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Bing-lian Liu
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Contemporary Logistics in China

Assimilation and Innovation

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ISSN 2194-7937 ISSN 2194-7945 (electronic)
ISBN 978-3-642-55281-6 ISBN 978-3-642-55282-3 (eBook)
DOI 10.1007/978-3-642-55282-3
Springer Heidelberg New York Dordrecht London

Library of Congress Control Number: 2014942661

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

This book is the fourth volume in a series entitled "Contemporary Logistics in China," authored by the researchers in the Logistics Center at Nankai University. Expanding the scope of the three predecessor volumes, published in previous years, this book continues the effort of providing a systematic exposition of the logistics development in China to the English-reading community at large. Our ultimate aim and desire is to present a timely portrayal of the rippling enlargement of China's logistics market and the status of its logistics industry's transformation. In so doing, we strive to offer an in-depth analysis of the hot issues and the dilemma amid the ongoing dynamic and multi-faceted development, and a source of reference for interested readers in the academic and professional fields.

The present work is founded on the research findings of a score of scholars in the Logistics Center, in writing the "Annual Logistics Report in China (referred to as The Blue Book in Chinese)," for the past 11 consecutive years. The Blue Book endeavors to parse the relevant data with analytic rigor and fresh perspectives in the hope to shed some light on this confounded area of logistics evolution in present day China. It is recognized by the National Development and Reform Commission and commended by knowledgeable readers as the most systematic and authoritative research report of its field. This series of books in English, though created as a companying publication, possess their unique characters in terms of themes, coverage of subjects, and orientations, to afford the English readers a balanced view on contemporary logistics of China.

This book comprises 11 chapters, organized into four parts. The introductory part, consisting of three chapters, depicts the current development status of the logistics environment, the logistics market, and the logistics infrastructure. The first three chapters give an up-to-date summary of relevant statistics and a longitudinal view of the recent trend; they also discuss the latest logistics development in a rapidly changing economic and social environment.

Part II focuses on the logistics development of three provinces in China – Zhejiang Province, Fujian Province, and Shaanxi Province. Zhejiang Province is one of China's most developed provinces, with highest degree of opening-up, and in

a leading position in logistics development. The unique logistics operations in Yiwu, a city in Zhejiang endowed with booming global trade, is featured in this chapter. Fujian Province plays a leading role in China's opening-up to the world, especially in the economic and trade exchanges between China Mainland and Taiwan. Expansion of mutual investments between Fujian and Taiwan has accelerated the logistics cooperation between the two regions. In the past few years, Shaanxi Province has achieved a steady economic growth through its tripartite development of advanced manufacturing, energy/chemical, and green industries. It has also made notable progress in construction of integrated transportation system and logistics parks, making it an important transportation hub in Central China.

The third part addresses the logistics development of two rapidly-expanding sectors in China – the apparel industry and the ports. Development in both sectors impact the scale and mode of domestic as well as international logistics. The development environment, development status, existing problems and future development trend of these sectors are analyzed respectively. The final part, consisting of three chapters, discusses some hot logistics topics in China. Chapter nine focuses on the current status of China's logistics service innovation. For the past few years, China's logistics service innovation has developed rapidly with the emergence of many typical innovation modes and several demonstration cases of logistics service. The chapter describes some typical patterns of the logistics service innovation and suggests some development proposals. The next chapter is on the development of China's logistics financial service. The chapter introduces the contents and development background of China's logistics financial service, and points out the problems and the future development trend. The last chapter of this part studies the operations mode and development trend of online shopping logistics in China. Modern information technology is rapidly revamping its distribution channel of social products, and the transaction mode of online shopping is gradually accepted by more and more consumers in China. The chapter shows the current situation of online shopping logistics in China and presents an outlook on the development trend.

This book is based on the most up-to-date information and synthesized for a systematic presentation for readers in universities, consulting firms, media, logistics enterprises, governmental agencies, and research institutions. We hope that this series of books will serve as a useful source of information and handy tool for grasping the vibrant logistics development in China.

Tianjin, China

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Chapter 1
China's Logistic Development Environment

Ling Wang

2012 was an important year for China to implement the Twelfth Five-Year Plan for National Economic and Social Development[1] (hereinafter referred to as the "12th Five-Year" Plan) as it inherited what had been accomplished in the prior Plan and blazes a brand new future trail. In that year, due to severe and complicated international economic situation, the tasks of reform, development and maintaining domestic stability encountered great difficulties. On one hand, accelerating the transformation of the economic development pattern was taken as the main line and more emphasis was given to steady development, thus creating a favorable economic environment for the development of logistics industry. On the other hand, the Government successively issued many "12th Five-Year" Plans for logistics-related fields, thus setting a favorable policy environment for the development of this industry. Meanwhile, the 18th National Congress of the Communist Party of China was during this year, in which the nation's long-term development goal by the middle of this century was set. The objective was to achieve the strategic target of transformation from building an all-around moderately prosperous society to realizing the socialistic modernization; the intent would bring new opportunities for the development of China's logistics industry.

This chapter describes the macro-economic and policy environment of China's logistic development. The first section describes the economic environment for

[1] The "Five-Year Plan" is part of China's national economic plan, in which the planning is mainly made for major construction projects, regional productivity directives, and essential indicators of the national economy. The purpose of the plan is to set the objectives and directions for future development of the national economy. The eighth five-year plan period was from 1991 to 1995 and called the "8th Five-Year Plan" for short; the ninth, tenth, eleventh and twelfth "five-year plan" period cover 1996 to 2000, 2001 to 2005, 2006 to 2010, and 2011 to 2015, and are named the "9th Five-Year Plan," the "10th Five-Year Plan," the "11th Five-Year Plan," and the "12th Five-Year Plan" for short, respectively.

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B. Liu et al. (eds.), *Contemporary Logistics in China: Assimilation and Innovation*,
Current Chinese Economic Report Series, DOI 10.1007/978-3-642-55282-3_1,

China's logistics in aspects of national economy, international trade, fixed assets investment, domestic consumption, regional development and cost of productive factors. The second section depicts the policy environment for China's logistic development in the "12th Five-Year" Plan, regional planning, and reform in the circulation domain and logistics policy. The third section portrays an outlook of the environment for China's logistics development.

1.1 Economic Environment for China's Logistic Development

In 2012, the economy in China developed steadily, and fixed-asset investment and domestic consumption maintained a sustained growth, while regional development became more balanced. However, national economy slowed down sharply and the world economy was still undergoing a sluggish recovery, resulting in a decline in the growth rate of logistics industry. Meanwhile, cost of productive factors in economic operations was high, thus resulting in high operational pressure among logistics enterprises.

1.1.1 Steady Growth of National Economy

In 2012, China's national economy kept a steady growth. China continued to maintain the status of the world's second largest economy with a GDP up to 51.9 trillion RMB. However, under the impacts of slow global economic recovery, and the transformation of domestic economy, the growth rate of GDP in 2012 was 7.8 % when calculated in comparable prices, which was the lowest growth rate since 2002. The pattern of growth rates from 2010 to 2012 shows that China's economy may be stepping into a "stage of moderate growth" from the previous "stage of perpetual high growth." The GDPs and growth rates for 2002–2012 are shown in Fig. 1.1.

Although economic growth continued to drop, yet the driver structure of economic growth was continually optimized. In 2012, the contribution of consumption to GDP growth reached 51.8 %, which was 1.4 percentage points higher than the contribution of investment. The contribution of investment to GDP growth was 50.4 %, increasing by 1.6 percentage points compared with that of 2011. Under the impacts of sharp decline in international trade and total export-import volume, the contribution of net export of goods and services was −2.2 %, but this was up by 2.1 percentage points from the previous year. Contributions of the three major sectors to GDP growth for 2002–2012 are shown in Table 1.1. It can be seen from the data for 2011–2012, consumption was the primary driving force of economic growth in two consecutive years. Therefore, if this trend continues, we can expect the shaping of an economic development mode of "consumption first – investment next – export last."

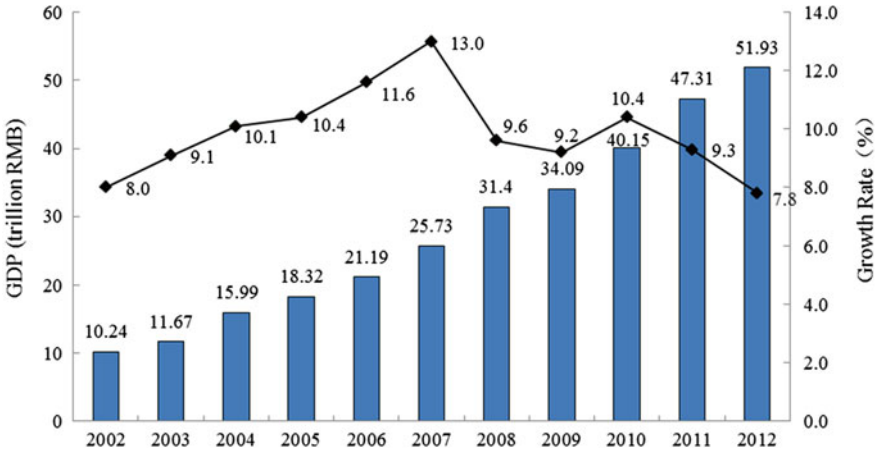

Fig. 1.1 GDPs and growth rates for 2002–2012 (Source: Data for 2002 and 2003 are compiled from the *2002 and 2003 China Statistical Bulletin of National Economic and Social Development*, and data for 2004–2012 are compiled from the *2008 and 2012 China Statistical Bulletin of National Economic and Social Development*, published by the National Bureau of Statistics of China)

Table 1.1 Contributions of three major sectors to GDP growth for 2002–2012 (unit: %)

Year	Investment	Consumption	Net export
2002	48.5	43.9	7.6
2003	63.2	35.8	1.0
2004	54.5	39.5	6.0
2005	38.5	38.7	22.8
2006	43.6	40.4	16.0
2007	42.5	39.6	17.9
2008	46.9	44.1	9.0
2009	87.6	49.8	−37.4
2010	52.9	43.1	4.0
2011	48.8	55.5	−4.3
2012	50.4	51.8	−2.2

Source: Compiled from the *China Statistics Yearbook (2012)* and information released at the press conference on China's economic performance in 2012 by Ma Jiantang, the Commissioner of the National Bureau of Statistics in China

With the steady operation of national economy, China's logistics industry also witnessed a steady growth, but the growth rate receded. In 2012, the total logistics value was 177.3 trillion RMB, with a year-on-year growth rate of 9.8 % when calculated in comparable price, but the growth rate dropped by 2.5 percentage points compared with the previous year. Added value in the logistics industry is 3.5 trillion RMB, with a year-on-year growth rate of 9.1 % when calculated in

Table 1.2 Economic growth and change in world's major countries for 2011–2012

Type	Country	Growth rate of 2011 (%)	Growth rate of 2012 (%)	Change of growth (percentage point)
World		3.9	3.2	–0.7
Advanced economies	All	1.6	1.3	–0.3
	Among which: America	1.8	2.3	0.5
	Germany	3.1	0.9	–2.2
	France	1.7	0.2	–1.5
	Japan	–0.6	2.0	2.6
	The UK	0.9	–0.2	–1.1
	Canada	2.6	2.0	–0.6
	Asian newly industrializing economies (NIEs)	4.0	1.8	–2.2
Emerging and developing economies	All	6.3	5.1	–1.2
	Among which: Russia	4.3	3.6	–0.7
	China	9.3	7.8	–1.5
	India	7.9	4.5	–3.4
	Association of Southeast Asian Nations (ASEAN)	4.5	5.7	1.2
	Brazil	2.7	1.0	–1.7

Source: Compiled from the *World Economic Outlook* by the International Monetary Fund, January 2013

comparable price, and the growth rate declined by 4.8 percentage points (National Development and Reform Commission, the National Bureau of Statistics of China and the China Federation of Logistics and Purchasing 2013) compared with previous year.

1.1.2 Slowdown in Global Economic Recovery

In 2012, the impacts of international financial crisis continued to be felt, especially the deepening and spreading of several European sovereign nations' debt crisis, resulting in a drastic slowdown of the global economic recovery. According to data published by the International Monetary Fund (IMF), in 2012, the growth rate of world output was 3.2 %, down by 0.7 percentage points compared with 2011. Of which the advanced economies held a growth rate of 1.3 %, decreasing by 0.3 percentage points over the same period last year, and the emerging and developing economies held a growth rate of 5.1 %, decreasing by 1.2 percentage points over the same period last year. Table 1.2 shows the economic growth and change in world's major countries for 2011–2012.

The slowdown of global economic recovery brought great impediment to global trade. International market demand declined and the growth of world trade volume dropped by a wide margin. In 2012, the growth in world trade volume (goods and

Table 1.3 Growth rate of world trade volume (goods and services) for 2008–2012 (unit: %)

Year	World trade volume (goods and services)	Import		Export	
		Advanced economies	Emerging and developing economies	Advanced economies	Emerging and developing economies
2008	2.8	0.5	8.9	1.8	4.4
2009	−10.7	−12.4	−8.0	−11.9	−7.5
2010	12.7	11.5	15.0	12.2	13.8
2011	5.9	4.6	8.4	5.6	6.6
2012	2.8	1.2	6.1	2.1	3.6

Source: Compiled from the *World Economic Outlook (2010–2013)* by the International Monetary Fund, January 2013

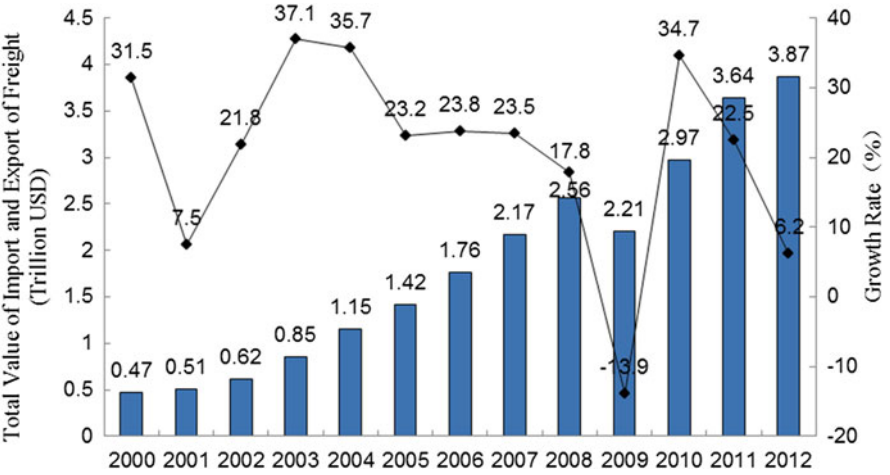

Fig. 1.2 China's total value of imports and exports of freight for 2002–2012 (Source: Compiled from the *China Statistical Bulletin of National Economic and Social Development (2000–2012)*, published by the National Bureau of Statistics of China)

services) was 2.8 %, less than half of that in 2011, and a year-on-year growth rate slid by 3.1 percentage points. Table 1.3 shows the growth rate of world trade volume (goods and services) for 2008–2012.

Confronted with the severe and complicated international trade environment, the growth of China's total imports and exports declined sharply in 2012. Total value of imports and exports of freight was 3.9 trillion RMB, with a year-on-year growth rate of 6.2 %, dropping by a whopping 16.3 (National Bureau of Statistics of China 2013) percentage points from that of previous year. The growth rate was the second lowest point since 2000, ranking only above the negative growth of 2009. Figure 1.2 shows China's total value of imports and exports of freight for 2002–2012.

With the declined growth of total imports and exports volume, China's international logistics market slowed down its growth in 2012. The total cargo

throughputs for ports[2] above designated scale were 9.74 billion tons, increasing by 6.8 % over the previous year, with the growth rate declining by 5.1 percentage points. Among which, the cargo throughputs of foreign trade were 3.01 billion tons, increasing by 8.8 % over the same period last year, with the growth rate falling by 2 percentage points. The container throughputs of ports above designated scale were 177 million TEUs, increasing by 8.1 %, with the growth rate sliding by 3.3 percentage points (National Bureau of Statistics of China 2013). The cargo and mail transport volumes of China's civil airports were 5.42 million tons, decreasing by 2.0 % over the same period last year. Among which the cargo and mail transport volumes of domestic routes were 3.86 million tons, decreasing by 2.5 % over the same period last year. And the cargo and mail transport volumes of Hong Kong-Macao-Taiwan routes were 200,000 tons, decreasing by 3.4 % over the same period last year. The cargo and mail transport volumes of international routes were 1.56 million tons, slipping by 11.7 % (Civil Aviation Administration of China (CAAC) 2012) over the same period last year.

1.1.3 Sustained Growth of Fixed Assets Investment

In 2012, the social fixed assets investment continued to grow, but the growth rate declined. The total fixed assets investment for 2012 was 37.5 trillion RMB, increasing by 20.3 % over the previous year with a slightly reduced growth rate of 3.3 % (National Bureau of Statistics of China 2013). In 2012, the fixed assets investments in the industries of transport, storage and post over the whole year were 3.0 trillion RMB, increasing by 9.1 % over the previous year, with the growth rate up by 7.3 percentage points (National Bureau of Statistics of China 2013).

Pulled by the investment, newly increased capability of transportation infrastructures grew considerably. In 2012, the year-on-year growth rate of operating mileage of newly-built railways and added double tracks amounted to 150 % or so. Table 1.4 shows the newly increased productive capacity for fixed asset investments in transportation for 2008–2012.

1.1.4 Substantial Growth of Domestic Consumption

Under the circumstances of austere external demand environment and unsustainable high investment growth, boosting consumption was still China's important measure to expand domestic demand and realize economic growth. In 2012, the total retail sales of social consumer goods reached 21.03 trillion RMB, increased by 14.3 %

[2] Coastal ports above designated scale refer to the ports with annual throughputs above 10,000 kilotons; inland ports above designated scale refer to the ports with annual throughputs above 2,000 kilotons.

Table 1.4 Newly increased productive capacity for fixed asset investment in transportation for 2008–2012

Index	Unit	2008	2009	2010	2011	2012	Year-on-year growth in 2012 (%)
Operating mileage of newly-built railways	km	1,719	5,557	4,986	2,167	5,382	148
Operating mileage of newly-built double tracks	km	1,935	4,129	3,747	1,889	4,763	152
Operating mileage of electric railway	km	1,955	8,448	5,948	3,398	6,054	78.2
Newly-built highways	km	99,851	121,013	104,457	55,285	58,672	6.1
Among which: highway	km	6,433	4,391	8,258	9,124	9,910	8.6
Newly added throughputs of quay berth of 10,000 tons in port	10,000 tons	33,099	31,318	27,202	26,639	49,522	85.9

Source: Compiled from the *China Statistical Bulletin of National Economic and Social Development (2008–2012)*, published by the National Bureau of Statistics of China

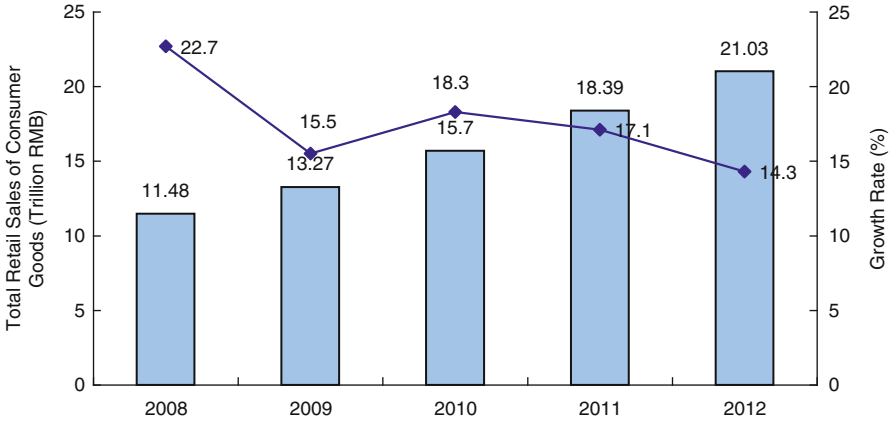

Fig. 1.3 China's total retail sales and growth rate of consumer goods for 2008–2012 (Source: Compiled from the *China Statistical Bulletin of National Economic and Social Development (2008–2012)*, published by the National Bureau of Statistics of China)

over the previous year. The actual growth rate was 12.1 % (National Bureau of Statistics of China 2013) after adjusting for inflation. Figure 1.3 shows the total retail sales and the growth rate of social consumer goods for 2008–2012.

In recent years, the growth of citizens' personal income, the improvement of standard of living, and the emerging commercial circulation systems such as e-commerce and online shopping have altered people's consumption pattern in

China. In 2012, while the consumption of various main daily livelihood items grew, the logistics demand of online shopping grew even more sharply. The total business transactions of e-commerce reached 7.1 trillion RMB, and that of online shopping was over 1.22 trillion RMB, accounting for 33.8 and 5.8 % (China Federation of Logistics and Purchasing (CFLP) 2012) of total retail sales of consumer goods, respectively.

The sustained growth of domestic consumption demand and the change in consumption pattern promoted the rapid growth of logistics business. The growth of total logistics of goods by institutions and residents increased by 23.5 % over the same period last year, with the growth rate 13.7 (National Development and Reform Commission, the National Bureau of Statistics of China and the China Federation of Logistics and Purchasing 2013) percentage points higher than that of the total social logistics; among the former, express logistics supporting e-commerce and online shopping achieved a swift growth, with business volume of 5.7 billion pieces, and increasing by 55 % over the same period last year. Express, daily chemicals, medical treatment and other logistics businesses related to people's livelihood kept rapid growth as well (China Federation of Logistics and Purchasing (CFLP) 2012).

1.1.5 More Balanced Regional Development

In recent years, China has deepened its implementation of overall strategy for regional development. The Central Government has promulgated the *National Plan for Development Priority Zones*, and formulated a new 10-year guideline for the large-scale development of the Western Region and a series of regional development plans. Meanwhile, it has accelerated the leapfrog development of Tibet and Xinjiang areas. The Government has also taken a series of policies and measures of finance and investment to narrow the regional disparity and further equalize the regional development. In terms of fixed asset investment, that of the Eastern Region accounts for a higher proportion in the nation's total fixed asset investment, but the proportion has experienced a continuous decline; the proportions of fixed asset investment of the Central, Western and Northeastern Regions in the nation's total fixed asset investment continue to inch up. Table 1.5 shows the fixed investments of the four regions and their proportions in national fixed investments for 2009–2012.

In terms of economic aggregate, the gravity center of Chinese economy is still in the eastern coastal region, but the shares of Central and Western Regions in national economic aggregate have been notably accelerated while that of the Eastern Region has shown a downward trend. China's regional economy has stepped into a stage of relatively balanced development. Table 1.6 shows the regional GDPs of four major regions and their proportions in national GDP for 2008–2012.

Table 1.5 Fixed investments of the four regions and their proportions in national fixed investments for 2009–2012

	Eastern		Central		Western		Northeastern	
Year	Investment amount (trillion RMB)	Proportion (%)	Investment amount (trillion RMB)	Proportion (%)	Investment amount (trillion RMB)	Proportion (%)	Investment amount (trillion RMB)	Proportion (%)
2009	9.56	42.5	4.98	22.2	4.97	22.1	2.37	10.6
2010	11.60	41.7	6.29	22.6	6.19	22.3	3.07	11.1
2011	13.03	41.9	7.08	22.8	7.18	23.1	3.27	10.5
2012	15.17	40.5	8.79	23.5	8.87	23.7	4.12	11.0

Note: Because some trans-regional investments are not included in regional data, the sum of fixed asset investments of the four regions is less than 100 %
Source: Compiled from the *China Statistical Bulletin of National Economic and Social Development (2009–2012)*, published by the National Bureau of Statistics of China

Table 1.6 Regional GDPs of four major regions and their proportions in national GDP for 2008–2012 (unit: trillion RMB)

	2008		2009		2010		2011		The First three quarters of 2012	
Region	Regional GDP	Proportion in GDP (%)	Regional GDP	Proportion in GDP (%)	Regional GDP	Proportion in GDP (%)	Regional GDP	Proportion in GDP (%)	Regional GDP	Proportion in GDP (%)
Eastern	17.76	54.3	19.67	53.8	23.20	53.1	27.14	52.0	–	50.1
Central	6.32	19.3	7.06	19.3	8.61	19.7	10.45	20.0	–	21.0
Western	5.83	17.8	6.70	18.3	8.14	18.6	10.02	19.2	–	20.5
Northeastern	2.82	8.6	3.11	8.5	3.75	8.6	4.54	8.7	–	8.4

Source: Data for 2008–2012 are compiled from the *China Statistical Yearbook (2009–2012)*, and data of the first three quarters of 2012 are compiled from "*China's Regional Economic in 2012–2013 under the Impacts of International Economy*," http://www.ceweekly.cn/html/Article/2013012397733.html

Along with coordinated development of regional economy in China, regional logistics also develops rapidly. In 2012, integration of logistics in regions such as Yangtze River Delta, Pearl River Delta, Circum-Bohai Area, and the Central Region was actively promoted. For example, Yangtze River Delta promoted the interconnection and sharing of management information of highway transportation and strengthened the construction of mechanism for port logistics information and resource sharing; six southwestern provinces and cities (Sichuan Province, Chongqing Municipality, Guangxi Zhuang Autonomous Region, Guizhou Province, Yunnan Province and Tibet Autonomous Region) worked together to build express lanes for inspection and quarantine. Transformation and upgrading of logistics industry were accelerated in Eastern Region; for example, the logistics industry in Shenzhen hastened its transformation from the traditional mode of logistics service providers to the mode of comprehensive third-party logistics and supply chain management service providers. Shanghai International Port (Group) Co., Ltd. transformed itself from the mode of single wharf provider into the mode of comprehensive port logistics service provider. And logistics infrastructure construction was accelerated in the Central and Western Regions; for example, a batch of large-scale e-commerce, cold chain and medicine distribution centers were built or completed in Zhengzhou, Wuhan, Chengdu, Chongqing, Xi'an and other logistics center cities in the Central and Western Regions. Beijing, Shanghai, Guangzhou, Chengdu and other national level logistics node cities further strengthened their radiating and agglomeration capacity; Zhengzhou, Wuhan, Xi'an and other logistics center cities in the Central and Western regions also achieved fast development.

1.1.6 Overall Rising of Factor Cost

In 2012, the cost of several logistics factors continued to rise. The first factor was the rising oil price. The National Development and Reform Commission adjusted price of oil products eight times in 2012, the cumulative price increase of #0 diesel was 290 RMB per ton, and the average price of oil was increased from 8,270 RMB per ton at the beginning of the year to 8,560 RMB per ton at the end of the year with a growth rate of 3.5 %. Secondly, the wage level kept rising; the average growth rate of labor cost of logistics enterprises was 15–20 %. Thirdly, rent for logistics land and warehouse in large- and medium-sized cities rose again. The average warehouse leasing cost in Beijing, Shanghai, Guangzhou, Shenzhen and Haikou increased by above 20 % (China Materials Storage & Transportation Association [CMSTA] 2013). The fourth factor is the high tax bearings of logistics enterprises. Even after the logistics industry was designated as a pilot sector in "replacing business tax with value-added tax" in July 2012, the issue of tax rate unification along

all logistics links was not resolved; the problem of heavier tax burden for transportation industry was still common.

The profit margin of logistics enterprises was reduced due to the increase in above-mentioned costs. From January to November in 2012, the main business income of the nation's key logistics enterprises increased by 26.5 % over the same period last year, while their main business cost increased by 31.6 % during the same period, such that the profit margin of their main business income was only 3.7 %. The growth rate of operational cost exceeded that of income for enterprises, so logistics enterprises were still operating under great pressure.

1.2 Policy Environment for China's Logistics Development

In 2012, China successively issued several "12th Five-Year" plans for various fields, as well as promulgated and implemented many State-level regional plans. Developing modern logistics was considered an important content in these plans, which signified that the leading role of logistics industry in national economy kept advancing, and provided new opportunities for the development of logistics industry. Meanwhile, China made great efforts to push forward reform in the circulation domain and actively implemented the "State's Nine Guidelines"[3] for the logistics industry. The implementation of these policies created a favorable policy environment for the development of logistics industry.

1.2.1 Promulgation of Several "12th Five-Year" Plans

In 2012, in order to substantiate *the "12th Five-Year" Plan for National Economic and Social Development of the People's Republic of China*, several "12th Five-Year" Plans involving industries such as service, food, etc. were promulgated successively. Developing modern logistics was the important content in the above-mentioned plans.

The *"12th Five-Year" Development Plan for the Service Sector* was promulgated by the State Council in December 2012, which is the first development plan for service industry in China. Transportation industry and modern logistics industry, as two major industries in the 12 productive services were listed as key development areas. Meanwhile, logistics distribution system aiming to developing urban logistics

[3] "State's Nine Guidelines" refers to the "*Opinions on the Policies and Measures for Promoting the Sound Development of the Logistics Industry,*" released by the State Council of the People's Republic of China in 2011.

and building e-commerce as well as development of cross-strait cooperation in logistics are also included in the plan as important measures.

The "*12th Five-Year" Plan for Domestic Trade Development* was promulgated by the State Council in September 2012, which is the first State-level special plan for domestic trade since China's reform and opening-up, and it includes important measures such as accelerating the development of logistics distribution and cold chain logistics system for agricultural products, encouraging enterprises to establish China's commodities exchange and distribution centers abroad and set up cross-border logistics channels. In addition, demonstration project of urban logistics distribution system is listed as key project of domestic trade development during the "12th Five-Year Plan" period.

Furthermore, the *"12th Five-Year" Development Plan for Iron and Steel Industries* was promulgated by the Ministry of Industry and Information Technology (MIIT) in October 2011, whose key point is to develop service outsourcing such as storage, logistics, etc. so as to improve the logistics distribution system. The *"12th Five-Year" Development Plan for Food Industry* was promulgated by the National Development and Reform Commission (NDRC) and MIIT in December 2011, and it proposed to develop fruits and vegetables logistics and establish logistics system for aquatic products. The *"12th Five-Year" Development Plan for Coal Industry* was promulgated by NDRC in March 2012, and it proposed to develop modern coal logistics, accelerate the establishment of socialized, specialized and informationalized modern coal logistics service system.

1.2.2 Promulgation and Implementation of Some Regional Plans

In 2012, the State Council and related ministries and commissions approved a number of regional development plans which reflect the strategies of regional development in China. These plans cover several regions. First, continue to carry out a new round of large-scale development of the Western Region; secondly, rejuvenate the Northeast China and other old industrial bases in an all-round way; thirdly, boost the development of the Central Region; fourthly, increase support to the old revolutionary base areas, ethnic minority areas, border areas, and poverty-stricken areas.

In all these regional plans, development of modern logistics is listed as an important content. Main agenda includes: (1) Establish State-level regional logistics nodal cities. (2) Strengthen the establishment of transportation infrastructure, logistics parks, logistics centers and logistics channels. (3) Strive to develop commercial logistics, agriculture logistics, aviation logistics, port logistics. (4) Build public information service platforms for regional logistics.

1.2.3 Promote Reform in the Circulation Domain

China's circulation industry is still in the stage of preliminary development and confronts the obvious problems such as low circulation efficiency and high circulation cost. In order to speed up the reform and development of the circulation industry, the Government promulgated the *Suggestions on Further Reforming the Circulation System and Accelerating the Development of the Circulation Industry* (hereinafter referred to as the *Suggestions*) in August 2012. And the General Office of the State Council issued the *Circular of the General Office of the State Council on Disseminating the Comprehensive Work Plan of Cutting Circulation Expenses and Improving Circulation Efficiency* (hereinafter referred to as the *Circular*) in January 2013.

