gain the related data as much as possible.

The survey was conducted from July to October 2016. According to the statistical information, there are altogether 131 import and export companies in Guizhou until October 2016. In the first round, there are only 7 uncompleted questionnaires with few missing items. Then we contacted all 7 companies to explain the problems in the questionnaires. Fortunately, they were all willing to recheck the questionnaires and returned them to us once more. Therefore, in the end, all 131 questionnaires were collected with 100% respondent rate.

Meanwhile, during that period of time, 5 typical enterprises also were selected for in-depth interview. Since it was a semi-structured interview, each interviewee was asked the similar set of questions by the interviewer and this happened in a time frame of at least one hour each. The main questions asked in the interview were:

- What are the main problems faced by your import and export products?
- How do you evaluate the service of Guizhou CIQ?
- How to improve the service of Guizhou CIQ?
- Do you think it is necessary to have a more market-oriented inspection and quarantine center? If yes, would you like to pay for its service?
- Does your enterprise need the processing monitor to guarantee the final quality of export products?

The findings from the interview section not only help assess the objectivity of the responses from the questionnaire, but also provide the opportunity for respondents to further discuss some significant issues that are difficult to be collected by the questionnaire.

4.4 Survey Results

4.4.1 Profile of Sampled Enterprises

The first section of the questionnaire is the basic information of the enterprises, namely import and export enterprises in Guizhou province. This part includes four questions: enterprise ownership, industry, total revenue, and the number of annual inspection or quantity. The descriptive statistical results are reported as follows:

Q Ⅰ-1. Enterprise ownership

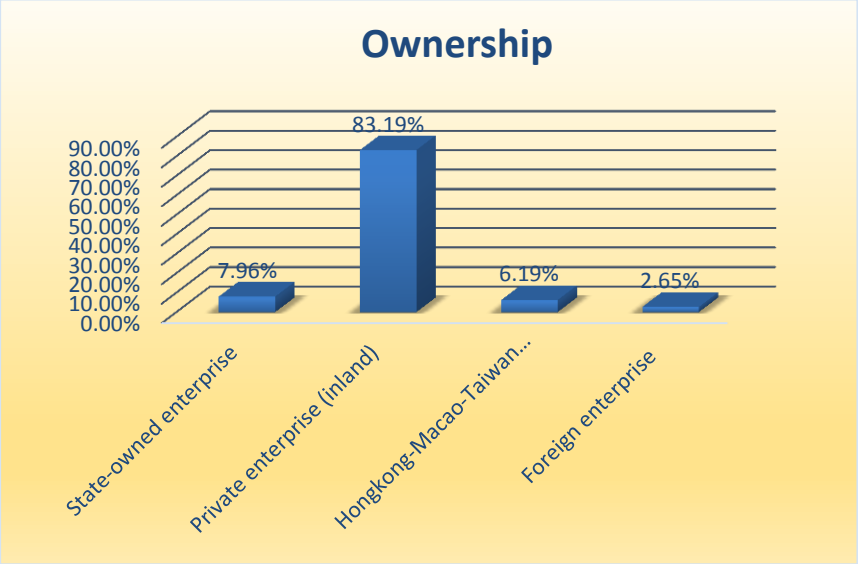

Figure 4-1 Results for Q Ⅰ-1

Source:by the author

As shown in Figure 4-1, the enterprise ownership distribution is quite uneven, in which more than 80 percent of enterprises are private enterprises, compared with only 7.96% of state-owned enterprises, 6.19% of Hongkong-Macao-Taiwan enterprises, 2.65% of foreign enterprises. These results also reflect the transitional characteristics in China, where private companies have gradually become the main backbone to the market economy.

Q Ⅰ-2. Enterprise Sector

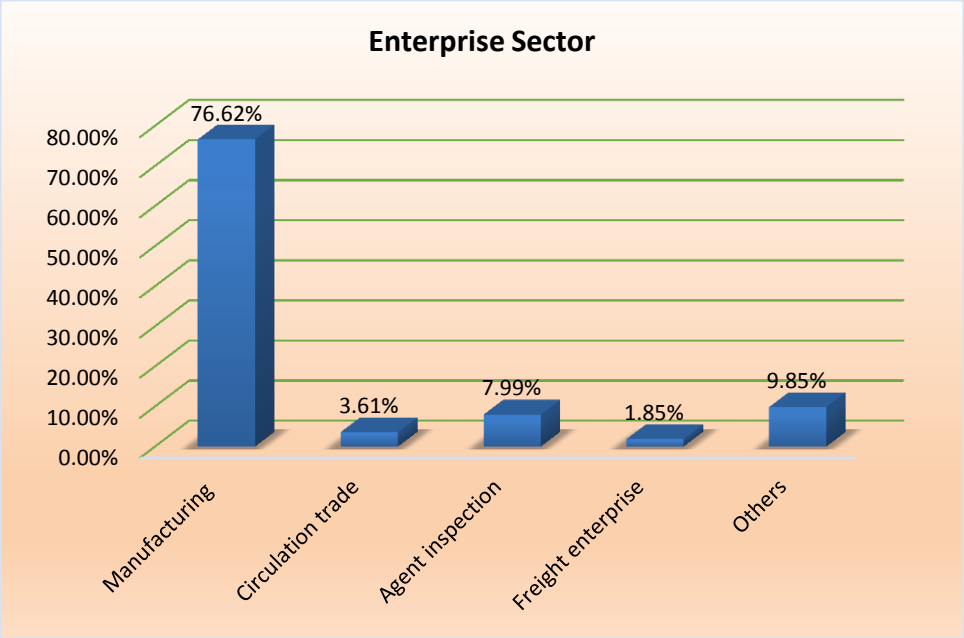

Figure 4-2 Results for Q Ⅰ-2

Source:by the author

Figure 4-2 shows the sectors of import and export enterprise. We may note that more than two-thirds of the enterprises are production, processing, or manufacturing enterprise, whereas the freight enterprises account for only 1.85%. By contrast, there are still nearly 8% of sampled enterprises are in agent inspection. This results that the manufacturing is the main component for Guihzou trade.

Q Ⅰ-3. Total revenue of enterprise:

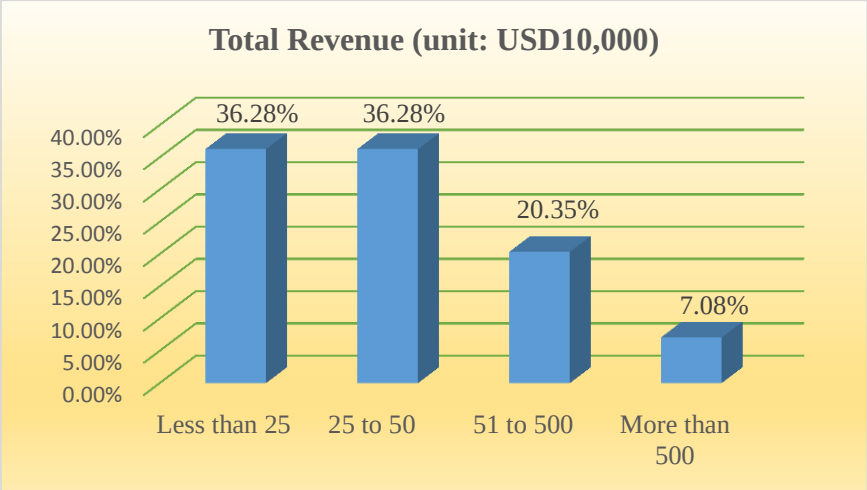

Figure 4-3 Results for Q Ⅰ-3

Source:by the author

As shown in Figure 4-3, the business sizes comparatively concentrate on small and medium categories. The number of businesses whose total revenues are less than 250 thousand dollars and between 250 to 500 thousand dollars are exactly the same and both account for 36.28% in the sampled enterprises. By contrast, companies whose revenues are more than 50 thousand dollars only occupy less than 30%, with only 7.08% of firms more than 5 million dollars and 20.35% between 51 and 500 thousand dollars. This also shows that the import and export firms in Guizhou are not very large, consistent with the results that most trading enterprises are private enterprises.

Q Ⅰ-4. Number of Annual inspection or quarantine batch

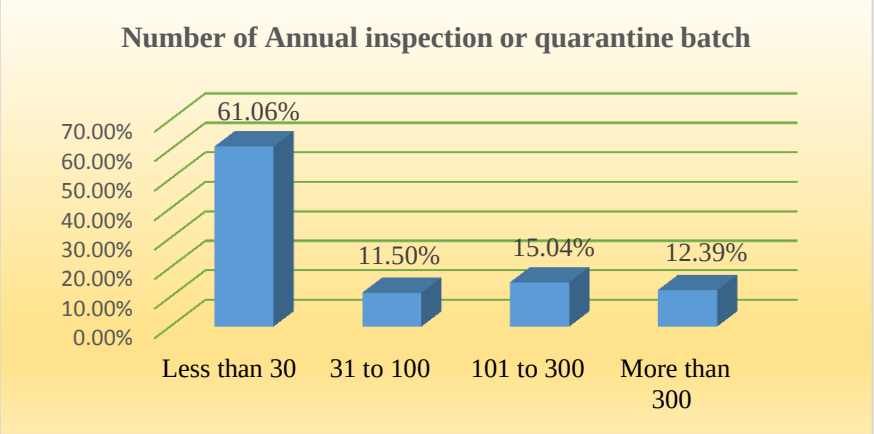

Figure 4-4: Results for Q Ⅰ-4

Source:by the author

As can be seen in Figure 4-4, more than half (61.06%) of the annual inspection batch of enterprises is less than 30. The number of annual inspection or quarantine batch from 30 to 100, 101 to 300, and more than 300 accounts for 11.50%, 15.04%, and 12.3% respectively. Therefore, from this perspective, we may find that most of the enterprises are private production, processing, or manufacturing enterprises, and their trading scale is not very large.

4.4.2 Trading service to enterprise

The second section in the questionnaire is designed to investigate the current service situation of Guizhou CIQ, which mainly include some questions on laws and regulations. The survey results are presented as follows.

Q Ⅱ-1. To what extent are your clear of the import and export policy?

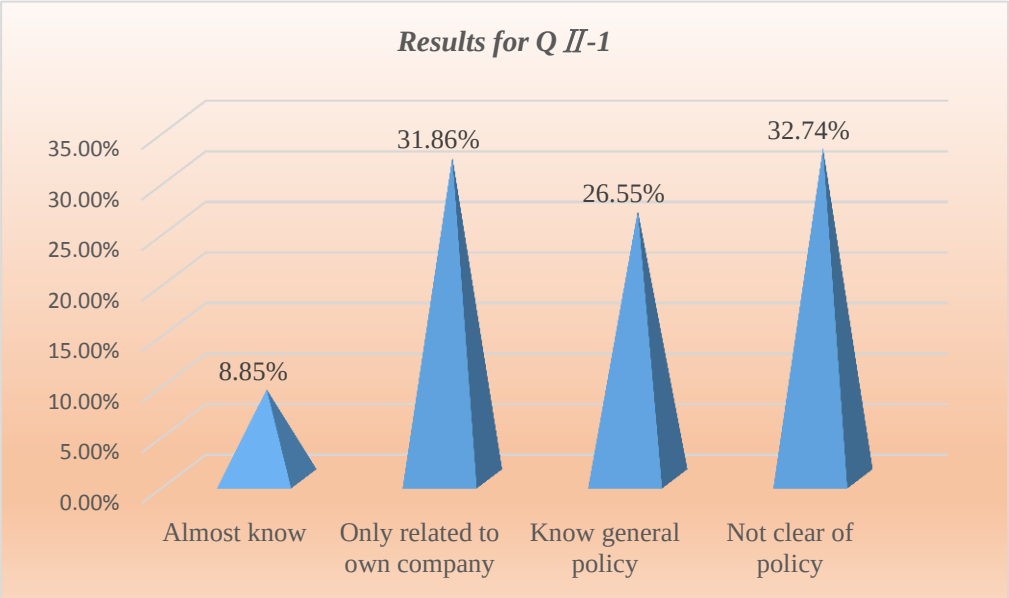

Figure 4-5 Results for Q Ⅱ-1

Source:by the author

As illustrated in Figure 4-5, only 8.85% of the companies clearly know the import and export trade policy. Nearly one-third of the enterprises are only concerned about the policy of their own company, and 26.55% of the companies just know the general inspection policy on import and export. Whereas there are also one-third of the enterprises do not care about the national policies, their inspections are only done according to the requirements of Guizhou CIQ. This is an undesirable result, indicating that the enterprises do not know much about entry-exit policies, reflecting the lack of trading experiences. These results also provide some suggestion to the service innovation for Guizhou CIQ.

Q Ⅱ-2. Which channel does your company get to know the relevant laws and regulations?

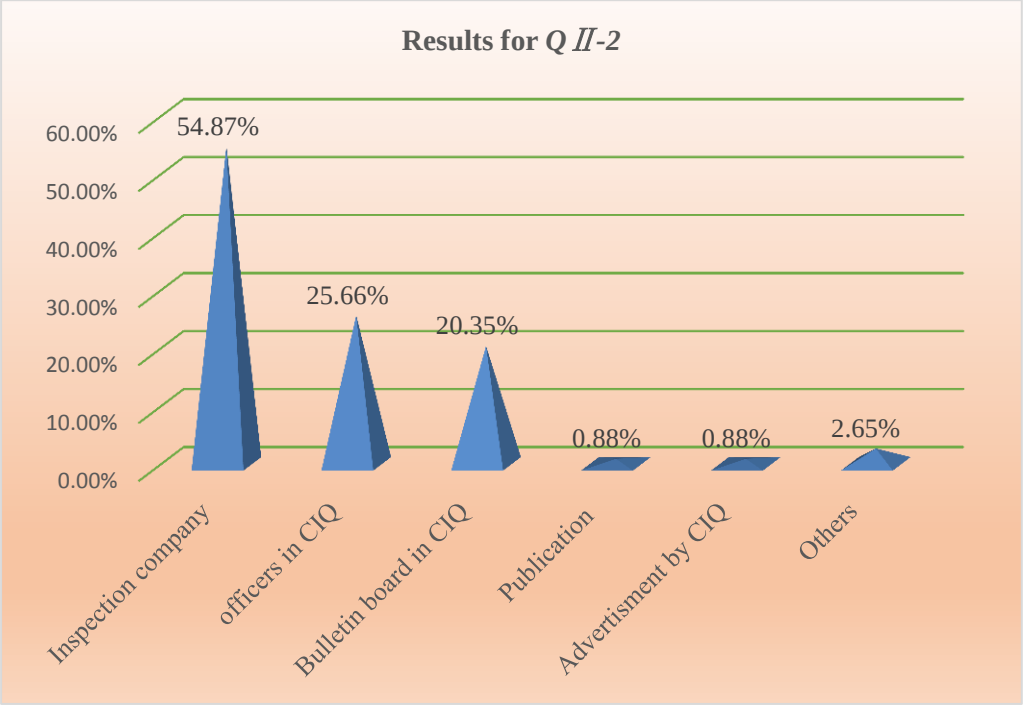

Figure 4-6 Results for Q Ⅱ-2

Source:by the author

As shown in Figure 4-6, more than half of the companies understand the relevant laws and regulations through the inspection companies, inspection persons or legal advisers. About a quarter of the enterprises indicates that they consult to the entry-exit inspection and quarantine officers in Guizhou CIQ. Meanwhile, there are 20.35% of businesses get to know the related laws and policies through the bulletin board and portal site in Guizhou CIQ. In addition, 4% of companies collect necessary information through publications like "China Times", advertisement provided by Guizhou CIQ, and Internet etc. This survey reveals that Guizhou CIQ failed to provide plenty of policy information to the trading enterprises.

Q Ⅱ-3. How often do the officers in Guizhou CIQ explain the relevant laws and policies to your company?

Figure 4-7 presents the frequency for the officers in Guizhou CIQ explaining relevant laws and regulations to the enterprises. According to the investigation, only 7.96% of the enterprises think that the officers in Guizhou CIQ often explain to them. However, nearly half of the businesses replied that the interpretation is not enough and only sometimes explain the

import and export policies to the enterprises. There are also 11.50% of companies considered that some of the officers themselves are not familiar with the laws. It is surprising to note that nearly one-third of the enterprises (30.97%) mentioned that the Guizhou CIQ never explain policies to them, showing that Guizhou CIQ is not active to advertise the import and export policies to the firms. This is also an important problem needed to be improved.

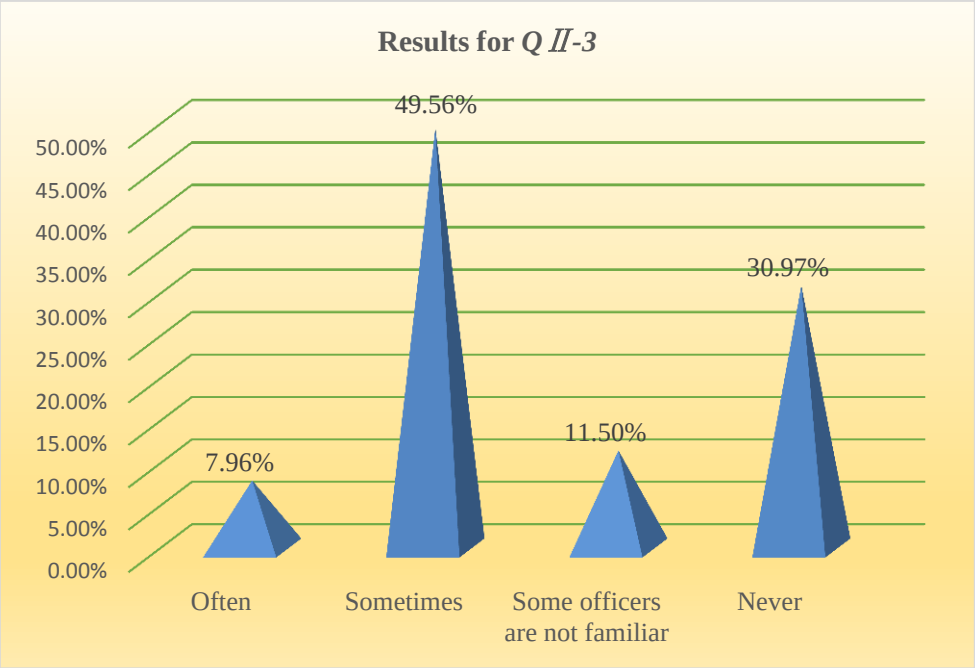

Figure 4-7 Results for QⅡ-3

Source:by the author

Q Ⅱ-4. Which ways do you think it more efficient for Guizhou CIQ to communicate with your company?

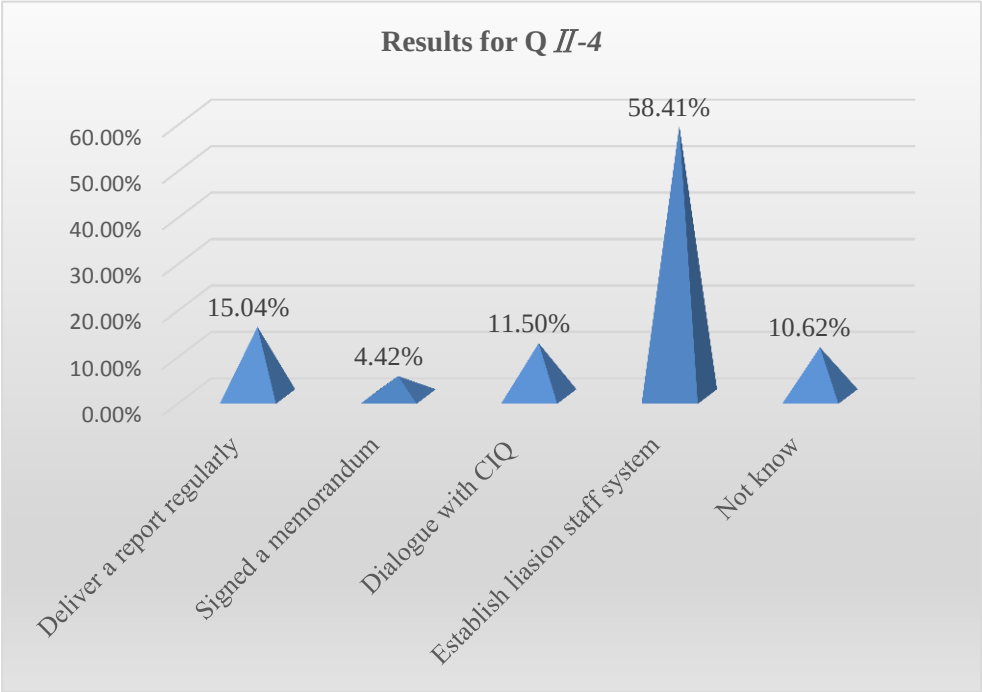

Figure 4-8 Results for Q Ⅱ-4

Source:by the author

From Figure 4-8, we may find that more than half of companies (58.41%) believe it is more efficient to establish liaison staff system and hold regular liaison meeting for the communication between Guizhou CIQ and enterprises. While some enterprises (about 15%) hope CIQ can deliver a report regularly, about 10% of businesses want to dialogue with the Guizhou CIQ through relevant industry organizations. By contrast, there are only a very small number of companies (about 4%) that think it useful to sign a memorandum of cooperation with Guizhou CIQ. Meanwhile, more than 20 percent of companies did not know which way is better, implying that they may not think of this issue before. From this field survey, we may find that the import and export companies in Guizhou are really lacking knowledge on relevant policies.

Q Ⅱ-5. Did your company's export business once be affected by foreign technical trade policies?

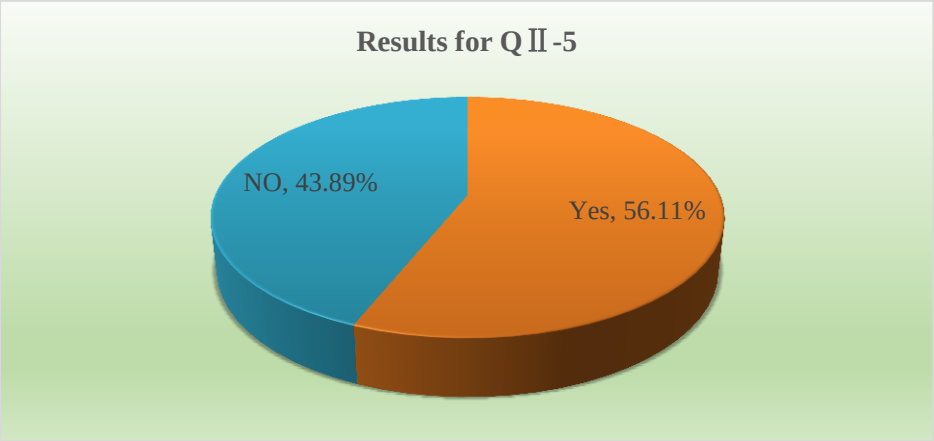

Figure 4-9 Results for Q Ⅱ-5

Source:by the author

As shown in Figure 4-9, we may easy to find that more than half of export businesses were once affected by foreign technical trade measures, revealing the importance of understanding foreign import and export standards.