Measures of the above-mentioned *Suggestions* and *Circular* related to logistics industry include: (1) Develop third-party logistics, and promote socialization of logistics in enterprises. (2) Support construction of large-scale logistics distribution centers and cold chain logistics facilities for agricultural products; and charge the cold storage of agricultural cold chain logistics the same electricity price as for regular industries. (2) Further promote the special cleanup tasks on toll roads and reduce the high vehicle toll charging standard. (3) Standardize the toll collecting practices on toll roads, and accelerate to popularize the mode of "networked toll collection and unified management within provinces (districts, cities)." (4) Raise the threshold for the value-added tax and business tax for small and micro enterprises, and reduce the tax burdens of small businesses in circulation industry. (5) Formulate management guidance for urban distribution vehicles, and provide more convenience for the distribution vehicles on the city roads. (6) Encourage the development of unified distribution, joint delivery and evening delivery so as to reduce distribution costs. Implementation of the above measures has important significance in reducing logistics cost, increasing logistic efficiency and improving the development environment for logistics enterprises in China at present and in the future.

1.2.4 Active Implementation of the "State's Nine Guidelines"

The *Opinions on the Policies and Measures for Promoting the Sound Development of the Logistics Industry* (hereinafter referred to as the "State's Nine Guidelines") was released by the State Council in August 2011. In 2012, many departments of the Government prepared specific and special plans and promulgated relevant policies and measures based on the "State's Nine Guidelines;" meanwhile, implementation of policies on land and taxation was accelerated.

1. Reduce land use tax. The Ministry of Finance and the State Administration of Taxation issued the *Notice on Urban Land Use Tax Policies for the Land Used by Logistics Enterprises for Bulk Commodity Storage Facilities* in January 2012. The urban land use tax for bulk commodity storage facilities owned by logistics

enterprises (whether self-used or leased out) are set at the reduced rate of 50 % of the tax bracket applicable to land of comparable grade.
2. Expand the scope of the pilot test for changing from business tax to value-added tax. In July 2012, at an Executive Meeting the State Council expanded the pilot scope of "changing from business tax to value-added tax for transport industry and modern service industry" from the initial pilot city – Shanghai to Beijing, Tianjin, Jiangsu, Zhejiang, Anhui, Fujian, Hubei, Guangdong, Xiamen and Shenzhen.
3. Promote the development of urban distribution. The *Guiding Opinions of Promoting the Application of Modern Logistics Technologies and the Integrated Distribution Services* was promulgated by the Ministry of Commerce in June 2012, and it proposed to perfect the layout of urban joint distribution nodes, to encourage innovation of commercial logistics pattern, and to accelerate the application of new logistics technologies.

1.3 Outlook for China's Logistics Development Environment

In November 2012, the 18th National Congress of the Communist Party of China was held, marking the opening of a new stage and the march on a new journey for building a socialist nation with Chinese characteristics. 2013 is a year of profound significance in implementing the development goals outlined in the report of the 18th National Congress of the Communist Party of China and in laying a solid foundation for building a moderately prosperous society in all respects. China's logistics industry is facing some new opportunities and challenges.

1.3.1 Strategic Targets Ascertained on the 18th National Congress of the Communist Party

During the 18th National Congress of the Communist Party, the goal of building a moderately prosperous society and deepening the reform and opening-up in all respects was ascertained, and the tasks of accelerating the improvement of the socialist market economy and the change of the growth model were proposed. The implementation and practice of these perspective tasks will bring new opportunities for the development of China's logistics industry in many aspects. Logistics enterprises would do well to grasp the following opportunities for greater advancement. (1) Grasp the strategic opportunity of expanding domestic demand, particularly consumer demand, to make logistics industry play a greater role in satisfying consumer demand effectively, reducing circulation cost, and increasing circulation efficiency. (2) Grasp the strategic opportunity of industry transformation and upgrading, thus promoting socialization of logistics demand, integration of supply chain and service orientation of the manufacturing industry.

(3) Grasp the strategic opportunity of new-type of urbanization, so as to strengthen the establishment and reconstruction of urban logistics service systems and promote the integrative development of urban and rural logistics. (4) Grasp the strategic opportunity of innovation, so as to encourage enterprises to accelerate technology, service, model innovations, and further harness the power from scientific and technological progress and management innovation. (5) Grasp the strategic opportunity of an open economy, and develop international logistics service network so as to provide logistics support for "going-out" to other industries. (6) Grasp the strategic opportunity of resource saving and circular economy, to implement green logistics, circular logistics, and low carbon logistics, and step into a sustainable development path (China Logistics and Procurement Network 2013).

1.3.2 Moderate Slowdown of Macro-economy Growth

In 2013, China will continue to implement active fiscal policy and steady monetary policy, and maintain the continuity and stability of its policies. Meanwhile, China will continue to accelerate the transformation of its economic development pattern and adjust the economic structure, and improve the quality and benefits of its economic growth. GDP is expected to grow by 7.5 % or so (Xinhuanet 2013).

As conjectured, China's average GDP growth will increase by about 7 % for some years ahead, thus its logistics industry will enter a "stage of moderate growth." Based on the preliminary forecasting, growth rate of total logistics and added value of logistics industry of China will be about 10 % in 2013, but the ratio of logistics cost to GDP is not likely to drop noticeably (China Logistics and Procurement Network 2013).

1.3.3 Slow Recovery of Global Economic Growth

The impact of international financial crisis continues to be felt through 2013, and the world economic recovery is still uncertain and unstable. It is anticipated that global economy will grow but the pace of recovery will be slow. According to the "World Economic Outlook Update of 2013" by the International Monetary Fund (IMF), global growth will recover slowly with the annual growth rate averaging 3.5 % in 2013, higher than that of 2012 by 0.3 percentage points. Figures 1.4 and 1.5 show the output growth rate of world's major countries of 2012 and the predicted output growth rate of 2013, the growth rate of world trade volume of 2012 and the predicted growth rate of 2013, respectively.

The recovery of the global economy, albeit slow, has a positive effect on improving China's external environment, but the international environment remains complicated

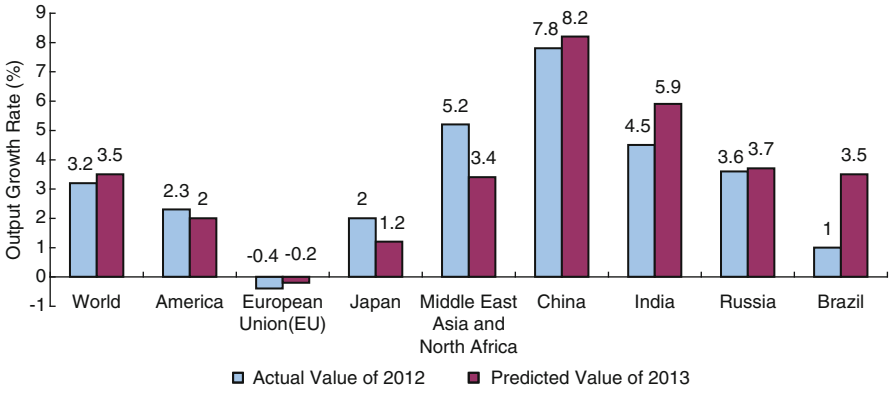

Fig. 1.4 Output growth rate of world's major countries of 2012 and predicted output growth rate of 2013 (Source: Compiled from the *World Economic Outlook* by the International Monetary Fund in January 2013)

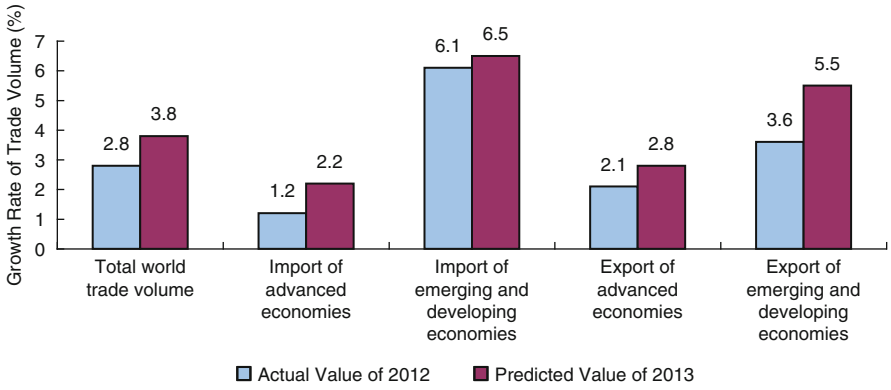

Fig. 1.5 Growth rate of world trade volume of 2012 and predicted growth rate of 2013 (Source: Compiled from the *World Economic Outlook* by the International Monetary Fund in January 2013)

and volatile. China's share of global trade is expected to remain stable or rise slightly in 2013; internal and external environment for China's foreign trade development may be better than that of 2012, but a steady upswing of foreign trade is still restrained (Ministry of Commerce of the People's Republic of China, Ministry of Commerce Network 2012). Under such macro-background, China's international logistics is expected to maintain a positive development trajectory.

1.3.4 Special Plans to Be Promulgated

In order to implement the *Plans for Adjusting and Accelerating the Logistics Industry* it promulgated and implemented in 2009, the National Development and Reform Commission (NDRC) prepared the *Plans for Development of National Logistics Parks*, the *Special Plan for Emergency Logistics* and other special plans in 2012, which are expected to be promulgated in 2013. In addition, the *Medium-term and Long-term Plans for Logistics Industry Development (2012–2020)* being prepared will serve as the steering document for the *Plans for Adjusting and Accelerating the Logistics Industry*; the document will define the basic tenets, the focus and direction of logistics industry for long-term development, and propel the logistics industry up to a new rapid-development stage.

1.3.5 Comprehensive Traffic Management System to Be Formed

For purpose of enhancing the inter-connectivity of various transport means, the *Institutional Reform and Function Transformation Scheme of the State Council* was proposed in 2013, wherein China plans to separate the administrative function from the commercial function in the railway sector. The Ministry of Railways shall no longer be retained. The Scheme mainly includes: (1) The China Railway Corporation shall be established, to assume corporate duties of the former Ministry of Railways. (2) The administrative functions of the Ministry of Railways, including making railway development plans and policies, shall be transferred to the Ministry of Transport. (3) The State Railway Administration shall be established, to take over administrative duties, of the Ministry of Railways, excluding those delegated in (2). (4) The Ministry of Transport will accelerate and promote the construction of transport system through integration and overall planning of various transport means, including railway, highway, waterway and aviation.[4] Figure 1.6 shows the scheme of institutional reform of the Ministry of Railways.

Along with the separation of the administrative functions from the commercial functions in the railway sector, China has formed a comprehensive traffic management system. This move is beneficial to accelerating the establishment of a comprehensive transport system and promoting a coordinated development and an organic linkage of various transport means, thus promoting the formation and establishment of a comprehensive logistics system. Meanwhile, separating government functions from business management and introducing competition mechanism are beneficial to enhancing the operational efficiency and promoting the efficiency of the comprehensive logistics system.

[4] "Institutional Reform and Function Transformation Scheme of the State Council," http://www.gov.cn/2013lh/content_2350848.htm, 2013-03-10.

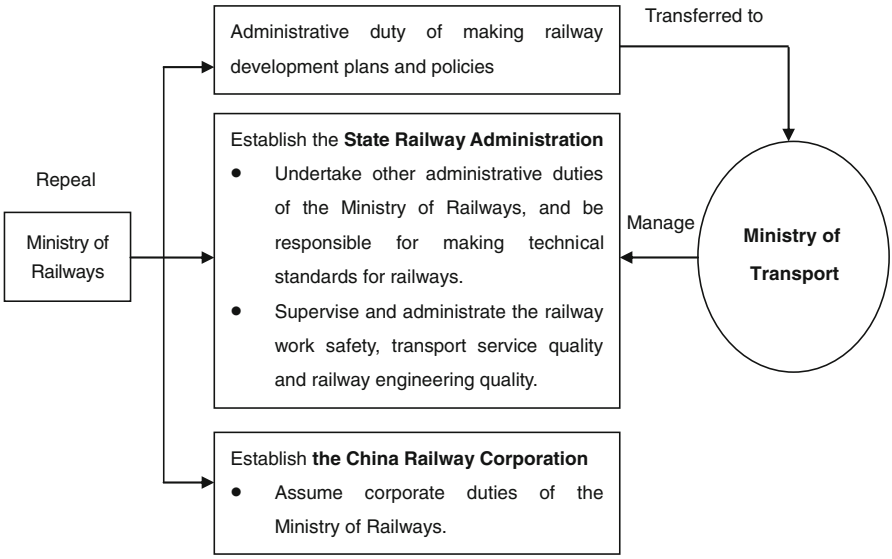

Fig. 1.6 Schema for institutional reform of the ministry of railways

1.4 Summary

This Chapter describes the macro-economic environment and policy environment encountered by China's logistics development in 2012, and gives an outlook of the future environment of China's logistics. As for the economic environment, China accelerated the transformation of its economic development pattern and maintained a steady development of its economy, but the growth rate for 2012 was the lowest since 2002. Fixed assets investments and domestic consumption maintained an increasing trend with more balanced regional development. All of these created a wholesome economic environment for China's logistics development. However, the size of China's international logistics market declined sharply owing to the slowdown of global economic recovery. Meanwhile, because the rising of various factor costs in the logistics industry, the operating cost pressure of the logistics enterprises was still high. Regarding the policy environment, China published many "12th Five-Year" Plans and promulgated a number of regional plans, which defined developing modern logistics as a key issue; thus the status of logistics industry in national economy was elevated markedly. Meanwhile, the Government promoted the reform of the circulation domain and actively implemented the "State's Nine Guidelines," so as to relieve the tax burden of logistics enterprises. The 18th National Congress of the Communist Party of China was held in November 2012 and delineated the strategic target of the nation's future development; China will strive to attain the strategic target of transforming from building a wholly moderately prosperous society to essentially realizing a modernized socialism, by the middle of this century. Marching towards this strategic target will undoubtedly bring a major opportunity

for the development of logistics industry. Looking forward to the future, along with slow recovery of the global economy, growth of China's macro-economy will continue to be slow. Meanwhile, a number of special plans are to be issued by the Government and a comprehensive traffic management system is in the process of being formed. The development of China's logistics industry will encounters both various opportunities and accompanied challenges.

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Chapter 2
Development of China's Logistics Market

Xiaomei Jiang

In 2012, the overall size of China's logistics market continued to grow. The structural changes in the logistics market continued the trend of development since 2009. The growth rates of automotive, pharmaceutical, online shopping and other major market segments were notably different. Some shipping, airfreight, highway freight and express enterprises continued their effort in resource integration and service innovation, which promoted the logistics industry's continual improvement on the overall service level.

This chapter includes three sections. The first section focuses on some key logistics indicators such as total expense of social logistics, added value of logistics, and freight volume. It also provides statistic data regarding these indicators between 2008 and 2012, so as to exhibit the variations of overall size of China's logistics market in recent years. The second section discusses the distinctive features of China's logistics market development in 2012 from three aspects, namely, logistics market structure, industry-wise logistics market, and the logistics industry. The third section offers an outlook of China's logistics development trend in 2013.

2.1 Overall Scale of China's Logistics Market

In 2012, several logistics indicators such as total value and total expense of social logistics, added value of logistics industry, and freight volume all achieved some growth, yet with the growth rates decreasing significantly as compared with that of the previous year. The share of total expense of social logistics in GDP increased slightly as compared with that in 2011, showing that China's logistics cost still remained high at the overall level in comparison with those of other advanced countries.

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B. Liu et al. (eds.), *Contemporary Logistics in China: Assimilation and Innovation*, Current Chinese Economic Report Series, DOI 10.1007/978-3-642-55282-3_2,

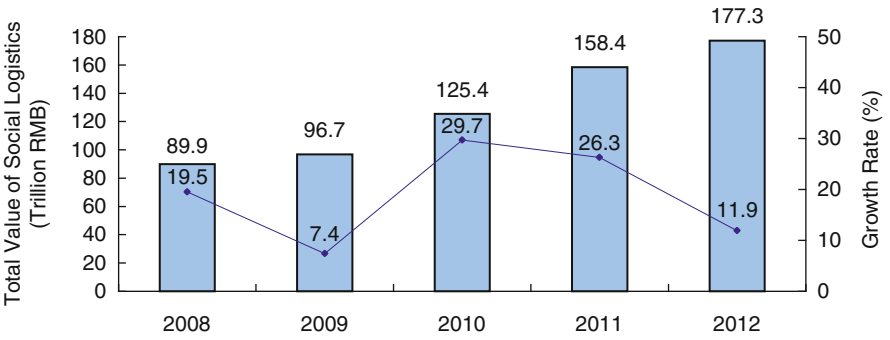

Fig. 2.1 Total value and nominal growth rate of social logistics in China for 2008–2012 (Source: Compiled from the *National Logistics Operation Report (2008–2012)*, jointly published by the National Development and Reform Commission, the National Bureau of Statistics of China and the China Federation of Logistics and Purchasing)

2.1.1 Total Value of Social Logistics

In 2012, the total value of social logistics in China reached 177.3 trillion RMB, which increased by 11.9 % year-on-year; this growth rate declined by 14.4 % as compared with the previous year. Figure 2.1 shows the total value and nominal growth rate of social logistics for 2008–2012.

From the perspective of the composition of the total value of social logistics,[1] logistics value of industrial products achieved a rapid growth in 2012, which increased by 12.8 % year-on-year; its share in total value of social logistics was 91.4 %, which increased by 0.8 percentage points as compared with the previous year. The total logistics values for import goods and agricultural products (including total logistics values for agricultural products, renewable resources and goods from institutes and residents) all showed a slight increase and their shares in the total value of social logistics dropped slightly. Table 2.1 shows the composition of total value of social logistics for 2008–2012.

[1] Total value of social logistics is composed of five parts: ①total value of commodities of farming, forestry, animal husbandry and fishing products in social logistics field ("total logistics amount of agricultural products" for short); ②total value of commodities of industrial products in social logistics field ("total logistics amount of industrial products" for short); ③ total logistics value of import goods; ④total value of commodities of renewable resources in social logistics field ("total logistics amount of renewable resources" for short); ⑤ logistics value of goods from institutes and residents (including luggage in railway and air transport, parcels and letters in mailing service, various donations from all sectors of the society and handling, carrying and transportation of goods incurred by moving activities of institutes and residents.)

Table 2.1 Composition of total value of social logistics for 2008–2012

Indicators	2008		2009		2010		2011		2012	
	Value (trillion)	Share (%)	Value (trillion)	Share (%)	Value (trillion)	Share (%)	Value (trillion)	Share (%)	Value (trillion)	Share (%)
Industrial products logistics	79.9	88.8	87.4	90.4	113.1	90.2	143.6	90.6	162.0	91.4
Import goods logistics	7.8	8.7	6.9	7.1	9.4	7.5	11.2	7.1	11.5	6.5
Agricultural products logistics, etc.	2.2	2.5	2.4	2.5	2.9	2.3	3.6	2.3	3.8	2.1
Total	89.9	100	96.7	100	125.4	100	158.4	100	177.3	100

Source: Compiled from the *National Logistics Operation Report (2008–2012)*, jointly published by the National Development and Reform Commission, the National Bureau of Statistics of China and the China Federation of Logistics and Purchasing

Table 2.2 Total expense of social logistics and growth rate for 2008–2012

Year	Total expense of social logistics (trillion RMB)	Increase from previous year (%)	Percentage in GDP (%)
2008	5.5	16.2	18.1
2009	6.1	10.9	18.1
2010	7.1	16.4	17.8
2011	8.4	18.3	17.8
2012	9.4	11.9	18.0

Source: Compiled from the *National Logistics Operation Report (2008–2012)*, jointly published by the National Development and Reform Commission, the National Bureau of Statistics of China and the China Federation of Logistics and Purchasing

2.1.2 Total Expense of Social Logistics

In 2012, the nationwide total expense of social logistics reached 9.4 trillion RMB, which increased by 11.9 % as compared with the previous year. The percentage of total expense on social logistics in GDP was 18.0 %, which increased by 0.2 percentage points as compared with the previous year. Table 2.2 shows the total expense of social logistics and growth rate for 2008–2012.

Table 2.3 shows the composition of total expense of social logistics, wherein expenses for transportation, storage and management all show a double-digit growth.

Table 2.3 Composition of total expense of national social logistics in 2012

Indicator	Value (trillion RMB)	Increase from previous year (%)	Share (%)
Total expense of social logistics	9.4	11.9	100
Including: Transportation expense	4.9	10.7	52.1
Storage expense	3.3	11.9	35.1
Management expense	1.2	13.1	12.8

Source: Compiled from the *National Logistics Operation Report (2012)*, jointly published by the National Development and Reform Commission, the National Bureau of Statistics of China and the China Federation of Logistics and Purchasing

Table 2.4 Nationwide added value of logistics industry and the growth rate for 2008–2012

Year	Added value of logistics industry (trillion RMB)	Increase from previous year (%)	Share in service industry (%)
2008	2.0	15.4	16.5
2009	2.3	15.0	16.1
2010	2.7	17.4	16.0
2011	3.2	18.5	15.7
2012	3.5	9.4	15.3

Source: Compiled from the *National Logistics Operation Report (2008–2012)*, jointly published by the National Development and Reform Commission, the National Bureau of Statistics of China and the China Federation of Logistics and Purchasing

2.1.3 Added Value of Logistics Industry

In 2012, the nationwide added value of logistics industry was 3.5 trillion RMB, an increase of 9.4 % year-on-year, but a drop of 9.1 percentage points in growth rate as compared with the previous year. The added value of transportation logistics increased by 8.7 %, storage logistics by 6.8 %, wholesale and retail logistics by 9.8 %, post logistics by 26.7 %. The share of nationwide added value of logistics industry in GDP was 6.8 %, same as that of 2011; the share of added value of logistics industry in added value of service industry was 15.3 %, a drop of 0.4 percentage points as compared with 2011. Table 2.4 shows the added value of logistics industry and the growth rate for 2008–2012.

2.1.4 Freight Volume and Freight Turnover

In 2012, China's freight volume was 41.21 gigatons, which increased by 11.5 % year-on-year; the growth rate dropped by 2.6 percentage points as compared with the previous year. Freight turnover was 17.31 trillion ton-kilometers, which increased by 8.7 % year-on-year; the growth rate declined by 3.6 percentage points as compared with the previous year. Table 2.5 shows the nationwide freight volume, freight turnover and growth rate for 2008–2012.

Table 2.5 Nationwide freight volume, freight turnover and growth rate for 2008–2012

Year	Freight volume		Freight turnover	
	Volume (gigaton)	Growth rate (%)	Value (trillion ton-kilometer)	Growth rate (%)
2008	25.86	13.6	11.03	8.8
2009	28.25	9.2	12.21	10.7
2010	32.41	14.7	14.18	16.1
2011	36.97	14.1	15.93	12.3
2012	41.21	11.5	17.31	8.7

Source: Compiled from the *China Statistics Yearbook (2012)* and related data in the *2012 China Statistical Bulletin of National Economic and Social Development*, published by the National Bureau of Statistics of China

Table 2.6 Freight volume, freight turnover and growth rate of various transportation modes in 2012

Indicator	Volume	Growth from previous year (%)	Share (%)	Change of shares from previous year (percentage point)
Total freight volume (gigaton)	41.21	11.5	–	–
Among which: Railway	3.90	−0.7	9.5	−1.2
Highway	32.21	14.2	78.2	1.9
Waterway	4.56	7.0	11.1	−0.5
Civil aviation (megaton)	5.416	−2.0	–	–
Pipeline	0.53	−7.8	1.3	−0.3
Freight turnover (trillion ton-kilometer)	17.3	8.7	–	–
Among which: Railway	2.9	−0.9	16.9	−1.6
Highway	6.0	16.8	34.7	2.4
Waterway	8.1	6.9	46.6	−0.7
Civil aviation (gigaton-kilometer)	16.22	−6.8	–	–
Pipeline	0.3	9.1	1.8	0.0

Source: Compiled from the *China Statistics Yearbook (2012)* and related data in the *2012 China Statistical Bulletin of National Economic and Social Development*, published by the National Bureau of Statistics of China

Of the various modes of transportation, the growth rate in freight volume by highway transportation was significantly faster than that of other modes of transportation, and the growth rates in railway and air-traffic volumes showed a slight dip. The share of freight volume by highway transportation in the total freight volume reached 78.2 %, an increase of 1.9 percentage points. The share of freight turnover by highway transportation in the total freight turnover reached 34.7 %, a rise of 2.4 percentage points. Table 2.6 shows the freight volume, freight turnover and growth rate of various transportation modes in 2012.

Table 2.7 Nationwide cargo throughput and growth rate of port for 2008–2012

Year	Nationwide cargo throughput of port		Share of cargo throughput for foreign trade	
	Volume (gigaton)	Growth rate (%)	Volume (gigaton)	Growth rate (%)
2008	7.02	9.6	1.99	7.4
2009	7.66	9.0	2.18	9.8
2010	8.93	16.7	2.50	14.7
2011	10.04	12.4	2.79	11.4
2012	10.78	7.3	3.06	9.7

Source: Compiled from the *Statistical Bulletin of Highway and Waterway Transportation Industry (2008–2012)*, published by the Ministry of Transport of China

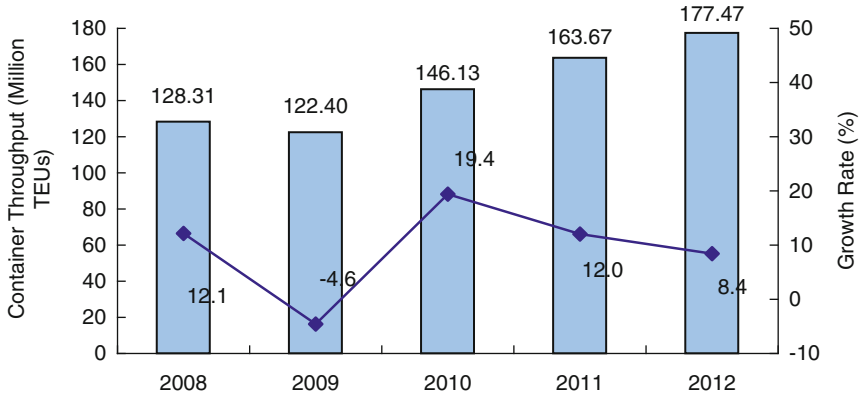

Fig. 2.2 Nationwide container throughput and growth rate of port for 2008–2012 (Source: Compiled from the *Statistical Bulletin of Highway and Waterway Transportation Industry (2008–2012)*, published by the Ministry of Transport of China)

2.1.5 Cargo Throughput and Container Throughput of Port

In 2012, China's cargo and container throughput of port fell noticeably in comparison with the previous year. Total cargo throughput reached 10.78 gigatons, which increased by 7.3 % as compared with the previous year, but the growth rate fell by 5.1 percentage points. Total cargo throughput for foreign trade was 3.06 gigatons, an increase of 9.7 % year-on-year, but the growth rate fell by 1.7 percentage points. Table 2.7 shows the nationwide cargo throughput of port and growth rate for 2008–2012.

As shown in Fig. 2.2, in 2012, the container throughput of port was 177.47 million TEUs, an increase of 8.4 % year-on-year, but the growth rate fell by 3.6 percentage points from the previous year.

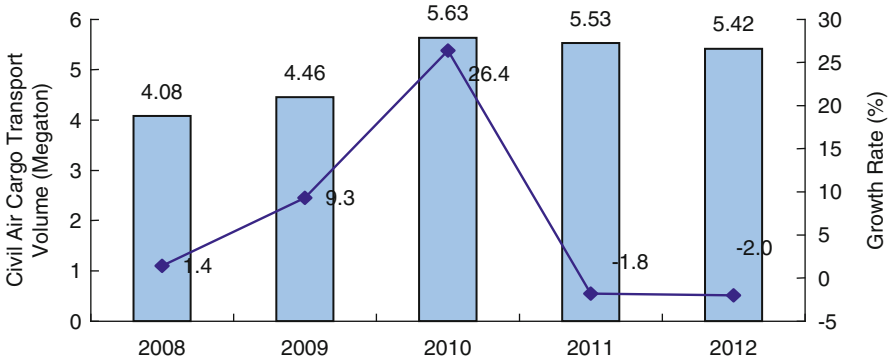

Fig. 2.3 Nationwide civil air cargo transport volume and growth rate for 2008–2012 (Source: Compiled from the *Statistical Bulletin of Development of Civil Aviation (2010–2012)*, published by the Civil Aviation Administration of China)

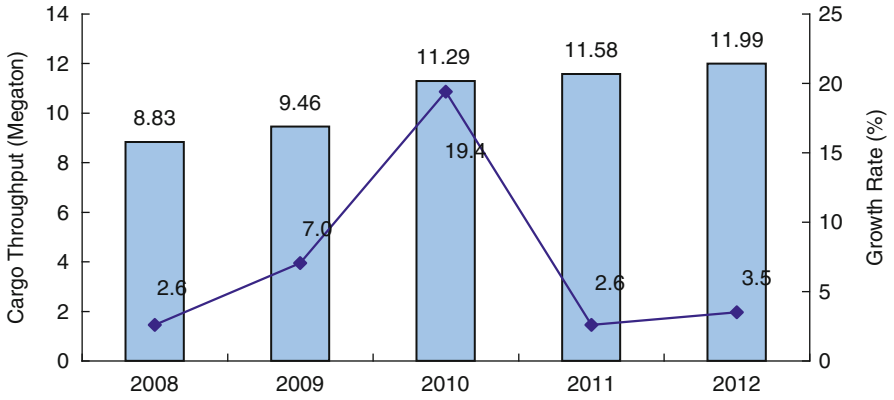

Fig. 2.4 Nationwide civil airport cargo throughput and growth rate for 2008–2012 (Source: Compiled from the *Statistical Bulletin of Nationwide Airports (2008–2012)*, published by the Civil Aviation Administration of China)

2.1.6 Cargo Transport Volume and Cargo Throughput for Civil Airport

China's market demand for air cargo transport experienced a relatively poor performance in 2012. The cargo transport volume in civil aviation enterprises nationwide was 5.42 megatons, a decrease of 2.0 % year-on-year. Figure 2.3 shows the nationwide civil air cargo transport volume and growth rate for 2008–2012.

Airport cargo throughput for 2012 was 11.99 megatons, an increase of 3.5 % over the previous year, and the growth rate increased by 0.9 percentage points as compared with that of 2011. Figure 2.4 shows the nationwide airport cargo throughput and growth rate for 2008–2012.

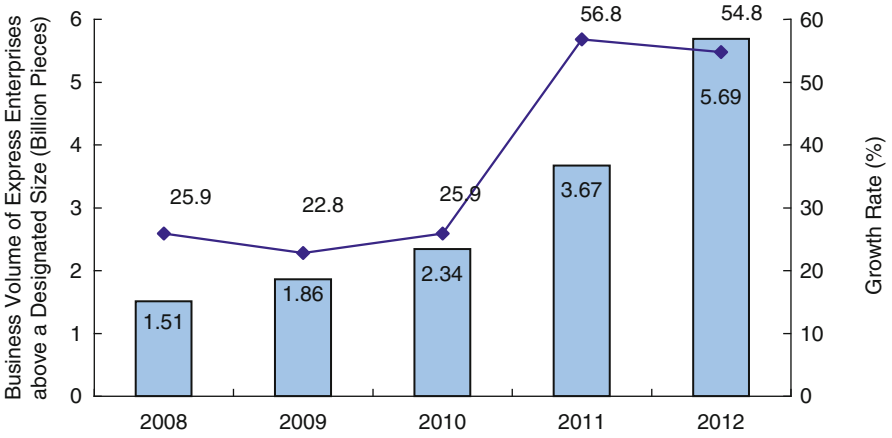

Fig. 2.5 Nationwide business volume of express service enterprises above a designated size and growth rate for 2008–2012 (Source: Compiled from the *Statistical Bulletin of Postal Service Industry (2008–2012)*, published by the State Post Bureau)

2.1.7 Business Volume of Express Industry

In 2012, the volume of express business in China continued to maintain a trend of rapid growth. The business volume of express service enterprises above a designated size[2] was 5.69 billion pieces, a rise of 54.8 % year-on-year, and the growth rate dropped by 2 percentage points as compared with the previous year. Figure 2.5 shows the nationwide business volume of express service enterprises above a designated size and their growth rate for 2008–2012.