Q Ⅱ-6. Which way does your company obtain information on foreign technical trade policies?

Figure 4-10 shows the ways for the enterprises to obtain information on foreign technical trade measures. According to the figure, about 40% of the companies acquire related information through foreign distributors or media (newspapers, magazines, television, etc.). Nearly one-third of the businesses obtain the information by National Quality Supervision and Inspection and Quarantine Institution. In addition, 15.04% of the enterprises access the information through other government departments, whereas the proportion of other channels such as TBT, SPS inquiry point, diplomatic and consular missions, foreign government website, etc. does not exceed 10%. This survey also shows that the Guizhou CIQ did not provide necessary information to enterprises and should make great effort to improve its service.

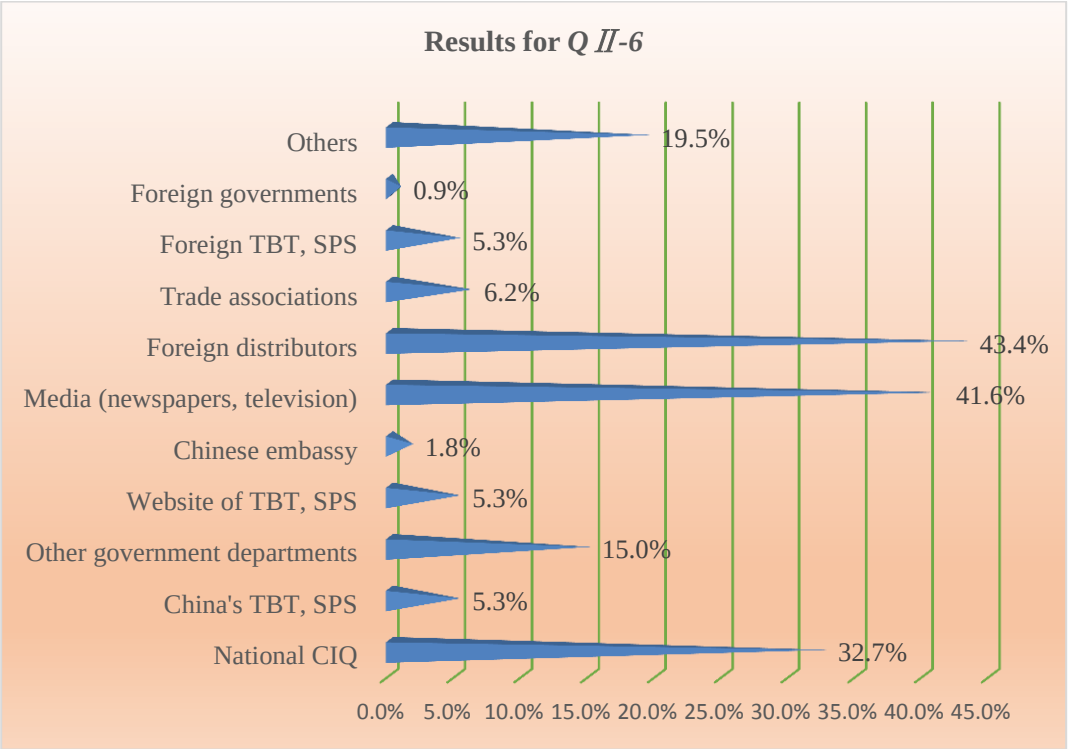

Figure 4-10 Results for QⅡ-6

Source:by the author

Q Ⅱ-7. What are the main obstacles for the export business?

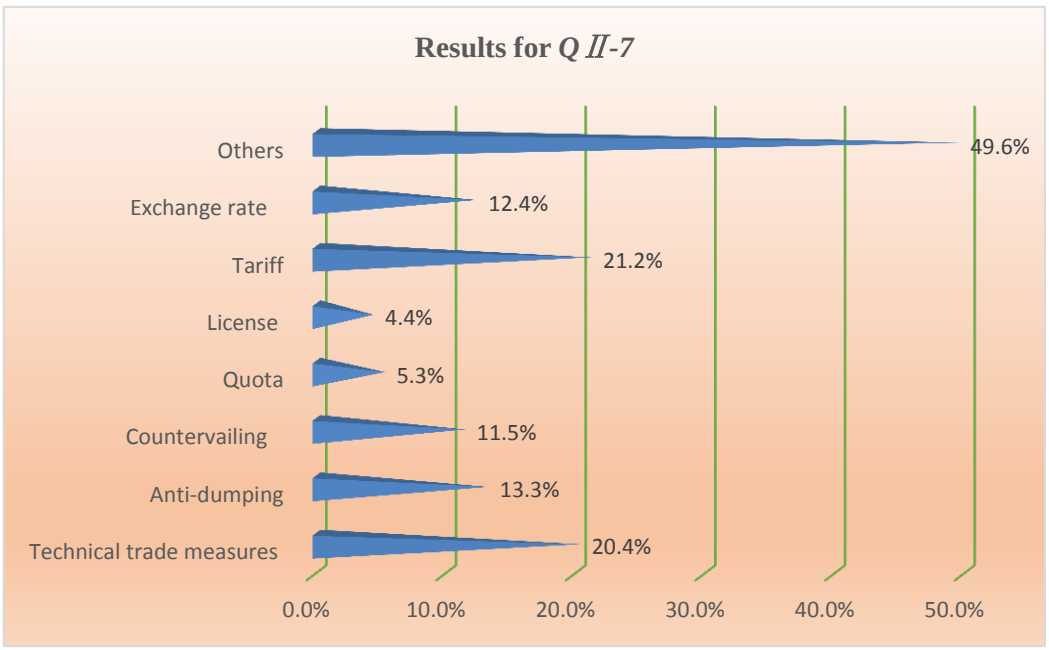

Figure 4-11 Results for QⅡ-7

Source:by the author

As illustrated in Figure 4-11, tariff and technical trade measures are the main obstacles for the export business (with 21.2% and 20.35% respectively). Besides, anti-dumping, countervailing and exchange rate all account for more than 10%, reaching 13.27%, 11.50% and 12.39%, respectively. However, the most important factors to affect the export business have not been revealed in this survey, implying that another approach should be used to investigate the question.

Q Ⅱ-8. To what extent does your company understand the national standards relevant to the import and export of goods?

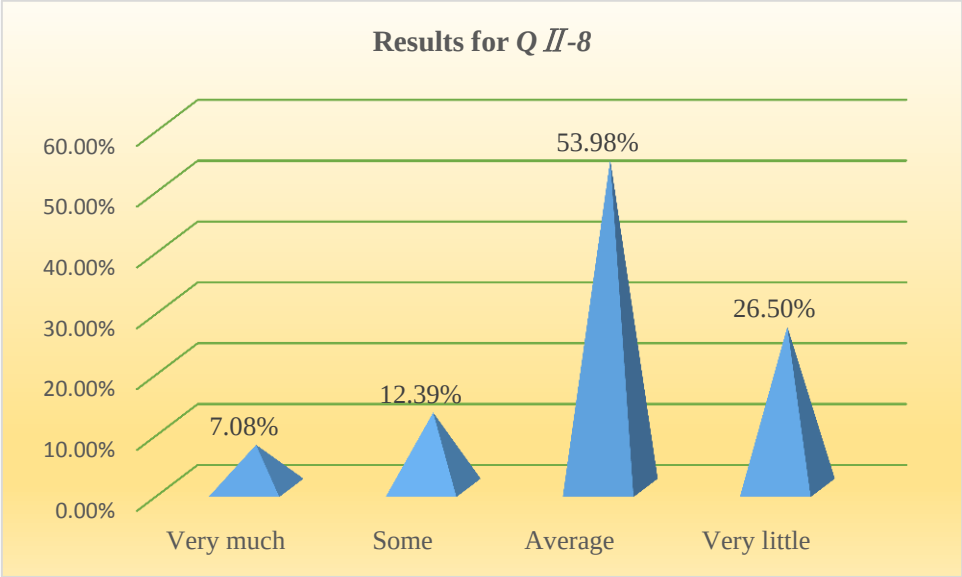

Figure 4-12 Results for QⅡ-8

Source:by the author

According to Figure 4-12, we may find that only 7.08% of the companies consider they understand very well the national standards relevant to the import and export of goods, which is an undesirable result. While about half of the enterprises have only a partial understanding of the national standards. Unexpectedly, there are 26.50% of the businesses that know very little about the standards.

Q Ⅱ-9. What content do you hope Guizhou CIQ to include in the policy statement?

As shown in Figure 4-13, almost all businesses (92.04%) hope Guizhou CIQ preaches the latest preferential policies (LPP) about import and export business. About half of the enterprises hope the knowledge about classification management and convenient customs

clearance (CM & CCC) can be included in the policy statement. Nearly one-third of the companies want to learn the knowledge about how to standardize the inspection (SI), such as pre-classification of goods. Meanwhile, more than 10% of the enterprises hope Guizhou CIQ explains and publicizes the knowledge of intellectual property protection (IPP). Moreover, inspection of law enforcement and subsequent management (ILE & SM) accounted for 18.58% and 11.50%, respectively.

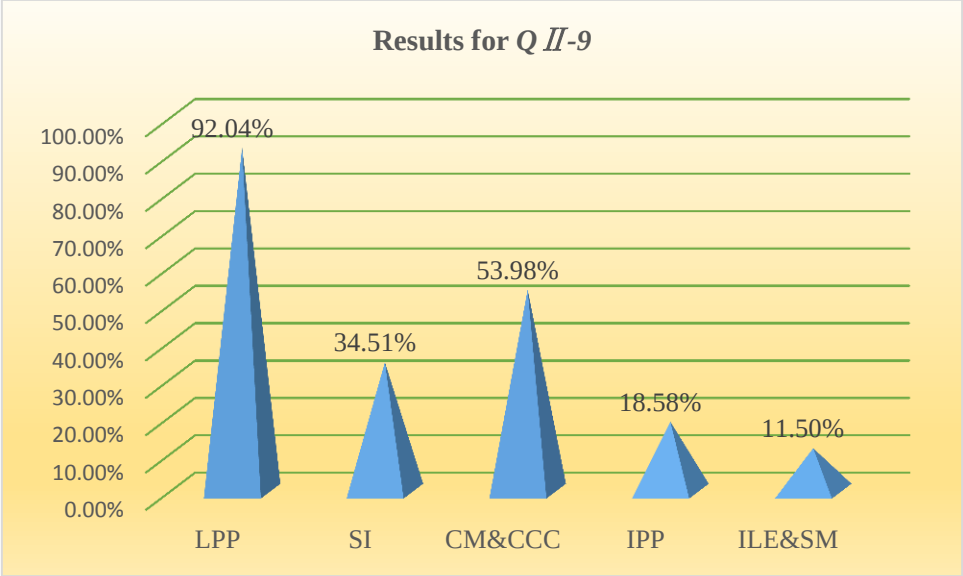

Figure 4-13 Results for QⅡ-9

Source:by the author

4.4.3 Service Satisfaction Survey

Section 3 shows the service satisfaction of the entry-exit enterprises towards Guizhou CIQ. The questionnaire focuses on the performance evaluations of these companies to the service of Guizhou CIQ. Here, some items are coded on a 7-point Likert scale, the higher the score, the higher the satisfaction degree. Thus, “1”, “4” and “7” represent “very dissatisfied”, “average” and “very satisfied”, respectively.

QⅢ-1. What services does your company currently receive from Guizhou CIQ?

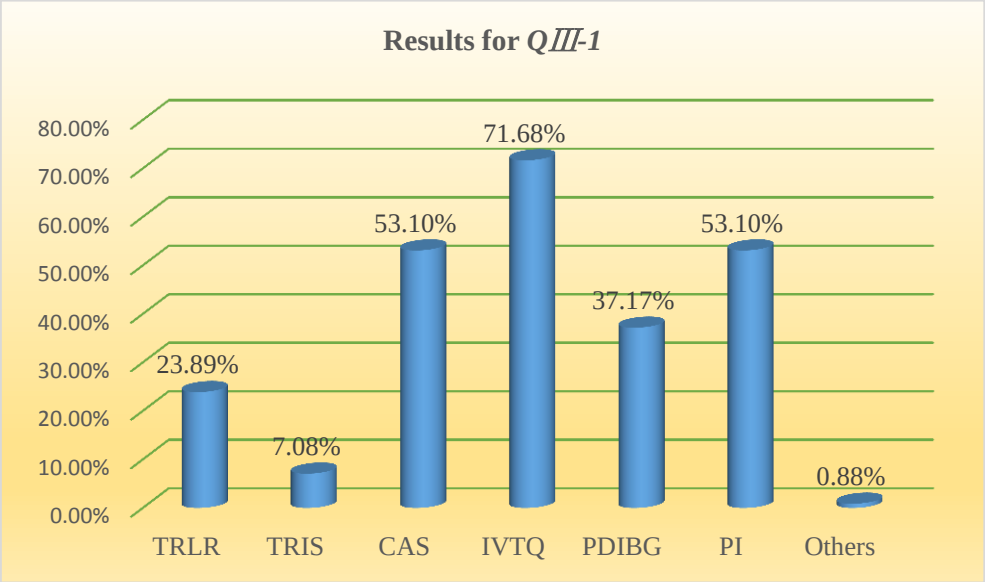

Figure 4-14 Results for QⅢ-1

Source:by the author

From Figure 4-14, we may note that 71.68% of the businesses enjoy the service of inspection, verification, testing and quarantine of import and export goods (IVTQ). This is easy to understand because this is the main work of CIQ. Meanwhile, electronic inspection (PI) and certification and accreditation services (CAS) both occupy 53.10% of the enterprises. Moreover, 37.17% of the companies believe that Guizhou CIQ provides detailed information on the business process and 23.89% enjoy the training of Guizhou CIQ on relevant laws and regulations for import and export business. However, only 7.08% of enterprises have received the training on relevant inspection standards for export target countries, implying that the Guizhou CIQ should improve this kind of service.

QⅢ-2. How do you evaluate the following services of Guizhou CIQ?

For this question, the questionnaire lists some factors that may affect the service level of Guizhou CIQ including staff attitudes; physical environment; policies, regulations and technical guidance; work efficiency; service procedure; inspection and quarantine duration; inspection accuracy; openness of government information; impartiality of law enforcement.

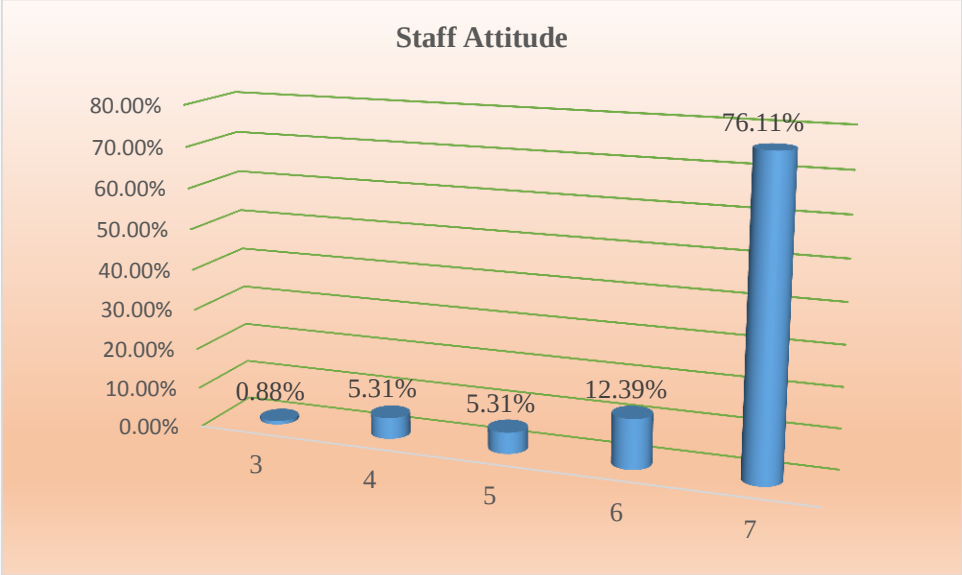

Figure 4-15 Satisfaction to staff attitude

Source:by the author

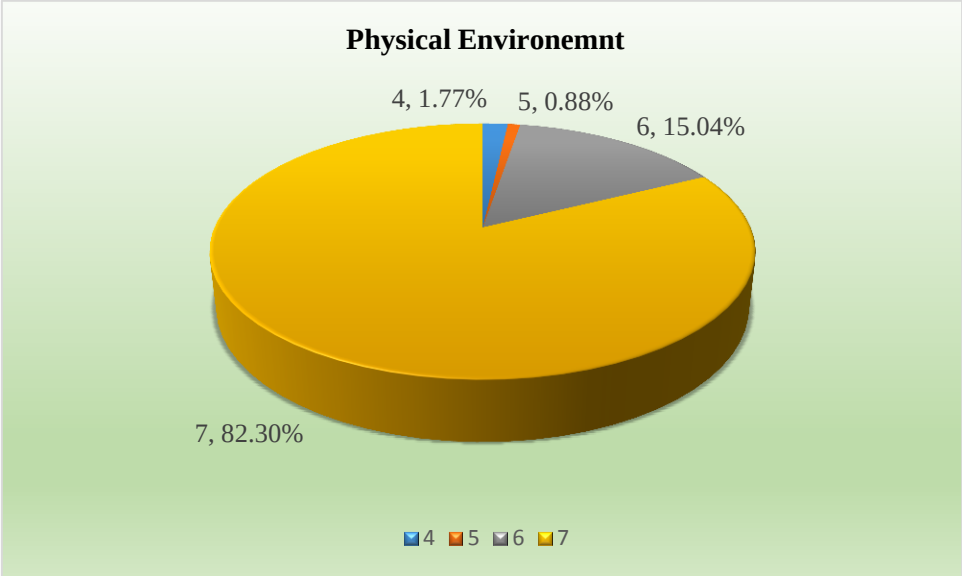

Figure 4-16 Satisfaction to physical environment

Source:by the author

As illustrated in Figure 4.15, nearly 95% of the enterprises are satisfied with the service attitude of the staffs in Guizhou CIQ, showing that the staff attitude is very good. The result is similar to that of physical working environment in Figure 4.16. There are more than 98% of enterprises give a positive assessment to the working environment of Guizhou CIQ. Considering these two items, we may find that so far many explicit factors like staff attitude

and physical environment have been improved a lot.

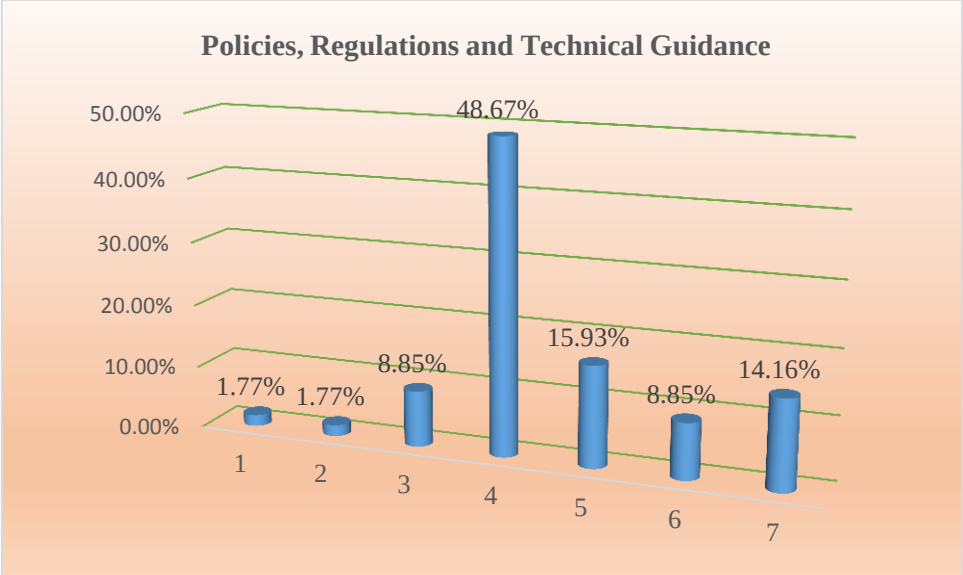

Figure 4-17 Satisfaction to policies, regulations and technical guidance

Source:by the author

Figure 4-17 shows the satisfaction of the enterprises towards policies, regulations and technical service of Guizhou CIQ. It is disappointing to note that only 14.16% of the companies are very satisfied. Nearly half of the businesses think it is moderate. Meanwhile, about 10% of the enterprises are dissatisfied. So Guizhou CIQ should pay attention to improve its policies, regulations and technical guidance.

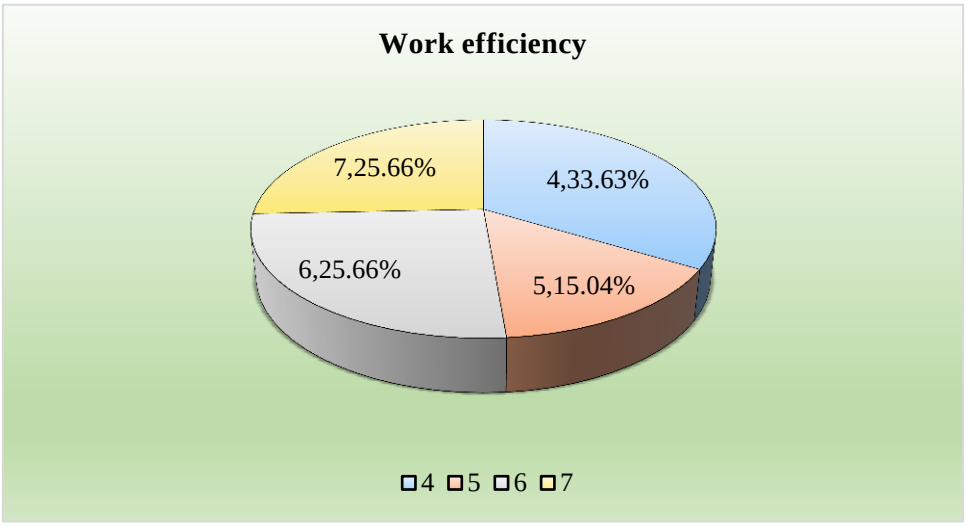

Figure 4-18 Satisfaction to work efficiency

Source:by the author

As shown in Figure 4-18, we may find that all results are concentrated between “4” and “7”, in which a quarter of the companies are very satisfied and more than 40% give a positive evaluation. By contrast, more than one-third of companies choose “average” scores, reflecting there is still much space to improve the work efficiency.

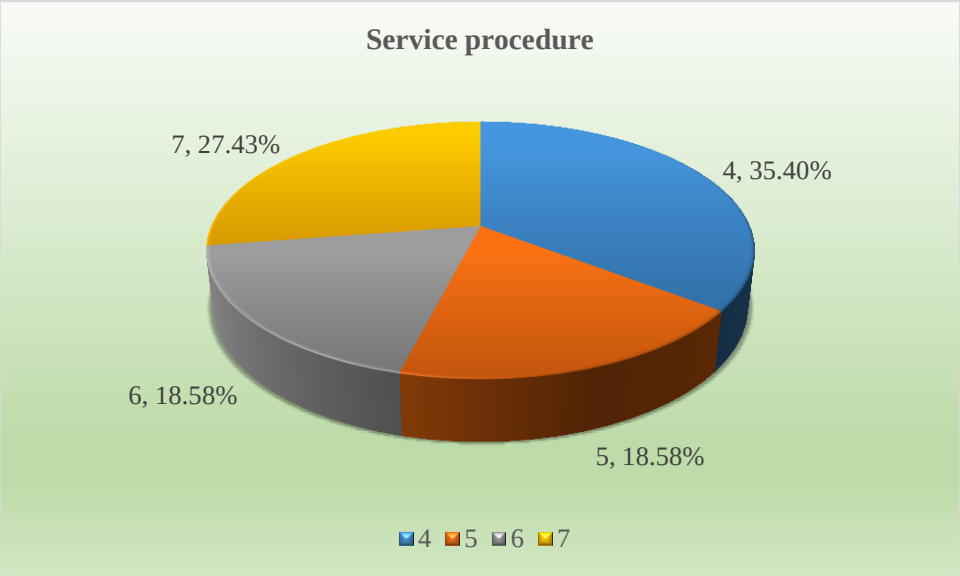

Figure 4-19 Satisfaction to service procedure

Source:by the author

Similar to the previous result, as shown in Figure 4.19, about two-third of enterprises are satisfied to the service procedure of Guizhou CIQ. In particular, more than a quarter of the companies are very satisfied while more than one-third of companies only think it is average.

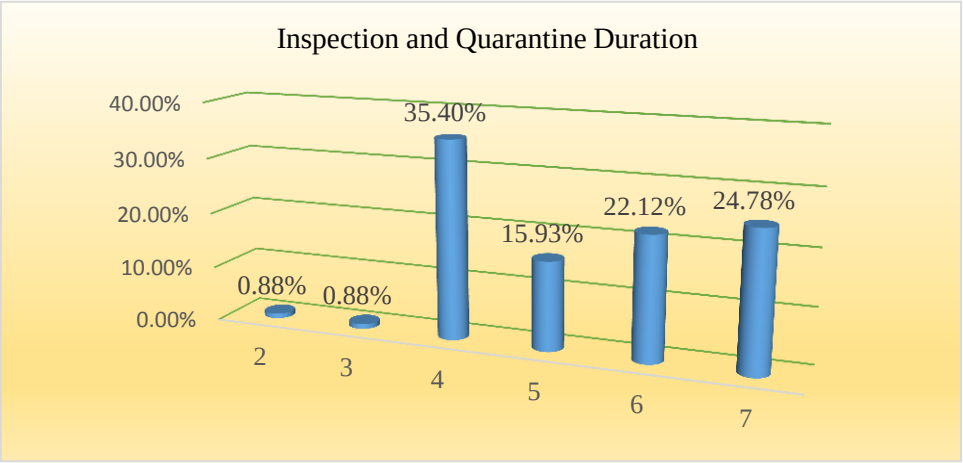

Figure 4-20 Satisfaction to inspection and quarantine duration

Source:by the author

As illustrated in Figure 4-20, compared with the high evaluation for staff attitude, physical environmental, work efficiency, and service procedure, the duration of inspection and quarantine in Guizhou CIQ does not receive much appraise. There are more than one-third of the companies select "average" and nearly 2% of the businesses are unsatisfied. Therefore, Guizhou CIQ should try to provide more efficient service to the inspection and quarantine of the entry-exit products.

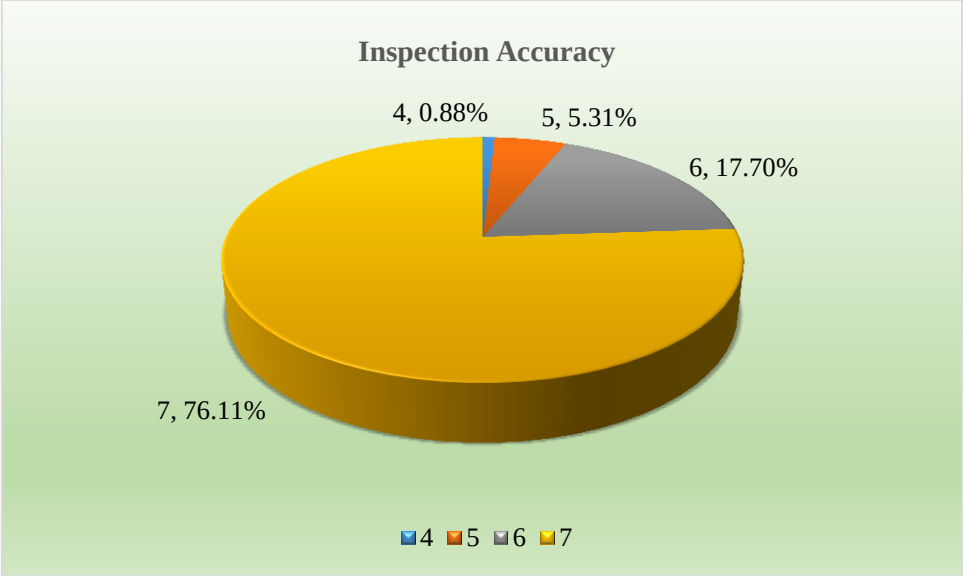

Figure 4-21 Satisfaction to inspection accuracy

Source:by the author

For the inspection accuracy of Guizhou CIQ, almost all the firms show their satisfaction. As shown in Figure 4.21, "7"score is three times higher than the total score of "4", "5" and "6", meaning about 75% of the enterprises are very satisfied with the inspection accuracy. This result may account for the advanced instruments and facilities in Guizhou CIQ.

Figure 4-22 shows the satisfaction of the firms to the openness of government information. We may note that 53.98% of the businesses agree that Guizhou CIQ have done a good job in government information disclosure. Meanwhile, with 19.47% selecting "average". However, there are still 3.54% of the firms with different views, declaring their discontent with the government information publicity.

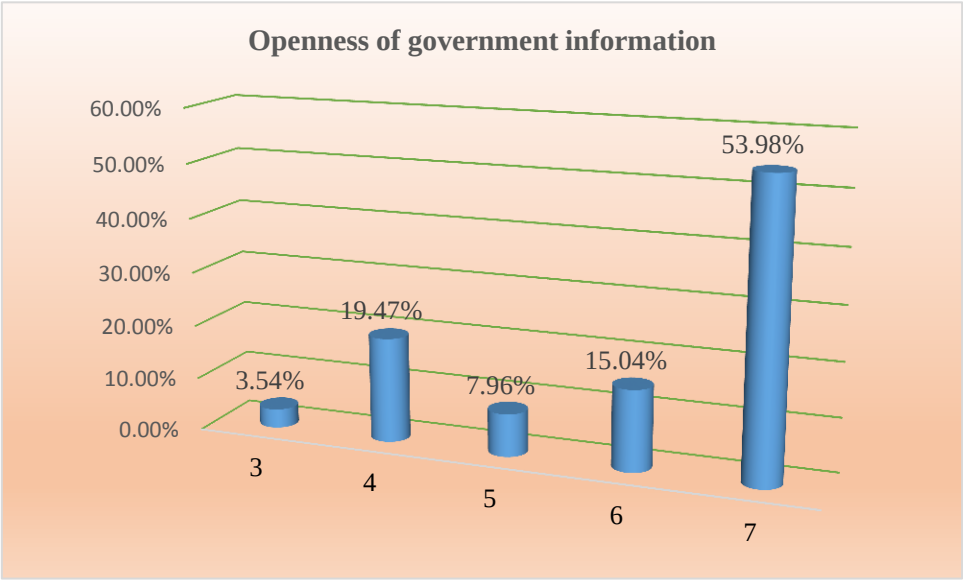

Figure 4-22 Satisfaction to openness of government information

Source:by the author

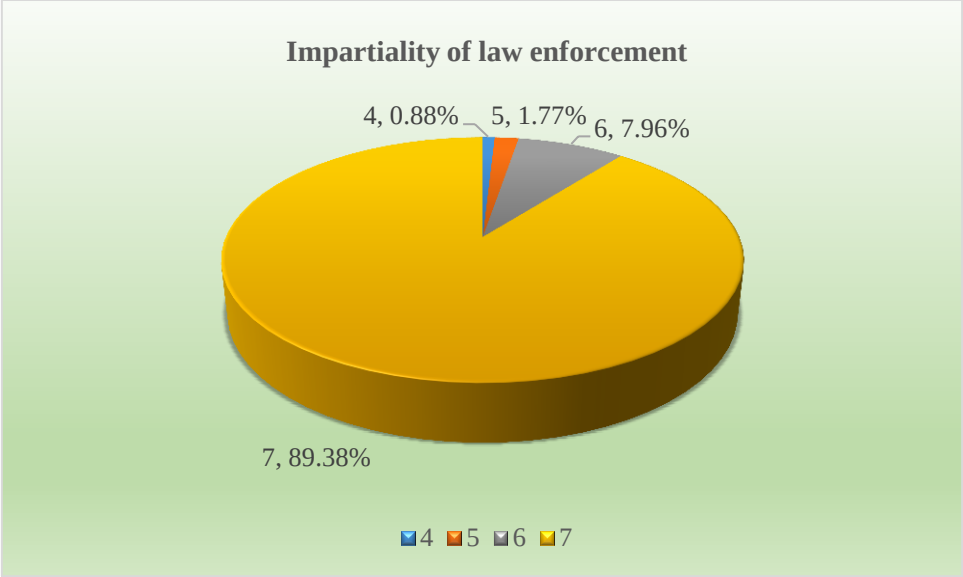

Figure 4-23 Satisfaction to impartiality of law enforcement

Source:by the author

Impartiality of law enforcement as the last question of this part also yields satisfactory results. According to Figure 4-23, nearly all the enterprises think the law enforcement of Guizhou CIQ is very fair. In addition, the other around 10% of the companies refer “4”, “5” and “6”.

4.4.4 Demand of Entry-exit Enterprises for CIQ

After investigating the satisfaction to Guizhou CIQ, this section continues to find the demand of entry-exit firms. It is important to understand what kind of services the enterprises really need for Guizhou CIQ. This will guide the service innovation of Guizhou CIQ. Therefore, eight service requirements are investigated as follows. Here "1" stands for "unnecessary", "4" presents "average" or "hard to say" and "7" stands for "very necessary".

QⅣ-1. Provide the training on product inspection and quarantine standards.

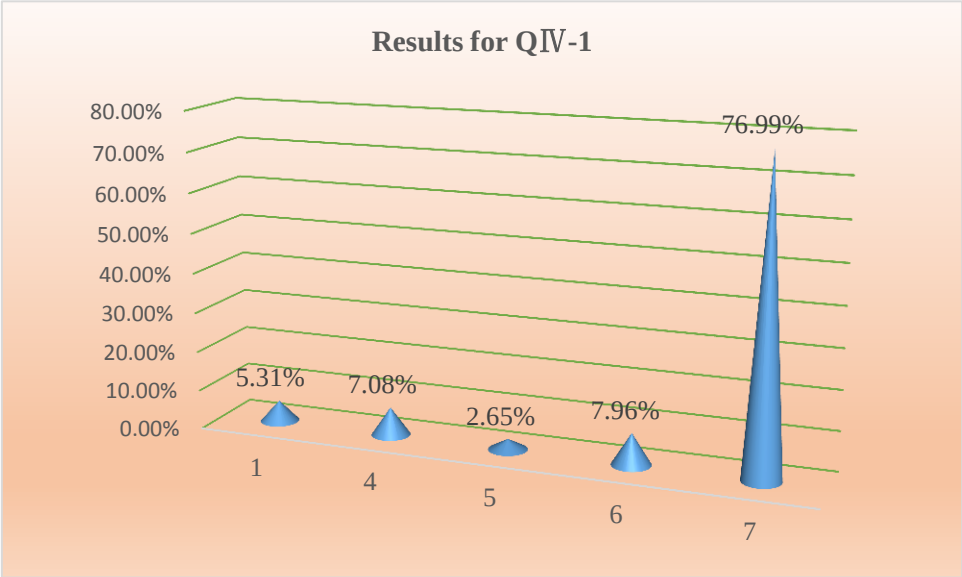

Figure 4-24 Results for QⅣ-1

Source:by the author

As shown in Figure 4-24, 76.99% of the enterprises declare that Guizhou CIQ does need to provide the training on product inspection and quarantine standards. So far only 23.89% of them have received this service. Meanwhile, 7.08% of the companies keep a neutral attitude. By contrast, only 5.31% of the firms consider it unnecessary.

QⅣ-2. Training on relevant standards for export target countries.

For the training on relevant standards for export target countries, as illustrated in Figure 4-25, while 21.24% of the enterprises consider it is unnecessary, more than half of firms think it is very useful to know the export standard clearly. In addition, according to our survey in the previous section, only 7.08% have enjoyed this service, showing Guizhou CIQ should

enhance this service in the further reform.

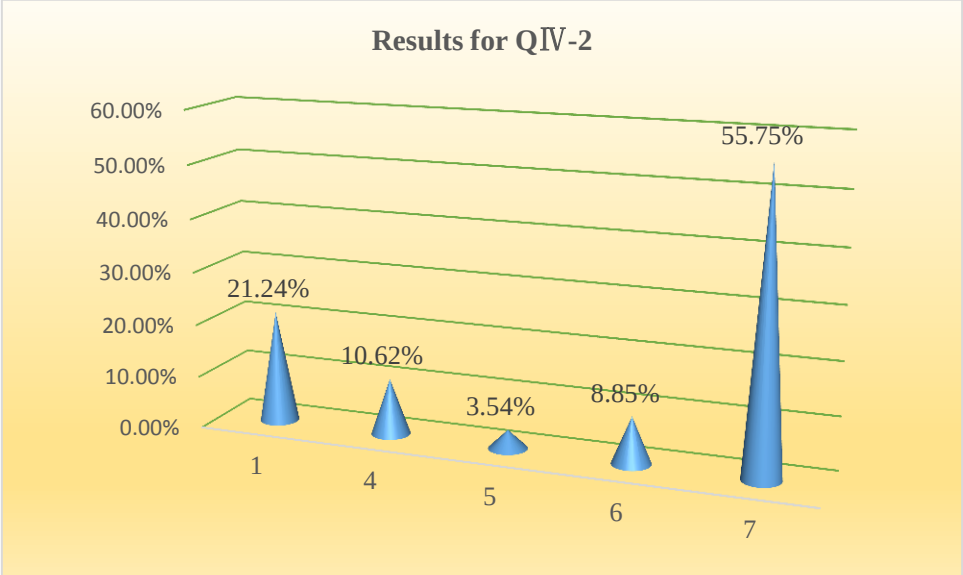

Figure 4-25 Results for QⅣ-2

Source:by the author

QⅣ-3. Provide inspection and quarantine service for the key stages in the production process.

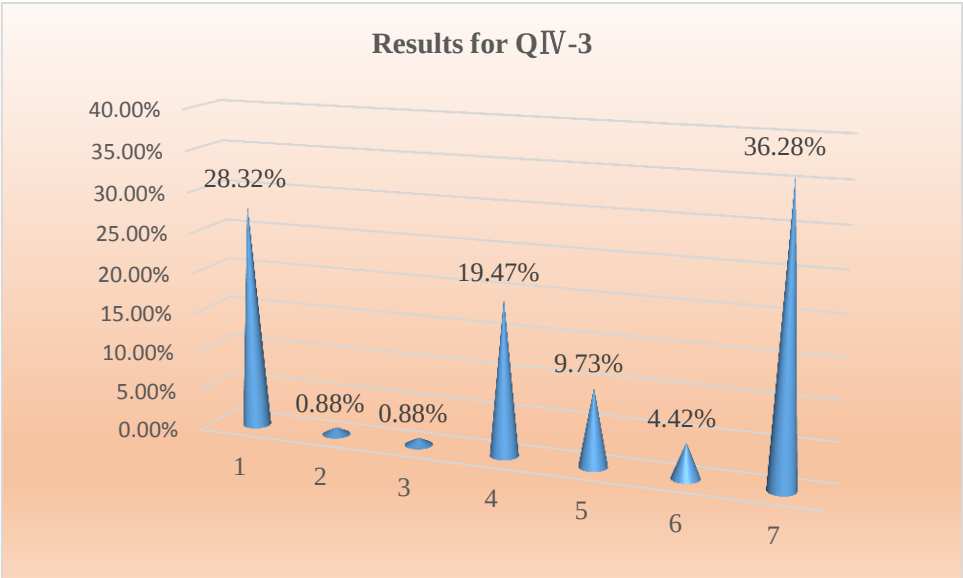

Figure 4-26 Results for QⅣ-3

Source:by the author

From Figure 4-26, we may find that more than half of firms believe it is necessary for Guizhou CIQ to provide inspection and quarantine service for the key stages in the production

process, in which 36.28% of firms even show their urgent demand to this service. Therefore, this demand should become one of the key innovation objects for Guizhou CIQ.

QⅣ-4. Provide up-to-date information, technical guidance and advice on technical trade measures of foreign countries.

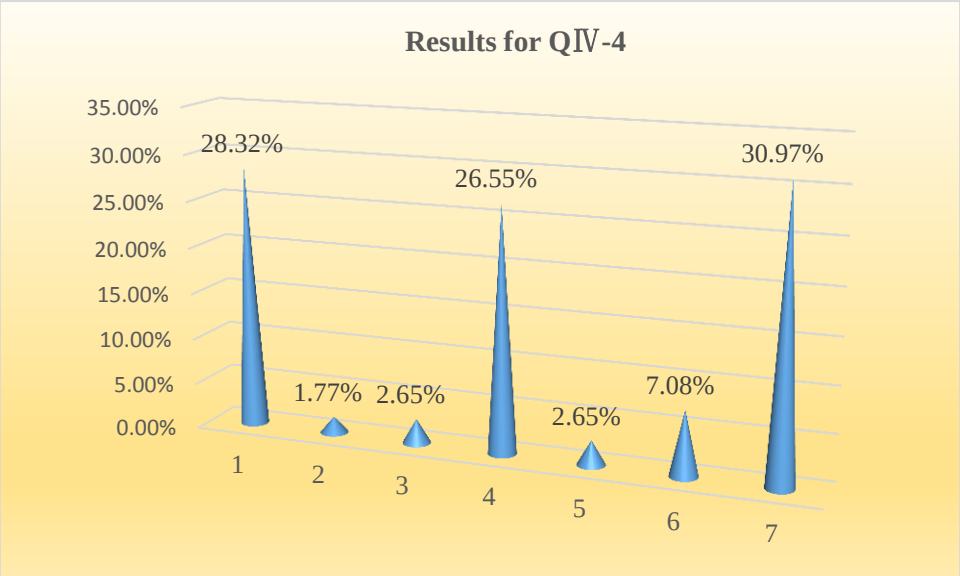

Figure 4-27 Results for QⅣ-4

Source:by the author

As illustrated in Figure 4.27, there are two apparently different views, and the number of the two views is very close. While more than 30 percent of the enterprises think it is very useful for Guizhou CIQ to provide up-to-date information, technical guidance and advice on technical trade measures of foreign countries, nearly 30 percent of companies have a quite opposite view, believing it completely unnecessary. These extreme results may attribute to the fact that some companies only have import trading. According to our previous field survey, about 22.11% of the companies were affected by foreign technical trade measures, so they need more about this kind of services. In addition, we know that most firms obtain information of foreign technical trade measures through media and foreign distributors rather than through inspection and quarantine institutions. So, in the future, Guizhou CIQ should try to enhance this service.

QⅣ-5. Strengthen the certification work, establish the mutual recognition mechanism with foreign authoritative certification bureau.

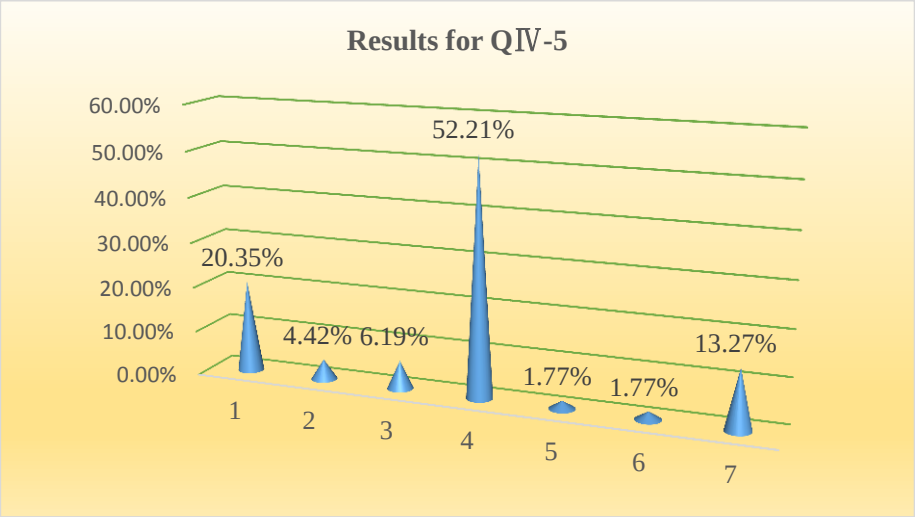

Figure 4-28 Results for QⅣ-5

Source:by the author

As exhibited in Figure 4-28, the enterprises which show a negative attitude selecting "1", "2" and "3" (20.35%, 4.42% and "6.19%", respectively) are more than "5", "6" and "7" (1.77%, 1.77% and "13.27%", respectively). This indicates that more companies believe that it is unnecessary to strengthen the certification work and establish the mutual recognition mechanism with foreign authoritative certification bodies. By contrast, more than half of companies believe it hard to say, implying that more detailed survey are needed in the future research.

QⅣ-6. Implement international standardization strategy to promote the participation of enterprises in international standard system.