Among various business categories, within-city, out-of-city, international and Hong Kong, Macao and Taiwan express business volumes amounted to 23.1, 73.7 and 3.2 % of the total express business volume, respectively, in 2012. As compared with the previous year, the share of within-city business volume increased by 0.8 percentage points, while out-of-city, international and Hong Kong, Macao and Taiwan business volumes declined slightly. As for regional distribution, the Eastern, Central and Western regions contributed 81.9, 10.5 and 7.6 % to the total business volume, respectively. As compared with the previous year, the share of business volume in the Eastern Region increased by 2.0 percentage points, while the Central and the Western Regions dropped 0.7 and 1.3 percentage points, respectively (Table 2.8).

[2] Express service enterprises above a designated size refer to those enterprises with annual business income over two million RMB.

Table 2.8 Composition of nationwide express business volume of 2012

Distribution of business categories			Regional distribution		
Business categories	Volume (billion pieces)	Share (%)	Region	Volume (billion pieces)	Share (%)
Within city	1.32	23.1	Eastern	4.66	81.9
Out-of-city	4.19	73.7	Central	0.60	10.5
International, Hong Kong, Macao and Taiwan	0.18	3.2	Western	0.43	7.6

Source: Compiled from the *2012 Operation of Postal Service Industry*, published by the State Post Bureau

2.2 Development Features of Logistics Market

In 2012, the growth of China's logistics market continued to shift towards domestic trade and the logistics markets in the Central and Western Regions. The growth in automotive logistics market slowed down, and the online shopping, food cold chain and pharmaceutical logistics markets extended their rapid development. A multitude of logistics enterprises improved their service level by implementing resource integration and service innovation.

2.2.1 Constantly Changing Structure of Logistics Market

2.2.1.1 The Domestic/Foreign Trade Logistics Markets

As the international market demand remained weak and the costs of export products escalated, the growth rate of China's logistics market for foreign trade slowed down in 2012. But due to the continuing shifting of economic growth toward domestic demand, the domestic trade logistics market still maintained a steady growth.

Take the container throughput of port as an example. The container throughput of major ports for foreign trade in 2012 was 106.34 million TEUs, with the growth rate being only 5.3 %; but the domestic trade container throughput over the same period was 48.17 million TEUs, which increased by 18.4 % year-on-year. During 2008–2012, the average annual growth of foreign trade container throughput was 5.0 %, while that for domestic trade container throughput reached 17.2 %. Table 2.9 shows the domestic and foreign trade container throughputs of China's major ports for 2008–2012.

In airfreight and express markets, the domestic market also grew faster than the international market. In 2012, the cargo throughput of domestic airlines was 7.85

Table 2.9 Domestic and foreign trade container throughputs of China's major ports for 2008–2012

Year	Container throughput for domestic trade		Container throughput for foreign trade	
	Value (million TEU)	Growth rate (%)	Value (million TEU)	Growth rate (%)
2008	25.55	30.1	87.39	5.7
2009	27.28	6.8	78.99	–9.6
2010	33.72	23.6	93.81	18.8
2011	40.70	20.7	101.03	7.7
2012	48.17	18.4	106.34	5.3

Source: Compiled from the *Statistical Bulletin of Container Throughput of Major Ports in China (Dec., 2008 to Dec., 2012)*, published by the Container Branch of China Ports Association

megatons, an increase of 4.6 % over the previous year. The cargo throughput of international airlines was 4.15 megatons, which grew only by 1.7 % as compared with the previous year. The business volume of domestic express market (including within-city and out-of-city) was 5.51 billion pieces, an increase of 55.5 % year-on-year. The express volume of international, Hong Kong, Macao and Taiwan market was 18 million pieces, representing a growth rate of 42.2 % over the previous year.

Under the feeble logistics market for foreign trade, domestic trade became the chief growth engine for many coastal ports in China. For example, the Port of Yingkou in Northeast China, as a domestic trade container hub port which features the most intensive domestic trade routes and radiates to a wide range of ports, its domestic trade container throughput in 2012 reached 4.49 million TEUs, a rise of 22.4 % year-on-year. The domestic trade container throughput of Taicang Port in the Yangtze River Delta region for 2012 was 2.66 million TEUs, an increase of 35.9 % year-on-year. While the growth of foreign trade container throughput slowed down, Xiamen Port vigorously developed its domestic trade container business and, achieved a throughput of 1.1 million TEUs, an increase of 21.2 % year-on-year.

2.2.1.2 Logistics Markets for the Eastern Region/the Central and Western Regions

The logistics volume of the Eastern Region experienced a slower growth in 2012. Take freight volume as an example, among 10 provinces and cities in the Eastern Region, the growth rate in the freight volume of Shanghai was only 1.1 %; the growth rates in the freight volume of Beijing, Tianjin, Zhejiang, Shandong and Jiangsu were between 5.0 and 9.0 %, all significantly below the national average of 11.5 %.

The logistics enterprises in the Eastern Region coped with the changes in logistics market by concertedly developing new logistics service modes and increasing logistics service offerings. For example, Shanghai International Port Group, as the largest port enterprise in China, actively made the transformation from a singular terminal operator to an integrated port logistics service provider. It took the lead in

introducing the "liner" operation in ocean transport to transport on the Yangtze River, and strove to develop its professional storage and distribution business. For future development, Shanghai International Port Group would further engage in automotive logistics, regional distribution center, cold chain storage and other new business formats. Logistics enterprises in Shenzhen accelerated the transformation from traditional logistics service provider to integrated third-party logistics and supply chain management service provider. By the end of 2012, it had more than 300 supply chain management enterprises; some Shenzhen-based enterprise leaders like Eternal Asia and YH Global emerged. These enterprises provided transportation and distribution, international freight forwarding, import and export services, VMI storage, bonded logistics, international procurement, supply chain finance, distribution and channel management, supply chain solutions and other logistics services covering the entire supply chain process.

Since the Central and Western Regions were still in a stage of rapid industrialization and urbanization development, swift expansion of the scale was still predominate in the development of logistics market in 2012. Take freight volume as an example. The growth rates of freight volume of five of six provinces in the Central Region were all above 13.0 %, surpassing the national average of 11.5 %. The growth rates of freight volume of 7 out of 12 provinces in the Western Region were all above the national average. Meanwhile, with continual transfer of the production projects of electronic information industries from the eastern coastal areas to the Central and Western Regions, the logistics demand in high value-added goods in the Central and Western Regions also grew rapidly in 2012. For example, after Foxconn, a renowned manufacturer in electronic information industry, settled down in Zhengzhou of Henan Province, the annual cargo throughput of Zhengzhou Airport reached 151 kilotons in 2012, which increased by 47.1 % year-on-year; its growth rate ranked first among large airports nationwide. Since manufacturers like HP and Dell established a complete industry chain in Chongqing, the freight volume of Chongqing Airport also achieved a rapid growth, with annual cargo throughput reaching 269 kilotons, an increase of 13.1 % year-on-year.

The rapid growth of the logistics demands mentioned above further propelled the construction of the logistics systems in the Central and Western Regions. Regarding transportation infrastructure, the investment in the Central and the Western Region reached a level of 357.2 and 532.5 billion RMB, respectively, in 2012. As for major logistics nodes, four comprehensive bonded zones were approved to set up in the Central and Western Regions in 2012; a number of large e-commerce, cold chain and pharmaceutical distribution centers were established in Zhengzhou, Wuhan, Chengdu and other logistics kernel cities in the Central and Western Regions. With respect to international logistics channel, the "Chongqing-Xinjiang-Europe" railway[3] has transported more than one billion USD of exported electronic products since

[3]The 11,179 km-long Chongqing-Xinjiang-Europe railway starts from Chongqing, reaches Alashankou border port in Xinjiang via Xi'an, Lanzhou and Urumqi, enters Kazakhstan, then passes through Russia, the Republic of Belarus and Poland, to arrive at Duisburg in Germany; the travel time is about 13 days.

opening in January 2011. The first Wuhan-Xinjiang-Europe international freight train[4] was successfully launched in October 2012, which mainly provided transportation services for mechanical and electrical products, automobile and auto parts, and other high value-added products imported from Europe, as well as for exported goods from central China.

2.2.1.3 Bulk Raw Materials and Energy Logistics Market/Consumer Goods Logistics Market

In 2012, under the impact of the sluggish global economy, slowing development of domestic economy and domestic economic transformation, China's power and steel industries developed at a notably slower pace. The growth rate of logistics volume of coal, crude oil, steel and other bulk raw materials and energy experienced a marked decline; some of these materials even had a negative growth in logistics volume.

Nationwide annual volume of railway transportation in 2012 is shown as follows: the freight volume of coal was 2.26 billion tons, a drop of 0.4 % in comparison with the previous year; the freight volume of smelting materials (including coke, ore, etc.) was 86 million tons, which dropped by 1.4 %; the freight volume of crude oil was 14 million tons, which increased slightly by 1.7 %. The throughput of coal and coal products of nationwide ports above a designated size[5] was 1.996 billion tons, an increase of 2.7 % year-on-year, but this growth rate dropped by 21.8 and 15.4 percentage points, respectively, as compared with 2010 and 2011. The throughput of petroleum and gasoline and related products was 73.8 million tons, a drop of 1.3 % year-on-year, and the growth rates dropped by 15.9 and 6.3 percentage points, respectively, as compared with 2010 and 2011. In 2012, 67 large storage enterprises encountered a drop of more than 30 % in the storage of bulk raw materials and energy goods, resulting in a large number of idle yards.

In 2012, consumption for major livelihood goods in China continued with a high growth. For example, the growth rate for apparels increased by 17.7 %, daily necessities by 17.5 %, communication equipment by 28.9 % and furniture by 27.0 %, which infused the continual expansion of the consumer goods logistics market. In addition, affected by the upgrade in consumer goods market and the changes in residents' consumption patterns, consumer goods logistics market also emerged with some new features. These features were mainly reflected in: (1) residents paid more and more attention to the quality and safety of foods and drugs, which led to the rapid development of foods cold chain and pharmaceutical logistics, and the emer-

[4] The 10,863 km-long Wuhan-Xinjiang-Europe railway starts from Wuhan, reaches Alashankou border port in Xinjiang via Ankang, Xi'an, Lanzhou and Urumqi to exit the China border, passes through Kazakhstan, Russia, the Republic of Belarus and Poland, to get to Pardubice, Meyrink in Czech Republic; the travel time is about 23 days.

[5] Nationwide ports above a designated size refer to coastal ports with annual throughput above ten million tons and inland ports with annual throughput above two million tons.

gence of large food, pharmaceutical cold chain infrastructure projects; (2) consumers were increasingly accustomed to online shopping, which promoted the establishment of e-commerce logistics system and the rapid development of express industry; a number of e-commerce enterprises and express enterprises had invested heavily in airfreight, transfer center, and trucking equipment, significantly improving the service capability of e-commerce logistics.

2.2.2 Industry-Wise Logistics Markets with Varied Performances

2.2.2.1 Automobile Logistics Market

In 2012, the combination of factors like slowing growth in China's economic development, the abolishment of the Government's policy on stimulating automobile consumption and the surge of oil price caused the growth rate of China's automobile production and sales to slump; hence, the automobile logistics market showed a relatively mild growth. According to statistics from the China Association of Automobile Manufacturers, 19.27 million automobiles were manufactured in China in 2012, which increased by 4.6 % year-on-year; 19.31 million automobiles were sold, which increased by 4.3 % year-on-year.

Affected by the operating conditions of different automobile manufacturers, individual automobile logistics enterprises showed quite different performance in 2012. Examples are as follows. (1) Anji Automotive Logistics Co., Ltd. mainly provides logistics service for Shanghai Automotive Industry Corporation. Its business volume for automobile shipment in 2012 was 6.4 million autos, a rise of 10.0 % year-on-year. (2) As the growth rates of automobile production and sales volume of Changan Automobile Company Ltd. were only 4.8 and 5.6 % in 2012, the income from truckload transport of its logistics service provider, CMAL, only achieved a growth of 2.98 % year-on-year. (3) For the first three quarters of 2012, as the production and sales volume of Toyota failed to meet its planned goals, the truckload volume of its logistics service provider – Tongfang Global Logistics Co., Ltd. was 737,000 autos, which was 45,000 cars (5.7 %) short of its original plan.

Under the backdrop of slow growth in automotive industry and intensified competition, the profitability of automobile and auto parts enterprises has suffered decline of various degrees. This pressure of cost reduction further transferred to the automobile logistics enterprises. Automobile logistics enterprises resorted to controlling their costs by optimizing transport structure and increasing the percentage of transporting automobiles via railway and waterway. For railway transportation, there were more than 10 scheduled automobile trains per day across the country in 2012; more than one million autos were transported annually by railway, which increased by 30 % year-on-year. As for waterway, the roll-roll automobile throughput of ports nationwide (by weight) was 533 million tons, an increase of 10.2 % year-on-year. The largest automotive logistics enterprise in China – Anji Automotive

Logistics Co., Ltd. newly added three roll-roll ships in 2012; by the end of 2012, it had owned 15 roll-roll ships; its annual freight volume by waterway transport exceeded 320,000 automobiles. FAW Logistics Co., Ltd. built large storage and transportation bases in Sichuan and Guangdong, respectively. It was estimated that after the completion of these bases, several hundred thousands of automobiles would be transported by waterway rather than highway each year, greatly reducing the future cost of transporting automobiles.

2.2.2.2 Online Shopping Logistics Market

China's online shopping market kept its momentum of raging growth in 2012. The annual transaction scale of online shopping market reached 1.3 trillion RMB, an increase of 66.2 % over the previous year. The rapid growth of online shopping made e-commerce logistics market the biggest bright spot in China's logistics market in 2012. Among the shopping websites, Tmall and TaoBao (with a combined market share ranking highest) had generated an average daily order quantity of 12 million, which increased by 50 % as compared with the eight million orders in 2011. The daily order quantity of Jingdong Mall with market share ranking second was 0.8 million; its annual logistics expenses (including storage, distribution and other expenses) amounted to 10 billion RMB, accounting for about 16–17 % of the annual sales.

Many enterprises were attracted to enter the e-commerce express market due to its high growth, so the competition among them was further exacerbated. The condition is mainly reflected in the following aspects: (1) domestic e-commerce enterprises applied for express licenses one after another to operate express business by themselves; (2) domestic high-end express enterprises focusing on general business express entered the e-commerce express market; (3) FedEx and UPS actively entered China's express market; both enterprises had obtained the express business concession for some domestic cities in September 2012.

2.2.2.3 Food Cold Chain Logistics Market

With domestic consumers' increased personal income and their concerns in food safety, the logistics demand in food cold chain has grown continually in recent years. In this context, China's cold chain logistics continued to maintain a trend of rapid growth in 2012.

In 2012, a number of projects for large-scale refrigerator were commenced or completed and put into operation. For example, five 10-kiloton national meat reserve refrigerators had been completed and put into operation; two reserve depositories were under construction. The cold chain logistics park of 1.2 billion RMB invested by the large meat processing enterprise – Henan TOPIN had already been under construction.

The operational capabilities of some third-party logistics enterprises for local food cold chains have increased notably in recent years. For example, Shandong

Rokin Logistics, established in 1997, presently owns more than 780 refrigerated trucks and numerous refrigerators serving an area of 10,000 m^2. It is constituted of three business sections, namely, the cold storage trunk line transportation covering the entire cold chain process, the inter-city cold chain distribution, and the storage; it is the cold chain logistics provider for Pepsi, Nestle and several other Fortune 500 companies. Annto Logistics has invested 100 million RMB to acquire more than 400 high-end refrigerated trucks and established five cold chain distribution centers in China since entering the cold chain market in 2006. At present, Annto Logistics has achieved an annual revenue of nearly 300 million RMB in cold chain business, and possesses a robust capability in the distribution for restaurants and of chocolates.

2.2.2.4 Pharmaceutical Logistics Market

As China has entered a period of accelerated aging population and the national health insurance system has been reformed to include more coverage, overall demand for medicines has increased substantially. The size of pharmaceutical logistics in China in 2012 continued with a rapid growth; the construction of pharmaceutical distribution center had been further promoted.

In 2012, China's pharmaceutical manufacturing industry achieved a main business income of 1.795 trillion RMB, an increase of 20.1 % year-on-year. Using the same estimated 11.9 % for logistics expense in total pharmaceutical revenue for 2011,[6] the size of logistics expense for China's pharmaceutical industry was approximately 213.2 billion RMB in 2012. According to statistics from the Commerce Department, total revenue of nationwide pharmaceutical distribution industry had reached 1.11 trillion RMB in 2012, a rise of 18 % over the previous year. Based on the rough estimate of 1.1 % for distribution cost,[7] the business income of logistics enterprises of China's pharmaceutical distribution field was about 12.2 billion RMB in 2012.

In 2012, a number of large pharmaceutical distribution centers were built or began construction. The regional distribution center of SINOPHARM Group in Zhengzhou of Henan was completed; the group announced a first-phase investment of 250 million RMB for this center, achieving full control via information system and automated equipment control for cargo storage and stock management. It was one of the most modern pharmaceutical logistics distribution centers in the Central

[6] Based on the "Statistical Survey on the Logistics of Nationwide Major Enterprises in 2012," published by the National Development and Reform Commission. Since the survey data in 2012 has not been released, the pharmaceutical manufacturing logistics costs in 2012 are estimated by referencing the 2011 data.

[7] Based on the "Statistical Analysis Report on the Operations of Pharmaceutical Distribution Industry in 2012," published by the Ministry of Commerce. The report points out that the product distributed through major pharmaceutical wholesale enterprises in China in 2012 was valued at 664.1 billion RMB, with distribution costs of 7.4 billion RMB; the distribution cost is thereby calculated to be about 1.1 % of revenue.

Regions, capable of supporting an annual sales of nearly 15 billion RMB. Suzhou pharmaceutical logistics and distribution projects for China Resources was launched in March 2012, with an estimated total investment of 300 million RMB; this project when completed would house China Resources' headquarter in eastern China with annual sales reaching five billion RMB.

2.2.3 Logistics Industry Speeding Up the Transformation and Upgrading

2.2.3.1 Resource Integration Implemented in Shipping Enterprises

Affected by adverse factors such as reduction of demand for imported raw materials and exported products, and excess capacity in the shipping market, China's shipping industry was devastated as a whole; 80 % of the shipping enterprises suffered a loss in 2012. Consequently, shipping enterprises strove to strengthen their core competitiveness by internal resource integration on the one hand, and to counter the crisis by engaging in inter-enterprise resource integration on the other hand.

In 2012, the COSCO Group merged 26 elite ships of its subordinate Guangzhou Ocean Shipping Co., Ltd. into COSCO Shipping Co., Ltd. COSCO Shipping is a professional company under the COSCO Group engaged mainly in ocean shipping of special cargos. This integration further expanded the size of COSCO Shipping's special fleet, which had a positive effect on enhancing the competitive advantage in its market position.

In October 2012, COSCON and CSCL began their cooperation on domestic trade container market in China. By integrating the transport resources of both sides, the cooperation effort is expected to improve the two enterprises' route coverage and schedule density, shorten the delivery time and lower the operating costs.

In January 2013, Shanghai Pan Asia Shipping Co., Ltd. cooperated with SINOTRANS Container Lines Co., Ltd. on Bohai Bay and Shanghai-Japan route by way of jointly investing in vessels and interchanging shipping space. This collaboration aimed to effectively integrate their resources in order to meet the streamlined and diversified service needs of the clients involving the North China-Japan and East China-Japan routes.

2.2.3.2 Airlines Create Full-Process Freight Industry Chain

In 2012, global air cargo market slumped and domestic traditional airfreight enterprises engaging solely in air transport business suffered a serious decline in revenue due to huge investment and low profit margins. Some large airfreight enterprises actively explored the expansion to both ends of the industrial chain and vigorously created a all-inclusive freight industry chain, featuring unified airfreight and ground

logistics by internal resource integration and cooperation with other express companies in order to enhance service capacity and profitability.

In June 2012, two freight companies under China National Aviation Holding Company – Air China Cargo and China Air Express, reached a cooperative agreement to improve the timeliness of delivering express products by jointly setting up high-speed channels.

After cooperating with YTO Express on domestic airfreight business in September 2011, China Southern Airlines Co. Ltd. further signed an agreement with the SF Express in March 2012 to cooperate on domestic airfreight business in eight cities in China. Meanwhile, both sides cooperated on designating spaces in some flights and sharing transferred express products to jointly expand their air cargo market.

In December 2012, China Eastern Airlines integrated its freight resources – China Cargo Airlines and Shanghai Eastern Logistics, and set up a full-freight industry chain composed of four business sections, namely, airfreight, truck transport, express delivery and logistics operations, thus preliminarily completing the transformation and upgrading from the traditional freight enterprise to a modern logistics service provider. By the end of 2012, the China Eastern Airlines freight system had formed its scheduled and un-scheduled truck-airline network and established its truck transit center for the Yangtze River Delta area.

2.2.3.3 Highway Freight Enterprises Explore Integrated Operations Models

In 2012, many management enterprises in highway express business actively explored the integrated operations models. They integrated numerous small freight agencies and truck drivers and standardized their management practices and quality control. Thereby, a number of highway freight service products featuring standardized service, information, image and price were launched, which brought in a new system of standards and organizational models for the entire highway freight industry, effectively improved the service quality of highway express market, and promoted the industry transformation and upgrading.

For example, ANE Logistics launched the "Arrival at Appointed Time" scheduled trucks, featuring high-end van trucks and non-stop round-trip at appointed time between major cities in China, to provide customers with the best cost-effective high-end highway express service. The service quality approaches that of the airfreight and express delivery service, while the price is only 1/3 thereof. By the end of 2012, ANE had developed more than 100 scheduled truck routes, covering 200 cities. The KXTX Company launched a similar freight service called "China Drive-Through." The company elicited many companies with dedicated routes across the country to cooperate and offered all of them with its home-grown information systems, thus providing customers with standardized highway freight service.

Transfar Co. also developed a "Highway-Port Express" freight service featuring fixed-point, fixed -route, fixed-schedule, fixed-time and fixed-price.

2.2.3.4 Express Industry Improves Service Level Via Multiple Means

Benefited from the explosive growth in online shopping, China's express industry had achieved an enormously rapid development in the past few years. However, recently it began to confront adverse conditions such as declining profits and service quality, due to the incessant low-price competition amid escalating growth. To alleviate this predicament, some enterprises have begun to use multiple means to improve their service level and meet the challenge.

Express enterprises have improved their service level by upgrading the capacity of their equipment and improving their level of informatization. For example, SF Express, China Postal Express and some other enterprises have substantially increased their airlift capability; by the end of 2012, there were 47 self-owned cargo aircrafts or chartered airplanes for the entire express industry, accounting for more than half of the 91 all-cargo aircrafts nationwide. Yunda Express popularized the hand-held electronic terminals within all its own outlets since the second half of 2011. By the end of 2012, it owned 40,000 terminals, achieving the real-time key-in, tracking and automatic sorting of express information; average processing time had been shortened by 2 h from the original average time.

Some express enterprises improved their service level by actively developing customized products and expanding services. In July 2012, nine express enterprises signed an agreement with Tmall, providing it with many customized dedicated services. Depending on the consumers' needs, some express companies further launched various special services such as "speedy cash on delivery," "delivery in evening," "home delivery at appointed time," "products returning and replacing services," and "pick-up by customer."

Some express enterprises are gradually turning to direct operation after realizing nationwide layout through franchise system. Meanwhile, they re-configured the operations and management model in order to fortify risk control, standardize management, and raise the service level. For example, some express enterprises enabled all the distribution centers to operate directly or converted the distribution centers in provincial capitals, large cities and major prefecture-level cities into direct operations.

2.3 Development Trend of Logistics Market

It is estimated that the overall size of China's logistics market in 2013 will grow modestly and the overall trend in logistics market structural adjustment will continue. Logistics industry will develop towards the direction of segmentation and specialization. The gross-style development of logistics industry will be difficult to sustain, and the industry transformation and upgrading process is expected to be further accelerated.

2.3.1 Declining Growth of Logistics Market

The *World Economic Situation and Prospects in 2013* released by the United Nations forecasted that the world economic growth is likely to remain sluggish in 2013 and could face the risk of double-dip recession in the subsequent two years. Regarding domestic economy, China has entered a critical period of economic transition; in the Government's working reports, the GDP growth goal for 2013 is set to be 7.5 %, below the level of 8 % of previous few years. It indicates that the Government places the priority on the coexistence of economic development and social construction, rather than the pursuit of high economic growth.

It is thus predicted that the overall size of China's logistics market will still keep on growing in 2013, but the magnitude of growth will likely to subside. The overall trend of adjusting the developing priorities of logistics market from foreign trade to domestic trade market, from the Eastern Region to the Central and Western Regions, and from bulk raw material to consumer goods market, will continue.

2.3.2 Segmentation and Specialized Development of Industry-Wise Logistics Market

After years of rapid development, China's logistics market has begun to enter the stage of segmented and specialized development of industry-wise logistics market for both the demand and the supply. The further segmentation and specialization development of industry-wise logistics market is an inevitable trend as China's logistics market becoming gradually mature.

Regarding demand, the competitive pressures of industrial and commercial enterprises in their core business are markedly increased, which will lead to their concentration on core business and outsourcing of the non-core logistics business. The practice of logistics outsourcing echoes the social requirements of division of labor, and can usually reduce the enterprises' asset investment in their own logistics facilities, improve logistics efficiency, and lower their logistics costs. In the meantime, logistics outsourcing helps to increase social logistics demand and speed up the development of industry-wise logistics. As for supply, the level of specialized services of China's logistics enterprises is rising; a number of logistics enterprises with high level of specialized services have emerged in various industries; more and more foreign logistics enterprises have penetrated into China's logistics market. All these will promote the industry-wise logistics market's development towards the direction of segmentation and specialization.

For the near future, the breadth and depth of segmentation of China's logistics market will be further extended. Professional logistics enterprises will choose certain or a few industries as the main target, making its market orientation more focused. Meanwhile, the internal logistics departments of industrial and commercial enterprises and professional logistics enterprises will continue to enhance their

service innovation; customized lean and value-added logistics service capabilities will continue to elevate.

2.3.3 Transformation of the Logistics Industry's Development Mode

With the slowing growth of China's logistics market, a host of issues covered under the long-period of rapid growth, such as insufficient rate of concentration of logistics enterprises, weak specialized service capability, high costs and low profits will become more visible. Gross-style development of the logistics industry will also be difficult to sustain, which will force the logistics industry to accelerate the transformation of its development mode. Low-cost and gross-style traditional business model will give way to high-efficiency and lean-oriented modern service models; the resource investment mode in scale expansion will be replaced by resource integration mode.

There exist a series of positive factors which will propel China's logistics industry to speed up its transformation and upgrading. For example, the weight of the Government's policy in supporting the transformation and upgrading of the logistics industry will continue to increase; new logistics technologies and logistics equipment will be continuously introduced into the logistics industry; the logistics industry itself also keeps strengthening its innovations in a variety of ways. All these factors will encourage the logistics industry to speed up its pace in striving toward a healthier development.

2.4 Summary

This chapter analyzes the overall development scale and features of China's logistics market in 2012 and offers an outlook for the development trend of China's logistics market in 2013. In 2012, the overall size of China's logistics market continued to grow, but the growth rate slowed down significantly as compared with the previous year. China's logistics market structure maintained the trend since 2009, with growth continuing to shift toward domestic trade logistics market and logistics markets in the Central and Western Regions. Moreover, logistics volume of bulk raw materials and energy showed a marked decline, but the growth of domestic consumer goods logistics market remained strong. For market segments of major industries, automobile logistics market achieved only a modest growth, so large automotive logistics enterprises had to strengthen their cost control to counter the flat market. Online shopping logistics market continued to grow, attracting numerous enterprises to enter the domestic parcel and express delivery market, which further intensified the competition in the domestic express industry. Food cold chain

and pharmaceutical logistics markets charged on with rapid development; large-sized refrigerators and pharmaceutical distribution centers kept increasing. Within logistics industry, various logistics enterprises focused on resource integration and service innovation; the overall development level of the logistics industry continued to rise. Looking ahead to 2013, China's logistics market is expected to maintain a moderate growth; industry-wise logistics markets will continue to develop towards the direction of segmentation and specialization; and the gross-style development of logistics industry will be changed.

Chapter 3
Logistics Facilities and Technological Development

Zhijuan Chen

In 2012, China continued its endeavor in strengthening the construction of transport infrastructure and transportation channels. The scale of logistics parks continued to expand, the layout of logistics parks grew following the trend of optimization and upgrade, and the number of professional logistics parks (centers) increased continually. In addition, logistics equipment further developed toward the direction of scale, automation, energy saving and environmental protection. The construction of logistics information platform continued to push forward and a new batch of national logistics standards were promulgated successively.

This chapter presents the logistics facilities and technological development in China in 2012 from four aspects: construction of transport infrastructure, construction of logistics parks (centers) and storage facilities, logistics equipment, and logistics informatization and standardization. Section 3.1 gives an overview of the infrastructure construction of highway, railway, waterway and aviation, and discusses the advancement of transportation channel construction in China from the perspective of international freight channels and domestic containers. Section 3.2 analyzes and summarizes the development characteristics of logistics parks (centers) and storage facilities in China. Section 3.3 states the characteristics of production and demand of logistics equipment in China in terms of vehicles and storage equipment. Section 3.4 describes the progress of logistics informatization and standardization.

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B. Liu et al. (eds.), *Contemporary Logistics in China: Assimilation and Innovation*,
Current Chinese Economic Report Series, DOI 10.1007/978-3-642-55282-3_3,

3.1 Advancement of Transport Infrastructure Construction

In 2012, China continued to strengthen its infrastructure construction of highway, waterway, railway, and civil aviation, steadily developed the construction of international transportation channel, and kept a good pace in the construction of domestic container channels.

3.1.1 Highway Infrastructure

3.1.1.1 Highway Network Scale

With increasing investment in highway construction year by year, China's highway mileage and density of highway network expanded continuously. By the end of 2012, the total highway mileage in China had reached 4.24 million kilometers, showing a year-on-year growth of 3.19 %. Highway density had reached 44.14 km/100 km^2, increasing by 3.20 % (Ministry of Transport of China 2013) over the same period last year. Figure 3.1 shows the growth of highway mileage and highway network density for 2008–2012.