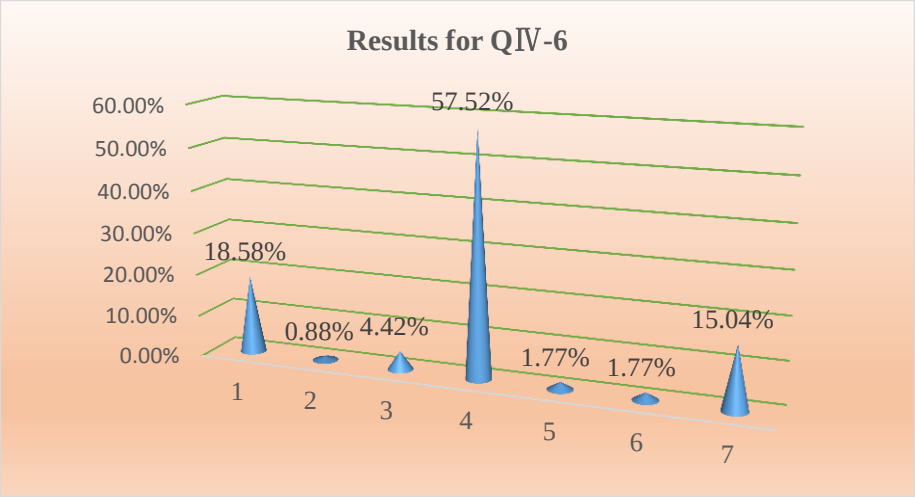

Figure 4-29 Results for QⅣ-6

Source:by the author

Figure 4-29 shows the attitude of firms on implementing international standardization strategy. The results are comparatively similar to the last question *QⅣ-5*. More than half of trading businesses think it hard to say. While about a quarter of enterprises express their negative views to carry out international standardization strategy, nearly 20 percent of firms show their active attitude to this issue. Although some companies are SMEs, it is still necessary to encourage all firms to pay more attention to the international standard since standard is essential for trading firms. Thus for Guizhou CIQ, it should promote the participation of enterprises to international standard system.

QⅣ-7. Build a public testing service platform to provide convenient testing services for enterprises.

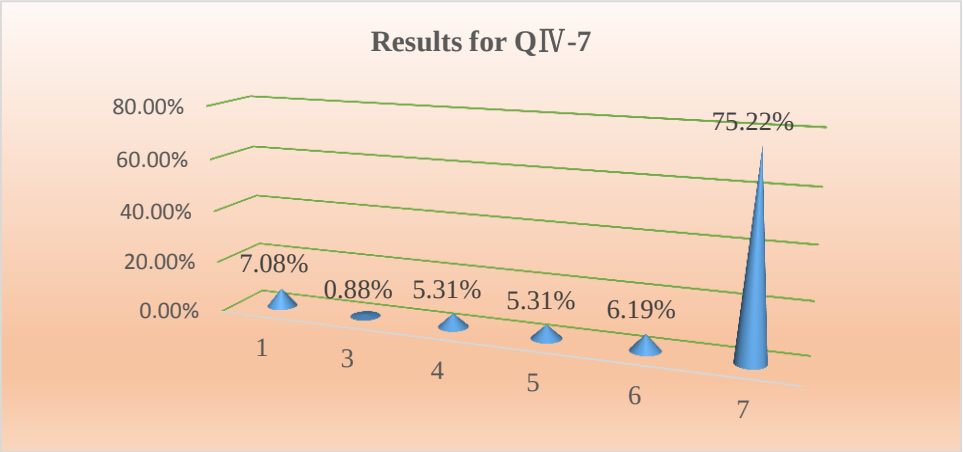

Figure 4-30 Results for QⅣ-7

Source:by the author

As shown in Figure 4-30, the results are concentrated. Most of enterprises (75.22%) think it very necessary to build a public testing service platform. By contrast, only 7.08% of them hold opposite views, regarding it quite unnecessary. This result is very important for the reform of Guizhou CIQ, showing some hints to the new service model.

QⅣ-8. Actively participate in external negotiations to minimize the losses of trading enterprises.

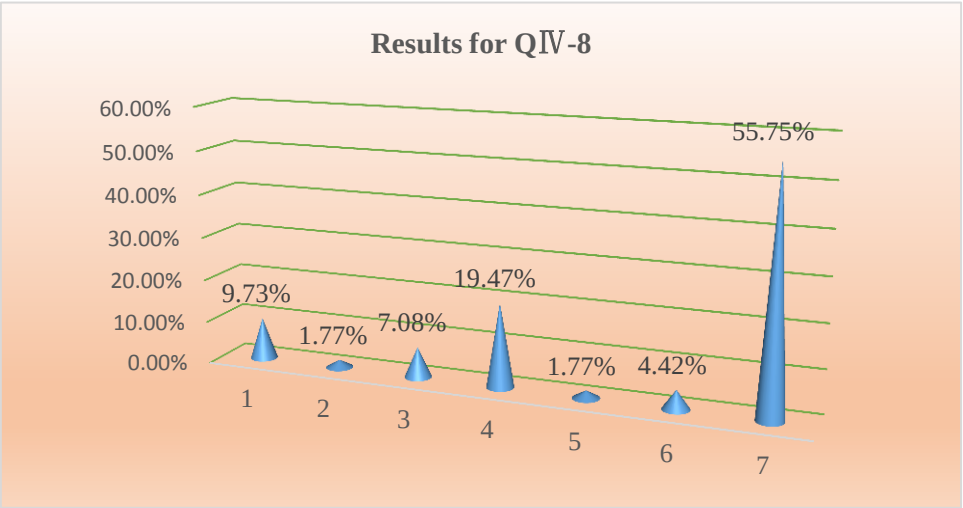

Figure 4-31 Results for QⅣ-8

Source:by the author

From Figure 4-31, we may find that more than 60% of the firms believe Guizhou CIQ should actively participate in external negotiations in the needs of enterprises to minimize the firms' losses. Meanwhile, about one-fifth of them maintain a neutral attitude. This result may imply that most enterprises are not very good at negotiation to foreign companies and hope to get the help from CIQ. These findings are also critical to the service model innovation.

4.5 Regression Analysis

4.5.1 Multicollinearity, Reliability and Validity

To further investigate the key factors that impact the service level of Guihzou CIQ, this study employed SPSS 20.0 to test for the quantitative analysis. Then, the dependent variable is the service level and the independent variables are various factors that may related to service level, that is, staff attitudes, physical environment, policies, regulations and technical guidance, work efficiency, service procedure, inspection and quarantine duration, inspection accuracy, openness of government information, and impartiality of law enforcement. Sub-Section 4.4.3 report the detailed results for each of them. Before regression analysis, multicollinearity was diagnosed by examining the Variance inflation factors (VIF). Generally speaking, a value of more than 10 for VIF can be expected to be highly multicollinear (Kleinbaum et al. 1988). Table 4-2 show the VIF of each independent variable. As we can see, multicollinearity was not a serious problem in this study.

Table 4-2 Multicollinear test: Variance inflation factors (VIF)

Independent Variables	Variance inflation factors (VIF)
Staff attitudes	2.31
Physical environment (PE)	1.87
Policies, regulations and technical guidance (PRTG)	3.23
Work efficiency	2.01
Service procedure	4.02
Inspection and quarantine duration (IQD)	1.92
Inspection accuracy	3.90
Openness of government information (OGI)	6.45
Impartiality of law enforcement (ILE)	1.32

Source:by the author

Before regression analysis, reliability assessment was done to examine the data reliability. Interrater reliability was assured using Cronbach's Coefficient α. Generally, a value of around 0.7 is considered adequate to show internal consistency (Nunnally 1978, p. 245). For our data, the Alpha values for each independent variable all satisfied this measure. As we mentioned before, for some questionnaires with nonresponse questions, we contacted these enterprises and asked them to fill in. Since this survey was supported by the Guizhou CIQ and aimed to improve its service, all enterprises were willing to cooperate. The validity of assumption of normality was tested using Blom's proportional estimation formula through normal P-P plot of the predictors. All graphs illustrated that normality assumption appeared to be valid for all data.

4.5 2. Regression Results

We first generated descriptive statistics and Pearson correlation between the variables, then conducted regression analyses to evaluate the influence of the predictor variables on the service level of Guizhou CIQ. In-depth interviews on 5 firms from different sectors with top managers helped to explain the quantitative findings.

Table 4-3 reports the descriptive statistics and Pearson correlation coefficient. We may find that staff attitude, PRTG, work efficiency, and OGI are significantly related to diversification. To further explore to what extent these three factors affect the service level, this thesis continued to do regression analysis.

Table 4-3 Descriptive statistics and Pearson correlation coefficient (*N=113*)

	Mean	S.D.	1	2	3	4	5	6	7	8
1. Service level	4.87	0.81	1							
2. Staff attitude	6.08	0.88	-0.21*	1						
3. Physical Environment	6.18	0.55	-0.06	0.32**	1					
4. PRTG	4.23	1.38	0.34**	0.24	0.03	1				
5. Work efficiency	4.98	1.20	0.24*	-0.26*	0.07	0.42***	1			
6. IQD	5.37	1.13	-0.02	0.23	0.14	0.18	0.18	1		
7. Inspection accuracy	6.09	0.45	-0.03	0.30*	0.13	0.09	0.19	-0.16	1	
8. OGI	5.66	1.32	0.20*	0.21*	-0.36*	0.15	0.00	0.24*	0.09	1
9. ILE	6.31	0.46	-0.03	0.23*	0.44*	0.25*	0.03	0.14	0.24*	0.02

Note: $^{*}p< 0.1$, $^{**}p< 0.05$ correlation is significant at the 0.05 level (2-tailed)

Source: by the author

Table 4-4 provides the result of regression analysis. Model 1 is a basic model only with control variables: sector and total revenues. Since the firms in different sector and total revenue may have their own requirements on CIQ service, we select sector and total revenue as controls variables. Model 2 added one independent variable: staff attitude and Model 3 took into consideration of guidance of CIQ to policy, regulation and technology (PRTG). Model 4 furthermore added work efficiency and finally Model 5 considered all independent variables into the base model. F value in each column indicates the effectiveness of the models, while Adj-R^2 value shows that as a whole to what degree independent variables in a model may account for the dependent variable.

As shown in Table 4-4, all four independent variables are significantly related to dependent variable. From Model 1 to Model 5, we step in the independent variables. Model 5 covers all four independent variables. Among them, staff attitude has the lowest *Beta* coefficient 0.201, showing that staff attitude is not the most important factor affecting the service quality. By contrast, PRTG has the highest coefficient 0.545, implying that the trading

enterprises in Guizhou now concern more about the service content provided by CIQ.

Table 4-4 Regression results for factors affecting service level

	Dependent variable: Service level				
	Model 1	Model 2	Model 3	Model 4	Model 5
Control variable					
Sector	0.014*	0.052*	0.048	0.124	0.093*
	(0.43)	(3.54)	(1.045)	(3.05)	(4.04)
Total Revenue(ln)	0.036*	0.012	0.010**	0.041*	0.102
	(4.17)	(0.78)	(5.63)	(2.43)	(3.41)
Independent variable					
Staff attitude		0.203*	0.276*	0.246*	0.201*
		(4.09)	(3.77)	(6.07)	(4.22)
PRTG			0.689***	0.571***	0.545***
			(2.32)	(1.28)	(2.09)
Work efficiency				0.343**	0.312**
				(4.60)	(3.99)
OGI					0.412**
					(2.51)
Constant	3.384***	3.034***	2.985***	1.561**	1.342**
	(7.61)	(4.56)	(7.44)	(5.09)	(4.81)
N	113	113	113	113	113
F	10.32***	11.58***	9.10***	12.45***	13.22***
R^2	0.205	0.298	0.455	0.5001	0.532
Adj-R^2	0.197	0.245	0.403	0.4486	0.500

Note: *t* statistics in parentheses, *p< 0.1, **p< 0.05, ***p< 0.01(2-tailed)

Source: by the author

Meanwhile, in Model 5, the Beta coefficients of work efficiency and OGI are 0.312 and 0.412 respectively. It is easy to understand the importance of work efficiency to service quality since time is a critical factor for all the trading companies. The longer the products stay in CIQ, the higher cost they have to pay. Regarding openness of government policy, the

results show it necessary to provide more fast channels for enterprises obtain the related information. For the *Adj-*R^2, we may find the effectiveness of the model is increasing with the number of independent variables, indicating all independent variables are significantly related to the dependent variable.

4.6 Discussion and Implication

The purpose of this empirical research is to investigate the satisfaction to Guizhou CIQ service and demand of enterprises. The sample is all the entry-exit enterprises in Guizhou. These 131 enterprises are mainly in production, processing, or manufacturing sectors and their scales are mostly below 500 thousand dollars with less than 30 inspection batches a year. The results of the questionnaire have been discussed in the previous sections. According to this survey, there are many common understandings, which could serve as a guide for improving the service and efficiency of Guizhou CIQ.

First, asymmetric information between CIQ and trading enterprises is a serious problem in Guizhou. The questionnaire revealed that most of these companies do not understand much about the import and export policies, standards and laws, which may be related to the fact that the Guizhou CIQ seldom proactively explain relevant laws and regulations to them. In addition, the channels to obtain this knowledge focus on inspected company, inspection staff or legal adviser, implying that the Guizhou CIQ did not well in this respect. As for the methods to communicate with CIQ, more than half of the companies hope Guizhou CIQ to establish liaison officer system and hold regular liaison meetings. Foreign technical trade barriers as one of the main obstacles of the companies encountered in the export business, about 22 percent of the enterprises have been affected. Although this ratio is not very high, the trade volumes are large for the Guizhou province and should attract our attention. We note that the main way to obtain information of foreign technical trade measures are media (newspapers, magazines, television, etc.) and foreign distributors, rather than Guizhou CIQ.

Second, the regression analysis also shows that four factors including staff attitude, policy and technology guidance, work efficiency, as well as open information are significant to the service level of Guizhou CIQ. More important, empirical findings suggest that currently,

many enterprises pay more attention to the policy and technology service provided by CIQ, showing a transfer from outward form like staff attitude to inward essence like service content. This trend provides a much valuable direction to the service model innovation for CIQ in China. Meanwhile, we may note that most firms are satisfied with the service attitude of the staffs, environmental facilities in the service place, work efficiency, service procedure, inspection accuracy and impartiality of law enforcement in Guizhou CIQ. By contrast, the openness of government information does not receive favorable comments. Moreover, the businesses keep a neutral attitude toward policies and technical guidance, implying that CIQ did not provide the satisfied related service to the enterprises.

Third, according to the field survey, most businesses expect Guizhou CIQ to public the latest preferential policies on import and export business as well as the information about classification management and convenient customs clearance. Meanwhile, they consider that it is necessary for Guizhou CIQ to provide the various training especially on relevant standards for export target countries, inspection and quarantine service for the key stages in the production process, technical guidance and advice on technical trade disputes with foreign countries. In addition, it is also useful to promote the participation of domestic enterprises in international standard system building through strengthening the certification work and establishing the mutual recognition mechanism with foreign authoritative certification organizations, and implementing international standardization strategy. All these demands suggest that the import and export enterprises have much more expectations and demands to CIQ than before since they have encountered more new problems with the enlargement of trade with various countries. Therefore, in the future, it is urgent to provide the training on product inspection and quarantine standards and to build a public testing service platform in order to provide convenient testing services for enterprises, and actively participate in external negotiations in line with the needs of enterprises to minimize the losses of the entry and exit enterprises.

4.7 Summary

In this Chapter, empirical method like questionnaire and in-depth interview is used to

investigate the current operation mode of CIQ as well as the demand of trading enterprises. In Chapter 3, interview was used to find the problems in four typical provincial CIQ including Inner Mongolia CIQ, Heilongjiang CIQ, Guangzhou CIQ, and Shanghai CIQ. Through the interviews, some common problems like mixed positions, lack of talents, unsuitable supervision mode had been discovered, which are important to the innovation of CIQ service model.

Before the innovation of CIQ service model, it is necessary to identify the current services of CIQ as well as their performance. Thus in Chapter 4, questionnaire was designed to further assess the performance of CIQ services and the needs of various enterprises. In the questionnaire, basic information of enterprises and the services to obtain from CIQ were collected. Especially their satisfaction to the services was measured by 7-point Likert scale, with 1 being very dissatisfied and 7 being very satisfied. The sample of this empirical study is all the trading enterprises in Guizhou province. To avoid unknown to the items in the questionnaire, all respondents in the study are managers in charge of trading business. Most of questions in the questionnaire have been reported by diagrams while regression analysis results were presented to show the extent of various factors effect on the service level of CIQ. This survey is much important since it provides the necessary data and information to CIQ innovation, laying the foundation to the new service model establishment.

Chapter 5:Service Model Innovation: A Case Study of Guizhou CIQ

5.1 Guizhou CIQ

5.1.1 Background of Guizhou CIQ

Guizhou CIQ is located in Guiyang, capital of Guizhou province at the southwest of China with more than 34 million population. It is a mountainous area with about 56 ethnic groups. Figure 5-1 shows the GDP of Guizhou province from 2003 to 2016.

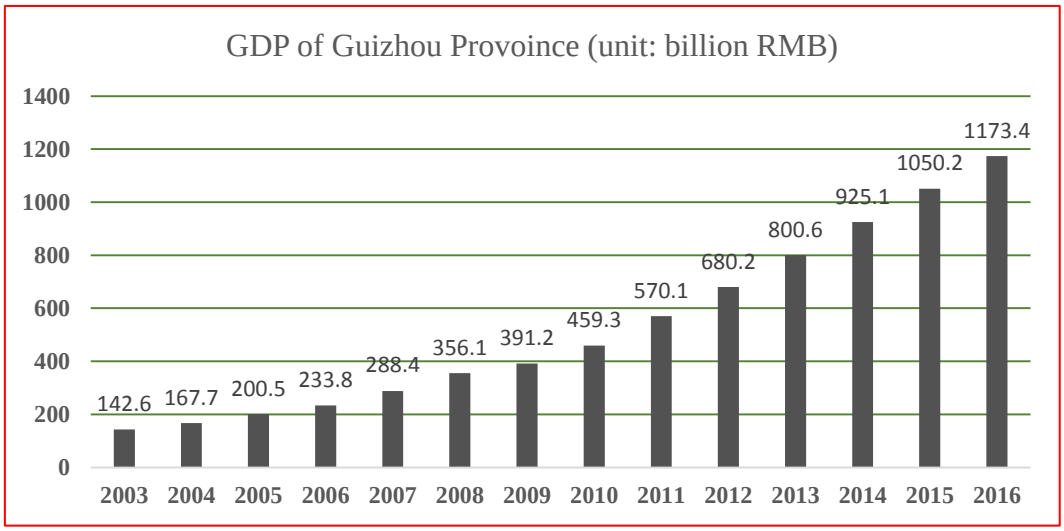

Figure 5-1 GDP of Guizhou province (2003-2016)

Source: Guizhou Statistical Yearbook (2002-2017)

As illustrated in Figure 5-1, the GDP of Guizhou province is increasing gradually, reaching 1173 billion RMB in 2016, nearly ten times of that in 2003. Though the Guizhou province exhibits a comparatively higher growth rate (in top 3) in the last three years compared with other provinces in China, the amount of GDP is still very low, ranking 25 in 31 provinces in 2006, showing that it is a developing area with many poverty districts and the main challenges is to develop local economy. Therefore it is urgent to enhance the export in Guizhou. Different from the other bureaus located in the developed provinces, Guizhou CIQ has to innovate their service model to help more trading enterprises that have relatively low managerial levels and may not endure the losses in the trading process like return of goods.

Since we have introduced the main functions of CIQ in details in Chapter 3, here we may focus on the inspection and quarantine activities to the import and export firms in Guizhou CIQ. All the data below in this section are from *www.gzciq.gov.cn*.

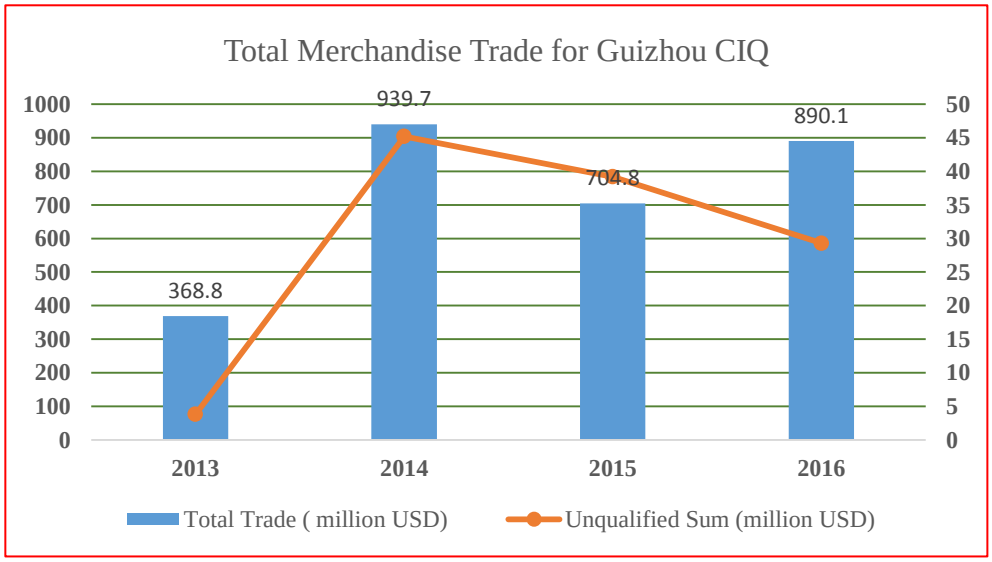

Figure 5-2a Total merchandise trade for Guizhou CIQ

Source: Guizhou Entry-Exit Inspection and Quarantine Bureau

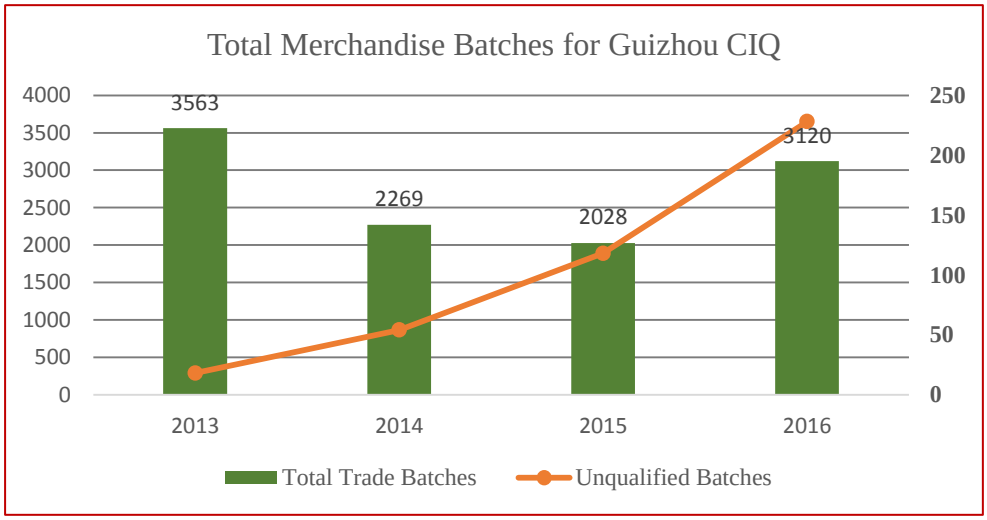

Figure 5-2b Total merchandise batches for Guizhou CIQ

Source: Guizhou Entry-Exit Inspection and Quarantine Bureau

Figures 5-2a and 5-2b exhibit the total amount and batches of merchandise trade for

Guizhou CIQ from 2013 to 2016. We may find that even if the international economy is sluggish, from 2014 the total amount of trade is nearly stable. However, the unqualified batches are increasing sharply, showing the need to control the unqualified goods.

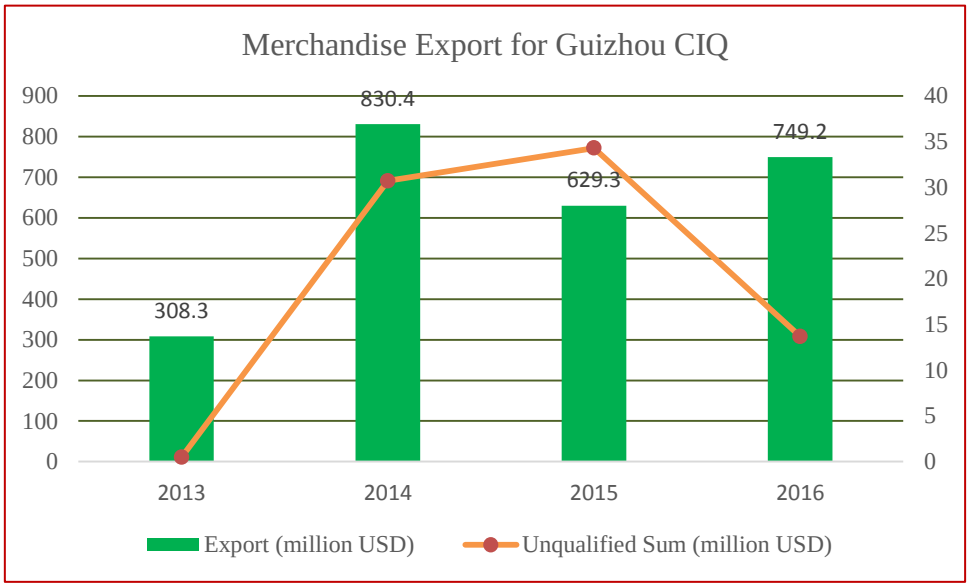

Figure 5-3a Merchandise export for Guizhou CIQ

Source: Guizhou Entry-Exit Inspection and Quarantine Bureau

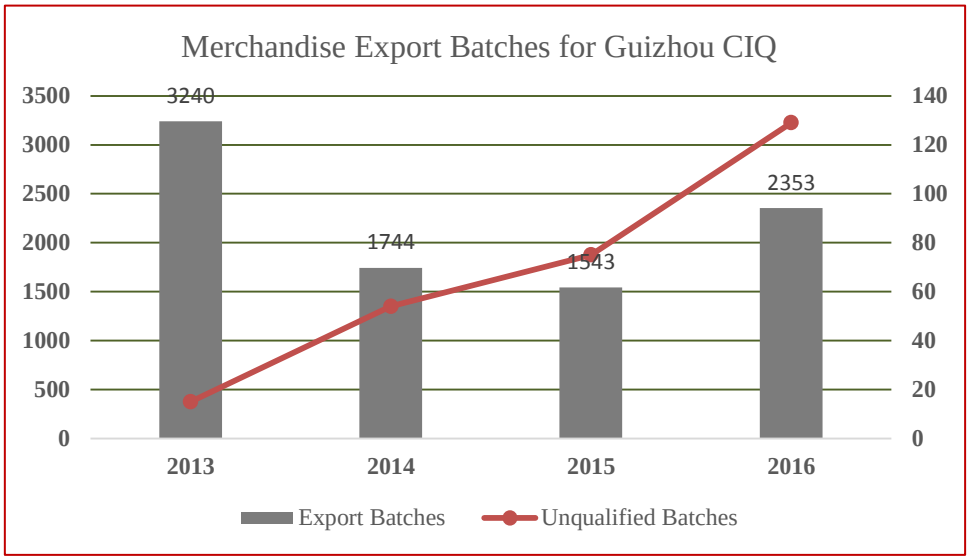

Figure 5-3b Merchandise export batches for Guizhou CIQ

Source: Guizhou Entry-Exit Inspection and Quarantine Bureau

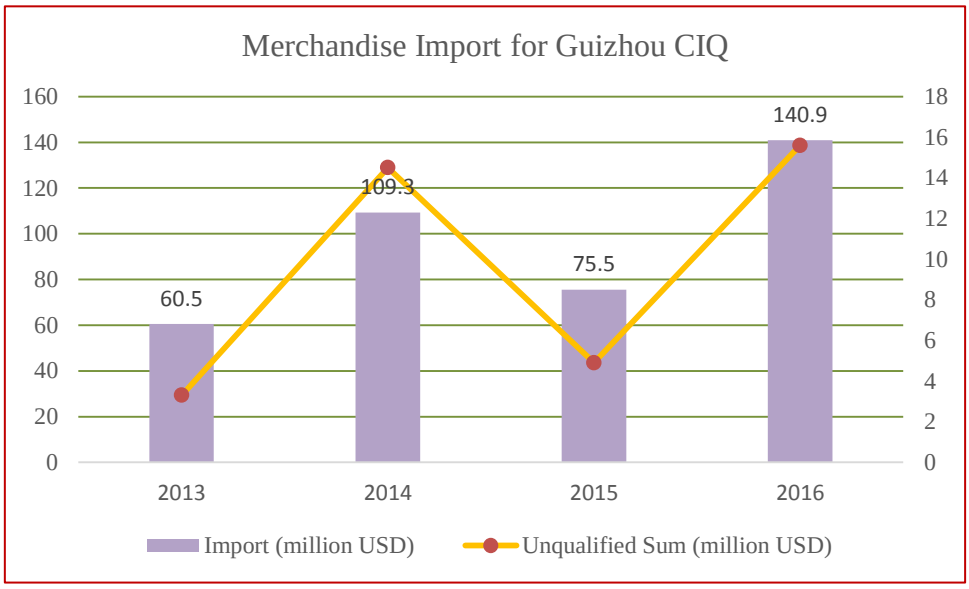

Figure 5-4a Merchandise import for Guizhou CIQ

Source: Guizhou Entry-Exit Inspection and Quarantine Bureau

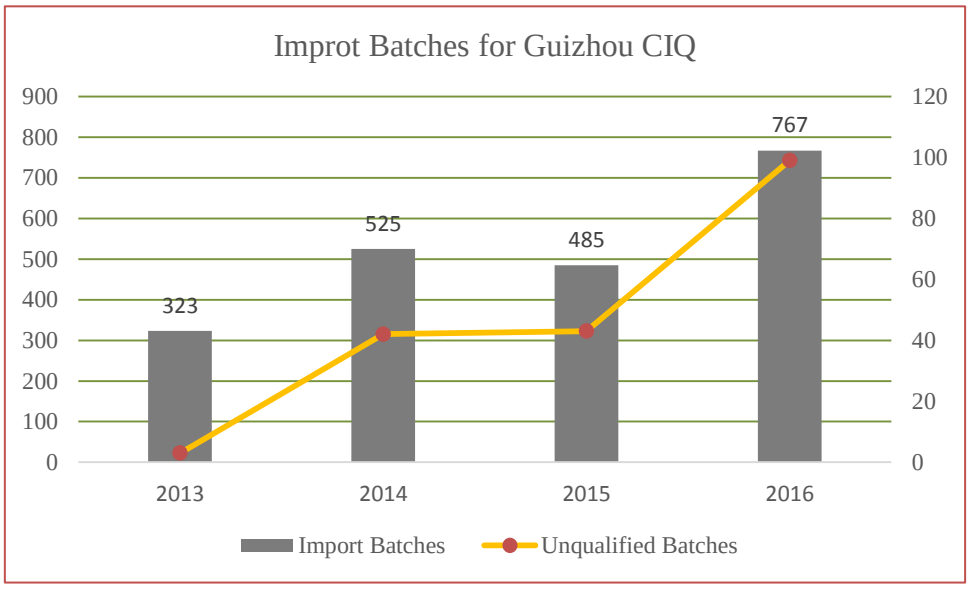

Figure 5-4b Merchandise import batches for Guizhou CIQ

Source: Guizhou Entry-Exit Inspection and Quarantine Bureau

To further explore the real situation, import and export are exhibited separately in Figures 5-3 to 5-4. In Figures 3a and 3b, although the amount of unqualified export goods in 2016 decreased sharply compared with 2015, the batches of that were increasing, showing that the quality of export goods is still a big problem for the enterprises in Guizhou. Similarly,

there was still an increasing trend for unqualified goods with the growth of import. From this perspective, we may find the necessity for Guizhou CIQ to innovate its service model in order to satisfy the needs of import and export businesses.

Meanwhile, as shown in Figures 4a, the merchandise import had experienced a fluctuation change within 4 years. In 2015, it decreased sharply with a strong rebound in 2016, reaching the summit of these years. The Unqualified sum also followed the changing trend of the total import. In terms of the batch of merchandise import, Figure 4b illustrates its rapid increase from 2015 to 2016, showing the trade development in China. Similar to the total import, unqualified batches were also increasing sharply with the growth of total import batches.

5.1.2 Organization Structure of Guizhou CIQ

In addition to the introduction of import and export in Guizhou CIQ, the organization structure is an important aspect to observe the activities of Guizhou CIQ. As exhibited in Figure 5-5, the organization structure of Guizhou CIQ is similar to other CIQ in China (see Figure 3-8 in Chapter 3) because they are all designed by the CIQ, making it difficult to change. Therefore, it is not easy to provide better service based on the current structure. On the one hand, the enterprises have urgent demand for more supporting and customization service, which has been analyzed in Chapter 4; but on the other hand, property as well as the organization structure is both hard to change due to the institutional characteristics of Guizhou CIQ, which has been discussed in Chapter 3. Therefore, in this study, we suggest that a new organization should be set up to better satisfy the various demands of import and export enterprises.

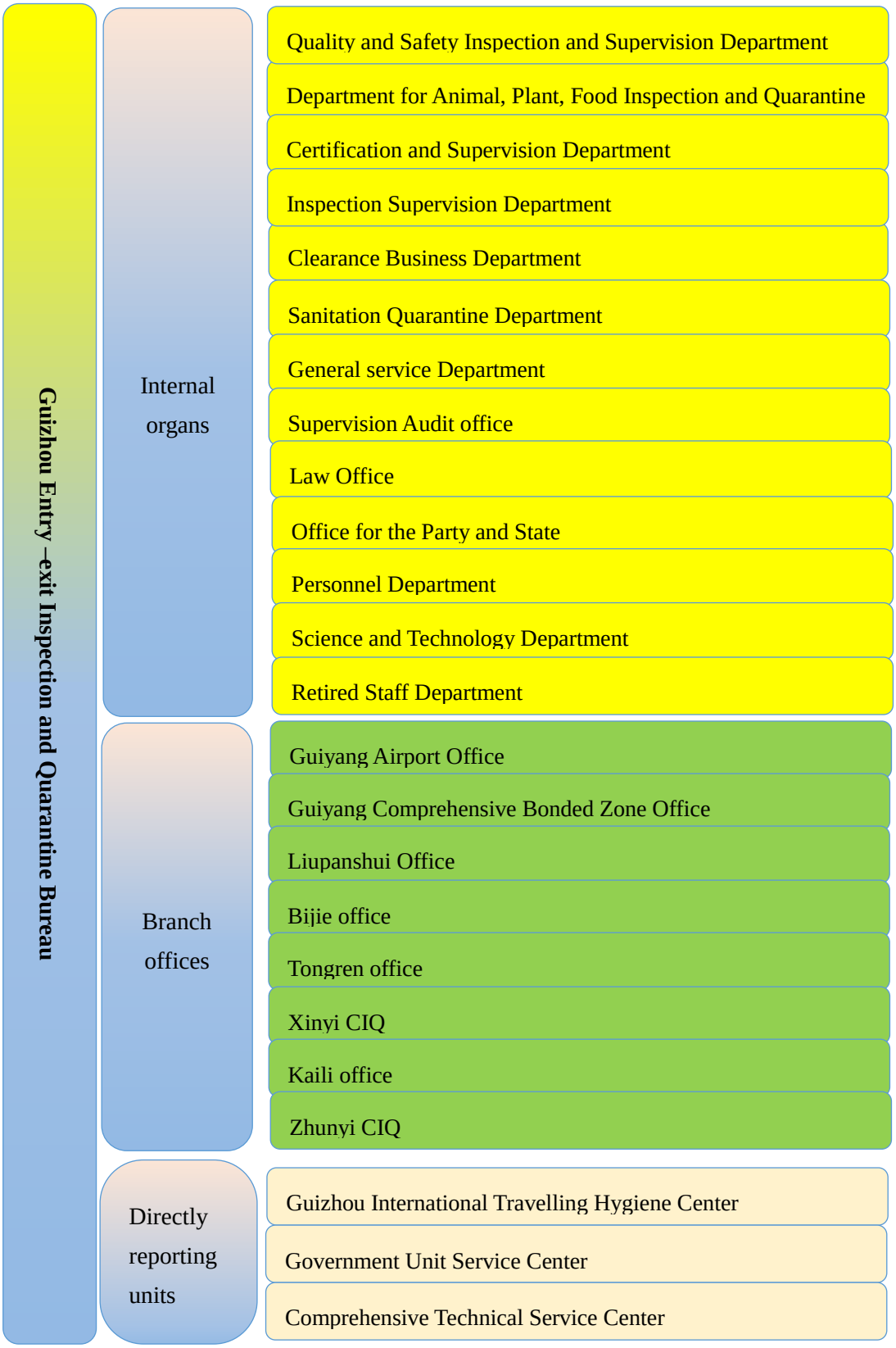

Figure 5-5 Organization structure of Guizhou CIQ

Source: www.gzciq.gov.cn

5.2 Principles for Guizhou CIQ Service Innovation

5.2.1 Summary of Import and Export Enterprises Demand

Table 5-1 Summary of field survey and their implications to service innovation

Questions	Survey results	Implication to the service innovation of CIQ
Understanding of the trade policy	Most enterprises are not clear of the import and export policy	Need to increase the efficiency of related policy explanation
Information channels	Most enterprises get to know through related agency, rather than CIQ	To provide regular and more convenient ways to inform related policy
Policy publicity	CIQ is not very active to explain the related policy	Should enhance the contacts with enterprises
Communication way	Most of the trading enterprises would like to establish liaison staff system.	To provide a very important direction for service innovation
Foreign barrier impact	More than half enterprises had suffered by foreign technical barrier.	Should provide related law and knowledge to support firms and control risks
Channel to know foreign requirement	Foreign distributors and mass media are the main channels	To increase the authority of CIQ
Obstacles in export	There are different obstacles for the import and export enterprises.	To show the diverse demand for the enterprises.
Understand import and export standards	Most of the enterprises know the national standards but are not very good at them.	The training for related standards is necessary.
Evaluation to CIQ service	Enterprises are not very satisfied with some implicit factors like training and professional service.	Need to provide more customization services.
Enterprise demand to CIQ	Focus on training, more efficient platform, involvement in producing process, approach to minimize the risk	To provide the direction to service model innovation for CIQ

Source: by the author

According to theoretical analysis in Chapters 3 and empirical survey in Chapter 4, we may find that CIQ in China are facing with many new challenges and need to reform immediately. How to better satisfy the need of local economy development has become an urgent problem. For instance, due to ineffective supervision capability as well as asymmetric

information. Chinese food safety including import and export products has much potential risk compared with FDA in US (Huang, 2014). Table 5-1 summarizes the main findings of the survey as well as their implication to service model innovation for CIQ reform.

According to the above field survey, we may find Guizhou CIQ should improve the following activities:

(1) To provide up-to-date information, technical guidance as well as some helps on trade disputes with foreign countries so as to reduce the losses of entry and exit enterprises;

(2) To offer the training on the import and export policies, national standards, laws and regulations in order to make enterprises better understand the relevant provisions;

(3) To provide inspection and quarantine services especially for the key stages in the production process, which may cut down unnecessary waste caused by failure to meet the foreign standards;

(4) To strengthen the certification work by establishing the mutual recognition mechanism with foreign authoritative certification organizations and implementing international standardization strategy. Therefore, in order to achieve these goals, in this Chapter, a new service model is proposed to improve the performance of CIQ. Before we innovate the service model, some principles are needed to guide the CIQ reform.

5.2.2 Reposition of Guizhou CIQ

Because of the limited resources, Guizhou CIQ often ignores the inspection, which affects not only the accuracy and efficiency of import and export products seriously, but also the products clearance speed. As Qiu (2014) suggested, CIQ should transfer from supervision government to service-oriented one. This reposition of CIQ is the theoretical foundation to the CIQ reformation. To improve the CIQ performance, the exit-entry inspection and quarantine bureau should enhance its service awareness. Only when the service-oriented ideology is created completely, can it try to provide more services to the trading enterprises. Besides, the CIQ may change itself from the management organization to the service organization, and pay close attention to market supervision, and technical support to economic development (Qin, 2014).

Due to the traditional administrative perception, currently CIQ undertakes some

functions that may belong to the market (Qiu, 2014; Xie, 2014). For example, many inspection such as the commodities' specific inspection, the inspection of the export commodities and the quality inspection of exit-entry goods, could be provided by the market enterprises, rather than the CIQ. The competition on these kinds of services can enhance the efficiency of exit-entry commodities inspection and shorten the inspecting cycle. Xie (2014) emphasizes that CIQ ought to weaken the administration role and accelerate the transitional process by introducing other market competitors, changing from a monopolistic structure to an oligopolistic one, especially for inspection activities. Instead of providing all the inspection and quarantine activities by itself, CIQ should strengthen its regulatory function, changing from "athlete" to "judger". Meanwhile, Qin (2014) also stressed the importance of service efficiency to both import and export.

Moreover, CIQ should balance inspection and quarantine activities to avoid the lack of responsibility and skip-level management. It is necessary for the Guizhou CIQ further to enhance the CIQ staffs' professional skills and strengthen the construction of basic capabilities before it improves its service level to meet the needs of the society and enterprises (Li, 2013). Qin (2014) believes that there are still many ways for CIQ to improve its service quality continuously such as changing the managerial approaches, establishing the image of honesty and credibility, developing the green channel and direct release system to speed up customs clearance and reduce the cycle time, encourage strategic planning, and promoting the management innovation ability to cut down the supervision cost.

5.2.3 Performance Evaluation

Performance evaluation is a process of assessing the contribution to organization made by the staff in a particular period (Ni, 2014). Li (2013) proposes that performance assessment is a method to evaluate the actual effect of the quality management system, and also an approach to monitor the working process and service quality. Shi (2013) points out that the performance management is to strengthen service value orientation. Here the performance of CIQ can be measured by its service level to the trading enterprises as well as the general public. Performance evaluation not only evaluates government's efficiency, but also emphasizes the government's work to satisfy the need of the public (Zhu and Zhang, 2005).

Meng (2014) introduces that there is no doubt that CIQ performance assessment may promote the transfer from administration to service-oriented one, leading to the lift of service quality for CIQ. Some ways, as Meng (2014) suggests, can be used to improve CIQ performance including changing ideological conception, building assessment instructions with the distinctive features of today's CIQ performance assessment, improving assessment system, strengthening the management, securing the result of CIQ performance evaluation.

In addition, Cai (2012) highlights the importance of borrowing some managerial approaches from local and international enterprises, that is, to introduce the market competition mechanism into administrative management. All these ways may provide more scientific ways to performance assessment and build a comprehensive evaluation process. As Wu (2012) suggests that it is necessary to establish a series of simple, feasible and practical index system for performance evaluation, which may service the administrative department to construct a high-efficiency integrated information network and to improve the timely feedback mechanism. Similarly, Shi (2013) stresses the consciousness of cultural innovation, and consolidation of intelligent and networked management with information technology.

Regarding to the service model innovation of Guizhou CIQ, it should build a comprehensive performance evaluation system, which may encourage all the staff in CIQ to work more efficiently, avoiding the equalitarianism within a department or among the various units. Meanwhile, in the process of performance assessment, not only every staff should be involved but also the entire inspection and quarantine process should carry out the more effective evaluated standard. For example, there is not any incentive for technician to be responsible for inspection and quarantine no matter whether the inspecting result is accurate or not, showing that there is no direct relationship between performance and the income. Therefore, it is necessary for CIQ to establish more efficient incentive system to the staff. To implement supervision and management for administrative performance, the duration for the whole performance evaluation process should be controlled. In order to promote the continuous improvement and the development of inspection and quarantine performance management, the supervision should be timely and provide some effective guidance so as to build the operation standard of the whole performance evaluation process (Shi, 2013).

5.2.4 Making Use of Electronic Supervision

The electronic supervision system, based on the Internet information technology, refers to using scientific method and modern electronic information technology to supervise the whole procedure of production in enterprises, and further to form the supervision and management network of inspection and quarantine (Hong, 2012). Electronic supervision is the core of electronic inspection and quarantine, addressed by Wu (2012), including process supervision, release of export goods, quick inspection of import goods and so on. This system can be used to monitor enterprises' production process and to collect the whole process information including declaring inspection, implementing inspection and quarantine.

The government should make use of information technology to accelerate the reform of inspection and quarantine supervision bureau, improving the efficiency of administrative management and creating a favorable atmosphere for customs clearance. The reform is capable of establishing an open, inclusive and extensible inspection and quarantine electronic supervision system by sharing information between CIQ and enterprises and putting effective quality analysis into effect, which covers different inspection and quarantine services (Wu, 2012). However, the role of information technology in inspection and quarantine business process has not been fully exposed currently. Cao (2013) argues that it is necessary to manage the business process of inspection and quarantine by means of e-government affairs. By strengthening the information construction of e-government, establishing electronic public information platform, and comprehensively implementing the government affairs, the government can promote the administrative law enforcement of CIQ more fairly, openly, justly, and efficiently (Qin, 2014).