3.1.1.2 Highway Network Structure

The proportion of graded highway[1] in total highway mileage continued to rise for the past few years. By the end of 2012, mileage of graded highway in China reached 3,609.6 kilo-km, accounting for 85.20 % of the total highway mileage, showing a growth of 1.1 percentage points. Therein, expressway mileage reached 96.2 kilo-km,

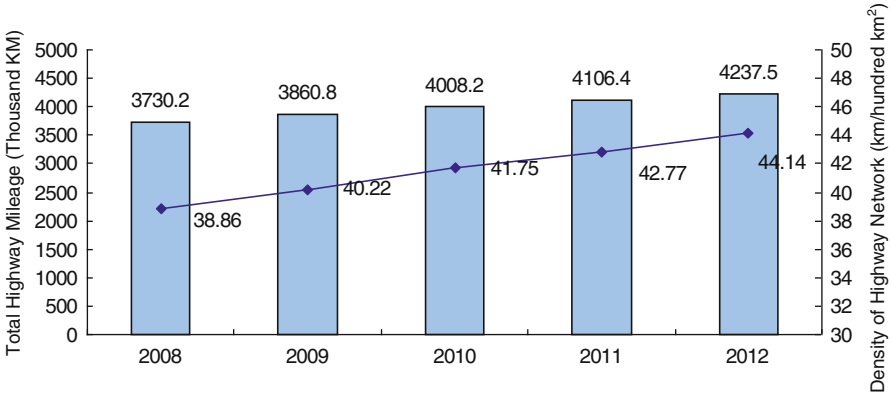

Fig. 3.1 Growth of total highway mileage and highway network density for 2008–2012 (Source: Compiled from the *Statistical Bulletin of Highway and Waterway Transportation Industry (2008–2012)*, published by the Ministry of Transport of China)

[1] According to usage, function and flow, China's highway is classified into expressway, grade-I highway, grade-II highway, grade-III highway, and grade-IV highway.

showing an increase of 11.3 kilo-km as compared with the previous year, and rising by 13.3 percentage points. Grade-II-and above highway mileage amounted to 501.9 kilo-km, accounting for 11.8 % of the total highway mileage; this represents an increase of 28.3 kilo-km, and a growth by 0.4 percentage points as compared with the previous year. By the end of 2012, national expressway mileage reached 68 kilo-km, among the national highways,[2] achieving 79 % (Ministry of Transport of China 2013) of the goal set in the *Planning for Adjusting Roadway Network*[3] launched in 2004.

3.1.1.3 Rural Highway Construction

Rural highway is an important support for rural economic development that the Government has continually bolstered the investment in rural highway. In 2012, rural highway construction in China completed investment of 214.50 billion RMB, rising by 6.7 % over the same period last year; new and rebuilt rural highway was 195 kilo-km, expanding the total nationwide rural highway mileage to 3,678.4 kilo-km (Ministry of Transport of China 2013).

3.1.2 Railway Infrastructure

3.1.2.1 Fixed Asset Investments

Constrained by financing sources, railway construction receded in 2011, such that the fixed asset investments dropped by 30.1 % from the previous year. Since the financing pressures eased in 2012, the fixed asset investment (covering infrastructure construction, replacement and refurbishment and purchase of locomotives) amounted to 633.97 billion RMB, rising by 8.13 % over the same period last year; therein, investment in infrastructure construction reached 518.51 billion RMB, rising by 12.45 % over the same period last year. Figure 3.2 shows the growth of fixed asset investment and infrastructure construction investment in railway for 2008–2012. Of the total investment of infrastructure construction, national railway and joint venture railway completed investment of 517.06 billion RMB and local railway completed 1.44 billion RMB (Ministry of Railways of China 2013).

3.1.2.2 The Scale and Structure of Railway Network

Along with the incrementing fixed asset investment in railway, the scale of railway network has maintained a sustained expansion in China. By the end of 2012,

[2] According to the administration level, China classifies highway into national highway, provincial highway, county highway, township highway and special-purpose highway; national highway refers to the main trunk highway with nationwide political and economical significance.

[3] National expressway network is the highest-level highway channel among China's highway networks. *The National Highway Network Planning* approved by the State Council in 2004 is the first layout planning for expressway in Chinese history.

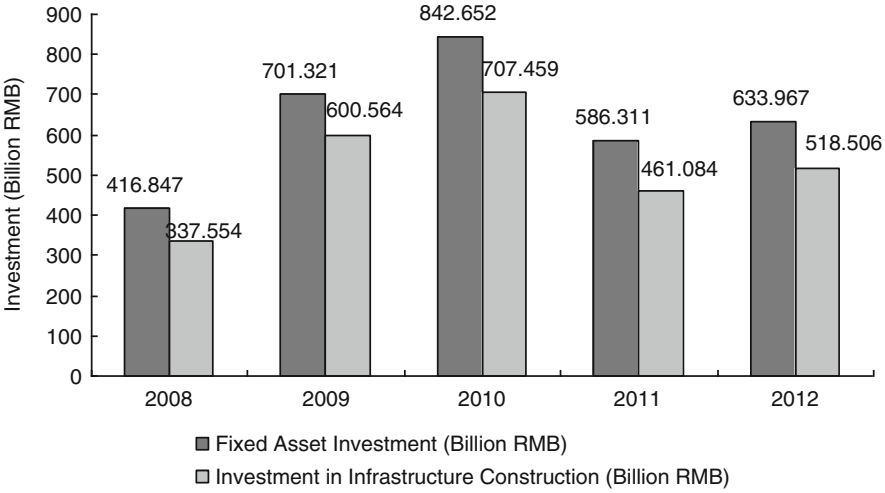

Fig. 3.2 Growth of fixed asset investment and infrastructure construction investment in railway for 2008–2012 (Source: Compiled from the Railway *Statistical Bulletin (2008–2012)*, published by the Ministry of Railways of China)

China's railway operating mileage ranked second in the world, reaching 98,000 km, and increasing by 4.70 % over the previous year. The density of railway network was 101.70 km/10,000 km^2, rising by 4.60 km/10,000 km^2 over the previous year (Ministry of Railways of China 2013).

As the scale of railway network expanded, China continued to optimize the railway network structure in terms of layout, multi-track rate and electrification rate. By the end of 2012, operating mileage in the Western Region reached 37.0 kilo-km, increasing by 1,060 km and showing a growth rate of 2.90 % over the previous year. Mileage of multi-track railway totaled 44,000 km with a growth rate of 10.80 % over previous year; multi-track mileage reached 44.8 % of the total railway mileage. The electrification mileage increased by 10.80 % with electrification rate reaching 52.30 % as compared with the previous year; the total mileage of electrified railway reached 51,000 km, leaping to the first place in the world (Ministry of Railways of China 2013).

3.1.2.3 Construction of High Speed Railway Network

Following the successive launching and operation of main lines and connecting lines of high speed railways in recent years, the backbone network of "4 Horizontal-4 Vertical High Speed Railway" has been attained, as shown in Fig. 3.3. Therein, Hefei–Bengbu High-Speed Railway was officially opened in 2012, connecting three main lines of high speed railway, i.e., the Beijing-Guangzhou line, the Beijing-Shanghai line, and the Shanghai-Wuhan-Chengdu line. The special passenger lines

Fig. 3.3 The "4H4V High Speed Railway" schematic

of Beijing-Shijiazhuang and Shijiazhuang-Wuhan were built and put into operation, connecting Beijing-Guangzhou High-Speed Railway with the world's longest operating mileage. The Harbin-Dalian High-Speed Railway threading through three provinces in the Northeast of China, is China's first alpine high-speed rail line.

The extension of high-speed railway network boosted the passenger carrying capacity, and freed some of the saturated freight carrying capacity. Moreover, some express delivery enterprises begin to make use of high speed railway line for their business. For example, China Railway Express Co., Ltd. sets up the first domestic "Express Freight Department of High Speed Railway" in Tianjin West Railway Station, exploiting time-limited express business of such as "same day delivery," "next morning delivery," and "next day delivery." S.F. Express Co. Ltd. cooperates with the Nanchang Railway Administration to develop business of delivering express items by utilizing the inspection van of the Motor Train Unit.

3.1.3 Waterway Infrastructure

3.1.3.1 Infrastructure Scale

Investment of waterway construction in China has steadily climbed in recent years. In 2012, inland rivers and coastal areas completed construction investment of 149.38 billion RMB, up by 6.30 % over the previous year, but the growth rate saw a conspicuous slowdown as compared with the previous years. Therein, inland river construction completed the investment of 48.97 billion RMB, showing a

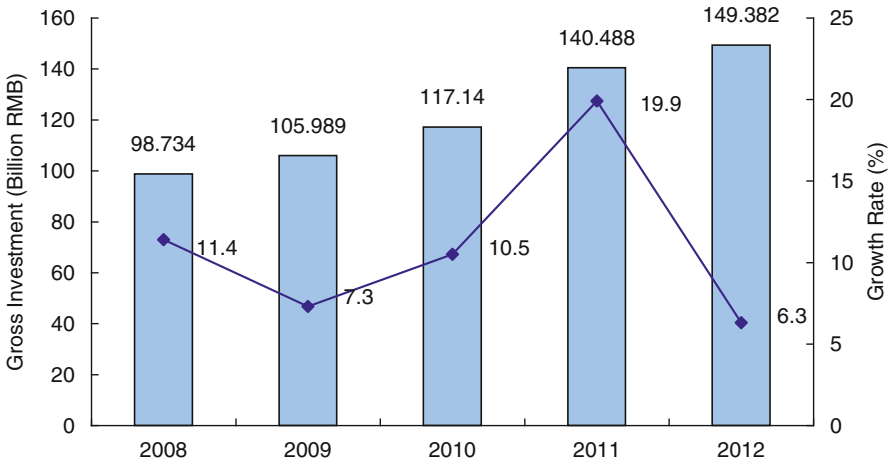

Fig. 3.4 Growth of waterway construction investment in China for 2008–2012 (Source: Compiled from the *Statistical Bulletin of Highway and Waterway Transportation Industry (2008–2012)*, published by the Ministry of Transport of China)

year-on-year increase of 23.10 %; coastal construction completed investment of 100.41 billion RMB, showing a year-on-year decline of 0.30 % (Ministry of Transport of China 2013). The growth of waterway construction investment in China for 2008–2012 is illustrated in Fig. 3.4.

The scale of waterway infrastructure has expanded rapidly with growing investment over the past 5 years in China. For port construction, the number of new and rebuilt (expanded) quay berths at coastal ports rose to 135 with added throughput of 324.01 million tons in 2012. Meanwhile the number of new and rebuilt (expanded) quay berths at inland ports was 251, with increased throughput of 120.25 million tons. New and rebuilt mileage of inland waterways was 686 km. By the end of 2012, navigable mileage of inland waterways in China reached 125,000 km (Ministry of Transport of China 2013). Growth of added annual port throughput in China for 2008–2012 is shown in Fig. 3.5.

3.1.3.2 Waterway Grade Structure

In recent years, inland waterways in China developed rapidly, and the proportion of waterways of grade III or above kept rising. By the end of 2012, the navigable mileage of inland waterways reached 125,000 km, rising by 383 km as compared with the previous year. The total mileage of graded inland waterway was 63,700 km and amounted to 51.00 % of total mileage, increasing by 0.70 % over the same period last year. The waterway of grade III or above was 9,894 km, accounting for 7.90 % of the total mileage and rising by 0.30 % (Ministry of Transport of China 2013) over the previous year. Navigable mileage and proportion in total mileage of China's graded inland waterway is shown in Fig. 3.6.

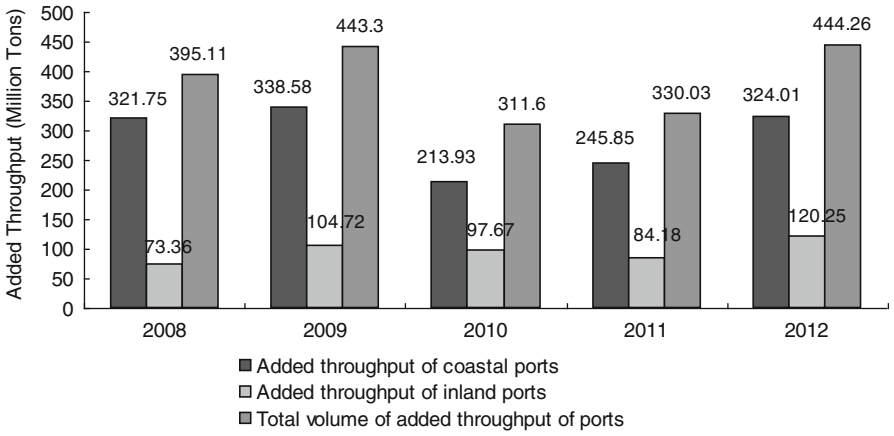

Fig. 3.5 Growth of added annual port throughput in China for 2008–2012 (Source: Compiled from the *Statistical Bulletin of Highway and Waterway Transportation Industry (2008–2012)*, published by the Ministry of Transport of China)

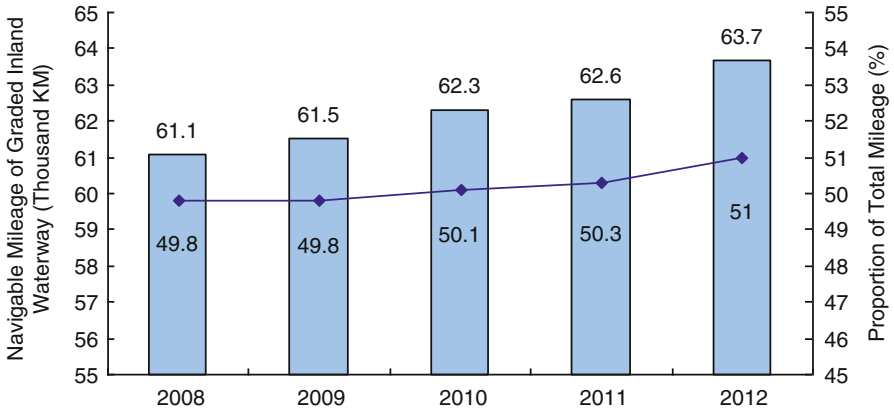

Fig. 3.6 Navigable mileage and proportion in total mileage of China's graded inland waterway (Source: Compiled from the *Statistical Bulletin of Highway and Waterway Transportation Industry (2008–2012)*, published by the Ministry of Transport of China)

3.1.3.3 Quay Berth at Ports

In recent years, China's quay berths kept developing toward larger size. By the end of 2012, there were 1,886 berths of 10 k-tons or above at ports, showing a year-on-year increase of 124 in number. Therein, 1,517 berths were of 10 k-tons or above at coastal ports, increasing by 95 in number with added throughput of 306.83 million tons, while 369 berths were of 10 k-tons or above at inland ports, increasing by 29 in number with added throughput of 5.25 million tons (Ministry of Transport of China 2013).

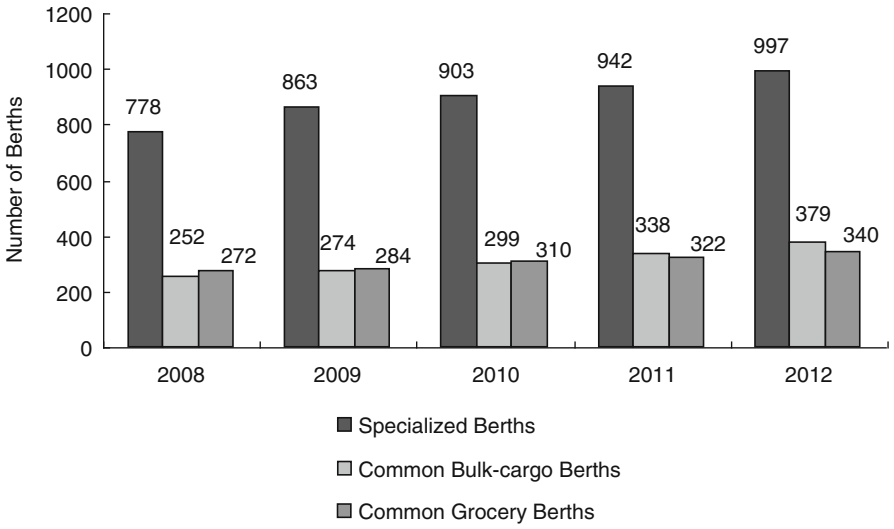

Fig. 3.7 Growth of special purpose berths above 10 k-tons in China for 2008–2012 (Source: Compiled from the *Statistical Bulletin of Highway and Waterway Transportation Industry (2008–2012)*, published by the Ministry of Transport of China)

As quay berths at ports developed toward larger size, their specialization level was also elevated continually. Among berths of 10 k-tons or above, there were 997 specialized berths, 379 common bulk-cargo berths, and 340 common grocery berths, showing an increase of 55, 41 and 18 in number, respectively, over the end of 2011 (Ministry of Transport of China 2013). Figure 3.7 shows the growth of special purpose berths above 10 k-tons in China for 2008–2012.

3.1.4 Civil Aviation Infrastructure

For the past few years, China continued to augment the investment in civil aviation infrastructure. In 2012, the Civil Aviation Administration had completed investment for infrastructure construction and technical transformation of 71.22 billion RMB, increasing by 3.6 % as compared with the previous year; among which, airport system completed a gross fixed asset investment of 49.87 billion RMB, increasing by 0.7 % over the previous year. Twelve key construction projects were completed, under construction or to be launched. For example, the extension projects of Hangzhou Xiaoshan International Airport, Chengdu Shuangliu International Airport, Lhasa Gonggar Airport and Xi'an Xianyang International Airport were completed; the extension projects of Shenzhen Bao'an International Airport,

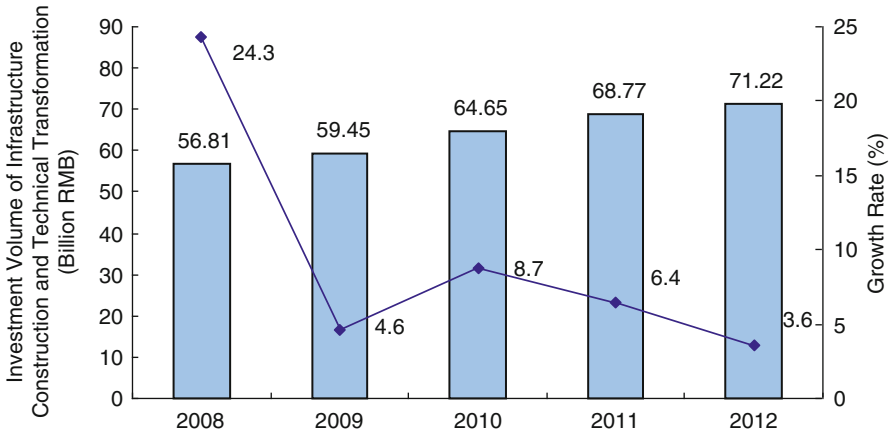

Fig. 3.8 Growth of investment for infrastructure construction and technical transformation of civil aviation in China for 2008–2012 (Source: Compiled from the *Statistical Bulletin of Development of Civil Aviation (2008–2012)*, published by the Civil Aviation Administration of China)

Xining Caojiapu Airport, Shenyang Taoxian International Airport, Nanjing Lukou International Airport, and Guiyang Longdongbao International Airport proceeded on schedule; the extension projects of Tianjin Binhai International Airport and Guangzhou Baiyun International Airport began construction. Figure 3.8 shows the growth of investment for infrastructure construction and technical transformation of civil aviation in China for 2008–2012 (Civil Aviation Administration of China 2013a).

With continuous expansion of investment scale, the scale of infrastructure of China's civil aviation continued to expand. In 2012, China added three certified civil aviation airports (JiaGeDaQi Airport in Heilongjiang, Yangzhou Taizhou Airport in Jiangsu, Zunyi Airport in Guizhou), and the total number reached 183; therein, 180 airports had scheduled flights, flying to 178 (Civil Aviation Administration of China 2013b) cities. The regional layout of airports in China by the end of 2012 is shown in Fig. 3.9.

3.1.5 Transportation Channels

3.1.5.1 International Freight Channels

In 2012, China continued to promote the construction of international freight channels. In October 2012, Wuhan opened the "Wuhan-Xinjiang-Europe" special international freight line from Wuhan to Europe via Xinjiang, which became the another land freight channel from Wuhan to Europe, after Wuhan's international

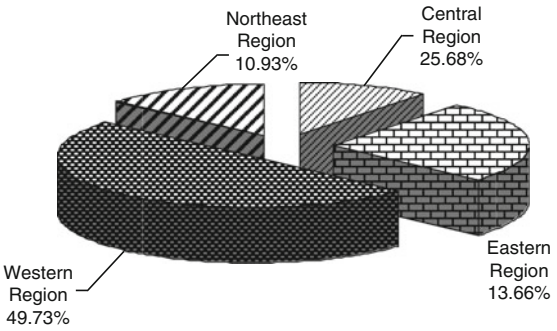

Fig. 3.9 Regional layout of airports in China, 2012 (Source: Compiled from the *Statistical Bulletin of Development of Civil Aviation (2012)*, published by the Civil Aviation Administration of China)

aviation route and river-sea direct route (i.e., "river-sea direct route" of container from Wuhan to Yangshan Port of Shanghai, for international shipping). In December 2012, Lianyungang began the first direct train for containers to Charges, which symbolized the beginning of a new channel connecting Central Asia and Europe for transit transport of containers through Lianyungang Port.

3.1.5.2 Domestic Container Channels

China strove to build domestic container channels in recent years for the purpose of improving its access capability of regional logistics. Many domestic container channels were opened in 2012. In May, the demonstration project of container railway-waterway combined transportation from Tianjin to Ningxia (of Gansu Province) was officially launched; the project is one of the first six demonstration projects for container railway-waterway combined transportation. In October, containers delivered by direct maritime route from Tianjin to Zhuhai were achieved, which became another new maritime freight channel between North China and South China. In November, a domestic container freight line of "North China-Fujian," first jointly developed and operated by COSCO Container Transportation Company and China Shipping Container Lines Company Ltd. was officially launched.

3.2 Development Status of Logistics Parks (Centers) and Storage Facilities

In 2012, as China's logistics parks expanded in scale, their regional layout became more reasonable and their functions and service levels were also improved. In addition, the construction of professional logistics parks and storage facilities was accelerated and the efforts to build automatic warehouses were enhanced.

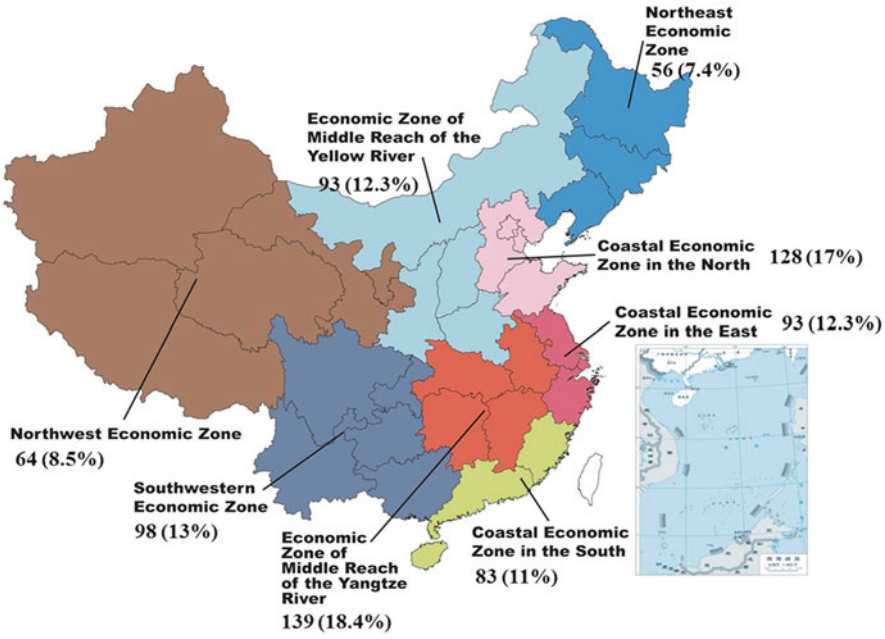

Fig. 3.10 Overall distribution of China's logistics parks (Source: Compiled from the *Third Survey Report of National Logistics Parks (Bases)*, published by the China Federation of Logistics and Purchasing)

3.2.1 Development Status of Logistics Parks (Centers)

3.2.1.1 Total Number of Logistics Parks

The number of China's logistics parks (centers) increases notably with the swift development of logistics industry. As reported by the China Federation of Logistics and Purchasing, the total number of logistics parks in China was 754 by June 2012, increasing by 264 % and 58.70 % respectively as compared with the 207 in 2006 and the 475 in 2008. Of the 754 logistics parks counted, 348 of them were in operation, accounting for 46 %, 241 (32 %) were in construction, and 165 (22 %) were in planning (China Federation of Logistics and Purchasing 2012).

3.2.1.2 Optimizing and Upgrade Trend of Parks

China's logistics parks (centers) are distributed reasonably evenly among regions, as shown in Fig. 3.10. In recent years, the number of parks in the Northern coastal economic zone and the four Central and Western Economic Zones (the Middle Reach

of the Yangtze River, the Middle Reach of the Yellow River, the Southwestern, and the Northwestern Economic Zones) grew at a faster pace, which was aligned with the adjustment and upgrade of China's industrial structure and the migration of some industries to the Central and Western Regions.

Some provinces and cities in the Yangtze River Delta Region had formed a network service system of their logistics parks (centers). For example, Shanghai formed the network layout structure with four logistics parks (Yangshan Deep Water Port, Wai Gaoqiao Free Trade Zone, Pudong International Airport and Northwest Integrated Logistics Park) as the core. Jiangsu Province broke the sole operational mode of its parks and established an alliance of the province's parks. Zhejiang Province established the logistics service system with provincial key logistics parks as core and coordinated the development of logistics parks of different levels and characteristics (China Federation of Logistics and Purchasing 2012).

3.2.1.3 Construction of "Dry Port"

Dry ports refer to the international commercial ports set in the inland economic center cities for opening to the outside world. As inland economic center cities, they serve as virtual ports for the coastal ports and operating the platform for modern logistics, as well as a "bridgehead" to provide convenient international port services for the development of inland economy. Dry ports typically integrate the functions of ports, logistics and value-added services. Cargo containers can accomplish all custom procedures, including space booking, customs clearance, customs inspection, issuance of bill of lading, in a dry port by the "one-stop" service. The cargo can then be shipped to a coastal port by means of ocean-rail transportation, and there the containers can set off from the port directly (China Federation of Logistics and Purchasing 2012).

For the past some years, development of dry port has gained more attention world-wide. Many cities in China began to realize the importance of "dry port" to the development of regional economy, such that the construction of "dry port" project had become a domestic hot issue. In 2012, China continued its promotion efforts on the "dry port" projects. For example, the Hengyang Dry Port in Hunan Province was in trial operation, Shenzhen Port's first "dry port" in Hunan Province was started, and the sea-railway combined transportation of containers of Xiangyang in Hubei Province and Ningbo in Zhejiang Province was launched officially. Tianjin Province built its new dry ports in Taiyuan of Shanxi Province, Hohhot of Inner Mongolia and Anyang of Henan Province, raising the total number of its inland dry ports to 23. Furthermore, Taicang Port set a "dry port" in Suzhou Industrial Park, Qingdao Port cooperated with Bonded Logistics Center of Henan Province to build a "dry port" in Zhengzhou, and Zigong Municipal People's Government and Guangxi Beibu Gulf International Port Group Ltd. signed a contract for a "dry port" project in the Southwest of Guangxi (Zigong).

3.2.1.4 Professional Construction of Parks

In recent years, the trend of upgrading the functions and promoting the services in logistics parks through modernizing business mode emerged. As for value-added service and innovation of logistics parks, the Yangshan Bonded Port of Shanghai developed the business of splitting and assembling the transit international containers, which boosted the logistics value-added services of Shanghai port. Service innovation also took the form of integration between logistics parks and e-commerce; Tianjin Wuqing Economic Development Zone and 99114.com signed a contract to jointly build the Wuqing E-commerce Industry Base. With regard to service innovation of integration between logistics parks and international logistics, the construction of Nanjing Port International Logistics Center of Weidu in Nanjing was fully launched. In addition, Shenzhen planned to build a bonded port with functions of regional production and management center and international supply chain management center in Qianhai New District. Furthermore, in terms of service innovation of integration between logistics parks and bonded logistics, the Dongguan Bonded Logistics Center (type B) had begun its operations. Comprehensive bonded zone in Jinan and that in Xi'an Hi-Tech Industrial Development Zone had been approved by the State Council for establishment.

In 2012, several professional logistics parks (centers) were built or began operation. Take pharmaceuticals logistics parks, for example, the Yifeng Pharmaceutical Logistics Park was completed. In terms of iron and steel logistics parks, for example, the first-stage project of Logistics Center for Shandong Zhongrui Steel Logistics Co., Ltd. was completed and put into operation, and the first-stage project of Logistics Center for Hebei Baiying Steel Logistics Co., Ltd. was completed and put into trial operation. As for agricultural products logistics parks, for example, the Northeast Asia Agricultural Products Logistics Park building project was started in Daqing. In terms of railway logistics parks, for example, the Qianchang Railway Logistics Base was under construction.

3.2.2 Development Status of Storage Facilities

3.2.2.1 Automated Vertical Warehouse

In order to cope with the increasing operational pressures, enterprises began increasing the utilization rate of warehouse space by means of building high-rise warehouse, and use mechanization/automation equipment to replace manual operation, so as to improve operations efficiency and control cost. According to partial statistics, in 2012, there were more than 130 newly built large scale automated vertical warehouses, reaching a total number of 1,300 automated vertical warehouses in China. Besides increase in number, the construction scale of these

warehouses grew larger; the average number of freight slots in a warehouse was 10,000 or so, with average height over 20 m.[4]

3.2.2.2 Industry-Specific Storage Facilities

Enterprises engaged in tobacco, apparel, pharmaceuticals and e-business continued to promote the construction of storage network. In 2012, the construction of professional storage facilities developed swiftly.

As for the construction of tobacco storage facilities, for example, the project of Fuling Cigarette Distribution Center of China Tobacco Chuanyu Industrial Corporation was commenced with an area of 17,100 m^2, and a total investment of 129 million RMB. Estimated annual distribution of cigarettes is 220,000 boxes.

As for the construction of apparel storage facilities, for example, the main construction of High-quality Suit Storage Logistics Center of Qipai Group Co., Ltd. in Quanzhou City of Fujian Province was completed; contract for the project of Northern Logistics Settlement Center of Zhejiang Semir Garment Co., Ltd. was signed, with a total investment of 250 million and a building area of 65,000 m^2. It mainly involves the sales, logistics and settlement service for the apparels of the company's two brands – "Semir" and "Balabala", in the Northern Region. It is estimated that the annual sales volume will reach above 1,000 million RMB after the Logistics Settlement Centers begins full operation.

As for the construction of pharmaceuticals storage facilities, for example, the first-stage Henan Logistics Center (Zhengzhou) of China National Pharmaceutical Group Corporation was built, and the project of pharmaceuticals logistics center located in Anyang of Henan Province was officially commenced; Qingdao Logistics Center and Wuhan Logistics Center of Jointown Pharmaceutical Group Co., Ltd. were both completed. The first-stage construction of Xiasha Modern Logistics Center of Huadong Medicine Co., Ltd. has been completed, with a total building area of 81,545 m^2 and a total investment of more than 200 million RMB; the center is equipped with many modern logistics equipment such as high-speed sorting system, automated assembly line, hand-held terminal sorting, elevated warehouse, etc., and is also integrated with software and hardware for its logistics management system.

As for the construction of e-business storage facilities, for example, Suning Commerce Group Co., Ltd. is establishing storage facilities in many places around the country. Among which the project under construction in Zhongshan Logistics Base is the first self-built large-scale logistics base for home appliance retail enterprises serving the Pearl River Delta to the western Guangdong area. Upon completion, the logistics base can support an annual sales volume over four billion RMB, having a distribution radius between 80 and 150 km, and achieving the goal

[4] "Analysis on the Development of Chinese Logistics Equipment Industry in 2012," http://www.56products.com, 2013-02-20.

of 24-h delivery to the homes in its coverage. The Headquarters of Suning Commerce Group Co., Ltd. in Lanzhou has signed an official contract to locate its logistics center in Qilihe Park of High-tech Zone of Lanzhou; the facility will support a distribution capability of annual sales over four billion RMB upon completion. The Suning Headquarters in Eastern China has officially signed a contract with Shanghai Comprehensive Industrial Development Zone for a construction area spreading 63.4 acres, with a total building area of more than 200,000 m^2; upon construction, the facility can support an annual sales volume of 10 billion RMB. In addition, another large e-commerce company, jd.com, also operates its major appliances logistics center in Zhengzhou.

3.3 Development Status of Logistics Equipment in China

In 2012, the transport vehicles in China continued to rise in number, improve in loading capacity and professional level, and develop toward the direction of energy saving and environmental protection. Meanwhile, the demand for low-end equipment declined, while the demand for storage facilities was more inclined to large-scale, energy saving and environmentally friendly.

3.3.1 Development Status of Transport Vehicles

3.3.1.1 Loading Capacity

In recent years, loading capacity of various highway and waterway transport vehicles continued to expand. By the end of 2012, the gross deadweight for motor truck in China amounted to 80.62 million tons, with an increase of 11.00 % as compared with previous year; the average tonnage reached 6.43 t/truck, showing a growth of 0.26 t/truck over the same period last year. The net deadweight of transport ships in China reached 228.49 million tons and the average net deadweight reached 1,279.38 tons/ship, representing an increase of 7.50 and 7.80 %, respectively, over the previous year. Container slot was 1.57 million TEUs (Ministry of Transport of China 2013), with an increase of 6.70 % compared with the previous year. The number and deadweight of water transport ships in China for 2008–2012 are shown in Fig. 3.11.

3.3.1.2 Technological Level

China has been enhancing its research on speedier and newer types of heavy-load truck and matching technology for railway transport. In 2012, the alpine motor train unit CRH380B was put into operation in Harbin-Dalian High-Speed Rail.

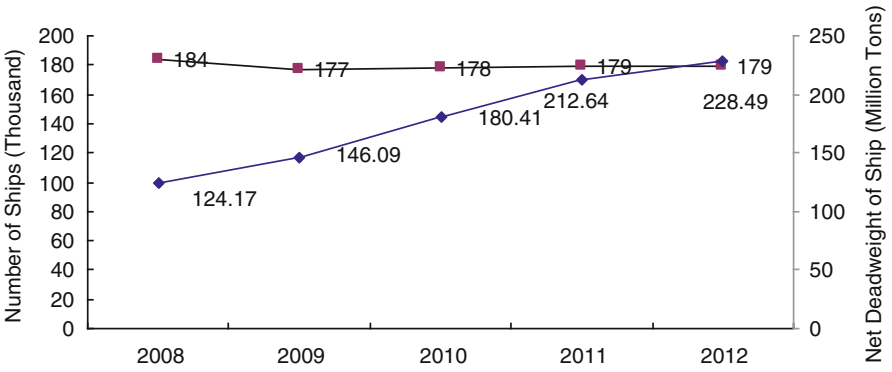

Fig. 3.11 Number and deadweight of water transport ships in China for 2008–2012 (Source: Compiled from the *Statistical Bulletin of Highway and Waterway Transportation Industry (2012)*, published by the Ministry of Transport of China)

Newly developed AC-drive passenger electric locomotive with speed of 160 km/h was in testing and evaluation stage. Self-developed DK-2 type locomotive brake was in the installation and checking stage (Ministry of Railways of China 2013). These research projects and accomplishment of the current stage marked a significant advancement in the technological innovation capability and technical level of China's transport vehicles.

3.3.1.3 Development Trend in Energy Saving and Environmental Protection

In recent years, under the impacts of sharp upsurge of energy price, trucks and locomotives in China have been developing towards energy saving and environmental protection. In 2012, Beijing began the demonstration project of employing electric vehicle for logistics. The project was proposed to establish sole electric logistics motorcade and supporting ground charging facilities, and provide advanced dispatching management and informatization platform for vehicle operation, using the city's end-point logistics distribution as the object of demonstration. This project was the first large-scale business application of domestic electric vehicles in the logistics field, which helped to realize the goal of enhancing the service efficiency of vehicles and the economic benefit of joint distribution. Moreover, the proportion of electric locomotives exceeded that of diesel locomotives in railway transport for the first time. By the end of the 2012, there were 19,600 sets of railway locomotive, increasing by 35 in number as compared with previous year, with diesel locomotive accounting for 48.80 % and electric locomotive for 51.20 % (Ministry of Railways of China 2013).

3.3.2 Development Status of Storage Equipment

3.3.2.1 Large-Scale Rack

In recent years, along with the significant upswing of land cost and labor cost, as well as the ever-increasing demand for high-efficiency logistics system by industrial and business enterprises in China, construction projects for logistics system including automated vertical warehouses and large-scale rack system increased substantially. In 2012, the demand for automated vertical warehouses increased continually in China. According to the survey statistics by the China Logistics Products Network, sales of racks to dealers were over 460 million RMB, increasing by 15 % over the same period previous year. Therein, the proportion of large-scale rack system in warehouse renovation and construction of vertical warehouses rose by a large margin.

3.3.2.2 Forklift

Except for a temporary decline in 2009, the forklift industry in China has kept a swift growth of near 30 % in the last decade. However, in 2012, due to the impacts of lethargic growth momentum of developed countries and the slowdown of economic growth for emerging markets, demands for China's forklift industry showed a consecutive drop by the quarter. According to statistics of the Industrial Truck Institution of the China Construction Machinery Association (CCMA), the manufacturing enterprises of automotive industry in China sold 288,662 sets of forklifts in total, down by 7 % as compared with 2011. While total sales declined, the share of electric forklifts and high-efficiency energy-saving and environmentally-friendly forklifts in total sales increased. In 2012, sales volume of counterbalanced heavy forklifts dropped by 9.17 % as compared with the same period previous year, while sales volume of electric forklifts and electric warehouse forklifts dropped slightly by 0.58 and 0.76 %, respectively, as compared with the previous year (Industrial Truck Institution, CCMA 2013).

3.3.2.3 Equipment for Delivery and Sorting

Because warehouses have been developing toward high-efficiency, and dense-storage form, the need for high-efficiency delivery and sorting systems becomes apparent. In 2012, the demand for delivery and sorting equipment increased dramatically in China, and annual growth rate of demand was estimated to reach 20 % (Wang Jixiang 2013). Meanwhile, due to the rapid development of e-commerce logistics, the requirements for automation technology of order processing also increased continually.

3.4 Logistics Informatization and Standardization in China

In 2012, the construction of public logistics information platform and industrial logistics information platform in China was further promoted. The *Catalog of Logistics Standards* was further revised and improved, and provincial and city governments all actively promoted the standardization efforts. At the same time, the preparation task of instituting fundamental and professional logistics standards continued in China, and the standardization in logistics industry for pharmaceuticals was pressing forward.

3.4.1 Development Status of China's Logistics Informatization

3.4.1.1 Construction of Public Information Platform for Logistics

The construction of regional public information platform for logistics was promoted continually. By the end of 2012, the provinces which opened public traffic information platform for transport logistics included Zhejiang, Gansu, Jiangsu, Fujian, and Shandong; Hubei Province also started the construction of public information platform for transportation logistics.

The construction of nation-wide public information platform for transportation logistics was officially started in 2012. The platform is an open and shared infrastructural exchange network serving logistics industry, which is built jointly by the State and several provinces and cities under the leadership of the Ministry of Transport and the government of Zhejiang Province. The platform can achieve seamless linking of trans-regional, multi-industry and cross-border logistics information. It is projected that the infrastructural exchange network for logistics information of the platform will be completed, the standards system of logistics data exchange will be finished, and the interconnection between the platform, the electronic ports and other relevant information systems of logistics will be realized by the end of the "12th Five-Year Plan" period (i.e., 2015).

In addition, the electronic commerce system of railway freight in China has begun its trial operation, which provides the platform for processing railway freight service online. The pilot project for public logistics information platform of Yangtze River transportation, the F Pack (network equipment, system software and system integration pack) and the G Pack (construction pack of machine room and supporting facilities) were submitted for review and approved. The operation of public service information platform of airport logistics in Changzhou Airport was officially launched.

3.4.1.2 Construction of Industry-Wide Logistics Information Platform

In recent years, construction of industry-wide logistics information platform in China had been promoted continually. In 2012, the distribution platform for hospital logistics developed by Hangzhou Post of Zhejiang Province began its operation online,

achieving full-process informatization of Chinese medicine distribution among hospitals, postal service and pharmaceutical factories. Shenzhen Huaqiang Industry Co., Ltd. promoted the logistics platform of www.hqepay.com, by integrating the resources of several express companies such as Sure56, Yunda Express (logistics) Company Ltd., Neda, and Shun Feng Suyun (Holdings) Ltd., and provided services such as cash on delivery, and monthly statement of express charges. Construction of the first-stage project for logistics information system of Fujian Province's tobacco enterprises, the "Intelligent Logistics Decision Management Platform Project," was officially launched.

3.4.2 Development Status of China's Logistics Standardization

3.4.2.1 Enhancement of the Catalog of Logistics Standards

In August 2012, the *Catalog of Logistics Standards of 2012* (herein after referred to as the *Catalog*) was issued by the Standards Task Department of China Federation of Logistics & Purchasing (CFLP) and the National Technical Committee on Logistics Information of the Standardization Administration of China. The new edition of the *Catalog* covers 677 items of current national standards, industrial standards and local standards. Based on the *Catalog* of 2011, the 2012 *Catalog* added the logistics standards for international freight forwarder, dangerous goods logistics, as well as textile, chemical and plastic products. In addition, it also included a Table of Contents and Index to facilitate the query function.

3.4.2.2 Construction of Logistics Standardization in Provinces (Cities)

In 2012, some provinces such as Shandong and Hebei, successively issued development plans of or suggestions for promoting the development of logistics industry, which contained the "construction of logistics standardization." Furthermore, Anhui Province and Ningbo City established technical committees to guide and promote the compilation/revision and popularization and application of logistics standards.

3.4.2.3 Compilation of National Logistics Standards

As per the *"12th Five-Year Plan for Standardization Development* and the *Key Issues of National Standardization in 2012*," China officially instituted, promulgated and implemented many foundational logistic standards which cover logistics services, logistics operations, logistics informatization and some other related aspects.

At the same time, China has also prepared, promulgated and implemented many professional logistics standards. The objectives are: (1) continue to perfect logistics standards in fields of agricultural products, automobiles, and cold chains; (2) focus on logistics standards of industries such as reverse logistics of chemical products,

iron and steel logistics, household appliances logistics, medicine and pharmaceutical logistics; (3) prepare and promulgate preliminary standards for the publishing industry and port logistics.

3.4.2.4 Standardization of Pharmaceutical Logistics Industry

In August 2012, China Association of Pharmaceutical Commerce (CAPC) and CFLP issued the first national standards of pharmaceutical logistics: the *Service Specification for Pharmaceutical Logistics* (hereinafter referred to as the *Specification*), as a recommended national standards. Although the *Specification* doesn't have mandatory legal authority, it stands as proprietary standards for pharmaceutical logistics.

3.5 Summary

This chapter presents the development of logistics facilities and technology in China from four aspects: transportation infrastructure construction, logistics parks (centers) and storage facilities construction, logistics equipment, and logistics informatization and standardization. For transportation infrastructure, the scale and network structure of highway, railway, waterway, airport and other transportation infrastructures are being optimized successively, which could further improve the access capability and efficiency of China's logistics. China's logistics parks (centers) were distributed somewhat evenly among the Regions, and their functions and service upgrades have taken place. Professional logistics parks and professional storage facilities were constructed in a fairly fast pace, and the same is true with the automated vertical warehouses. As for logistics equipment, various transport vehicles have achieved better carrying efficiency and professional level. Storage equipment continues to develop toward large scale, energy saving and environmental protection. In terms of logistics informatization, the construction of public logistics information platforms and industrial logistics information platforms has made new advancement. While for logistics standardization, the *Catalog of Logistics Standards* was revised and enhanced, and a batch of new national logistics standards were promulgated, which will play an effective role in promoting the formation and implementation of China's logistics standards.

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Chapter 4
Logistics Development in Zhejiang Province

Lanbing Li

Situated in southeastern coastal region of China, Zhejiang Province is an important part of Yangtze River Delta and also regarded as one of the provinces with most developed economy and highest degree of opening-up in China. The level of logistics development of Zhejiang Province takes a leading position in China. In the past few years, the State Council has successively approved the plans to construct Zhejiang Marine Economy Development Demonstration Area, establish Zhoushan Islands New District and develop the Comprehensive Reform Pilot of Yiwu International Trade, thus bringing new opportunities and challenges for the development of logistics industry in Zhejiang.

This chapter comprises three sections. The first section introduces the economic development conditions in Zhejiang; the second section presents the development of logistics market in Zhejiang; the third section emphasizes on analyzing the development characteristics of logistics industry in Yiwu, a city endowed with booming trade market in recent years.

4.1 Economic Development Status in Zhejiang Province

From 2006 to 2010, despite the impact of international financial crisis, the overall economy in Zhejiang still achieved a rapid growth. In 2012, Zhejiang witnessed a steady growth in economy, an improvement of industrial structure and further enhancement of comprehensive economic strength, resulting in its regional GDP, industrial added value and other major economic indicators continually ranking atop in China. Map of Zhejiang Province is shown in Fig. 4.1.

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B. Liu et al. (eds.), *Contemporary Logistics in China: Assimilation and Innovation*, Current Chinese Economic Report Series, DOI 10.1007/978-3-642-55282-3_4,

Fig. 4.1 Map of Zhejiang Province

4.1.1 Major Economic Indicators

4.1.1.1 Regional GDP[1]

Zhejiang is one of China's major provinces with a strong economy. In 2012, it realized a regional GDP of 3,460.6 billion RMB, with an economic aggregate holding fourth in China, just behind Guangdong, Jiangsu and Shandong. From 2006 to 2010, regional GDP of Zhejiang generally kept a rapid growth with an average annual growth rate (AAGR) above 10 %. Since 2011, the growth rate of its regional GDP has declined slightly. The growth rates for 2011 and 2012 were 9.0 % and 8.0 %, respectively, showing a decrease of 2.9 and 1.0 percentage points compared with the previous years, as shown in Fig. 4.2.

4.1.1.2 Industrial Added Value[2]

During 2006–2012, the industrial added value of Zhejiang generally exhibited a trend of fluctuating growth. In 2012, added value of large-scale industries[3] in Zhejiang was 1,087.5 billion RMB, increased by 7.1 % compared with previous year, as shown in Fig. 4.3. Therein, added values of light and heavy industries were 470.5 and 617 billion RMB, an increase of 8.0 % and 6.6 %, respectively.

[1] All growth rates cited in this paragraph refer to actual growth rate.

[2] All growth rates cited in this paragraph refer to actual growth rate.

[3] Large-scale industrial enterprises in China refer to firms with registered capital of 400 million RMB and above.

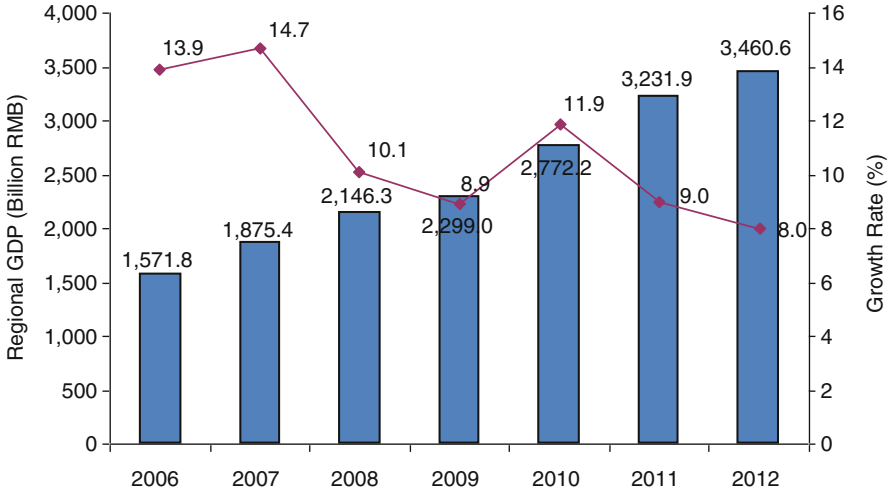

Fig. 4.2 Regional GDP and growth rate of Zhejiang Province for 2006–2012 (Source: Compiled from the *Statistical Bulletin of National Economic and Social Development (2006–2012) of Zhejiang Province*, published by the Statistics Bureau of Zhejiang Province)

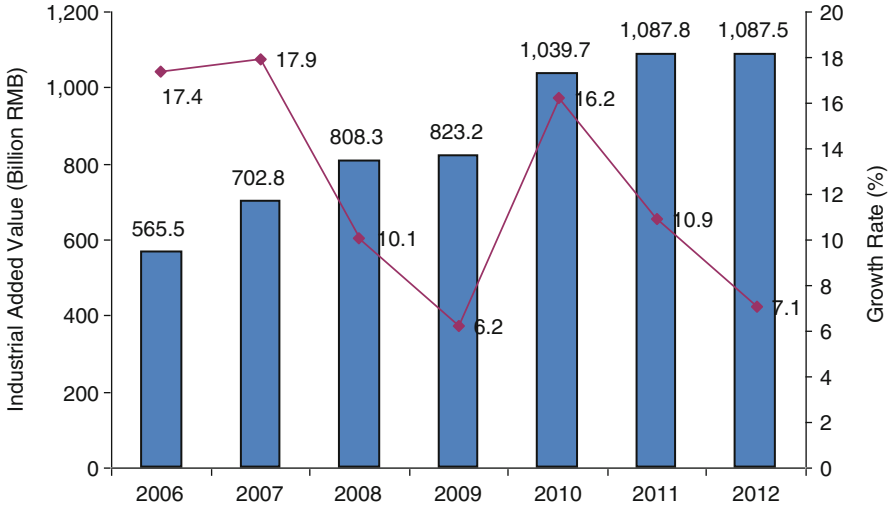

Fig. 4.3 Industrial added value and growth rate of Zhejiang Province for 2006–2012 (Source: Compiled from the *Statistical Bulletin of National Economic and Social Development (2006–2012) of Zhejiang Province*, published by the Statistics Bureau of Zhejiang Province)

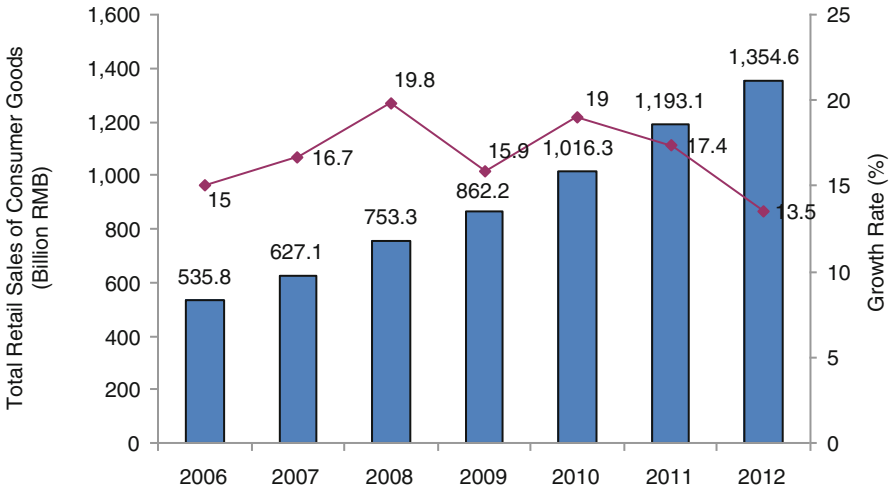

Fig. 4.4 Total retail sales of consumer goods and growth rate of Zhejiang Province for 2006–2012 (Source: Compiled from the *Statistical Bulletin of National Economic and Social Development (2006–2012) of Zhejiang Province*, published by the Statistics Bureau of Zhejiang Province)

4.1.1.3 Total Retail Sales of Consumer Goods[4]

Total retail sales of consumer goods of Zhejiang ranks top in China. During 2006–2012, the total retail sales of consumer goods of Zhejiang grew rapidly with an average annual nominal growth rate of 16.7 %, as shown in Fig. 4.4. In 2012, its total retail sales of consumer goods reached 1,354.6 billion RMB, an increase of 13.5 % compared with the previous year; excluding the price factor, the actual growth was 11.4 %.

4.1.1.4 Total Value of Import and Export Trade[5]

Zhejiang owns a well-developed export-oriented economy, thus is highly dependent on foreign trade. Influenced by the recent international financial crisis, its total value of import and export trade experienced a negative growth in 2009. Following the recovery in international economic situation, its total value of import and export trade rose again in 2010, with a growth rate climbing to 35 %. In 2011, its total value of import and export trade maintained a rapid growth of 22 %. Yet due to the sluggish recovery of global economy in 2012, the total growth in import and export trade was only 0.9 %, as shown in Fig. 4.5.

[4] All growth rates cited in this paragraph refer to nominal growth rate.

[5] All growth rates cited in this paragraph refer to nominal growth rate.

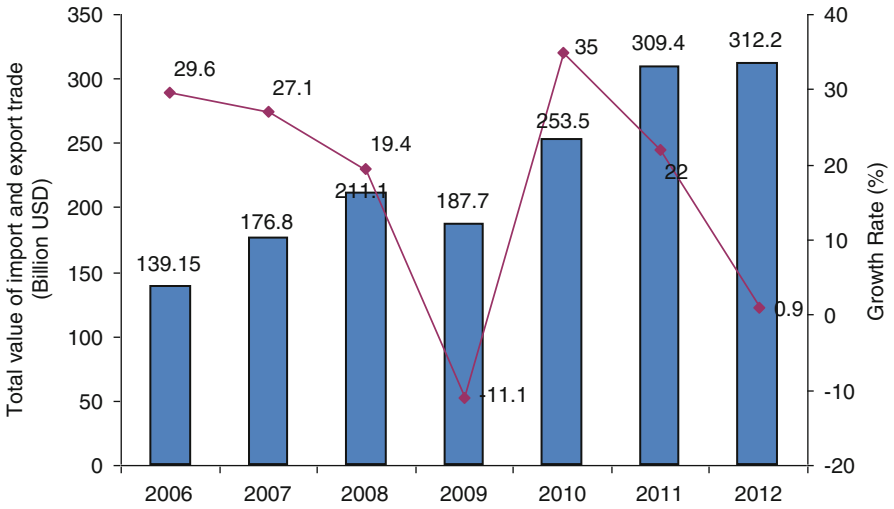

Fig. 4.5 Total value of import and export trade and growth rate of Zhejiang Province for 2006–2012 (Source*:* Compiled from the *Statistical Bulletin of National Economic and Social Development (2006–2012) of Zhejiang Province,* published by the Statistics Bureau of Zhejiang Province)

Table 4.1 Proportions of three industries in GDP of Zhejiang Province for 2006–2012

	Primary industry (%)	Secondary industry (%)	Tertiary industry (%)
2006	5.9	53.9	40.2
2007	5.5	54.1	40.4
2008	5.1	53.9	41.0
2009	5.1	51.9	43.0
2010	5.0	51.9	43.1
2011	4.9	51.3	43.8
2012	4.8	50.0	45.2

Source*:* Compiled from the *Statistical Bulletin of National Economic and Social Development (2006–2012) of Zhejiang Province,* published by the Statistics Bureau of Zhejiang Province

4.1.2 Structure of the Three Industries

In recent years, Zhejiang has adopted the policy of promoting the quality of its industrial development, improving and upgrading the industrial structure, and accelerating the transformation and upgrading of secondary industry and tertiary industry, on the basis of enlarging its overall industry scale. The proportions of three industries in GDP of Zhejiang Province for 2006–2012 are shown in Table 4.1. Compared with 2006, the proportion of added value of tertiary industry in regional GDP was increased by 5 percentage points in 2012, and that of the secondary industry was decreased by about 4 percentage points. The structure of the three industries is adjusted from 5.9: 53.9: 40.2 in 2006 to 4.8: 50: 45.2 in 2012.

4.1.3 Characteristics of Economic Development

Zhejiang is one of the provinces with the most developed economy and highest degree of opening-up in China. The main characteristics of its economic development are as follows.

1. Private economy is the main component of economic development.
   By the end of 2011, individual businesses had reached 2.3 million in number in Zhejiang, including 720,000 private enterprises; the economic aggregate of private enterprises accounts for over 60 % of regional GDP. Among the nation's top 500 private enterprises in 2011, 144 were from Zhejiang; this number ranks first in China for 13 consecutive years (Han Xu and Huang Ping 2012).

2. Market system for business trading is highly developed.
   Attributing to the huge commodity trading markets, Zhejiang has been the province with the most number of commodity markets, having largest scale and highest trade volume. By the end of 2011, Zhejiang had owned 4,212 commodity trading markets with total transaction volume of 1,450 billion RMB. Therein, 25 commodity markets achieved an annual trade volume above 10 billion RMB, with total transaction volume ranking at the top in China for 21 consecutive years.[6]

3. Characteristics of county economy and agglomerate economy are prominent.
   In 2010, the GDP of county administrative regions (totaling 59 counties and cities in the province, excluding municipal districts) in Zhejiang amounted to 50 % of the province's total GDP. More than 90 % of the province's counties and cities have cultivated and developed cluster economy (Mao Guanglie 2011). Promoting the transformation of cluster economy toward modern industrial cluster and accelerating the development of industrial cluster with international competitiveness have become one of the strategic focuses of industrial structure transformation and upgrading in Zhejiang.

4. Degree of export-oriented economy is high.
   Total volume of foreign trade in Zhejiang was 309.4 billion USD for 2011, accounting for about 8.5 % of the nation's total amount and ranking fifth nationwide. In 2012, the annual total value of foreign trade was 312.24 billion USD, an increase of 0.9 % compared with the previous year. The outstanding feature of export trade in Zhejiang lies in the high proportion of its private enterprises. For example, the export of private enterprises was 140.32 billion USD in 2012, showing a year-on-year growth of 8.5 %, which was higher than the average export growth of the entire province by 4.7 percentage points. It took up 62.5 % of the total gross export value of Zhejiang, grew by 2.7 percentage points from the previous year, and contributed 133.3 % to Zhejiang's export growth (Statistics Bureau of Zhejiang Province 2012).

[6] "Commodity trading market develops rapidly in Zhejiang," 2012-10-10. http://www.china.com.cn.

4.2 Development of Logistics Market in Zhejiang Province

Relying on the favorable location advantage and the vast industrial base, modern logistics industry in Zhejiang develops rapidly, with the scale of logistics market expanding continually and large notable logistics enterprises gathering. In the meantime, logistics facility and logistics service in Zhejiang are also improved with time and the level of informatization degree is elevated continually. This makes Zhejiang one of the regions with the highest logistics development level in China.

4.2.1 Scale of Logistics Market

4.2.1.1 Added Value of Logistics Industry

During 2007–2011, added value of logistics industry in Zhejiang has grown rapidly, with an annual average nominal growth rate of 14.8 %. In 2011, the added value of logistics industry in Zhejiang was 307 billion RMB, which represented a growth of 12.7 % compared with that of 2010, and accounted for of 9.6 % of the regional GDP of Zhejiang, as shown in Table 4.2.

4.2.1.2 Added Value of Transportation, Warehousing and Post Industries[7]

From 2006 to 2012, added value of transportation, warehousing and post industries in Zhejiang grew continually with a fluctuating growth rate, and the added value of 2012 was almost twice as that of 2006. In 2012, the added value of transportation, warehousing and post industries reached 127.7 billion RMB, showing a year-on-year growth of 6.7 %, as shown in Fig. 4.6.

Table 4.2 Added value of logistics industry and its proportion in regional GDP of Zhejiang Province for 2007–2011

	2007	2008	2009	2010	2011
Added value of logistics industry (billion RMB)	177	205.2	212	255	307
Regional GDP (billion RMB)	1,875.3	2,146.2	2,299	2,772.2	3,231.9
Proportion of added value of logistics industry in regional GDP (%)	9.5	9.4	9.3	9.4	9.6

Source: Compiled from http://www.zjol.com.cn/, http://www.chineseport.cn/, http://www.zj.stats.gov.cn/, the "12th Five-Year" Development Plan of Logistics Industry for Zhejiang Province, by Zhejiang Office, the National Bureau of Statistics of China

[7] All growth rates cited in this paragraph refer to actual growth rate.

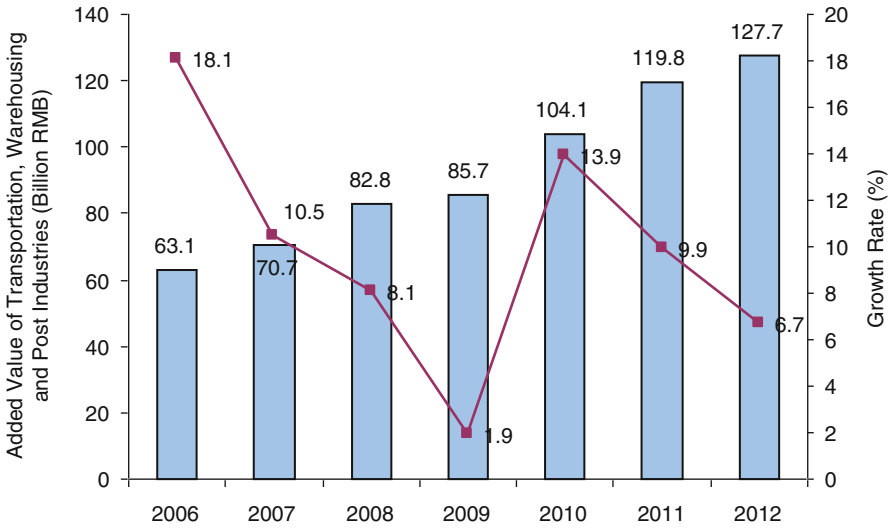

Fig. 4.6 Added value of transportation, warehousing and post industries and the growth rate of Zhejiang Province for 2006–2012 (Source*:* Compiled from the *Statistical Bulletin of National Economic and Social Development (2006–2012) of Zhejiang Province*, published by the Statistics Bureau of Zhejiang Province)

Table 4.3 Freight volume and freight turnover of Zhejiang Province for 2006–2012

	2006	2007	2008	2009	2010	2011	2012
Freight volume (billion tons)	1.4	1.53	1.47	1.51	1.71	1.86	1.91
Freight turnover (billion ton-kilometers)	436.4	496.2	538.5	566	711.2	862.7	918.3

Source: Compiled from the *Statistical Yearbook of Zhejiang Province (2012)*, the *Statistical Bulletin of National Economic and Social Development (2006–2012) of Zhejiang Province*, and http://www.askci.com/

4.2.1.3 Freight Volume and Freight Turnover

In 2012, railway, highway and waterway of Zhejiang accomplished freight turnover of 918.3 billion ton-kilometers in total, an increase of 6.4 % compared with the previous year. Therein, waterway was the main mode of transportation, which undertook over 80 % of the freight turnover, as shown in Tables 4.3 and 4.4.

4.2.1.4 Cargo Throughput of Airport

From 2006 to 2012, cargo throughput of airports in Zhejiang grew continually with an average annual growth rate reaching 9.8 %. In 2012, the seven freight airports of Zhejiang attained a total cargo throughput of 457.7 thousand tons, showing a year-on-year growth of 7.9 %. Cargo throughput of civil airports in Zhejiang Province for 2006–2012 is shown in Fig. 4.7.