The use of electronic supervision platform can greatly improve the speed of customs clearance, better complete the inspection and quarantine tasks, and improve the performance of the entire department. The new foreign trade and situation require both effective supervision to product quality and rapid development of customs release. Consequently, the implementation of information technology as a method of electronic supervision is extremely urgent. Electronic supervision is a huge reform related to the CIQ's comprehensive development, which certainly plays a crucial role to promote the management level of

inspection and quarantine (Shi, 2013).

5.3 PPP Model

The origin of Public-Private Partnerships (PPP) model can be traced back to the toll road construction program in Europe in the 18th century, but its formation and development in the model sense are mainly attributed to the market-oriented reform in the new public management movement that focused on the active involvement of the private sector. In the 1970s, the United Kingdom and the United States for the sake of solving the problem of inadequate financial funds in the economic depression, actively introduced the private sectors into the construction and operation of public project, apply the PPP model to the public policy field, and made a series of measures to standardize this model, which greatly promoted the development of PPP (Liu, 2015).

In mid 80s, medium developed countries encountered debt crisis. In order to promote the sustainable development of economy, Turkey proposed BOT (Build-Operate-Transfer) and constructed the Arkoy nuclear power plant in 1984, then this model followed by other developing countries. The Sha Tau Kok B Power Plant project invested and constructed by Hong Kong Hopewell Holdings Company in Shenzhen is a typical BOT project. Then the franchise, operation and maintenance of PPP model and the lease contract are all widely applied, among which BOT is the most popular. In 1992, when the New Public Management Movement introduced private sector into public service sector, the Private Financing Initiative (PFI) became an important model for promoting the cooperation between government and private sector after the introduction of market competition in the public service, and it had a comprehensive promotion in the field of public infrastructure in 1997. Since the 1970s, countries around the world have been trying to implement the PPP model in major urban and regional projects. PPP has gradually become an important model that carries out multi-agent cooperation of operating projects in the international market (Liu, 2015).

5.3.1 Definition and Classification of PPP

PPP has been widely applied in various fields, such as water, transport, and healthcare. However, despite the worldwide application of PPP, its definition has not yielded a

well-known agreement. The United Nations Development Program believes that PPP is a form of cooperative relationships between government, for-profit enterprises and non-profit organizations based on a particular project. Through this cooperation, the parties can achieve more favorable results than if they operated alone (Jia and Sun, 2014). In a project, the government does not transfer all responsibility of the project to the private sector, but the parties share responsibilities and financing risks together. According to the United Nations Institute for Training and Research, the PPP encompasses all institutionalized forms of cooperation between different social systems to address some complex problems in the local regions. PPP contains two aspects: one is the various partnerships between public and private advocates, which is to meet the needs of public goods, and the other is the implementation of large-scale public projects by public sector and private sector (Jia and Sun, 2014). Similarly, European Commission argues that PPP refers to a partnership between the public sector and private sector, which is designed to offer public projects or services that are traditionally provided by the public sector. American PPP National Committee notes that PPP is a way between outsourcing and privatization, which combines the both characteristics to provide public goods. It takes advantage of private resources to design, build, invest, operate and maintain public infrastructure, and supplies related services to meet public needs. Moreover, from the perspective of the PPP National Committee of Canada, PPP is a cooperative relationship between the public and private sectors, it is based on their respective experiences and best meets the public needs defined in advance through appropriate resource allocation, risk-sharing and benefit-sharing mechanisms (Jia and Sun, 2014).

In a broad sense, PPP is any arrangement of providing goods and services by the joint participation of public and private sectors. It refers to a number of complex, multi-stakeholder and privatized infrastructure projects (Savas, 2000). On the other hand, it means a formal cooperation between businessmen, social leaders and local government officials to improve the situation of the city (Davis, 1986). In narrow sense, PPP is a special type of contractual arrangement between public sector and private sector (Chou and Pramudawardhani, 2015; Kerä nen, 2016). Armstrong (1992) supposes that PPP is a partnership that includes contractual arrangements, cooperation agreements, collaborative activities and other aspects to facilitate

the implementation of policies and programs. Kernaghan (1993) considers that PPP is a partnership that aims to achieve common goals, mutual benefits, power sharing, co-operation and information sharing between public sector and private sector.

However, Consulting and Audit Canada (1998) thinks that PPP reaches an agreement between two or more entities so that all partners can cooperatively manage for the common or compatible goals and share power, responsibility, resource and risk to come true mutual benefit. As Jia and Sun (2014) point out, PPP refers to a long-term contract signed by public sector and private sector. According to Engel et al. (2014), PPP is an agreement where the government contracts a private company to build infrastructure projects and subsequently operate them in a longer period in exchange for revenues in the contract (Thomassen, et al., 2016). As a result, the construction or management of infrastructure in public sector is taken over by private sector, or the private sector represents public sector to provide a variety of services to the community. In sum, there are still no common definitions for the PPP. However, we may easily find some common features of PPP from these definitions. The first is the cooperation between public sector and private sector, which is the prerequisite; the second is to take the provision of public goods and services, including the provision of infrastructure, as the goal of cooperation; the third is to emphasize on win-win game among benefit-sharing, the private sector and the public sector; the forth is risk-sharing that requires the partners take risk together. In addition, the classification of PPP is shown in Table 5.1 (Zhou, Zhang and Zhang, 2015).

Table 5-2 The classification of PPP

Contracts	Modular Contracts	SC	Service Contract
		MC	Management Contract
	Integrated Contracts	DB	Design-Build
		DBMM	Design-Build-Major Maintenance
		DBO	Design-Build-Operate (Super Turnkey)
		O&M	Operation & Maintenance
Operations	TOT	PUOT	Purchase-Upgrade-Operate-Transfer
		LUOT	Lease-Upgrade-Operate-Transfer
	BOT	BLOT	Build-Lease-Operate-Transfer
		BOOT	Build-Own-Operate-Transfer
	Others	DBTO	Design-Build-Transfer-Operate
		DBFO	Design-Build-Finance-Operate
Privatizations	Full Privatizations	PUO	Purchase-Upgrade-Operate
		BOO	Build-Own-Operate
	Partial Privatizations	Share Transfer	
		Others	

Source: (Zhou et al., 2015)

5.3.2 Characteristics of PPP

PPP model has three important characteristics: partnership, benefit-sharing and risk-sharing (Jia and Sun, 2014). As illustrated in Figure 5-6, partnership is the first major feature of PPP and all successful PPP projects are built on a partnership. It can be said that partnership is the most primary issue in PPP. Compared with other relationships, the partnership between private sector and public sector in PPP has a distinct uniqueness. The main reason for the cooperation between private sector and public sector is that they have a common goal, that is, with the least resources to realize the most products or services in a specific project. The private sectors achieve this goal to pursue their own interests, and the public sectors realize this goal to ensure public welfare and interests. The formation of partnership requires consistent project objectives, but this is not enough. In order to maintain the long-term development of the partnership, partners also need to consider issues for each other (Jia and Sun, 2014).

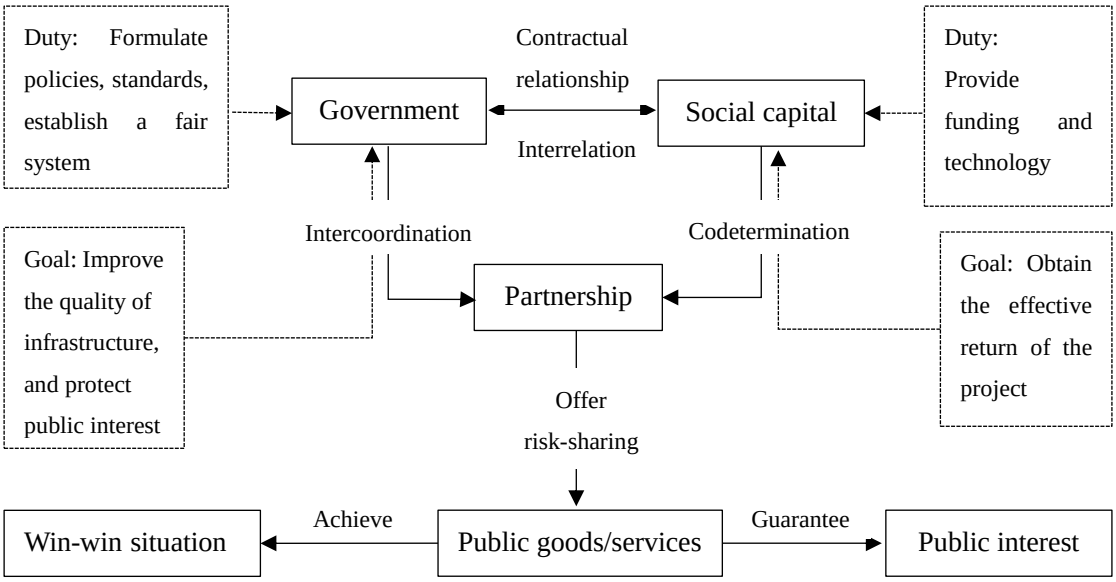

Figure 5-6 Characteristics of PPP

Source:(Thomassen et al., 2016; Zhou et al., 2015) .

Benefit sharing is the second characteristic of PPP. It should be emphasized that the public sector in PPP not only shares profits with private sector, but also needs to control the high profits of private sector, namely the excess profits of private sector in project are not allowed. The main reason is that all PPPs are public welfare project, they are not run for the maximum profit. If the two sides want to share high profits, it is actually a very easy thing. As long as prices are allowed to rise, profits can be greatly increased. However, this behavior will inevitably lead to public discontent, and ultimately may cause social confusion. Benefit sharing is clearly one of the foundations of partnership, and if there is no benefit-sharing, there will no sustainable PPP (Jia and Sun, 2014).

The third characteristic of PPP is risk sharing. Partnership in PPP implies not only the benefit sharing but also risk-sharing. In PPP, the risk sharing between public sector and private sector is the distinct feature making the PPP model different from the other transaction model in public and private sector. The government procurement process, for example, may have more than one kind of PPP model because both sides all try to take risks as small as possible. If any risk can be borne by the partner who is best at dealing with the risk, there is no doubt that the cost of the entire infrastructure project can be minimized. PPP management model pays more attention to the optimal risk sharing to minimize the overall risk. The

managerial model of pursuing the minimization of entire project risk has advantages over the way that public and private parties pursue the minimization of their own risk (Jia and Sun, 2014).

5.3.3 Management of PPP

PPP is a new managerial model, which not only has the general functions of management such as planning, organization, leadership, control, but also has some special functions like public and private conflict management, expansion of financing, the use of new technologies, and mechanism innovation (Jia and Sun, 2014). For PPP, like other managerial model, the first step of planning is to define organizational objectives, the second step is to formulate a global strategy to achieve these goals, and the last need to do is to develop a comprehensive hierarchical planning system to synthesize and coordinate various activities. Planning is a coordinated scheme and process for PPP, providing the direction for managers and non-managers. When all stakeholders know the organization's goals, they may start to coordinate among their activities, working together and teaming up. If there is no plan, they will encounter a lot of obstacles, thus the process of achieving the goals will loss of efficiency. Organization is generally composed of organizational structure, duty, human resource management, change and innovation management and other elements. In the PPP process, new organizations are sometimes created for specific projects, while some others do not set up new organizations. The new organization generally includes the personnel in public and private sectors according to the requirements of the contract to arrange the management position. PPP also has different characteristics from the general management model. For example, Shanghai Pudong water plant adopts PPP model, in which the chairman and general manager take turns in power from China and French. This managerial approach is an innovative one for the leadership in PPP.

Control is also a critical issue for PPP model. Control refers to the process of monitoring activities to ensure that they are carried out as planned strategy and correct significant deviations. An effective control system can guarantee the direction of all actions to be consistent with organizational targets. The control process can generally be divided into three steps: the first step is to measure the actual performance; the second is to compare the actual

performance with the standards; the third is to take management action to correct the bias or inappropriate standards. Although plan can be formulated, organizational structure can be adjusted, and the enthusiasm of the staff may also be mobilized, these still cannot guarantee that the goals pursued by managers can be achieved. Therefore control, as the last stage in the management cycle, is extremely important. The origin purpose of PPP is to financing for infrastructure construction such as highway and road. The government public sector invites the private enterprises to construct infrastructure, then operate to gain benefit, and finally transfer to the government department after a certain period of time. In this process, the stable income from the infrastructure is the main attraction for the enterprises. Therefore it is a win-win game in this process, in which government provides public goods to the society while enterprise may benefit from the stable revenue.

The use of new technology involves two aspects, production and management. PPP management model not only provides financing, but also brings new production technology and managerial skills that developed by private enterprises for the public sector, which may greatly improve the efficiency of public administrations. Therefore, PPP model may have advantages in addressing the shortage of financial problem by not increasing the tax burden of the enterprises as well as meeting the public needs at the same time. Due to the reform and opening policy in China, mechanism innovation, as a specific kind of innovation, has a special role for the process of economic and social construction. The purpose of this is to promote the change of tradition mechanisms to more efficient one so as to enhance the efficiency of resource allocation in the economic and social life. Mechanism transformation includes two directions: one is the public sector converts from traditional administrative department to market-oriented enterprise; another is the private sector gradually transfers to quasi-public company from market property. This convergent may generate some new incentive mechanisms, which may promote institutional innovation and enhance resource allocation effectiveness.

5.3.4 Risk of PPP

Above the advantage and operation of PPP model are discussed. However, because of different properties of public and private sectors, there exists many risks in the PPP model.

During the cooperation, government may transfers most or part of the risks of public utility construction and operation to the private sector. Therefore, if these risks cannot be well circumvented, both private and public parties will suffered by the unbalanced risk allocation. As Jing et al. (2006) pointed out, the main risks in PPP model include:

(1) Political and policy risk. Changes in government policies will largely affect the profitability of the project during the process of project implementation. Since this kind of risk is related to the political system especially the human resources arrangement in the government, it is always unexpected and cannot be predicted. In addition, the adjustment of interest relations in project implementation will create social and political problems;

(2) Financial risk. Financial risk in PPP refers to the project operating income not doing enough to pay the debt and interest, leading to the failure of the project company into bankruptcy;

(3) Operational risk. During the operational process, many factors may influence the economic and social performance. For example, if the profitability cannot reach the expected level of private partners, the enterprise may stop this project and withdrawal from the cooperation.

(4) Moral hazard. Moral hazard refers to the project partners in the implementation and operation of the project process not complying with the principle of good faith.

Successful PPP project needs to control various risks effectively, in which the efficient supervision is a powerful guarantee for all participants. In PPP model, the government has a dual role. On the one hand, the government is one of the parties in the collaboration; on the other hand, the government should provide a stable political and legal environment for the operation of the project. Thus the role of the government should be transformed or adjusted to the following functions such as to provide legal protection for the specific operation of the project; to keep the normal business decisions to be made independently; to give appropriate policy support as much as possible; to keep caution on the commitment of specific projects and leave enough space for the adjustments of follow-up behavior (Jing, 2005). Moreover, government functions must be defined with a clear boundary, including the boundaries of assets and regulation, such as market access supervision, price regulation, general service

regulation, and efficiency supervision is a prerequisite and guarantee for effective supervision. Besides, the government must establish a commitment mechanism (Cao, 2003) to guarantee the safety of assets. This is an important principle to reduce project financing cost and ensure the sustainability of project production or operation, allowing the project to operate with sufficient income, paying the necessary investment costs and operation costs, and allowing the enterprise to get a reasonable return.

In practice, PPP is a long cooperation process and closely related to the interests of people, in which trust is critical to all participants and acts as an important tool to reduce the transaction cost. Therefore, the government must seriously select the project, construct an effective regulatory framework and establish a reasonable, scientific and transparent procedure that is suitable to the development of the project. Furthermore, it is necessary for stakeholders to communicate with each other and let the third party agencies to do some consulting or to provide suggestions to ensure procedural justice. In order to achieve this goal, laws and policy environments should be fair and transparent (Jing, et al., 2006).

In public-private cooperation, risk sharing is a natural result (Treasury, 2006; Power, et al., 2016). As shown before, construction and operation have to undertake a series of risks (Allen, 2003; Jing, et al., 2006), such as financial risk, policy risk, technical risk, exchange rate risk, operational risk, service risk, moral hazard and so on. These risks will directly affect the PPP performance especially the investment returns of private sector. Traditionally, they are accommodated by the government in the traditional public project mechanism, whereas in the PPP model they are partially or even largely transferred to the private sector. However, if these risks cannot be controlled efficiently, both public and private parties will be suffered. Therefore, the government should take the responsibility to assist the private sector to avoid various risks ensuring the successful operation of the PPP model and achieving the desired objectives (Jing, et al., 2006).

5.3.5 Entry-exit Inspection and Quarantine Service Center (EIQSC): PPP Model

According to the empirical survey in Chapter 4, we found that CIQ in China are facing with many new challenges and need to reform immediately. First, CIQ should try its best to provide up-to-date information, technical guidance as well as some helps on trade disputes

with foreign countries so as to reduce the losses of entry and exit enterprises. Second, in order to make enterprises better understand the relevant provisions, the import and export policies, national standards, laws and regulations also need to be offered. Third, CIQ could provide inspection and quarantine service for the key link in the production process; this may cut down unnecessary waste caused by failure to meet the national standards. Fourth, Guizhou CIQ should strengthen the certification work, establish the mutual recognition mechanism with foreign authoritative certification bodies, and implement international standardization strategy so that it can keep up with the development of the times and consistent with foreign standards.

Considering the problems of CIQ, in this paper, a new service model namely Entry-exit Inspection and Quarantine Service Center (EIQSC) is proposed to provide the service to trading enterprises more efficiently. As Qiu (2014) suggested, CIQ should transfer from supervision government to service-oriented one. This reposition of CIQ can lay the theoretical foundation to the CIQ reformation. According to the field survey, to enhance the efficiency of exit-entry commodities inspection and shorten the inspection duration, CIQ may transfer from implementation of inspection and quarantine activities to the regulatory and supervisor role, leading to the separation of “referee” and “athlete”. To achieve this goal, this paper suggests that Public-Private Partnership (PPP) model should be introduced to EIQSC, in which public good attribute as well as the market efficiency may combine to provide better service to the enterprises. Figure 5-7 shows the ownership of EIQSC and its property.

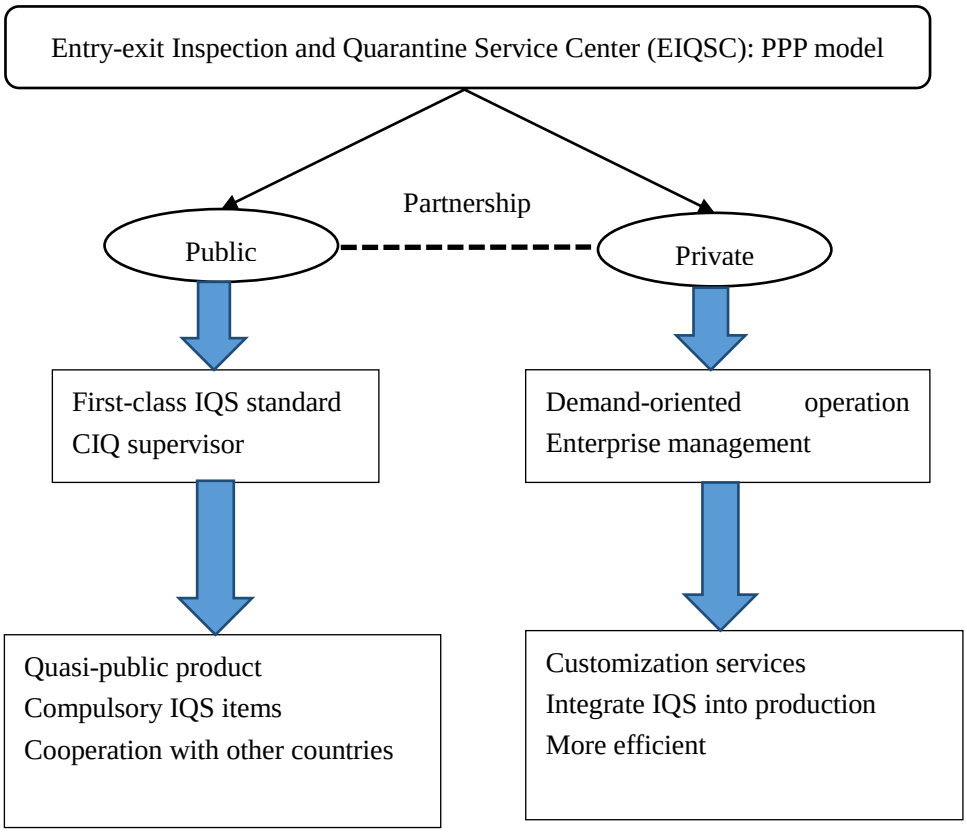

Figure 5-7 PPP model for EIQSC

Source:by the author

As shown in Figure 5-7, PPP is a form of cooperative relationships between government, for-profit enterprises and non-profit organizations based on a particular project. As a special type of contractual arrangement between public sector and private sector (Chou & Pramudawardhani, 2015; Kerä nen, 2016), PPP aims to achieve common goals, mutual benefits, power sharing, co-operation and information sharing between public sector and private sector. Through this cooperation, the parties can achieve more favorable results than they operate alone (Jia & Sun, 2014). Thus Public-Private Partnerships (PPP) have been widely applied in various fields (Power et al., 2016).

In this study, PPP model is employed to establish the Entry-exit Inspection and Quarantine Service Center (EIQSC). This center is the integration of public and private attributes. EIQSC may keep some compulsory services by the state government and only charge very-low price for them. Thus the EICSC still plays the basic role in inspection market. In addition to the compulsory services, EIQSC can provide many customized services to

support these enterprises development. These activities represent the private property of EIQSC since all these services are market-oriented and can be priced by the market mechanism. From the empirical study, we found that many firms suffered from the lack of process inspection or quarantine monitoring. Therefore, for these enterprises, in order to avoid the final huge losses, inspection and quarantine should be moved ahead to the production process, rather than only for the final product. Of course, the CIQ also works as a supervisor to all value-added services. However, despite of many advantages for PPP ownership, there are still shortcomings in the real implementation. For instance, due to some different interests, PPP may bring about the increasing of negotiation cost or internal transaction cost between government and private enterprises (Savas, 2000; Thomassen et al., 2016). In the PPP model, the government transfers most or part of the risks of public utility construction and operation to the private sector. Therefore, if these risks cannot be well overcome, they not only destroy the reputation of the enterprise, more importantly, but also to the government.

5.4 Business Model of EIQSC

Above we discuss the necessity for building EIQSC as well as its public private partnership ownership. Since it is an enterprise, rather than a government department, how to make it profitable has become a critical problem for the sustainable development of EIQSC. Since in Chapter 2, the literature on business model was reviewed, including the definition, characteristics, and component, in this section, we focus on the business model design of the proposed Entry-exit Inspection and Quarantine Service Center (EIQSC) as well as its operation.

5.4.1 Business Model Design of EIQSC

As Chesbrough and Rosenbloom (2002) suggest, a business model is also a type of innovation. Furthermore, Osterwalder et al. (2005) point out that business model describe the basic principle of how firms create, transfer, and capture value. Thus how to design a new business model has become a big challenge for nearly all firms. In particular, facing with the turbulent environment where a traditional model does not work well, firms have to innovate its business model. Until now, several methods have been developed to help design new

business model. One of the most popular approaches is the “business model canvas” by Osterwalder and Pigneur (2010) in which nine elements are considered and integrated together to construct a business model (see Figure 5-8).

Indeed, these nine components have complex relationships and may impact each other. When designing a business model we first define the customer segment and then adjust the design of the value proposition to address the needs of the customers(Osterwalder et al., 2014). We may also find that value proposition is in the core position though the other elements are all important.Therefore, in this canvas,value is the key concept and business model is designed to address the relationships among four parts:customers,supplier, infrastructure and financial capability.

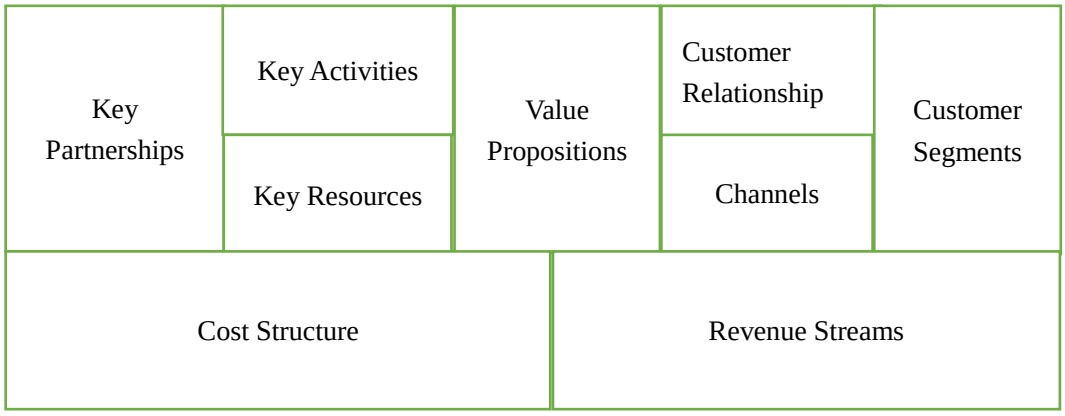

Figure 5-8: Business model canvas by osterwalder and pigneur (2010)

Source:by the author

In this study, we employ the business model canvas (Figure 5-8) by Osterwalder and Pigneur (2010) to design the business model of EIQSC. There are nine blocks in the model, including key partnership, key activities, key resources, value proposition, customer relationship, channels, customer segments, cost structure and revenue streams. In Table 5-4, the difficulties of nine components in EIQSC business model were discussed. For the Entry-exit Inspection and Quarantine Service Center, taking Guizhou CIQ as an example, the customers are very focused on all trading businesses in Guizhou province. Due to the

government regulation, these firms have to apply to CIQ for import or export businesses online or offline. Although these administrative communications are not enough, it still provides many chances for CIQ and enterprises to communicate with each other. Thus the communication channel is a key issue for the proposed EIQSC. Meanwhile, due to the PPP model, it is easy to find the partners. The private company would like to cooperate with the government because generally speaking government has higher credit as well as sufficient resources. Consequently, the related resources are easy to access. In addition, investigations in Chapter 4 indicate that currently nearly all the import and export enterprises are satisfied with the attitude of Guizhou CIQ, the relationships with the customers is not a big problem for EIQSC. Because of the specification of EIQSC whose customers are clearly defined, the distribution channel as well as the customer segment are not the important issues for EIQSC.

Table 5-3 Key components for the business model of the proposed EIQSC

Components in Osterwalder's Business Model	Implication to proposed Entry-exit Inspection and Quarantine Service Model (EIQSC)	Difficulties to achieve for EIQSC
Key partnership	To choose suitable private company that has some common goal and operation idea	Not very difficult to find suitable partner
Key activities	To explore the services which the import and export enterprises really need	Need to plan carefully
Key resources	Tangible and intangible resources that can maintain the operation of the EIQSC.	Easy to access in the PPP model
Value proposition	All the benefits or utilities that the consumer can enjoys from EIQSC	Can access through carefully investigation
Customer relationship	To maintain the good and efficient relationships with all trading firms	Should maintain the current good relationships
Distribution Channels	The ways and channels that EIQSC contacts with all the import and export enterprises in order to transfer the value of EIQSC	Gradually transfer from passive to proactive approaches
Customer segments	To identify and explore the customers of EIQSC	Easy to identify for EIQSC
Revenue streams	To build a profiting model to guarantee the sustainable development of EIQSC	Very difficult to achieve and need carefully design

Source: by the author

By contrast, key activities, value proposition, and revenue streams are comparatively much difficult to achieve for EIQSC. All these components are associated with the profiting capabilities. Different from the Guizhou CIQ that is an administration bureau, EIQSC is an enterprise that has to make money to survive. Therefore, how to balance the government public property and provide profit purpose has become the most important problem for EIQSC, which may determine its sustainability development. Therefore, in the following sections, we will focus on these four critical elements for the business model of Entry-exit Inspection and Quarantine Service Center.

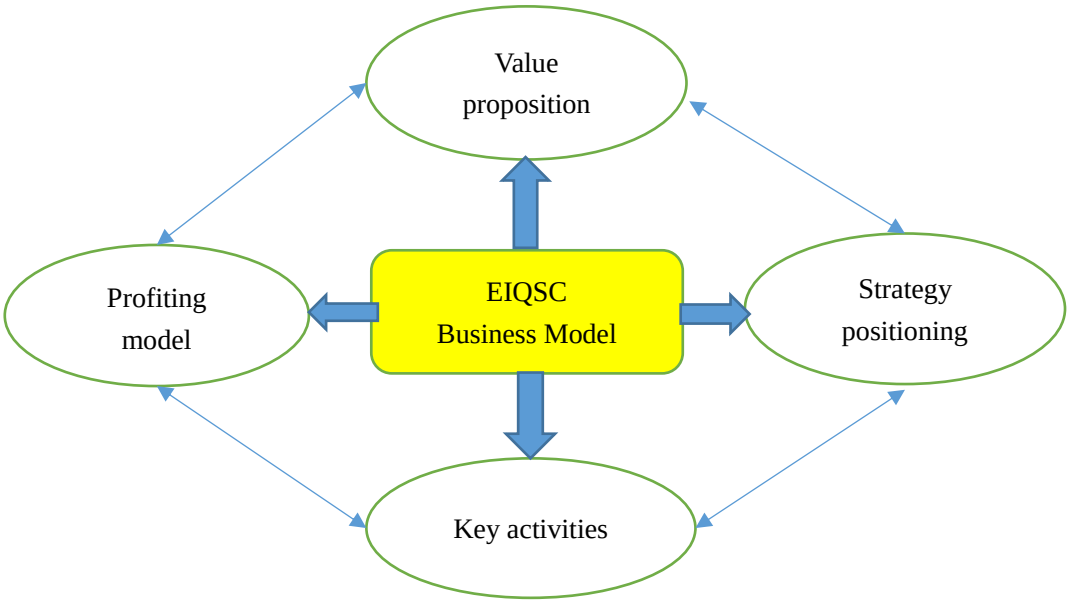

Figure 5-9 Key components of EIQSC business model

Source: by the author

According to the prior studies on business model, for the business model of EIQSC, there are four main components that need to be considered seriously. As shown in Figure 5-9, the business model of EIQSC comprises four interacting parts: value proposition, key resources, profiting model, and strategic positioning. Among them, the first three components are mentioned by the business model canvas. Here we suggest that strategy positioning is also an important issue for the business model since it determines the implementation of the business model, especially for the EIQSC with PPP model.

5.4.2 Value Proposition

Value proposition is related to the customer demand. It describes products or services provided by a company and how these supplies meet the needs of customers. Value proposition can be regarded as a set containing all benefits that customers may obtain from the products or services, explaining why the customer are locked in one company (Osterwalder et.al., 2005). To capture the value proposition, it is necessary to analyze the customers' demand. From this perspective, we may also find the significance of the field investigation in Chapter 4. The key point of value proposition is to provide a unique service to customers.

Table 5-4 Value proposition for the business model of EIQSC

	Services provided by EIQSC	Value Proposition
Primary activities	Basic services: ● Inspection items required by the government ● Quarantine items required by the government	Provide quasi-public goods to the enterprises with high quality
Value-added activities	Customization services: ➢ Inspection and quarantine items during the production process ➢ Related standards training and establishment ➢ International law consulting ➢ Other services proposed by the customers	Provide customization services to the enterprises, satisfying the various needs of the trading and other potential enterprises

Source: by the author

Table 5-5 shows the value proposition of EIQSC business model. The value proposition of EIQSC compromises two kinds of service: one is the basic services that are required by the government, which have quasi-public goods property. This kind of services represents the government administrative role to the enterprises, showing the public aspect in PPP model of EIQSC. All import and export enterprises at least pay for this service, attributing basic cash flow to the EIQSC; the other is the value-added services focusing on the special needs of every customer in Guizhou province. As we analyzed before, the local economy is comparatively underdeveloped compared to many advanced provinces in China, ranking only 26 for GDP in 31 provinces. This also implies that the competitive advantages of enterprises

in Guizhou are not very strong in both domestic and international markets. How to avoid the trading risk to keep the present export and to explore new international market has been an urgent task for the Guizhou government and enterprises. Accordingly, the EIQSC should try its best to support the firms in terms of technology and information. To better satisfy the customer's demand, customization services should be provided. In Chapter 4, through the empirical study on all import and export enterprises in Guizhou, we found that many new services have strong demand such as processing inspection and quarantine during the production stages, related standards training and establishment, international law consulting. Therefore the value proposition of EIQSC should focus on developing new services to the firms.

5.4.3 Strategic Positioning

Strategic position aims to select suitable strategy for an enterprise (Kald, 2003). To maintain the sustainable development of EIQSC, it is necessary to make a long-term strategy. In the context of transitional context from planning to market economy, EIQSC is responsible for both public as well as private goods supply. However, though EIQSC is set up by local government and its private partner, EIQSC may also face competition from other private inspection and quarantine agencies. Thus the strategy positioning is still critical for the development of EIQSC, especially for the private firms that may invest a lot for the EIQSC.

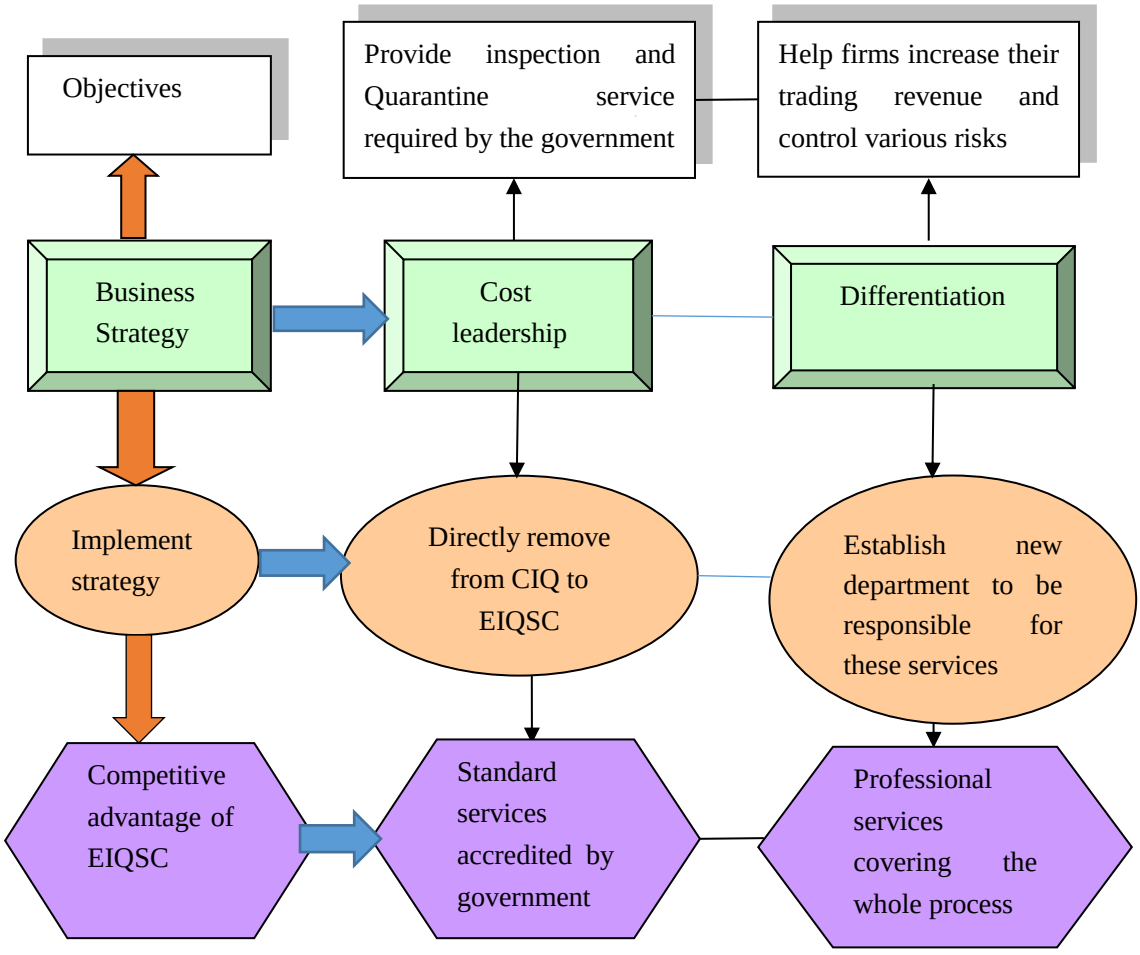

Figure 5-10 Strategic positioning for EIQSC

Source: by the author

Figure 5-10 shows the business strategy proposed for EIQSC. For the basic services accredited by the government, since its quasi-public goods property, cost leadership strategy is made and service would be priced based on the total cost. By contrast, for the additional services, because this kind of services is designed for a specific firm, it can be charged with a comparatively higher price. The different strategies for the two types of services exhibit the public and private mixed properties of EIQSC. Since currently the Guizhou CIQ has comprehensive human resources as well as facilities for basic services, there is no need to establish a new department for the basic inspection and quarantine activities. However, for the customization services, it is necessary to build a new department to explore these related businesses. In sum, due to the different strategies, the implementation ways should consider

the cost so as to make use of Guizhou CIQ resources more efficiently.

5.4.4 Profiting Model

Profit model explains the financial value created process. In proposed EIQSC, the revenue mainly come from three businesses: the income from the basic services covering all the compulsory inspection and quarantine required by the government; the income from the value-added services to enterprises; the revenue from the other supporting activities like training and consulting. Figure 5-12 exhibits the profiting model for EIQSC.

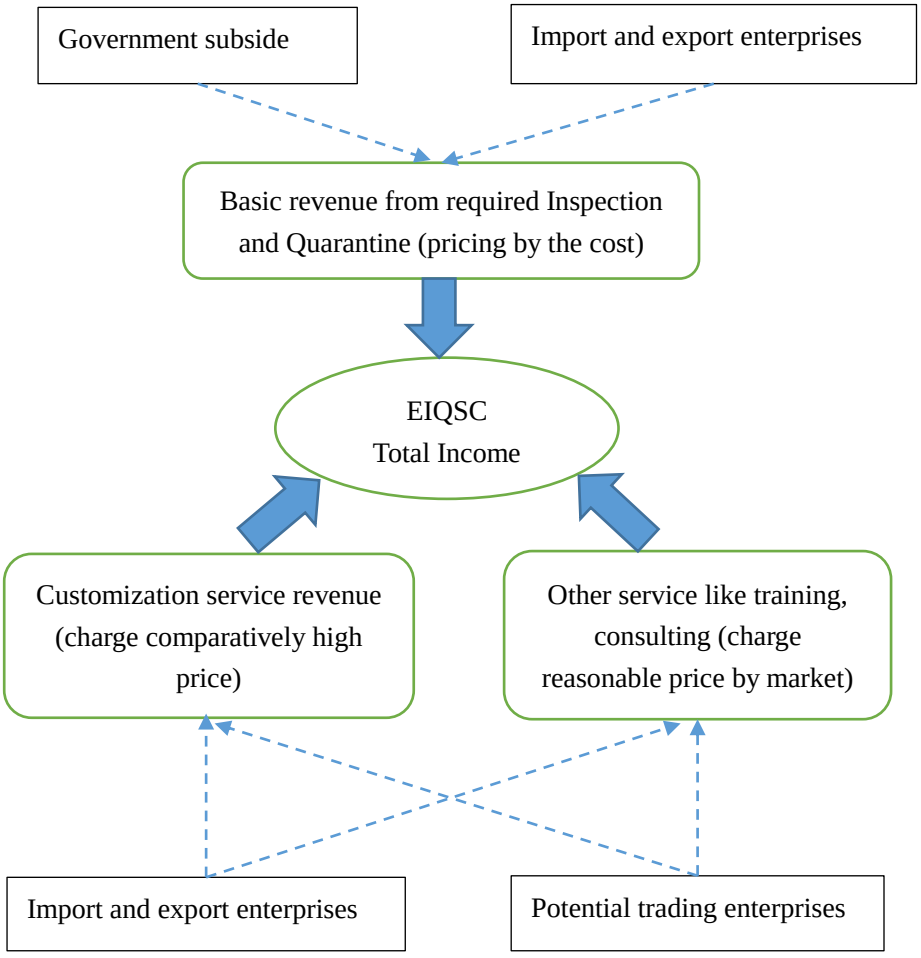

Figure 5-11 Profiting model for EIQSC

Source: by the author

As showing in Figure 5-11, the total income of EIQSC may come from three parts: basic services, customization services, and other services. However, considering the public

goods property for the basic services, the profit of EIQSC mainly depends on the customization services and other services. Because of the PPP model, basic services can attract the enterprise and lock in them, making the EIQSC much easier to understand the need of the enterprises and communicate with the customers. Therefore, in EIQSC, basic and customization services are supported each other. On the one hand, basic services provide the customers to the other two services; on the other hand, customization and other value-added services improve the quality of basic services. These interaction relationships may form a positive feedback and finally benefit the enterprises in Guizhou province.

5.4.5 Key Activities of EIQSC

The key activities in business model refer to a series of activities that are important to the implementation of a business model. For the proposed Entry-exit Inspection and Quarantine Service Center, it is not easy to balance the public and private properties in the PPP model. In this study, we concentrate on the organization structure of EIQSC, representing the formal arrangement and authority. To carry out the different strategies, the organization structure design of EIQSC should reflect the cost leadership and differentiation strategies. Figure 5-12 illustrates the main organization structure of EIQSC.

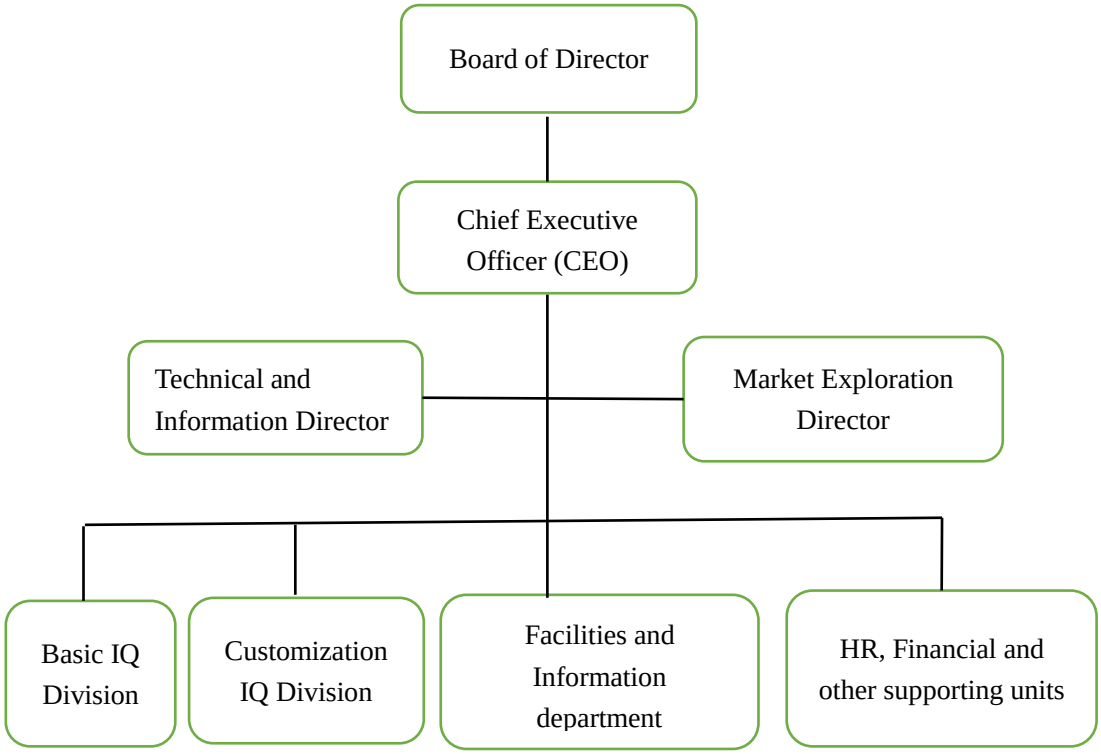

Figure 5-12 Organization structure for proposed EIQSC

Source: by the author

As exhibited in Figure 5-12, the functional department structure may make the operation more efficient. Thus the main departments of EIQSC include basic service division, customization service division, facilities and information department, and other supporting department like human resource department and accounting department. The reason to separate the basic and customization services is that they have different strategies.

At the same time, the technical and information director can enhance the technology in EIQSC. Since no matter the basic and customization services, the quality of inspection and quarantine is the ode of competitive advantages for EIQSC. Different from Guizhou CIQ, the core competence of EIQSC is its innovation capabilities, especially on service innovation. The duty of market director is to investigate the enterprises' demands and further develop the new products. This arrangement aims at enhancing the differentiation strategy that plays key roles in EIQSC, especially for the profit of the proposed service center.