Table 4.4 Freight volume finished by railway, highway and waterway of Zhejiang Province in 2012

Index	Unit	Value	Year-on-year growth (%)
Freight turnover	Billion ton-kilometers	918.3	6.4
In which: Railway	Billion ton-kilometers	29.1	−6.7
Highway	Billion ton-kilometers	152.6	6.3
Waterway	Billion ton-kilometers	736.6	7.0
Cargo throughput of coastal ports	Billion tons	0.93	7.0

Source: Compiled from the *Statistical Bulletin of National Economic and Social Development (2012) of Zhejiang Province,* published by the Statistics Bureau of Zhejiang Province

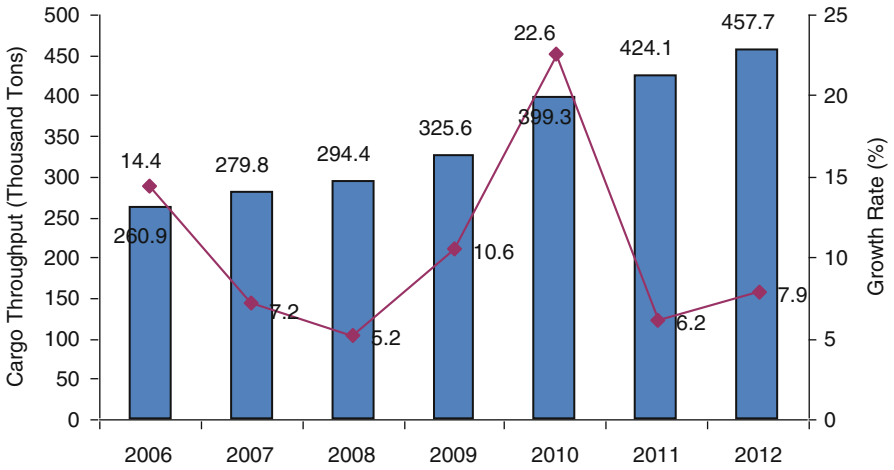

Fig. 4.7 Cargo throughputs of airports in Zhejiang Province and the growth rate for 2006–2012 (Source: Compiled from the *Statistical Bulletin of Nationwide Airports (2006–2012),* published by the Civil Aviation Administration of China)

4.2.2 Transportation Infrastructures

4.2.2.1 Conditions of Highway Construction

Highway is an important component of comprehensive transportation system in Zhejiang. By the end of 2011, total highway mileage of Zhejiang had reached 112,000 km, including 3,500 km[8] of expressways. The density of highway network in Zhejiang has reached 108.2 km/100 km^2, with Grade II or above highways taking up 15.2 % of the total highway mileage.[9]

[8] Transportation Department of Zhejiang Province. http://www.zjt.gov.cn/art/2012/9/25/art_6547_506008.html, 2012-09-25.

[9] The *"Twelfth Five-year" Plan for Transportation Development of Highway, Waterway and Civil Airport in Zhejiang.*

4.2.2.2 Conditions of Railway Construction

Presently, Zhejiang owns seven trunk line railways, viz. Shanghai – Kunming, Hu-Hang (Shanghai – Hangzhou) Passenger Transport Line, Xuancheng – Hangzhou, Yongtaiwen Railway,[10] Xiaoshan – Ningbo, Jinhua – Wenzhou, and Xinyi – Changxing. Besides, Zhejiang owns two local railways, Jinhua – Qiandao Lake and Quzhou – Changshan, as well as other branch railways.[11] At the end of 2010, total railway mileage of Zhejiang reached 1,775 km, with 65.6 % rate of double-track and 60.6 % rate of electrification. Meanwhile, Zhejiang Province opened five provincial channels and upgraded the density of road network to 1.74 km/100 km^2; the railway mileage owned per each 10,000 persons rose from 0.26 km in 2005 to 0.33 km in 2010.

4.2.2.3 Conditions of Waterway and Port

Zhejiang is endowed with superior conditions for waterway construction. . The whole province owns 6,646 km of coastline, occupying 21 % of the total coastline in China. The mileage of inland rivers open to traffic is 9,750 km, including 1,386 km of channels of class-IV and above.

Presently, there are four coastal ports in Zhejiang, namely, Ningbo – Zhoushan Port, Wenzhou Port, Taizhou Port, and Jiaxing Port. At the end of 2011, Zhejiang possessed 173 10,000-ton-class coastal berths (not counting Yangshan Port Area), having an annual overall throughput capacity of 830 million tons. Ningbo – Zhoushan Port is a noted world-class port with 239 container marine lines, including 130 ocean main routes connecting to more than 600 ports in over 100 countries and regions. In 2012, Ningbo – Zhoushan Port accomplished a cargo throughput of 744 million tons, ranking first among the world's seaports. Zhejiang has seven key inland ports, namely Hangzhou Port, Huzhou Port, Jiangxing Inland Port, Shaoxing Port, Ningbo Inland Port, Jinhua Lanxi Port and Lishui Qingtian Port, with an overall throughput capacity of 410 million tons.[12]

4.2.2.4 Conditions of Airport Construction

Zhejiang owns three international airports (Hangzhou, Ningbo and Wenzhou), four branch airports (Yiwu, Taizhou, Zhoushan and Quzhou), as well as Dongyang Hengdian Airport and Jiande Qiandao Lake Airport. Currently, Zhejiang has opened

[10] Yongtaiwen Railway, which starts from Ningbo to Wenzhou with a total length of 268 km, refers to a national Class I railroad providing mainly for passenger transport and secondarily for freight transport.

[11] "Railway network reaching all China's major cities within five hours will cover all counties of Zhejiang," http://zt-hzrb.hangzhou.com.cn/.

[12] "Overview of Zhejiang's Port Transport," Zhejiang Communications. http://www.zjt.gov.cn/col/col6554/index.html.

a total of 207 domestic and international routes, including 158 domestic routes and 49 international and regional routes. In 2011, the passenger throughput of civil aviation in Zhejiang reached 30.05 million person-times with cargo throughput of 420,000 tons, thus positioning it in the fifth place nationwide.[13]

4.2.3 Conditions of Logistics Informatization Construction

In recent years, Zhejiang has actively carried out logistics informatization construction and released the "Public Information System of Zhejiang Transport Logistics" in 2009. In the initial stage, this system consisted mainly of three software, viz. small-package express, common transportation, and general website. In 2011, Zhejiang launched the construction of Phase II Project of the Public Information Sharing Platform of National Transport Logistics and compiled the logistics information standards and technical guidance documents to expand the application and coverage area of its basic switching network.

Zhejiang has actively promoted the construction of electronic port and striven to create a "one-stop" customs clearance administrative platform, and has made some notable achievements. For example, it realized three leading acts in China: (1) initiating grid-connected operation with electronic port of China; (2) realizing interconnection with regional (Shanghai and Ningbo) or local electronic ports; (3) attaining seamless connection of international and domestic logistics platform. Moreover, by the end of 2012, electronic port of Zhejiang had independently developed and successfully operated 75 various business projects of government affairs; the total import and export enterprise users registered on the platform exceeded 110,000; daily page view of web portal broke through 20,000 times. This government affairs platform assists enterprises to save direct customs clearance cost of over one billion RMB, with all operational indicators ranking first among all local electronic ports in China. During the 2011–2015 planning period, Zhejiang has undertaken the construction and operation of several major pilot projects of Government policies, including the Pilot of Cross-border Trade E-Commerce Services in Zhejiang, the Public Information Platform of National Transport Logistics, and the Comprehensive Reform Merchant Network of Yiwu International Trade.

Besides, Zhejiang is continually carrying forward its port informatization construction. For example, Ningbo Port Co., Ltd. is continuously promoting the construction of intelligent port. Presently, it has established the business operations management, operations control, communication and supervision, comprehensive management, information service and other informatization systems, which further enhance Ningbo Port's leading position in informatization construction among domestic ports.[14]

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[13] "Overview of Zhejiang's Civil Aviation," Zhejiang Transportation http://www.zjt.gov.cn/.

[14] "Informatization construction of Ningbo Port Co., Ltd. Leads domestic ports," State-owned Assets Supervision and Administration Commission of Ningbo. http://gzw.ningbo.gov.cn/temprule_article/009.jsp?aid=24075.

4.2.4 Development of Logistics Enterprises

In the past few years, Zhejiang has witnessed a rapid growth in number of logistics enterprises, including domestic and well-known foreign firms; this has led to a diversified development pattern of co-existing privately-operated, State-owned and foreign-funded logistics enterprises. From 2006 to 2010, logistics enterprises in Zhejiang developed rapidly and there were over 300 transport logistics enterprises, each of which achieved an annual revenue of more than 30 million RMB.

First, private logistics enterprises typified by Transfar Logistics Co. and Lu Tong Logistics Co. emerged rapidly. Transfar Logistics Co. is a comprehensive and platform logistics enterprise providing highway logistics services. Transfar Highway Port is positioned as a "fourth-party logistics" firm, viz. an "integrated service provider of logistics platforms." It stresses on promoting informatization and standardization and actively integrates logistics resources, to establish clustered development platform of logistics enterprises. Such development platform centers on promoting information transaction and service efficiency, with networking as the carrier, and directs toward the improvement of overall supply chain efficiency. In addition, Lu Tong Logistics Co. has established intermodal logistics networks in various regions of China, set up a freight information network, and established over 40 dedicated freight lines. Having constructed the high-efficiency freight transport system, integrated through highway express, highway-railway combined transport and waterway-highway combined transport, Lu Tong Logistics Co. has become a comprehensive modern logistics enterprise; its service covers common freight, cargo stowage, warehousing and tallying, transaction, and packaging, distribution processing.[15]

Secondly, State-owned logistics enterprises such as Bada Logistics Co. have grown stronger continuously. Founded in 1984, Zhejiang's Bada Logistics Co. owns the logistics base integrating goods collection, shipment, warehousing and distribution, and the logistics network radiating over entire China. It possesses nearly 400 self-owned railway cars and a large e-commerce website of railway transportation. Owing to its excellent operations capability, Bada Logistics was designated as "China's Logistics Demonstration Base" by the Government in October 2012.

Lastly, a large number of internationally renowned logistics enterprises such as FedEx, Maersk and DHL have accelerated their business expansion in Zhejiang. For example, FedEx settled its China Transfer Center in Hangzhou in 2007 and DHL Global Forwarding set up its branch office in Wenzhou in 2011. And in 2005, Maersk Logistics (China) and Xunzhou Investment Co., Ltd. of Ningbo Economic and Technological Development Zone jointly invested and established the Blue Dragon Logistics Co., Ltd. This company mainly engages in the following businesses: (1) warehousing, material processing and distribution, cabinet loading and unloading; (2) construction and operation of warehousing facilities relating to transportation

[15] Lu Tong Logistics. http://www.zjltwl.com/book.asp?id=1.

service; (3) international marine transportation cargo warehousing, international container operation and holding site service, international freight forwarding, etc.

From an overall view, logistics enterprises in Zhejiang grow rapidly with business operations expanding continuously. More and more logistics enterprises are transforming from providing single transportation and warehousing service to providing all-around, multilevel and integrated services, and from simply undertaking logistics business to developing professional logistics services tailored to customers' specific needs.

4.2.5 Development of Logistics Parks

Since 2006, Zhejiang Province has laid the emphasis on promoting the construction of five different kinds of typical logistics parks, viz. Transfar Logistics Center (transport logistics type), Yiwu Logistics Park (commercial logistics type), Shaoxing Keqiao Logistics Park (manufacturing logistics type), Jiaxing Modern Logistics Park (comprehensive logistics type) and Meishan Bonded Port Area Logistics Park (international logistics type).[16]

For example, the Zhejiang Transfar "Highway Port Logistics" mode is aimed to realize the objective of "integrated operation and informatized management" of the two logistics subjects (the logistics enterprises and the social vehicles) within the platform, by constructing a large highway port platform to gather and integrate logistics resources. The Hangzhou Transfar Highway Port is the first platform of the logistics exploration and implementation of Transfar Highway Port, which is put into operation in April 2003. The platform covers a site of 0.37 km^2 with a total investment of 300 million RMB. Owning "six centers" in information transaction, transportation, warehousing, distribution, breakbulk express and management service, Zhejiang Transfar Highway Port gathers and integrates three resources in logistics service, logistics carrier and logistics demand. Currently, the platform has become the comprehensive modern logistics base of Hangzhou Bay and Yangtze River Delta region.

In addition, Zhejiang was approved for establishing the Meishan Bonded Port Area and Zhoushan Port Comprehensive Bonded Area. With a planned area of 7.7 km^2, Ningbo Meishan Bonded Port Area was established in February 2008 upon the approval of the State Council. It is the fifth bonded port area in China following those in Shanghai Yangshan, Tianjin Dongjiang, Dalian Dayao Bay and Hainan Yangpu. In June 2010, Ningbo Meishan Bonded Port Area was formally accepted by the joint inspection team of the State Council and put into operation in August 2010. In March 2012, the State Council approved the opening of the port in Meishan Bonded Port Area.

[16] The "Twelfth Five-year" Plan for Transportation of Highway, Waterway and Civil Airport in Zhejiang.

In September 2012, the State Council formally approved the establishment of Zhoushan Port Comprehensive Bonded Area with a total planned area of 5.85 km^2, divided into the island district and Qushan district. Therein, the main functional orientation of the island district is marine equipment manufacturing, marine bio-industry, electronic information industry and other advanced manufacturing industries, as well as warehouse logistics and import & export trade. The Qushan district emphasizes on developing the warehousing and distribution business of bulk commodities like coal, minerals, oil products, which will then be constructed into an important warehousing and transfer base of bulk commodities in China.

4.3 Development of Modern Logistics in Yiwu

Yiwu is the world's largest exhibition, transaction and circulation center of small commodities. In 2008, it was listed as one of the 18 distinctive regions of China's Reform and Opening-up. In 2011, the Pilot Plan for Comprehensive Reform of Yiwu International Trade was approved, and it became the tenth national pilot region for comprehensive reform after Pudong New District of Shanghai, Tianjin Binhai New District, etc. Benefiting from the well-developed commercial market system and rapid economic growth, Yiwu now becomes a major inland port of Zhejiang and the largest break-bulk cargo stowage logistics hub in China. The development of logistics enterprises of Yiwu presents some unique characteristics and immense potential.

4.3.1 Characteristics of Regional Logistics Nodal City

As one of the three "Customs Clearance" pilot cities designated by Zhejiang Provincial Government, Yiwu is one of the four logistics hubs with the busiest operation and largest business volume in Zhejiang. The *Overall Pilot Plan for Comprehensive Reform of Yiwu International Trade in Zhejiang* clearly specifies the goals to: "Support Yiwu to construct into an important nodal city for logistics of Yangtze River Delta; perfect the comprehensive transportation system and bring Yiwu into the overall strategic consideration of national transportation; support Yiwu to further reduce logistics cost in the region by relying on its transportation and market advantage, so as to provide a stable 'physical flow' of sustainable growth for important ports such as Shanghai Port, Ningbo – Zhoushan Port; participate in international economic cooperation and competition at a higher level."

Presently, Yiwu possesses four professional logistics stations- Phase I of Inland Port Station, International Logistics Center, Jiangdong Freight Market and Jiangbei Xiazhu Freight Market. The Customs Supervision Site of Yiwu International Logistics Center has become the largest inland international container supervision site in China. Yiwu Airport is included in the National "Twelfth Five-Year" Port

Opening Plan, and Yiwu Logistics Park is listed on the General Planning of National Highway Transportation Hubs. The "Yiwu Freight Index" is formally released. Yiwu has become one of the 30 national dynamic monitoring points of logistics informatization and is striving to elevate to an international land port city.[17]

4.3.2 Yiwu's Flourishing Market System as an Important Engine of Modern Logistics Development

Since the initial founding of small commodity market in China in 1982, Yiwu has formed the market system centered on China's Commodity City, supported by 11 specialized markets and over[18] 20 specialty streets, and matched with transportation, property right, labor force and other factor markets. More than 100,000 manufacturing enterprises and over 6,000 world-famous brands exhibit their products in Yiwu market year-round. Such scale enables Yiwu to be the bridge of commodity exchange between China and the world. More than 600 enterprises abroad set up office of business representatives in Yiwu, and over 8,000 foreign merchants reside in Yiwu to purchase small commodities. A host of high-end commercial resources congregate in Yiwu, including the Purchasing Center of the UN Refugee Agency, the Yiwu Purchase Information Center of the Ministry of Foreign Affairs Supply Department, the Yiwu Office of Carrefour Asia Procurement Headquarters, etc.[19] Yiwu is honored as the largest small commodity wholesale market in the world by the United Nations, the World Bank and other authorities. Commodities from the Yiwu market have been exported to 212 countries and regions; over 60 % of its market is export-oriented. In 2012, the gross turnover of Yiwu Peddlers' Market reached 75.88 billion RMB, showing a year-on-year growth of 11.9 %. Therein, the turnover of "China's Commodity City" was 58 billion RMB, showing a year-on-year growth of 12.6 %. The market turnover of Yiwu ranks at top of all China's major specialty markets for 22 consecutive years.[20]

Logistics system development of Yiwu is closely related to the development of Yiwu market. On one hand, as the global largest daily consumer goods circulation center, exhibition center and important commodity export base of China, the development of Yiwu market creates heavy logistics demands, leading to a prosperous development of modern logistics industry in Yiwu. On the other hand, the development and upgrading of Yiwu market system generate strong internal demand for modernized, efficient and intensified modern logistics industry. Both of the factors facilitate the functional expansion of the logistics system, which not only promotes the traditional simple cargo transportation, but also ushers in the unique consignment

[17] "Digit Yiwu," Yiwu Municipality, the People's Republic of China. http://www.yiwu.gov.cn.

[18] Communications market, household appliance market, flea market, motor city, Yiwu decoration market, material market, Yiwu agricultural trade market, furniture market, second-hand car trade market, timber market and publication center.

[19] "Market profile," Yiwu Municipality, The People's Republic of China. http://www.yiwu.gov.cn.

[20] "Digit Yiwu," Yiwu Municipality, The People's Republic of China. http://www.yiwu.gov.cn.

industry (See Sect. 4.3.5 for details). Meanwhile, the logistics industry of Yiwu has become the important assurance of Yiwu's market system development and the circulation of Yiwu's commodities globally and nationwide. The logistics industry in Yiwu is gradually transforming towards an international modern logistics industry.

4.3.3 Three-Dimensional Transport Network and International Channel Has Been Formed

Owning multiple transportation modes, Yiwu has formed a highly-developed logistics system of highway, railway and air transportation, enhanced by external transportation modes such as sea transportation of Shanghai and Ningbo. By road transportation Yiwu can directly reach 321 large and medium-sized cities of 31 provinces (cities and municipalities) in China, fully covering all major domestic cities. Its railway transshipment station can connect more than 20 major railway stations around the country. Its air freight volume rises stably and over 100 air logistics enterprises are stationed in Yiwu. With rapid growth of express volume, average daily shipment of domestic express items reaches 450,000 and that of international express items are above 20,000; its business volume ranks sixth nationwide. Short-distance transport system in the city is seamless with transport network nodes spreading all over the city, and parcel express delivery network covering 77 % of the city.[21]

Yiwu has also formed an efficient international logistics channel. By implementing the customs clearance practice of "customs declaration in other locations and release at ports," Yiwu realizes seamless connection with seaports and airports such as Shanghai, Ningbo, and Hangzhou to extend the port functions of cabinet booking, container pick-up to Yiwu, thus creating the fast channel of cargo export. Eighteen internationally known shipping companies including China Shipping, CMA-CGM, ZIM, APL and MSC have established offices in Yiwu. There have already been more than 1,000 various agencies of sea transportation, outward transportation and foreign trade in Yiwu. Yiwu has opened the special trains for international containers from Yiwu to Manzhouli and to Russia Railways. It is evident that Yiwu has realized the connection with global logistics network through channels of sea transportation, air transportation and railway, thus providing powerful support for its export-oriented economy and international commodity distribution of its market.

4.3.4 Function of Yiwu Port and Other Logistics Parks Being Gradually Perfected

Yiwu Logistics Park, jointly constructed by the Ministry of Transport and the Zhejiang Provincial government and a logistics base strongly supported by the Office of Zhejiang Communications, becomes the logistics demonstration base which is also listed into the General Planning of National Highway Transportation Hubs.

[21] "Digit Yiwu," Yiwu Municipality, The People's Republic of China. http://www.yiwu.gov.cn.

Yiwu Logistics Park covers an area of 5.29 km^2, expending a total investment of more than four billion RMB, and adopts the operational mode of "led by government and operated by enterprises." The logistics park consists of an international logistics park and a domestic logistics park. The former comprises of three blocks-Yiwu Inland Port Station, Yiwu Qingkou Supervision Center and Yiwu International Logistics Center; the latter is composed of Jiangdong Freight Station, West Logistics Center and Niansanli Logistics Center.

Specifically, the Phase I of Yiwu Inland Port Station, also termed "Yiwu Port," is a major project of Zhejiang and one of the three key "customs clearance" construction projects. The *Overall Pilot Plan for Comprehensive Reform of Yiwu International Trade in Zhejiang* clearly stipulated to "support the construction of modern logistics and collection/distribution platform," making "Yiwu Port" into an "origination port" and "destination port" with fully endowed functions. The station shall be designed as with all ports the customhouse, inspection and quarantine supervision, and customs clearance functions, so as to provide one-stop international logistics service. The overall floor space of Phase I project is about 43,000 m^2, including a large warehouse, a temporary parking lot, and buildings for service area and relevant facilities. The Phase II Project of Yiwu Port will consist of a supervision area (providing customs clearance functions such as inspection and quarantine supervision, customs inspection, container sealing, etc.) and warehouses (He Bailin 2012).

Yiwu International Logistics Center is established with the investment from Yiwu Consignment Development Corporation to adapt to the need of small commodity trade for internationalization development. Set with customhouse, inspection and quarantine and other supervisory authorities, and equipped with matching facilities such as warehousing, container yard, and business offices for customs declaration, shipping, ship agency, freight forwarding, foreign agency, bank, and insurance. The center serves as a public service platform for international logistics, following the "one-stop inland direct customs clearance" mode, and attracts companies such as China Shipping, CMA-CGM to settle here for international ocean shipping business.

4.3.5 Unique "Consignment" Mode

The vigorous development of small commodity market in Yiwu generates a vast amount of freight and great need for logistics, and so the "consignment" mode comes into being. This is an organized mode of realizing the connection and entrustment between transport carriers and customers with demand to achieve transportation through the intermediate transport agents. The main participants of consignment operation in Yiwu are customers (manufacturing enterprises, operators and dealers), carriers (individual tri-cyclers, operators, the consignment department and other distribution vehicles) and the "consignment office."

The "consignment office" refers to a professional transport agency, an organization of coordinating multiple agents. The work of the consignment office can be divided into two parts: the first is to contact the transport providers (carriers) to

utilize their idle transport capacity; the second is to draw customers or small commodity wholesalers with transport needs. Upon entrustment of the customer, the consignment office is responsible for delivering the customer's goods to the destination safely through the carriers, and the customer will pay a service fee based on certain charging standard. One feature of Yiwu Consignment Market lies in that the consignment office must acquire transport capability from carriers to realize transport service for itself owns no transport capability, so the logistics activities must be finished by other professional agents.

Information stream of the entire consignment business operation is mainly carried by paper document. Consignment generally features shipments of small quantity, large variety and multiple batches (Lou Qianfei 2007). In terms of transportation mode, road transportation is predominating and railway transportation, sea transportation and air transportation supplement, accomplishing the nationwide freight transport and distribution. As for the consignment path, small commodity market of Yiwu is a wholesale market blending distributing centers and production firms; hence the consignment paths can be classified into "Production firm – distributing center – destination market" and "Production firm – destination market." The former is the typical path of distributing center-based market while the latter refers to the typical path of production firm-based wholesale market.

4.3.6 Gradually Evident Effect of Logistics Price Depression

With the advantage of logistics network spreading all over the country and the low freight market, logistics cost of Yiwu only accounts for 12 % of the total cost of commodity, which is far lower than the average logistics cost level of Zhejiang or that of China, thus creating an obvious "price depression" phenomenon. Compared with neighboring counties and cities, cargos transshipped in Yiwu can have an average savings of freight cost of 20–30 %, on top of a faster delivery time. Therefore, it has attracted cargos from Ningbo, Hangzhou, Wenzhou and other neighbor regions or even Jiangxi and Fujian provinces to transship from here.

4.4 Summary

This chapter states the economic development conditions and development of logistics market in Zhejiang Province, and offers an explanation on the characteristics of modern logistics development in Yiwu. Regional GDP, industrial added value, total retail sales of consumer goods and total value of import and export trade in Zhejiang all exhibit a trend of stable growth over the recent years. Industrial development of Zhejiang is characterized by a well-developed private economy, a mature commercial market system, a developed county economy and cluster economy, as well as high level of export-oriented economy. As for the development of logistics market,

logistics market size, transportation infrastructure, logistics informatization construction and logistics park construction of Zhejiang all take the leading position in China. The diversified development pattern of privately-operated, State-owned and foreign-funded logistics enterprises comes in to being in Zhejiang. The development of Yiwu's logistics industry has several distinctive features: (1) it exhibits the characteristic of a regional logistics nodal city; (2) its well-developed market system is the important engine of modern logistics development; (3) it has formed a multi-dimensional transport network and international channel; (4) the functions of Yiwu Port and other logistics parks are being enhanced gradually; (5) Yiwu has created a unique "consignment" mode of logistics service; (6) the depression effect of Yiwu's logistics price is becoming gradually evident.

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Chapter 5
Logistics Development in Fujian Province

Jianhua Xiao

Situated in the southeast coastal region of China, Fujian Province is the important advanced manufacturing industry[1] base and ocean development base of this region. It also plays a leading role in China's opening-up to the world, especially in the economic and trade exchanges between China Mainland and Taiwan. Being the key area of logistics construction in southeast coastal region of China, the logistics industry in Fujian has shown a rapid development in recent years. Figure 5.1 is a map of Fujian Province showing its location and some key cities.

This chapter covers three sections. The first section introduces the economic development conditions in Fujian, including the major economic indicators, major industries and their development characteristics. The second section presents the development of logistics market in Fujian, including logistics market demand and supply. The third section discusses the logistics cooperation between Fujian Province and Taiwan, including the freight volume of direct transport, logistics channels, and the cooperation of logistics enterprises between the two regions.

[1] Advanced manufacturing industry refers to the manufacturing industry which continuously absorbs high & new technologies in electronic information, computer, machinery, materials, modern management technology, etc., and comprehensively applies these advanced manufacturing technologies to the whole process of R&D design, manufacturing, online inspection, marketing service and process management, thus realizing high-quality, efficient, low energy consumption, clean and flexible production.

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B. Liu et al. (eds.), *Contemporary Logistics in China: Assimilation and Innovation*, Current Chinese Economic Report Series, DOI 10.1007/978-3-642-55282-3_5,

Fig. 5.1 Map of Fujian Province

5.1 Economic Development Conditions in Fujian Province

In 2012, Fujian Province fully leveraged the location advantage and policy advantage to accelerate its economic transformation and upgrade and optimize its industrial structure. Meanwhile, all major economic indicators of Fujian in 2012 rose sharply, with its comprehensive economic strength further enhanced.

5.1.1 Major Economic Indicators of Fujian Province

5.1.1.1 Regional GDP

From 2006 to 2011, economy in Fujian maintained a stable and rapid development, and the regional GDP showed an average annual growth rate (AAGR) of 13.3 %. In 2012, the regional GDP of Fujian was 1,970.18 billion RMB, showing a year-on-year growth of 11.4 %,[2] with the growth rate ranking second among coastal provinces and cities. Regional GDP and growth rate of Fujian from 2006 to 2012 are shown in Fig. 5.2.

[2] In this chapter, price variations have been taken into consideration when calculating the growth rate of the economic indicators such as GDP, industrial added value and total value of import and export trade; so they refer to actual growth rate unless otherwise specified.

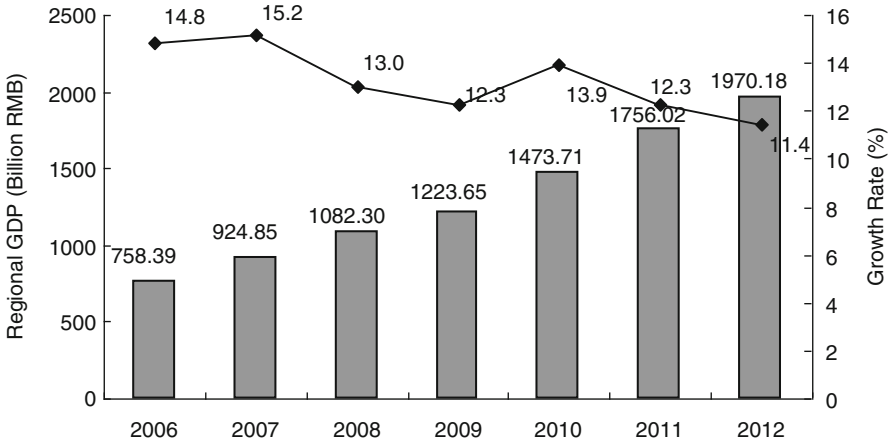

Fig. 5.2 Regional GDP and growth rate of Fujian Province for 2006–2012 (*Source:* Compiled from the *Statistical Yearbook (2008–2012) of Fujian Province* and the *Statistical Bulletin of National Economic and Social Development (2012) of Fujian Province*, published by the Statistics Bureau of Fujian Province)

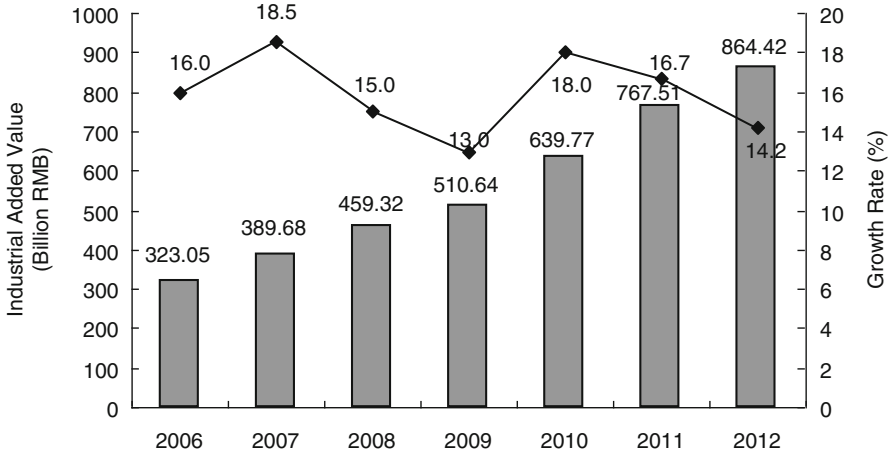

Fig. 5.3 Industrial added value and growth rate of Fujian Province for 2006–2012 (*Source:* Compiled from the *Statistical Bulletin of National Economic and Social Development (2006–2012) of Fujian Province*, published by the Statistics Bureau of Fujian Province)

5.1.1.2 Industrial Added Value

From 2006 to 2011, the industrial added value of Fujian showed a rapid growth with an AAGR of 16.2 %. In 2012, Fujian achieved industrial added value of 864.42 billion RMB with a year-on-year growth of 14.2 %, which was 6.3 percentage points higher than the national average growth rate, as shown in Fig. 5.3. Therein,

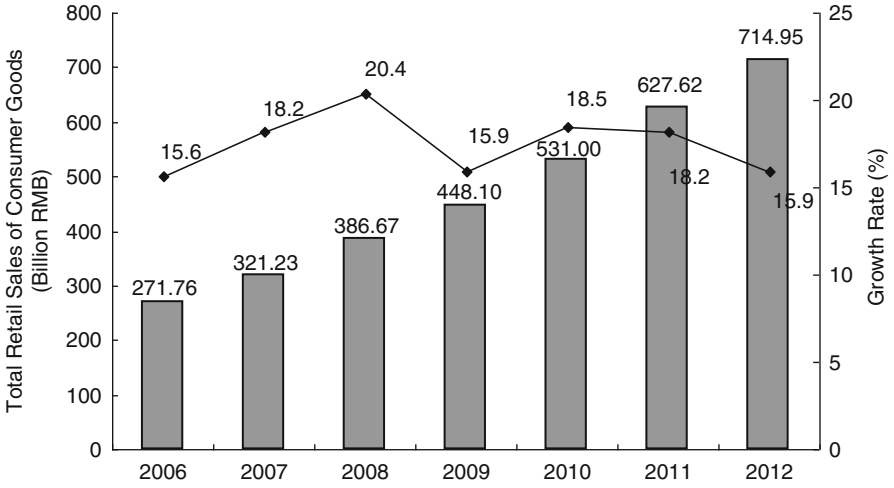

Fig. 5.4 Total retail sales of consumer goods and growth rate of Fujian Province for 2006–2012 (*Source:* Compiled from the *Statistical Yearbook (2012) of Fujian Province* and the *Statistical Bulletin of National Economic and Social Development (2012) of Fujian Province*, published by the Statistics Bureau of Fujian Province)

added value of light industry was 390.42 billion RMB, showing a year-on-year growth of 15.5 %, while that of heavy industry was 395.21 billion RMB, representing an increase of 14.9 % compared with that of the previous year. The growth rate of light industry is slightly higher than that of heavy industry.