5.5 Summary

The purpose of this chapter is to find an innovative way to provide better services to the import and export enterprises. As discussion in Chapter 3, though the four provincial CIQ are located in quite different geographic areas in China, there are still many common problems. Due to these similarities, one provincial CIQ was chosen as a case to show the innovation of CIQ service model. This chapter took Guizhou Entry-exit Inspection and Quarantine Bureau as a case to develop a new service model to better satisfy the local import and export enterprises.

Based on the empirical study in Chapter 4, this chapter analyzes how to innovate CIQ. Taking Guihzou CIQ as a case, this study suggests the importance to establish entry-exit Inspection and Quarantine Service Center (EIQSC) that can provide better services to the enterprises with more flexible managerial mechanism. Since the empirical sample is the enterprises in Guizhou province, accordingly Guizhou CIQ is a suitable choice for the innovation. In this case study, interview was employed to explore the new model.

Considering the demand and the gap between the expectation of trade firms and current operation system of CIQ, this study explained the necessity for the establishment of Entry-exit Inspection and Quarantine Service Center (EIQSC). Furthermore, Public–private Partnership (PPP) model is introduced to EIQSC to make it possible to balance the public and private properties. This chapter discusses the public private partnership (PPP) model for the ownership of EIQSC. Since PPP model have both public and private properties, this chapter first introduces the characteristics of PPP, including its definition, classification, management and risk and then explain the PPP model in EIQSC, emphasizing its quasi-public goods property as well as the advantages of PPP for service model innovation of Guizhou CIQ.

Employing the business model canvas by Osterwalder and Pigneur (2010), we discussed the business model of proposed EIQSC. Among the nine components, four of them including value proposition, strategy positioning, profiting model and key activities are critical to the business model of EIQSC and need seriously considering. Thus at the end of this chapter, these four aspects as well as their interactive relationships are discussed in details. All these four aspects help to explore a practical ways to achieve the PPP model of EIQSC.

Chapter 6:Implication and Conclusion

In Chapter 4 and Chapter 5, using Guizhou province in the southwest of China as a sample, we first empirically investigate the performance of Guizhou CIQ and the determinants of its service satisfaction. And then by the field survey results, Entry-exit Inspection and Quarantine Service Center (EIQSC) as a service model innovation is proposed, aiming to provide more efficient and better service to various trading enterprises. Though this study focuses on Guizhou province as a case, the empirical findings as well as EIQSC may also have important implications for other CIQ in China. As shown in Chapter 3, there are still many common problems faced by nearly all CIQ. Thus in this chapter, the implication of EIQSC are discussed and conclusions are presented along with the limitations of this study and further research.

6.1 Implication of EIQSC

6.1.1 Challenges Faced by CIQ in Other Provinces

In Chapter 3, we found that though each province in China varies in economic developing level as well as geographic environment, local CIQs are facing with some common problems. In addition to the theoretical analyses in Chapter 3, the followed cases that happened recently years may exhibit some other ways to observe the change of market as well as the typical problems of other CIQs in China (all cases are coming from "Journal of China Inspection and Quarantine").

***Case 1*:** Food plastic products are sensitive to consumer goods that enjoy a high concern at home and abroad. In recent years, this kind of export products in Guangdong province suffered frequent returned issues by foreign enterprises. Since most of these enterprises are small and medium enterprises, their product quality is not easily guaranteed. As a result, there is a risk of low product quality caused by reduced costs or vicious competition between enterprises. On the other hand, there are many foreign technical barriers such as the updated 10/2011/EC standard, especially restrictions of bisphenol in the plastic released by EU, "food

grade material requirements and test standards" in Italy, German LF−GB standards as well as the special measures to part of the plastic tableware taken by South Korea, the EU and other countries. In addition, there are still many other standards and regulations related to raw materials, leading to some unqualified components containing formaldehyde, melamine, nylon being tested by foreign quarantine and inspection organizations.

***Case 2*:** In the first half-year of 2015, 659 batches of export textiles worth of 32 million US dollars were shipped back to Ningbo in Zhejiang province, increasing 342.30% compared with the same period of 2014. These returned textiles accounted for 22.10% of Zhejiang's total returned textiles. By the statistics of Ningbo CIQ, EU, Japan and US are the main markets of Ningbo's export textiles and accordingly are the main returned countries. In 2015, the returned batches accounted for 26.60%, 22.40% and 10.30% of the total respectively, and had a growth of 77.80%, 160% and 100% respectively. From the analysis of returned situation, increasingly strict foreign technical regulations are the primary reason for unqualified textile. Statistics show that the first half year of 2015, more than 90% of the textiles in Ningbo were shipped back due to substandard quality.

Case 3: Investigation on returned products produced by Shandong Hailong Chemical Fiber Limited Company and exported to Mexico found that the products were shipped back because their curvature cannot meet the contract requirements. Field survey discovered that the inspection instrument was flawed, the quarantine agencies only through sensory ways (bending the fiber with their hands) were able to verify the curvature, which could not conduct qualitative measurement. However they did not commission relevant external testing agencies for testing. While customers took three samples to test by instrument, results showed that the highest curvature of the three samples is 1.70% lower than the contract requirements (≥ 3%). Consequently, the return is inevitable.

Case 4: Recently, a number of high-quality garlic in Shandong, which was exported to South Korea, was sent back due to quality problems, leading to a huge loss of the farmers. This incident was caused by the inconsistent test results of South Korean which has different inspection agencies and methods before and after delivery. Though South Korea should take responsibility for these results, Chinese farmers were finally suffered by the return. When this

batch of garlic shipped to South Korea, agricultural management institute conducted a sampling test and found that the "severely defective garlic" was more than contract requirement. Of note, in China, defective garlic is a vague concept and has not strict standards. By contrast, South Korea has been cautious in the policy of imported food. There are nearly ten thousand kinds of terms and standards to restrict the imports of agricultural products. This makes it difficult to pass the inspection of substandard goods. In 2013, the agricultural products returned by South Korea only in Ningbo port are up to 131 batches, valued 9.34 million dollars. Therefore, the returns garlic of Shangdong province is not a specific case. Before that, the export garlic from Lanling, Guangxi province had been returned by South Korea. The farmers said that they were not familiar with the rules of foreign trade written in Korean and failed to follow the strict terms of South Korea as well. The garlic export trade involves various aspects of production, processing, packaging, storage, trade policies, laws (contracts), market changes, quality sampling and other series of work. However, garlic farmers have no capability to figure out these complex links. In addition to production and processing, the other aspects are also commissioned by the South Korean companies. Therefore, Chinese garlic farmers are completely in the minor position from the beginning. Once there is a problem, Chinese farmers have to suffer the losses.

Case 5: Dongguan Inspection and Quarantine Bureau implemented special inspection to Acrylonitrile Butadiene Styrene (ABS) plastic cups sent by a metal molding limited company in September and November 2012, results showed that the products were unqualified by standards of American and China. The survey suggested that the company's English test report about ABS raw materials was only in line with the requirement of 2002/95/EC, rather than EU 10/2011. It must be noted, that 2002/95/EC is a criterion that restricts harmful substance in electronic equipment. Yet the cup is a kind of product that direct contacts with food, its ABS raw material complies with 2002/95/EC only indicates that the raw material meets the requirements of Restriction of the use of certain hazardous substances in electrical and electronic equipment (ROSH) and cannot guarantee that it accords with the requirements of contact with food plastic products. There is a great difference in terms of safety and health indicators between plastic raw materials in contact with food and general industrial plastic

raw materials. But the company has limited knowledge of English report and standards about export country, only by the word “PASS” as the judging standard coupled with the attraction of low price, which made the factory emerge lots of unqualified raw materials and finally caused great economic losses to company and customer. When the standards are inconsistent, the inspection and supervision institutions should be careful to deal with the ABS plates that export to Russian declared by some plastic limited company in Dongguan. After testing, the acrylonitrile content of the product did not meet the requirement of GB17326-1998, therefore Dongguan inspection and quarantine bureau issued an unqualified notice to this company. Investigations revealed that the company’s products were qualified according to the US federal regulations FDA CFR181.32, but they failed to meet China’s standards. A careful comparison of the two standards showed that FDACFR181.32 is in accordance with the principle of risk control, that is, when the acrylonitrile content in ABS is less than 30%, there will no longer require the monomer content of acrylonitrile. By contrast, GB17326-1998 does not divide different proportions of ABS, but always requires the monomer content of acrylonitrile, is similar to FDACFR 711.1020. In other words, the same product, it may meet the requirements of the US federal regulations, but it does not meet China’s standards.

Table 6-1 The implications to CIQ service innovation

Returned Case	Main reasons	Implication to CIQ service innovation
Case 1: food plastic product in Guangdong province	No quality control for SMEs and strict standard of imported countries	➢ The problem about standard inconsistency has always plagued the inspection and supervision work of contact with food plastic products. Some domestic health standards of contact with plastic products have been used for more than 20 years, the test items focus on the consumption of potassium permanganate, heavy metals, evaporation and other traditional items. It has not been changed and cannot meet the requirements of the latest health technology regulations. ➢ Inspection and quarantine should be involved during the producing process even at the beginning like raw materials ➢ Need for the differentiated service to SMEs
Case 2: textile product in Ningbo, Zhejiang province	Do not meet the updated standard	➢ CIQ should follow the change of related standard and inform to trading enterprises ➢ More customization services are needed for the trading enterprises
Case 3: chemical Fiber in Shandong province	Inspection and quarantine instruments are old	➢ The hardware like inspection instruments should be updated and catch up with the world first-class standard ➢ CIQ should provide higher qualified service to the trading enterprises
Case 4: garlic product in Guanxi and Shandong province	Big gap between Chinese and imported country's standard Very high standard	➢ Relevant departments should speed up updating and formulating product standards to make it in line with international standards. ➢ CIQ should be proactive to join the world standard association and to increase the negotiation power in the world trade conflicts
Case 5 AS material cups in Dongguan, Guangdong province	Not understand the related requirements	➢ Raw materials need to be carefully checked. The quality of raw materials is of vital importance to the health of contact with food plastic products and must be strictly checked by manufacturing enterprises. ➢ The test report should be targeted, and the daily supervision of inspection and quarantine should focus on the quality management of raw materials and other key projects.

Sources: by the author

6.1.2. Application of EIQSC

As discussed before in this thesis, facing with the continuous changes of international environment and rapid increasing of Chinese trade, how to provide more efficient and better

services to trading enterprises in China has become the most urgent and important issue for CIQ. By the empirical survey in Chapter 4, this study proposes the establishment of Entry-exit Inspection and Quarantine Service Center (EIQSC) and further explores its business model in practice. Even if differences among provinces in China, from the typical cases in Table 6-1, we may still find that the proposed EIQSC could also be an innovative model for other provinces, rather than only in Guizhou province. The purpose of EIQSC is to provide more marketization services and finally support the Chinese enterprises to go abroad smoothly. Combining the field survey and case analysis in this thesis, we may find some general needs for CIQ all over the country of China. As shown in Table 6-1, there are various reasons for return production. Therefore, in this section we further analyze how the proposed EIQSC can help Chinese trading enterprises improve their operation and control their trading risks.

First, EIQSC can make use of its professional capability and facilities to help analyze the returned reason and make more comprehensive investigation to returned goods than the firm itself. If the products indeed have any quality problem, EIQSC may provide some suggestions to the firms on how to improve the quality of the product. Except for the quality problem, there are still many other reasons such as inconsistency of inspection standard, shipping condition, or even the unclear contract. For these cases, EIQSC is more convenient to provide the law support on behalf of the trade firm to negotiate with the foreign company.

Second, since EIQSC is an independent organization with its own strategy rather than a government department, it is possible to offer customization services. This kind of service should be individual as various firms have its own products and procedure. Currently CIQ can only provide standard services according to the related policy and laws. This flexibility is more important than before since the business environment are changing so fast, just as happened in *Case 4.* For most of trading enterprises, due to their limited resources, it is hard to follow this change. Meanwhile, it is not economically feasible for each firm to trace the standard by themselves. Therefore professional services are needed to help enterprise understand the revision of the related law or standard.

From this perspective, the proposed EIQSC could be more efficient than current CIQ, showing the wide application of EIQSC in other provinces of China.

6.2 Conclusions

The aim of this thesis is to develop a novel CIQ service model to provide more efficient services to trading enterprises. To achieve this goal, multiple methods like empirical study and case study were used to collect necessary information and do theoretical analysis. Taking Guizhou CIQ as a case, we explore the service model innovation of CIQ. The main conclusions are as follows:

1.Taking four provincial Entry-exit Inspection and Quarantine Bureaus (CIQ) as examples, this study first discussed their operation. Through the interview to (Inner Mongolia, Heilongjiang, Shanghai, and Guangzhou CIQ in China, this study found that though their economic backgrounds are quite different, some common problems were discovered such as mixed positions, lack of advanced inspection equipment and talents, unsatisfied service quality, and unsuitable supervision mode. This overview illustrates the general status of CIQ and also helps to the later empirical investigation, especially in the questionnaire design. All these shortcomings indicate that traditional CIQ should be innovated to catch up with the new economic development.

2.Empirical survey, including a questionnaire and an interview, was employed to investigate the performance of CIQ current services and the demand of trading enterprises. Through this field investigation, we found that there exists asymmetric information between CIQ and trading enterprises. The determinants of CIQ satisfaction have gradually changed from hardware to software factors including staff attitude, policy and technology guidance, work efficiency, and open information, showing the new demand under the present environment. In particular, most enterprises show their strong needs to the more convenient and efficient platform. The empirical survey provides the guidance to the CIQ service model innovation.

3.To better meet the demand of enterprises, taking Guizhou CIQ as a case, this thesis emphasized the importance of innovation to the tradition CIQ service model. Therefore, considering the current operation and performance of Guizhou CIQ, Entry-exit Inspection and Quarantine Service Center (EIQSC) was proposed to provide more efficient services. This service center is an independent organization that aims to avoid the bureaucracy of

administration and to enhance its marketization of inspection and quarantine activities, making it more sensitive to the changes of demand. Different from the current CIQ that is an administration department of government, EIQSC can make use of enterprise managerial skills to enhance the flexibility and efficiency of original CIQ.

4.Public-private partnerships (PPP) model was introduced to address its ownership of the proposed EIQSC. This PPP model provides a practical solution to the public and private mixed properties in EIQSC. Though EIQSC is not a government department, it is still responsible for providing some public goods like the basic services required by related laws and policies. Therefore it is not easy to balance the public and private properties in EIQSC. The PPP model can not only enhance the public properties of the service center but also make it possible to pursue reasonable profit to survive in the market competition.

5.In addition to the ownership arrangement, this thesis also discussed the operation of EIQSC especially its business model. Using business model canvas by Osterwalder (2010), we analyzed the situation of EIQSC and found that the most critical components in the nine blocks are value proposition, strategy positioning, key activities and profiting model. Then these four aspects and their relationships have been explored in detail. This study suggested that EIQSC should provide two kinds of services: basic services by the government regulation and customization service by the market demand. Furthermore, the cost leadership and differentiation strategies should be made to primary services and value-added services respectively.

6.Due to the similarities among the various CIQ in China, the proposed EIQSC could be applied to other provinces or cities, rather than only for Guihzou provinces, even though the sample in this thesis was from Guizhou and EIQSC was also analyzed base on Guizhou CIQ. There should be a wide application in the other provinces of China for the proposed EIQSC and its practical operation including PPP ownership arrangement and the business model. Meanwhile, we also suggest that the CIQ service model innovation should take into account of the different economic development and trade characteristics in various provinces and regions.

6.3 Limitations and Further Research

This thesis combines empirical study and theoretical analysis to explore the service model innovation of CIQ in China. However, due to the limited resources especially the time and expenditure, the sample of the empirical study focuses on Guizhou province even if we investigated all the trading enterprises in it. Therefore the main shortcoming of this study lies in the sample size. As shown in Chapter 1, China has become the largest trade country in the world, in which thousands of trade products from various sectors have quite different demands on inspection and quarantine. Therefore in the future research, the large-scale survey for these enterprises are necessary since it can provide more accurate data and information to guide the innovation of CIQ. Considering the variation of every province in China, the questionnaire may also be adjusted to adapt to the local situation.

Besides the sample size, the study takes Guizhou CIQ as a case to discuss the service model innovation of CIQ. Further research may take other CIQ as a case to study the general application of EIQSC. Indeed, even for the Guizhou CIQ, the discussions in Chapter 5 are not sufficient enough due to the limited time. For example, in Chapter 5, we mainly analyze the business model of EIQSC and only a simple organization structure is given for EIQSC. In the following study, we may further discuss the human resources management like employee's incentive system to guarantee the efficient of EIQSC in the long-term.

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Appendix 1

Survey of Enterprises on Guizhou Entry-Exit Inspection and Quarantine Bureau

Thank you for supporting and participating in this study. All information will be held in confidence and only used for academic research. Please choose the number that closely reflects your enterprise.

Section Ⅰ. Profile of Enterprise

1. Enterprise ownership:

(1) State-owned enterprise (2) Private enterprise

(3) HongKong-Macao-Taiwan enterprise (4) Foreign enterprise

(5) Others

2. The sector of the enterprise:

(1) Production / processing / manufacturing enterprise

(2) Circulation trade enterprise (3) The agent inspection unit

(4) Freight enterprise (5) Others

3. *Total revenue (unit: USD $10,000):*

(1) Less than 250 thoUSnd dollars (2) 250 thoUSnd to 500 thoUSnd dollars

(3) 510 thoUSnd to 5 million dollars (4) More than 5 million dollars

4. *Number of annual inspection or quarantine batch:*

(1) Less than 30 batches (2) 31 to 100 batches

(3) 101 to 300 batches (4) More than 300 batches

Section Ⅱ. Trading Service to Enterprise

1. To what extent are you clear of the import and export policy?

(1) Very knowledgeable about the import and export policy.

(2) Very knowledgeable about the policy only related to the company.

(3) Only know the inspection policy of general import and export goods. Other policies

are not very clear.

(4) Not clear of the inspection policy and only did according to the requirements of Guizhou CIQ.

2. Which channel does your company get to know the relevant laws and regulations?

(1) Inspection company, inspection person or legal adviser

(2) Officer in Guizhou CIQ

(3) Bulletin board and portal site in Guizhou CIQ

(4) Newspaper like "China Times" and other publications

(5) Advertisements provided by Guizhou CIQ

(6) Others

3. How often do the officers of Guizhou CIQ proactively explain the relevant laws and policies to your company?

(1) Often

(2) Sometimes, but the explanation is not enough

(3) Some officers themselves are not familiar with the laws

(4) Never

4. Which way do you think it is more efficient for Guizhou CIQ to communicate with your company?

(1) To deliver a report regularly

(2) To sign a memorandum with the Guizhou CIQ

(3) To dialogue with the Guizhou CIQ through the industry organizations

(4) To establish liaison staff system and hold regular liaison meetings

(5) Others, please specify_____

5. Did your company's export business once be affected by foreign technical trade measures?

(1) Yes, please specify_____

(2) No

6. Which way does your company obtain information of foreign technical trade policies? (Multiple choices)

(1) National Quality Supervision and Inspection and Quarantine Institution

(2) China's TBT, SPS inquiry point

(3) Other government departments

(4) Through the website of TBT, SPS inquiry point

(5) Diplomatic and consular missions of China

(6) Media (newspapers, magazines, television, etc.)

(7) Information provided by foreign distributors

(8) Relevant trade associations and chambers of commerce in China

(9) Foreign TBT, SPS inquiry point

(10) Foreign government website

(11) Others

7. What are the main obstacles for the export business?

(1) Technical trade measures (2) Anti-dumping

(3) Countervailing (4) Quota

(5) License (6) Tariff

(7) Exchange rate (8) Others

8. ***To what extent does your company understand the national standards relevant to the import and export of goods?***

(1) Very much (2) Some

(3) Average (4) Very little

(5) Absolutely not

9. ***What content do you hope Guizhou CIQ to include in the policy statement?***

(1) The latest preferential policies in the import and export

(2) How to standardize the inspection, such as pre-classification of goods and other knowledge

(3) Classification management, convenient customs clearance

(4) Intellectual property protection

(5) Inspection of law enforcement and subsequent management

(6) Others, please specify_____

Section Ⅲ. Satisfaction for CIQ

1. What services does your company currently receive from Guizhou CIQ?

(1) Training on relevant laws and regulations for import and export

(2) Training on relevant inspection standards for export target countries

(3) Certification and accreditation services, such as mandatory product certification, protection of geographical indication products, protection of eco-origin products, etc.

(4) Inspection, verification, testing and quarantine of import and export goods

(5) Provide detailed information on the business process of Guizhou CIQ

(6) Paperless inspection

(7) Others, please specify_____

2. How do you evaluate the following services of Guizhou CIQ?

		Very Dissatisfied | Average| Very satisfied ◄——————————►						
1.	Staff attitude	1	2	3	4	5	6	7
2.	Physical environment	1	2	3	4	5	6	7
3.	Policies, regulations and technical guidance	1	2	3	4	5	6	7
4.	Work efficiency	1	2	3	4	5	6	7
5.	Service procedure	1	2	3	4	5	6	7
6.	Inspection and quarantine duration	1	2	3	4	5	6	7
7.	Inspection accuracy	1	2	3	4	5	6	7
8	Openness of government information	1	2	3	4	5	6	7
9	Impartiality of law enforcement	1	2	3	4	5	6	7

As a whole, how do you assess the service level of Guizhou CIQ

	Very **low** | Average| Very high ◄——————————►						
Service level of Guizhou CIQ	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Section Ⅳ. Demand of the Enterprise

1. To what degree does your enterprise need the following services?

		Unnecessary at all | Average| Very necessary						
1.	Provide the training on product inspection and quarantine standards	1	2	3	4	5	6	7
2.	Provide training on relevant standards for export target countries	1	2	3	4	5	6	7
3.	Provide inspection and quarantine service for the key stages in the production process	1	2	3	4	5	6	7
4.	Provide up-to-date information, technical guidance and advice on technical trade measures in foreign countries	1	2	3	4	5	6	7
5.	Strengthen the certification work, establish the mutual recognition mechanism with foreign authoritative certification bodies	1	2	3	4	5	6	7
6.	Implement international standardization strategy to promote the participation of enterprises in international standard system revision	1	2	3	4	5	6	7
7.	Build a public testing service platform to provide convenient testing services for enterprises	1	2	3	4	5	6	7
8	Actively participate in external negotiations to minimize the losses of trading enterprises	1	2	3	4	5	6	7

In addition, what other kind of services do you think Guizhou CIQ should provide?

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The end of questionnaire. Thank you for your cooperation!