5.1.1.3 Total Retail Sales of Consumer Goods

From 2006 to 2011, total retail sales of consumer goods rose rapidly in Fujian, with an AAGR of 18.2 %. In 2012, total retail sales of consumer goods of Fujian was 714.95 billion RMB, which showed a year-on-year growth of 15.9 % (Statistics Bureau of Fujian Province 2013) and was 3.8 percentage points higher than national average growth rate. Therein, total retail sales of consumer goods of three major cities in Fujian, i.e., Fuzhou, Quanzhou and Xiamen were 225.90, 166.31 and 88.21 billion RMB, respectively, with the sum accounting for 67.2 % of the total in Fujian. Total retail sales of consumer goods and growth rate of Fujian from 2006 to 2012 are shown in Fig. 5.4.

5.1.1.4 Total Value of Import and Export Trade

Foreign-trade dependency of Fujian is high. Over the past years, import and export trade took up a significant proportion in Fujian's GDP and maintained a persistent growth. The only exception was in 2009 when the international financial crisis

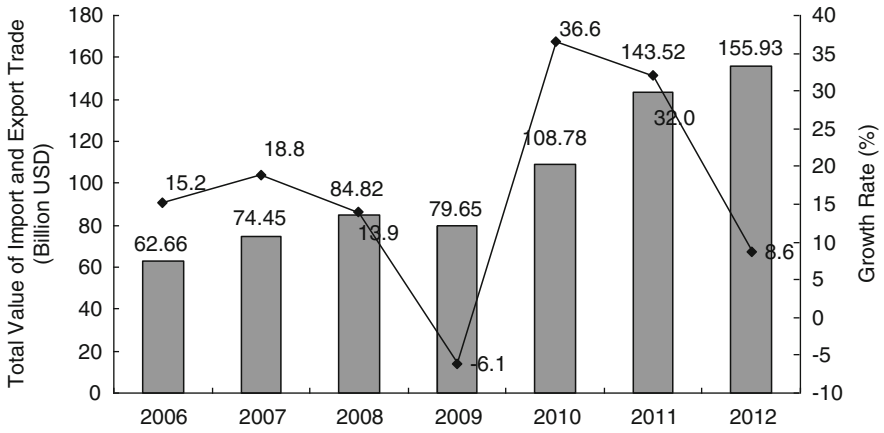

Fig. 5.5 Total value of import and export trade and growth rate of Fujian Province for 2006–2012 (*Source:* Compiled from the *Statistical Yearbook (2012) of Fujian Province* and the *Statistical Bulletin of National Economic and Social Development (2012) of Fujian Province*, published by the Statistics Bureau of Fujian Province)

erupted and the total value of import and export trade in Fujian showed a decline. Along with the gradual recovery of international economy in 2010 and 2011, import and export trade of Fujian rebounded sharply. In 2012, total value of import and export trade in Fujian reached 155.93 billion USD, which showed a year-on-year growth of 8.6 % and was 2.4 percentage points higher than national average growth rate, as shown in Fig. 5.5. Therein, total value of export trade reached 97.84 billion USD with a year-on-year growth of 5.4 %, and total value of import trade was 58.09 billion USD with a year-on-year growth of 14.6 %, hence showing a favorable balance of trade of 39.75 billion USD (Statistics Bureau of Fujian Province 2013).

The US and EU are two major trade partners of Fujian. In 2012, Fujian accomplished a total trade volume of 22.61 and 21.75 billion USD with the US and EU, respectively. In addition, trade between Fujian and ASEAN grows rapidly in the last few years with a total trade volume close to the two major trade partners. In 2012, total trade volume of Fujian to ASEAN reached 21.54 billion USD, showing a year-on-year growth of 17.6 %.

5.1.2 Industrial Structure and Characteristics

5.1.2.1 Industrial Structure of Fujian Province

Recently, industrial structure of Fujian Province has undergone continual adjustment, and the ratios of three industries are readjusted from 11.4: 48.7: 39.9 in 2006 to 9.0: 52.2: 38.8 in 2012. Therein, the proportion of added value of primary industry shows a downward trend year by year, the proportion of secondary industry,

Table 5.1 Structure of the three industries of Fujian Province for 2006–2012

	Primary industry		Secondary industry		Tertiary industry	
Year	Added value (billion RMB)	Proportion (%)	Added value (billion RMB)	Proportion (%)	Added value (billion RMB)	Proportion (%)
2006	86.60	11.4	369.50	48.7	302.28	39.9
2007	100.21	10.8	447.64	48.4	377.00	40.8
2008	115.82	10.7	531.84	49.1	434.64	40.2
2009	118.27	9.7	600.53	49.1	504.85	41.3
2010	136.37	9.3	752.28	51.0	585.06	39.7
2011	161.22	9.2	906.92	51.6	687.87	39.2
2012	177.65	9.0	1,028.86	52.2	763.67	38.8

Source: Compiled from the *Statistical Yearbook (2012) of Fujian Province* and the *Statistical Bulletin of National Economic and Social Development (2012) of Fujian Province*, published by the Statistics Bureau of Fujian Province

propelled by its three pillar industries, viz. electronic information, machinery equipment and petrochemical industry, rises continually, and that of the tertiary industry decreases slightly, as shown in Table 5.1.

5.1.2.2 Main Characteristics of Industrial Development

Emergence of Industrial Clusters

The three pillar industries of Fujian, viz. electronic information, machinery equipment and petrochemical industry have developed rapidly since 2006, with increasing level of industry clustering. In terms of electronic information, four industrial clusters of flat-panel display, software, semiconductor lighting and solar photovoltaic, and mobile communication have been formed in Fuzhou, and Xiamen.

In terms of machinery equipment, six industrial clusters of automobile and parts in Fuzhou, automobile and parts in Xiamen, engineering machinery in Xiamen, transportation and special-purpose equipment manufacturing in Longyan, motor and electrical appliance in Fu'an, and machinery equipment in Quanzhou were formed. As for petrochemical industry, four industrial clusters of coastal petrochemical bases were formed, namely, petrochemical base in Meizhou Bay, Gulei Petrochemical Base in Zhangzhou, Jiangyin Chemical New Materials Base in Fuzhou and Ningde Base on west side of Taiwan Strait.

Marine Industry Develops Rapidly

Since 2006, Fujian Provincial government has successively issued various policies and measures, including the *Opinions on Accelerating Marine Economy Development* and the *Development Planning for Emerging Marine Industry in Fujian*, to greatly develop its marine economy. In 2012, the gross ocean production of Fujian reached

522.0 billion RMB, which showed a year-on-year growth of 18.1 % and amounting to 26.5 % of the regional GDP of Fujian, and ranking fifth in China.

Currently, Fujian has cultivated 10 eco-typical marine cultivation bases and 10 marine products processing bases, which become the emerging marine bio-pharmacy R&D base of southeast coastal region in China and the important base of ocean energy development and comprehensive seawater utilization in China. During 2011–2015, Fujian Province will lay the emphasis on developing six marine economy intensive areas by taking Fuzhou and the "Xiamen – Zhangzhou – Quanzhou" areas as the core of this establishment. It is expected that by the end of 2015, gross ocean production of Fujian will have reached 730 billion RMB, accounting for over 28 % of the province's GDP.

Active Industrial Cooperation and Exchange Between Fujian and Taiwan

Since 2006, Fujian Province has fully leveraged the location advantage to Taiwan and the Government's support for initial policy tryout, to continuously extend the scale of industrial cooperation with Taiwan. By the end of 2012, there had been 3,953 Taiwan-funded enterprises in Fujian, taking up 15.8 % of the total such enterprises in the Mainland and ranking third among all provinces and cities. In 2012, registered capital of Taiwan-funded enterprises in Fujian was 5.74 billion USD, occupying 12.5 % of the total amount by such enterprises in the Mainland and ranking second among all provinces and cities. There have been 763 Taiwan-funded enterprises, each of which with investment of above 10 million USD in Fujian, and more than 50 enterprises among the "Top Hundred" enterprises in Taiwan have come to invest in Fujian. In 2012, there were 279 Taiwan-funded enterprises newly settled in Fujian infusing a total investment of 685 million USD, ranking first in foreign capital in China. Hence Fujian has become one of the most vigorous and concentrated areas of Taiwanese investment (Li Xiangjuan 2013).

The scope of Fujian – Taiwan industrial cooperation has been continually extended, from manufacturing industry to agriculture and forestry, financial service industry, cultural creativity industry and other fields. The form of industrial cooperation has also transitioned from "one-way" to "mutual" investment. By the end of 2010, more than 20 Fujian enterprises had invested in Taiwan, spreading over various industries such as fruit & vegetable, exhibition, transportation & logistics, etc. The number of Fujian enterprises investing in Taiwan and their investment scale ranked first among all provinces in China. In 2012, Fujian accomplished a total investment of 83.02 million USD to Taiwan, showing a year-on-year growth of 25 times.

5.2 Development of Logistics Market in Fujian Province

Relying on its favorable location advantage, rapid development of regional economy and strong support of relevant policies by the Government, Fujian Province builds a favorable development trend in logistics. The market size of logistics

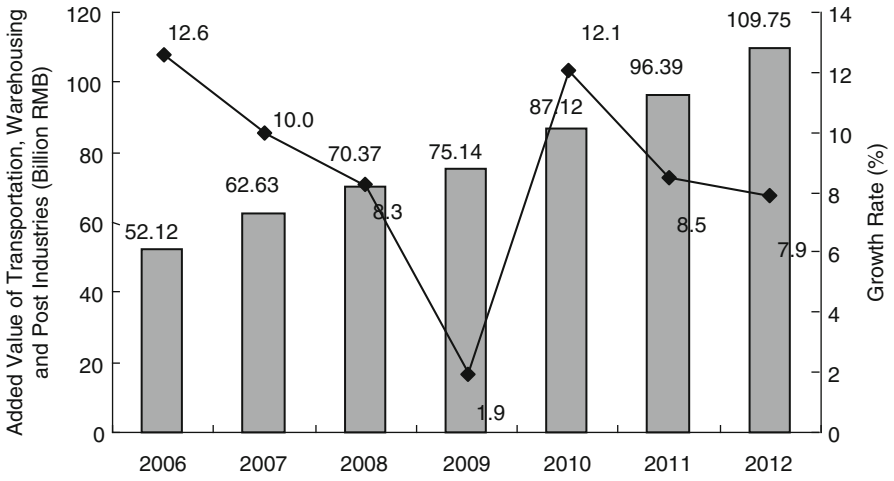

Fig. 5.6 Added value and growth rate of transportation, warehousing and post industries of Fujian Province for 2006–2012 (*Source:* Compiled from the *Statistical Yearbook (2012) of Fujian Province* and the *Statistical Bulletin of National Economic and Social Development (2012) of Fujian Province*, published by the Statistics Bureau of Fujian Province)

demand has expanded continuously and the logistics infrastructure has gradually been perfected. Logistics enterprises grew continually, with informatization level improved continuously and logistics supply capacity and level promoted rapidly.

5.2.1 Logistics Market Demand of Fujian Province

5.2.1.1 Added Value of Transportation, Storage and Postal Service

From 2006 to 2011, the transportation, warehousing and post industries in Fujian grew steadily with AAGR of 8.1 %. In 2012; these industries achieved an added value of 109.75 billion RMB, showing an increase of 7.9 % compared with that of previous year, as shown in Fig. 5.6 (Statistics Bureau of Fujian Province 2013).

5.2.1.2 Freight Volume and Freight Turnover

From 2006 to 2011, freight volume of Fujian showed a trend of overall growth with AAGR of 11.2 %, as shown in Fig. 5.7. In 2012, Fujian Province achieved a total freight volume of 844 million tons, representing a year-on-year growth of 12.2 %.

From 2006 to 2011, freight turnover of Fujian increased stably with AAGR of 12.3 %. In 2012, Fujian Province achieved freight turnover of 387.77 billion ton-kilometers, showing a year-on-year growth of 13.9 %, as shown in Fig. 5.8.

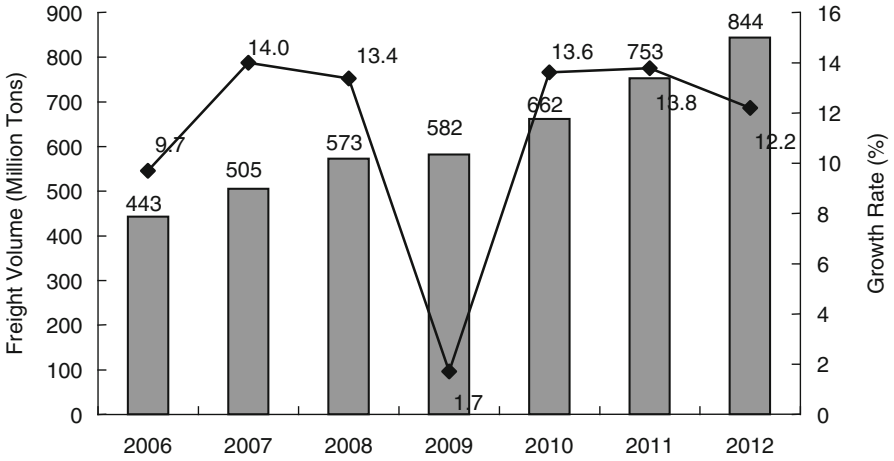

Fig. 5.7 Freight volume and growth rate of Fujian Province for 2006–2012 (*Source:* Compiled from the *Statistical Yearbook (2012) of Fujian Province* and the *Statistical Bulletin of National Economic and Social Development (2012) of Fujian Province*, published by the Statistics Bureau of Fujian Province)

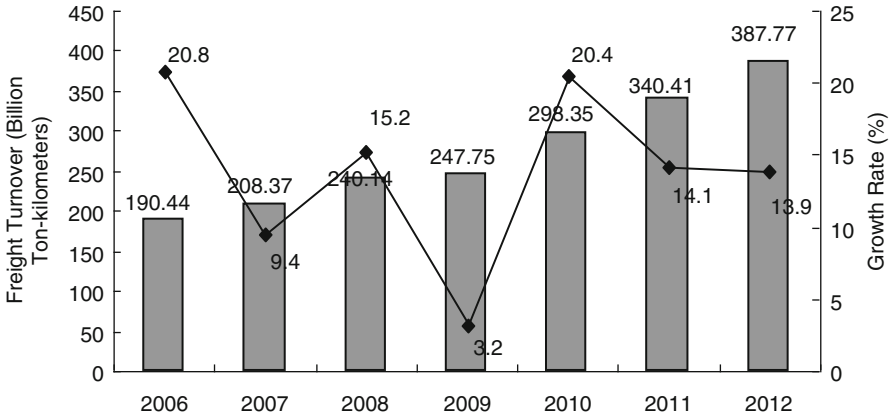

Fig. 5.8 Freight turnover and growth rate of Fujian Province for 2006–2012 (*Source:* Compiled from the *Statistical Yearbook (2012) of Fujian Province* and the *Statistical Bulletin of National Economic and Social Development (2012) of Fujian Province*, published by the Statistics Bureau of Fujian Province)

Highway transport and waterway transport, as the main freight mode of Fujian Province, their total freight volume and freight turnover took up more than 90 % of the freight activities in recent years. Freight volume and freight turnover of Fujian for 2006–2012 are shown in Table 5.2 (Statistics Bureau of Fujian Province 2013).

Table 5.2 Freight volume and freight turnover of Fujian Province for 2006–2012 (Freight volume: million tons; freight turnover: billion ton-kilometers)

	Total		Railway		Highway		Waterway	
Year	Freight volume	Freight turnover	Freight volume	Freight turnover	Freight volume	Freight turnover	Freight volume	Freight turnover
2006	443.04	190.44	36.46	20.17	298.06	26.63	108.41	143.49
2007	505.00	208.37	35.95	20.97	348.29	31.74	121.30	155.38
2008	572.54	240.14	36.81	20.78	383.67	48.36	151.93	170.84
2009	582.31	247.75	36.31	18.27	403.17	50.72	142.71	178.59
2010	661.59	298.35	37.65	18.42	455.75	57.83	168.03	221.89
2011	752.72	340.41	38.26	18.79	525.58	65.95	188.72	255.43
2012	844.17	387.77	38.68	18.11	594.31	77.11	211.00	292.30

Source: Compiled from the *Statistical Yearbook (2012) of Fujian Province* and the *Statistical Bulletin of National Economic and Social Development (2012) of Fujian Province*, published by the Statistics Bureau of Fujian Province

5.2.1.3 Cargo Throughput at Ports

From 2006 to 2011, cargo throughput at ports of Fujian showed an overall rapid growth with AAGR of 9.5 %, as shown in Fig. 5.9. In 2012, cargo throughput at ports of Fujian reached 414 million tons, showing a year-on-year growth of 11.0 %. Therein, foreign trade cargo throughput was 167 million tons, showing a year-on-year increase of 10.0 %; and container throughput broke through 10 million TEUs and reached 10.73 million TEUs, showing a year-on-year growth of 10.6 % (Statistics Bureau of Fujian Province 2013).

Fuzhou, Xiamen and Quanzhou are the main ports of Fujian, with the cargo throughput at ports accounting for more than 85 % of the throughput at coastal ports in Fujian Province. Cargo throughput at all ports of Fujian Province for 2006–2012 is shown in Table 5.3.

5.2.1.4 Cargo Throughput at Airports

From 2006 to 2011, cargo throughput at airports of Fujian showed a continuous increase with AAGR of 10.6 %. In 2012, cargo throughput at airports of Fujian was 405.78 thousand tons, showing a year-on-year growth of 6.72 %, as shown in Fig. 5.10.

Xiamen Gaoqi International Airport and Fuzhou Changle International Airport, as the main airports of Fujian, their total cargo throughput took up 90.8 % of the province's total cargo throughput at airports in 2012. Therein, cargo throughput of Gaoqi International Airport was 271.5 thousand tons, showing a year-on-year growth of 4.2 %; and that of Fuzhou Changle International Airport was 96.9 thousand tons, gaining a year-on-year growth of 10.7 %, as shown in Table 5.4.

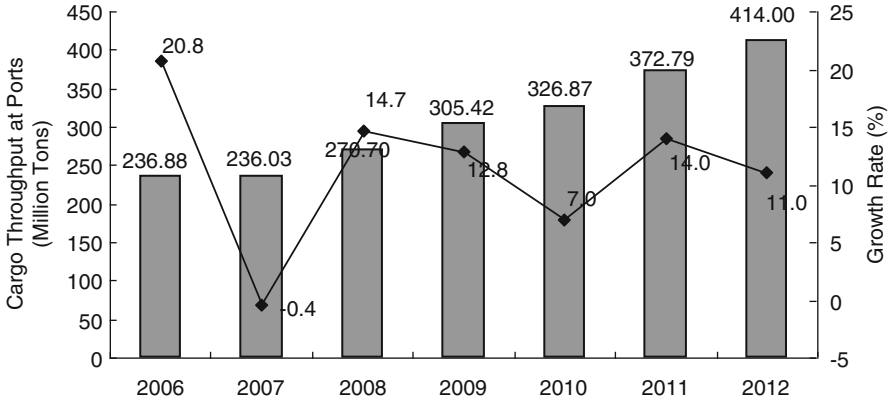

Fig. 5.9 Cargo throughputs at ports of Fujian Province and the growth rate for 2006–2012 (*Source:* Compiled from the *Statistical Yearbook (2012) of Fujian Province* and the *Statistical Bulletin of National Economic and Social Development (2012) of Fujian Province*, published by the Statistics Bureau of Fujian Province)

Table 5.3 Cargo throughput at all ports of Fujian Province for 2006–2012

Year	Total (million tons)	Cargo throughput (million tons)					
		Fuzhou port	Xiamen port	Quanzhou port	Ningde port	Meizhou bay port	Zhangzhou port
2006	236.88	88.48	77.92	51.35	4.47	13.01	1.65
2007	236.03	64.33	81.17	62.16	6.91	16.13	5.33
2008	270.70	67.03	97.02	72.24	10.07	18.02	6.32
2009	305.42	80.94	110.96	76.66	12.41	15.43	9.02
2010	326.87	71.25	127.28	84.55	14.20	17.56	12.03
2011	372.79	102.21	156.54	93.30		20.74	
2012	413.59	114.10	172.27	103.72		23.50	

Note: Zhangzhou Port was merged into Xiamen Port since 2011 and Ningde Port was merged into Fuzhou Port since 2011

Source*:* Compiled from the *Statistical Yearbook (2012) of Fujian Province*, published by the Statistics Bureau of Fujian Province

5.2.2 Conditions of Transport Infrastructure

5.2.2.1 Highway Construction

By the end of 2012, Fujian had 11 provincial expressways with total expressway mileage of 6,152.2 km. Therein, four expressways lead to the Yangtze River Delta, three lead to the Pearl River Delta, and four lead to the Central and Western regions. The distribution of expressways and national roads in Fujian Province is shown in Table 5.5.

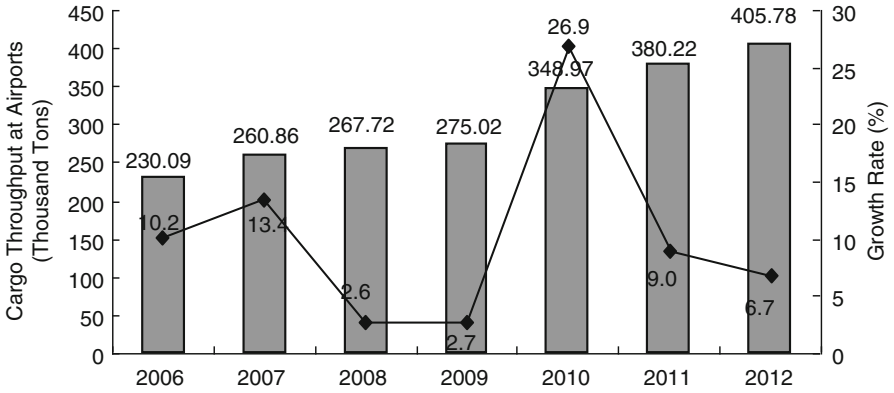

Fig. 5.10 Cargo throughputs at airports of Fujian Province and the growth rate for 2006–2012 (Source: Compiled from the *Statistical Bulletin of Nationwide Airports (2006–2012)*, published by the Civil Aviation Administration of China)

Table 5.4 Cargo throughput at airports of Fujian Province and their rankings in 2012

Airport	Nationwide ranking	Cargo throughput (thousand tons)	Growth rate (%)
Xiamen Gaoqi International Airport	8	271.47	4.2
Fuzhou Changle International Airport	22	96.95	10.7
Quanzhou Jinjiang Airport	38	35.71	14.4
Wuyishan Airport	86	1.66	97.4
Longyan Guanzhishan Airport	170	–	–

Source: Compiled from the *Statistical Bulletin of Nationwide Airports (2012)*, published by the Civil Aviation Administration of China

Table 5.5 Distribution of expressways and national roads in Fujian Province

Name of road network		Composition of road network
Expressway	Two longitudinal expressways	Shenyang – Haikou Expressway (G15) and Changchun – Shenzhen Expressway (G25)
	Six horizontal expressways	Ningde – Shangrao Expressway (G1514), Fuzhou – Yinchuan Expressway (G70), Putian – Yongding Expressway (S10), Quanzhou – Nanning Expressway (G72), Xiamen – Shaxian Expressway (S30) and Xiamen – Chengdu Expressway (G76)
National highway	Two longitudinal highways	Beijing – Fuzhou National Highway (104) and Fuzhou – Lanzhou National Highway (316)
	Two horizontal highways	Xiamen – Chengdu National Highway (319) and Fuzhou – Kunming National Highway (324)

During 2011–2015, Fujian will endeavor to construct the beltway in its key cities including Fuzhou, Xiamen and Quanzhou, and further improve the rural highway network. It is expected that by 2015, total highway mileage of Fujian will exceed 100,000 km. Therein, expressway will reach 5,000 km with the number of provincial expressways increased to 17.

5.2.2.2 Railway Construction

In recent years, railway construction in Fujian is mainly addressed in the following aspects: (1) accelerating the construction of coastal express railroad of Wenzhou – Fuzhou, connecting the Yangtze River Delta, as well as the express railroad of Fuzhou – Xiamen and Xiamen – Shenzhen, connecting the Pearl River Delta; (2) accelerating the construction of Longyan – Xiamen express railroad, connecting the Central and Western Regions, and Nanchang – Fuzhou express railroad, connecting the Central and Northern Regions; (3) transforming and upgrading the railways of Yingtan – Xiamen, Zhangping – Longchuan and Zhangping – Xiaocuo Port of Meizhou Bay.

In 2012, Fujian owned six provincial railways leading to Jiangxi, Guangdong and Zhejiang provinces. By the end of the same year, the length of railways in operation of Fujian had reached 2,277 km, with road network density of 18.4 km/1,000 km^2.

During 2011–2015, Fujian Province will accelerate the construction of new main line railways and branch railways, expand and rebuild the capability of existing railways, continue improving its railway network system and expanding its provincial railways. By the end of 2015, railway mileage of Fujian will have reached 4,800 km and the number of provincial railways will be more than 10. And eventually, Fujian will have completed the rapid transportation channels with greater transport capacity, connecting Western Taiwan Straits Economic Zone and Yangtze River Delta, Pearl River Delta and the Central and Western Regions.

5.2.2.3 Seaport Construction

Owning to its long coastline of more than 3,324 km, Fujian ranks first in China in terms of deepwater port resources. By the end of 2011, Fujian's ports owned 454 productive quay berths, including 129 berths of 10,000 tons and above (Transportation Department of Fujian Province 2012).

Fujian owns three clusters of ports in Fuzhou, Meizhou Bay and Xiamen, as shown in Fig. 5.11. Therein, Xiamen Port refers to the international shipping hub and international container transshipment center, specializing in container transportation, supplemented by break-bulk cargos transportation, and emphasizing on simultaneous development of both passenger and freight transport. Fuzhou Port is an international shipping hub port, specializing in container and large bulk cargo transportation, while Meizhou Bay Port[3] refers to the main hub port complimenting with large bulk cargo and container transportation.

[3] Meizhou Bay Port was formed in 2012 by merging the four port areas around the original Meizhou Bay Port (Xiaocuo Port Area, Douwei Port Area, Xiuyu Port Area and Dongwu Port Area), the three port areas of Quanzhou Port (Quanzhou Bay Port Area, Shenhu Bay Port Area and Weitou Bay Port Area) and the Xinghua Bay Port Area of Putian Port.

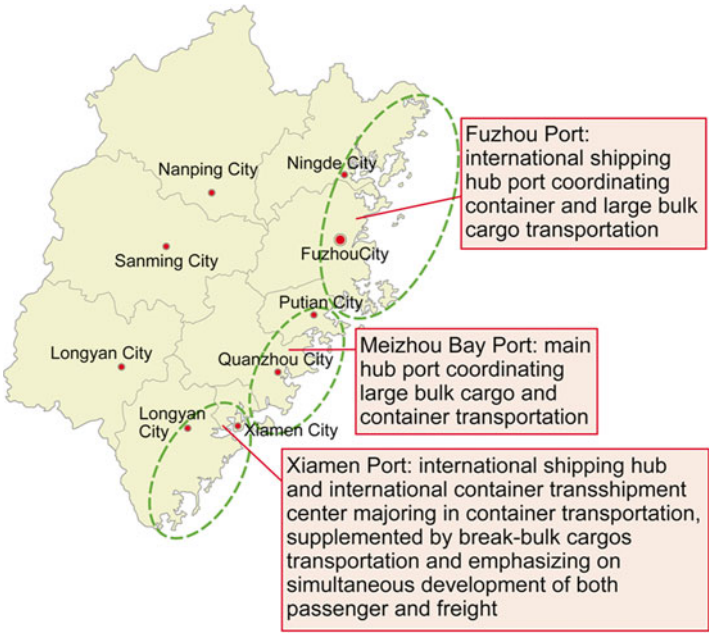

Fig. 5.11 Layout map of port clusters in Fujian Province (Source: Compiled from Special Planning on "Twelfth Five-year Plan" Comprehensive Transportation System Development of Fujian Province, published by the People's Government of Fujian Province)

By the end of 2015, throughput capacity of coastal ports in Fujian[4] will have reached 550 million tons. Therein, container throughput capacity will have reached 17 million TEUs and the number of deepwater berths of coastal ports will be about 200.[5]

5.2.2.4 Airport Construction

Since 2006, Fujian Province has witnessed a rapid development in airport construction and presently has five airports, namely, Xiamen Gaoqi International Airport, Fuzhou Changle International Airport, Quanzhou Jinjiang Airport, Wuyishan Airport and Longyan Guanzhishan Airport. Meanwhile, the Fujian government has started the construction of Sanming Shaxian Airport, Ningde Airport and Putian Airport. Pintan Airport and Zhangzhou Airport are also being planned. The layout map of airports in Fujian is shown in Fig. 5.12.

[4] The maximum feasible quantity of cargos a port can handle during a certain period of operation.

[5] The "Twelfth Five-year" Development Plan for Transportation of Fujian Province, the People's Government of Fujian Province, 2011-05-18.

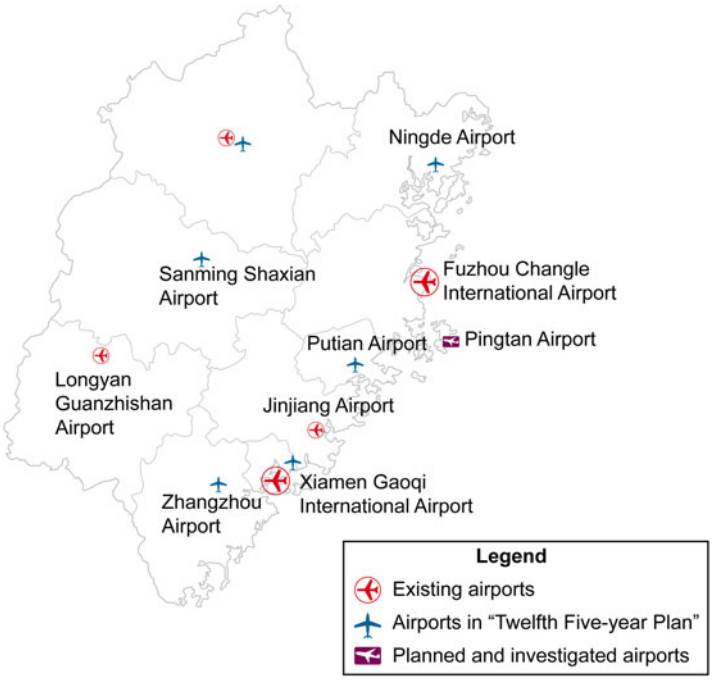

Fig. 5.12 Layout map of airports in Fujian Province (Source: Compiled from Special Planning on "Twelfth Five-year Plan" Comprehensive Transportation System Development of Fujian Province, published by the People's Government of Fujian Province)

Being the most important international aviation hub between Yangtze River Delta and Pearl River Delta, Xiamen Gaoqi International Airport is regarded as the important main line airport and regional aviation hub airport of south east coastal areas. In 2012, Xiamen Gaoqi International Airport accomplished a cargo throughput of 260.6 thousand tons, ranking eighth in China. Fuzhou Changle International Airport is also the main international airport of Fujian, currently having 66 air routes. In 2012, Fuzhou Changle International Airport realized a cargo throughput of 96.9 thousand tons, ranking 22nd in China.

During 2011–2015, Fujian will be finishing the expansion and rebuilding of five existing airports and the construction of Sanming Shaxian Airport. In the meantime, Fujian Province will actively promote the relocation and reconstruction of Xiamen New Airport, Wuyishan Airport, etc. By the end of 2015, cargo throughput of Fujian will have surpassed 700,000 tons, and have formed the airport network of combining the main lines and branch lines centered on Fuzhou Changle International Airport and Xiamen International Airport.

5.2.3 Development of Logistics Information Platform

In recent years, Fujian has been enhancing the construction of the logistics information platform to promote its logistics service level. In 2010, Fujian's electronic port information platform was successively opened for operation in all cities of the province, covering sea transportation, air transportation, logistics parks, information value-added services and other fields. This platform successfully realized the connection with Taiwan's Trade-Van information platform, thus becoming the first local electronic port information platform in China Mainland to connect with Taiwan's port information platform.

In May 2011, the Fujian Transportation Logistic Public Information Platform was formally opened. The platform connects to China Communications Logistics LOGINK System longitudinally and links to other industrial logistics public information platforms such as commerce, steel and mineral horizontally. Currently, the platform has launched a pilot project to connect 14 highway transport logistics enterprises in Fujian, with a daily electronic waybill exchange of 800.

Moreover, Xiamen, Fuzhou and other cities have also constructed logistics public information platforms by integrating EDI platform of harbors, EDI platform of airports and EDI platform of e-commerce centers.

5.2.4 Construction of Logistics Parks

In recent years, Fujian Province has actively promoted the construction of Fuzhou Bonded Logistics Park, Xiamen Modern Logistics Park and other comprehensive logistics parks, and made plans to construct transfer reserve bases for petrochemical industry, metallurgical energy and large bulk cargo on Meizhou Bay and Luoyuan Bay.

In 2006, Xiamen Modern Logistics Park, merging from Xiangyu Bonded Area, Bonded Logistics Park, Dongdu Port Area and Airport Logistics Park, covering an area of 9 km^2, was founded. This park has been the important international logistics center of southeast coastal region in China and the supporting pillar of logistics in Xiamen.

In December 2007, the State Council approved the establishment of Fuzhou Bonded Logistics Park, which became the ninth bonded logistics park following Shanghai, Qingdao, Ningbo, Dalian, Zhangjiagang, Xiamen, Shenzhen and Tianjin. Endowed with functions in international transshipment, international distribution, international procurement, international intermediary trade, this park shares the preferential policy of "Tax refund upon entry to the park." The park has realized quick customs clearance of "One-stop declaration, inspection and release" of cargos by implementing the mode of "One entry, multiple use and information sharing" of the customs clearance data.

In May 2010, Fuzhou Bonded Port was formally founded upon the approval of the State Council and became the 14th Government- approved bonded port following Shanghai, Tianjin, Dalian and other pilot projects. Composed of port-surrounding processing area, port distribution area, international logistics area and railway logistics park, the port area is the bonded port area with the shortest distance from China Mainland to Taiwan.[6] In the same year, Fuzhou Bonded Port Area signed the *Agreement of Linking the Two Areas* with Taiwan's Keelung Free Trading Port Area, thus becoming the first bonded port area in the Mainland realizing connection with free trading port of Taiwan.

Besides, Fujian Province also constructed a batch of professional logistics distribution centers in the clustered districts of electronics, petrochemical and equipment manufacturing industries, as well as some regions with specific products such as coal, steel, essential mineral products, building materials, textile, aquatic products and agricultural materials. There are also regions with outstanding scale production advantages, including Fujian Agricultural Production Materials Logistics Center, Fuzhou Express Delivery Processing Center on west side of Taiwan Strait, Jiangyin Port Logistics Center, and Fujian Sandu Bay Aquatic Product Cold-chain Logistics Center.

5.2.5 Development of Logistics Enterprises

For the last few years, logistics enterprises in Fujian have witnessed a rapid development with diversified development pattern of foreign-funded, State-owned and privately-operated logistics enterprises. This development is typified by the following concrete acts. (1) UPS, TNT, DHL, Maersk and other internationally known logistics enterprises have successively settled in Fujian; (2) Cosco Logistics, China Shipping Logistics, China Post Logistics, Sinotrans, China Railway Logistics, China Merchants Logistics and other domestically famous large logistics enterprises have successively established branches in Fujian; (3) Provincial-level traditional transportation, storage and freight forwarding enterprises, such as Fujian Provincial Communication Transportation Group Co., Ltd., Xiamen Port Development Co., Ltd., C&D Logistics, and Fujian Shenghui Logistics have actively expanded and extended logistics service functions to accelerate the transformation into modern logistics enterprises; (4) Privately-operated logistics enterprises including Quanzhou Qilong Logistics, Fuzhou Hongjie Logistics, Shengfeng Logistics, Shenghui Logistics, and Wangguantou Sea Transportation have also achieved rapid development.

By the end of 2012, there had been 109 logistics enterprises of level 3A[7] and above in Fujian, mainly centered in Fuzhou, Xiamen, and Quanzhou. Among them,

[6] Fuzhou Bonded Area, the People's Government of Fujian Province, 2010-08-04.

[7] Level A logistics enterprise is rated according to the comprehensive assessment and grading of China's logistics enterprises by the China Federation of Logistics & Purchasing.

Table 5.6 List of 5A logistics enterprises in Fujian Province

Level	Enterprise	Headquarters
5A	Fujian Provincial Communication Transportation Group Co., Ltd.	Fuzhou
5A	Xiamen Port Development Co., Ltd.	Xiamen
5A	Xiamen Xiangyu Group Corporation	Xiamen
5A	C&D Logistics Group Co., Ltd.	Xiamen
5A	Fujian Shenghui Logistics Group Co., Ltd.	Fuzhou
5A	Fujian Shengfeng Logistics Group Co., Ltd.	Fuzhou
5A	Xiamen ITG TIDAK Logistics Co., Ltd.	Xiamen
5A	Huanyu Logistics (Fujian) Co., Ltd.	Fuzhou
5A	Fujian HF Logistics Co., Ltd.	Fuzhou

Source: Compiled from the List of National Level A Logistics Enterprises (up to the 12th batch), and List of Level A Logistics Enterprises (the 13th, 14th and 15th batches), published by the China Federation of Logistics & Purchasing

nine are 5A logistics enterprises, 32 are 4A logistics enterprises and 68 are 3A logistics enterprises, as shown in Table 5.6. Xiamen Xiangyu Group Corporation and Fujian Provincial Communication Transportation Group Co., Ltd. were listed among the top 50 of China's logistics enterprises in terms of 2012 main business income, ranking fourth and 13th, respectively.

5.3 Fujian – Taiwan Logistics Cooperation and Development

Relying on the favorable location advantage and the policy of supporting initial trial-runs, all-round logistics cooperation between Fujian and Taiwan is gradually realized. Recently, freight volume of Fujian – Taiwan cross-strait direct transport rises stably with logistics channel gradually formed and logistics enterprises cooperation continuously deepened. Fujian Province has become the comprehensive logistics hub across the strait and the leading-edge platform of exchange and cooperation between Taiwan and the Mainland.

5.3.1 Freight Volume of Fujian – Taiwan Cross-Strait Direct Transport Rises Stably

In 2012, total trade volume of Fujian to Taiwan was 11.96 billion USD, which showed a year-on-year growth of 3 % and the volume was twice as that of 2005. Therein, total volume of export trade was 3.09 billion USD, showing a year-on-year growth of 2.8 %; total volume of import trade was 8.87 billion USD, showing a year-on-year growth of 3.1 %. Total trade value of small items towards Taiwan was 0.34 billion USD, showing a year-on-year growth of 15.1 % (Xinhuanet 2013).

Along with the rapid development of cross-strait economy and trade, the direct transport freight volume also rises stably. Volume of cross-strait direct transport bulk cargos freight by sea rose from 18.57 million tons in 2010 to 22 million tons in 2012, representing an average annual increase of 8.9 %, and volume of direct transport freight by air rose from 13.6 thousand tons in 2010 to 20.3 thousand tons in 2012, showing an average annual increase of 22.2 %.[8] In 2012, Xiamen Port imported 7,980 tons of fruits from Taiwan with a year-on-year growth of 12.6 %, thus becoming the largest entry port of Taiwan's fruits to Mainland China. Quanzhou Port imported 290 batches of aquatic products from Taiwan with total weight of 8,073.7 tons, showing a year-on-year growth of 1.4 and 2.2 times, respectively. Quanzhou Port has been the largest transshipment port of Taiwan's aquatic products entering the market in Mainland.

In addition, volume of cross-strait container freight between Fujian and Taiwan also witnessed a rapid development. By the end of January 2011, direct transport of container had been operated for nearly 20,000 voyages, transporting a total of 5.47 million TEUs. Presently, nine container liner routes have been opened between Fujian and Taiwan with annual throughput capacity of more than 700 thousand TEUs, accounting for about one third of the container throughput capacity of direct sea transport on both sides.[9] In 2012, Fujian and Taiwan finished combined direct transport container volume of 712.5 thousand TEUs in total, showing a year-on-year growth of 6.2 %.

5.3.2 Fujian – Taiwan Cross-Strait Logistics Channel Is Gradually Formed

In recent years, Fujian Province greatly promotes the direct sea and air transport and postal communication with Taiwan, and constructs the cross-strait passenger and cargo transshipment hub, to form three logistics channels of direct sea and air transport and postal communication.

Among the direct sea transport channels, Fujian successively opened the following five routes: (1) Fuzhou – Keelung, Taipei, Hualien and Matsu; (2) Ninigde – Taipei, Taichung, Keelung and Matsu; (3) Xiamen – Taipei, Taichung, Keelung, Gaoxiong, Jinmen and Penghu; (4) Zhangzhou – Taipei, Gaoxiong, Keelung and Jinmen; (5) Pingtan – Taichung, Quanzhou – Su'ao, Taipei and Jinmen. Among them, there are seven regularly-scheduled container lines to Gaoxiong, Keelung, Taichung and other ports; 21 unscheduled lines of bulk cargos to Keelung, Taipei, Gaoxiong, Taichung, Hualien, Budai, Matsu, Penghu, etc.; and two liner ship lines for roll-roll shipment of passenger and freight to Taichung and Keelung.

[8] Compiled from data provided by the Fujian Development and Reform Commission.

[9] "Cross-strait container freight index is expected to be issued in the next year," the People's Government of Fujian Province, 2013-03-22.

In terms of direct air transport, Fuzhou Changle International Airport and Xiamen Gaoqi International Airport are the origins of direct freight transport towards Taiwan. China Airlines, EVA Air and China Cargo Airlines successively opened all-cargo aircraft lines with Taiwan. In 2012, Xiamen Gaoqi International Airport had four cargo aircraft flights to Taiwan weekly with freight capacity of 450 tons; Fuzhou Changle International Airport had two weekly cargo aircraft flights to Taiwan with freight capacity of 240 tons.

Besides, Fuzhou and Xiamen have become two of the eight Mainland's mail dispatching offices to Taiwan. Therein, Fuzhou opened the first air mail transport line to Taiwan, which was also Mainland's only waterway – road mail exchange office to Taiwan. During 2011–2015, Fujian Province will greatly promote the construction of cross-strait mail package processing center and post logistics center in Fuzhou and Xiamen. In the meantime, Fujian Province will actively open up sea and air combined transport postal route of "various regions in Mainland – Xiamen – Jinmen – Taiwan" and sea, rail and air transport postal route of "Taiwan – Fuzhou – the Mainland," to further enhance the Fujian – Taiwan postal communication.

5.3.3 Prominent Features of Petty Trade

In the past few years, all ports in Fujian have fully taken the location advantage and policy advantage to actively develop distinctive petty trade towards Taiwan. Among them, Quanzhou Port is mainly responsible for importing mechanical parts and accessories, household commodities, textile and other groceries as well as areca nut and other agricultural products from Taiwan. In 2012, volume of import cargos of petty trade towards Taiwan at Quanzhou Port was 84.7 thousand tons valuing 165 million USD, which showed a year-on-year growth of 16.7 % and 14.6 %, respectively. Presently, import volume of petty trade from Taiwan at Quanzhou Port takes up 60 % of the total amount of Fujian and 50 % of that of China. Thus Quanzhou Port has become China Mainland's largest import cargo port of petty trade towards Taiwan. Imported items from Taiwan at Xiamen Dadeng Port are mainly shoes, furniture, tableware, underwear and other daily consumer goods. In 2012, petty trade volume towards Taiwan at Xiamen Dadeng Port was 71.08 million USD, showing a year-on-year growth of 33.4 %. Therein, volume of import of disposable hygienic products was 7.45 million USD, noting a year-on-year growth of 71.2 %. Xiamen Dadeng Port is Mainland's largest import port of disposable hygienic products from Taiwan.

5.3.4 Agricultural Product Logistics Park Develops Rapidly

Fujian is China's largest cross-strait agricultural cooperation pilot site, and owns six national incubator parks for Taiwan farmers, namely Zhangpu, Zhangping, Xianyou, Qingliu, Fuqing and Hui'an parks. Meanwhile, Fujian also has the only

experimental area of cross-strait (Sanming) modern forestry cooperation, owning three agricultural exhibition platforms towards Taiwan, viz. "Cross-strait modern agricultural expo," "Cross-strait forestry expo," and "Cross-strait tea industry expo." In the last few years, the Fujian – Taiwan trade of agricultural products has kept a rapid growth and the scale of trade has expanded from 62 million USD in 2005 to 596 million USD in 2011, showing a growth of 8.6 times from that of 2005. In 2012, Fujian exported 930 million USD towards Taiwan, showing a year-on-year growth of 32.4 %.

Along with the rapid growth in Fujian – Taiwan trade of agricultural products, Fujian's agricultural product logistics park towards Taiwan also witnesses a rapid development. Fujian Province has successively completed five national agricultural products distribution centers towards Taiwan, including Xiamen – Taiwan Fruit Sales Distribution Center, Xiapu – Taiwan Aquatic Product Distribution Center, and Cross-strait (Dongshan) Aquatic Product Processing and Distribution Base. Among them, Xiapu – Taiwan Aquatic Product Distribution Center, founded in 2006, is Mainland's first comprehensive agricultural product logistics park towards Taiwan for aquatic product production, marketing and processing. Moreover, Xiamen – Taiwan Fruit Sales Distribution Center, Cross-strait (Zhangzhou) Flowers Distribution Center and Cross-strait (Quanzhou) Agricultural Trade Logistics Center and other agricultural product logistics parks (bases) towards Taiwan also developed rapidly, thus further promoting the Fujian – Taiwan agricultural product logistics development.

5.3.5 Fujian – Taiwan Electronic Port Information Platform Leading the Connection

In June 2010, Fujian and Taiwan signed the *Cooperation Agreement for Logistics Information Platform of Customs Clearance at Ports of Fujian and Taiwan*, which marked the formal linking between Fujian's electronic port platform and Taiwan's Trade-Van information platform, and realized the first connection of local electronic port platform in Mainland with port information platform of Taiwan. In early stage, the platform will cooperate on information exchange of logistics and shipping, and on facilitating service of importing/exporting agricultural products. At later date, it will deepen the cooperation to Fujian – Taiwan customs clearance operations, special supervision areas of Fujian Customs and linking business to Taiwan's free trade port area, thus fully realizing paperless customs clearance between Fujian and Taiwan.

In October 2012, logistics information platform of customs clearance at ports of Fujian and Taiwan was formally put into operation, and the first batch of data transmission for shipping bill/ships drawing/passenger list, mutual information transmission of customs clearance logistics status, transmission of the certificate of electronics origin and other functions were opened, thus enhancing the customs clearance and logistics information sharing. Along with further deepening of

cross-strait cooperation, Fujian electronic port and Trade-Van information platform of Taiwan will carry out the data exchange of customs declaration information to further establish the cross-strait speedy customs declaration channel.

5.3.6 Connection of Cross-Strait Free Trade Port Areas Is Accelerated

Since 2006, Fujian Province has actively promoted the deeper cooperation between Fuzhou Bonded Port Area and Keelung Free Trade Port Area, Haicang Free Trade Port Zone and Gaoxiong Free Trade Port Area, Xiangyu Bonded Area and Taichung Free Trade Port Area, so as to accelerate the linkage of cross-strait free trade port areas.

In November 2011, the *Development Plan for "Twelfth Five-Year" Modern Logistics Industry* of Fuzhou City was issued, which clearly stipulated the requirements of accelerating the business connection with Taiwan's free trade port areas. This document is mainly substantiated in the following acts: (1) allowing cargos from Taiwan or cargos operated by Taiwan-funded enterprises to follow the treatment of "batched shipment and periodically centralized customs clearance" when being transported through bonded port areas to other regions of the Mainland; (2) carrying out the customs clearance mode of "one-stop declaration, inspection and release" for cargos traded between Taiwan and bonded port areas of the Mainland after entering the bonded port areas of the Mainland; (3) allowing cargos of both Taiwan and the Mainland to enter the market of Taiwan and the Mainland via the green channel between Fuzhou Bonded Port Area and Keelung Free Trade Port Area of Taiwan, thus jointly creating the regional shipping logistics center facing Southeast Asia.

Besides, Fuzhou Bonded Port Area and Trade-Van Information Services Co., Ltd. signed the agreement of jointly developing paperless customs clearance system for Fujian – Taiwan trade to jointly construct a unified virtual customs clearance between Fuzhou Bonded Port Area and Keelung Free Trade Port Area of Taiwan, and create an intercommunication platform of cross-strait overseas cargo information. Management Committee of Xiamen Haicang Free Trade Port Zone and Taiwan Gaoxiong Port Office have established the business exchange mechanism to strengthen the information sharing of cross-strait logistics industry and shipping market.

5.3.7 Cooperation of Fujian – Taiwan Logistics Enterprises Continually Deepened

Along with the continuously elevated Fujian – Taiwan economic and trade development, cooperation of cross-strait logistics enterprises has also been deepened. In 2009, T-Join (BVI) Logistics (CHINA) received delivery orders from 14 stores in

Fujian, including Wal-Mart and Trust-Mart, and formally settled in the economic zone on the west side of Taiwan Strait. After that, the Oriental Logistics Group, Lianyungang Huansheng Logistics Co., Ltd. and other large-scale logistics companies successively established branches in Fujian, set up branch offices and settled in Fujian logistics market.

In March 2012, Fujian Shengfeng Logistics Group Co., Ltd. signed the project of Strait Bulk Cargo Connection Distribution Center with the Wagon Group. Fujian Shenghui Logistics Group Co., Ltd. signed a cross-strait sea-rail transportation logistics project with Taiwan Li's International Co., Ltd. The East Coast Bonded Warehouse Logistics Center Co., Ltd. signed cooperation projects for aquatic product processing and intermediary trade and distribution with the Jiatian Group.

In the meantime, logistics enterprises in Fujian actively entered Taiwan market to conduct logistics business. In 2009, Fujian All-trans Logistics Co., Ltd. and Wagon Logistics Co., Ltd. organized the All-trans – Wagon Logistics Co., Ltd. and founded the "Office of Fujian Provincial Communication Transportation Group Co., Ltd. in Taiwan" to carry out logistics business in Taiwan. In addition, SF Express (Fujian) and other express enterprises successively established branches or transshipment centers in Taiwan.

5.4 Summary

This chapter mainly introduces the current status of logistics development in Fujian from the aspects of economy, conditions of logistics market, and Fujian – Taiwan logistics cooperation. For economic development conditions, Fujian has taken full location advantage and policy advantage to accelerate its economic transition and upgrade, and further optimized its industrial structure. In 2012, all Fujian's key economic indicators were increased sharply and its comprehensive economic strength was further enhanced. From the perspective of logistics market, the demand scale of Fujian's logistics market has been extended continually and its logistics infrastructure has been perfected gradually, with the capacity and level of logistics supply improved rapidly. In terms of Fujian – Taiwan logistics cooperation, freight volume of cross-strait direct transport has risen stably and multiple cross-strait logistics channels have been formed gradually, with Fujian – Taiwan logistics enterprise cooperation deepened constantly.

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Chapter 6
Logistics Development in Shaanxi Province

Yong Liu

Shaanxi Province is situated in a key region connecting Eastern China and Central China as well as Northwestern China and Southwestern China; with the advantages in geographical location and transportation convenience, it links the east and the west as well as the north and the south. Xi'an, the capital of Shaanxi Province, is an important transportation hub nationwide and of great strategic significance for being a vital information and business hub, and a logistics center and financial center in Western China. In the past few years, Shaanxi Province has achieved a steady economic growth and accelerated its pace of urbanization, thus providing huge market demand for the development of modern logistics industry. Besides, notable progress made in construction of integrated transportation system and logistics parks (centers) has laid a solid foundation for the development of modern logistics industry, so the logistics industry for Shaanxi has gained a rapid development momentum. And based on the expanding industrial scale and rapidly growing logistics enterprises, groups of large- and medium-sized key logistics enterprises featuring scale and high level of specialization have also taken shape in Shaanxi.

This chapter comprises three sections. The first section summarizes the economic development of Shaanxi Province, the second section elaborates on the characteristics of logistics development in this region and the third section describes the future directions of logistics development in Shaanxi Province.

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B. Liu et al. (eds.), *Contemporary Logistics in China: Assimilation and Innovation*, Current Chinese Economic Report Series, DOI 10.1007/978-3-642-55282-3_6,

6.1 Overview of Economic Development in Shaanxi Province

In recent years, Shaanxi Province, by seizing the opportunities of "the strategy of large-scale development of the Western region" implemented by the China Government and the nation's large-scale policy-guided investment, has accelerated its construction and infrastructure and adjusted its economic structure to significantly uplifted its overall strength.

6.1.1 Regional Economic Aggregate

From 2006 to 2012, Shaanxi Province achieved a steady economic growth, with its regional GDP reaching an average annual growth rate of 14.27 %. In 2012, its regional GDP[1] was up to 1,445.1 billion RMB, increasing by 12.9 % compared with that of 2011, which is 5.1 percentage points higher than the national average and ranking fifth in China. Figure 6.1 shows the regional GDP and the growth rate of Shaanxi Province for 2006 to 2012.

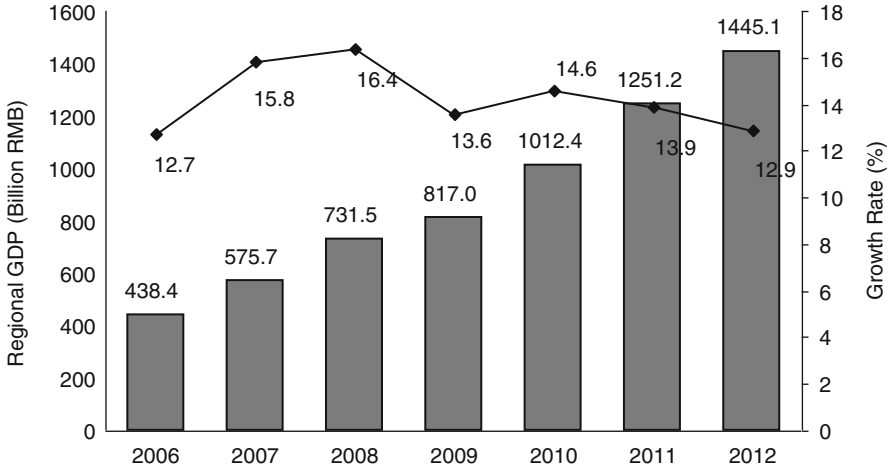

Fig. 6.1 Regional GDP and growth rate of Shaanxi Province for 2006–2012 (Source: Compiled from the *China Statistical Yearbook (2006–2012)*, published by China Statistics Press, and the *Statistical Bulletin of National Economic and Social Development (2012) of Shaanxi Province*, published by the Statistics Bureau of Shaanxi Province)

[1] In this chapter, unless otherwise stated, growth rates of regional GDP, industrial added value, total value of import and export trade and other data indexes refer to actual growth rates; price changes have been considered in the calculations.

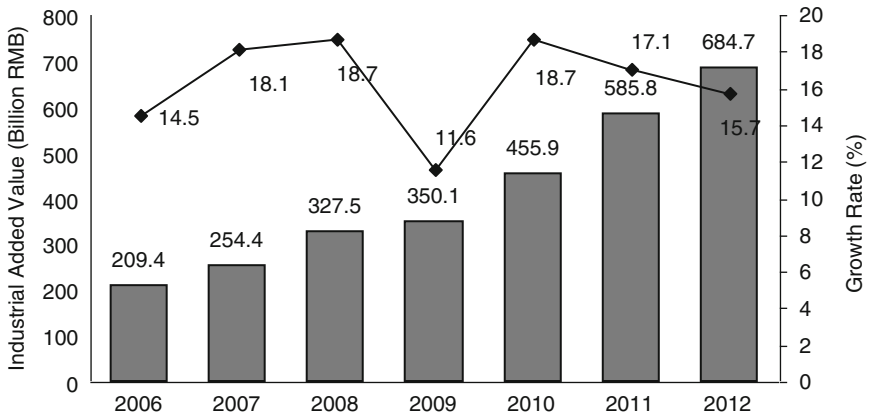

Fig. 6.2 Industrial added value and growth rate of Shaanxi Province for 2006–2012 (Source: Compiled from the *Statistical Bulletin of National Economic and Social Development (2006–2012) of Shaanxi Province*, published by the Statistics Bureau of Shaanxi Province)

6.1.2 Industrial Added Value

From 2006 to 2012, industrial added value of Shaanxi Province continued to grow rapidly and its average annual growth rate was 16.34 %, which is 5.34 percentage points higher than the national average rate. In 2012, Shaanxi Province achieved industrial added value of 684.7 billion RMB, increasing by 15.7 % compared with that of 2011, as shown in Fig. 6.2.

6.1.3 Total Retail Sales of Consumer Goods

From 2006 to 2012, Shaanxi Province witnessed a rapid growth in total retail sales of consumer goods, with an average annual growth rate of 18.8 %. In 2012, Shaanxi's total retail sales of consumer goods reached 433.1 billion RMB, increasing by 16.0 % compared with the previous year. Figure 6.3 shows the total retail sales of consumer goods and its growth rate of Shaanxi Province for 2006–2012.

6.1.4 Total Value of Import and Export Trade

Shaanxi, as an inland province, its economic development is predominately internal-oriented with very low level of external slant. From 2006 to 2011, the foreign trade dependency (value of foreign trade/GDP) of Shaanxi was 7.96 % on average, much lower than the national average of 17 % (Wang Fang 2012).

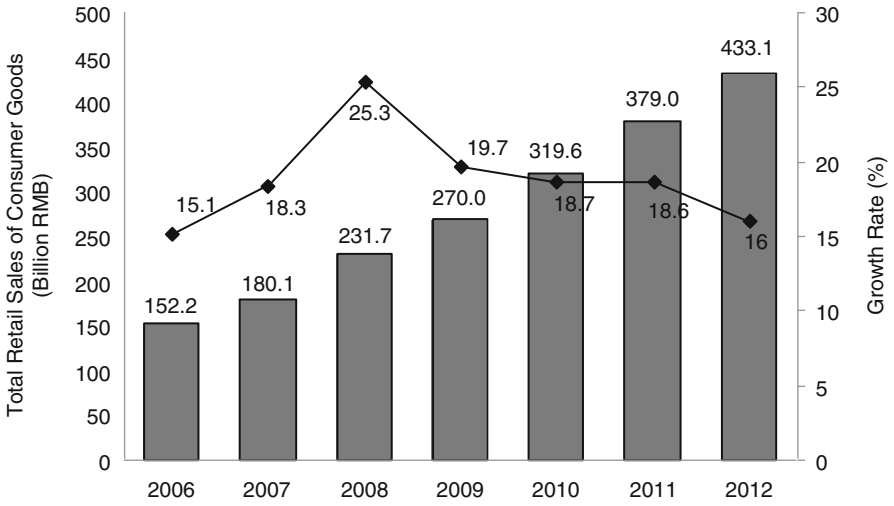

Fig. 6.3 Total retail sales of consumer goods and growth rate of Shaanxi Province for 2006–2012 (Source: Compiled from the *Statistical Bulletin of National Economic and Social Development (2006–2012) of Shaanxi Province*, published by the Statistics Bureau of Shaanxi Province)

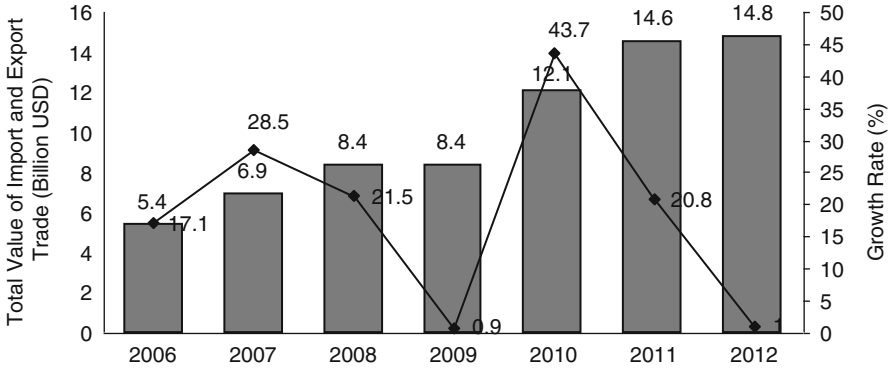

Fig. 6.4 Total value of import and export trade and growth rate of Shaanxi Province for 2006–2012 (Source: Compiled from the *Statistical Bulletin of National Economic and Social Development (2006–2012) of Shaanxi Province*, published by the Statistics Bureau of Shaanxi Province)

From 2006 to 2012, Shaanxi Province attained a more visible growth in total volume of imports and exports. However, due to the global financial crisis, the growth rate of total value of import and export trade fluctuated considerably. In 2012, the total value of imports and exports of Shaanxi Province was 14.8 billion USD, increasing by 1 % compared with that of 2011. Therein, value of exports was 8.7 billion USD, increasing by 23 %, while that of imports was 6.1 billion USD, decreasing by 19.3 %. Among total value of import and export trade, volume of general trade was 8.3 billion USD, decreasing by 9.3 %; and that of processing trade of imported material was 4.2 billion USD, increasing by 6.7 %. Figure 6.4 shows the total value of import and export trade and growth rate of Shaanxi Province for 2006–2012.

Table 6.1 Total output values and proportions of the three industries of Shaanxi Province for 2006–2012

Year	Primary industry		Secondary industry		Tertiary industry	
	Total output value (billion RMB)	Proportion in GDP (%)	Total output value (billion RMB)	Proportion in GDP (%)	Total output value (billion RMB)	Proportion in GDP (%)
2006	48.8	11.1	231.8	52.9	157.7	36.0
2007	59.3	10.3	298.7	51.9	217.8	37.8
2008	75.4	10.3	386.1	52.8	270.0	36.9
2009	79.0	9.7	423.6	51.8	314.4	38.5
2010	98.9	9.8	544.6	53.8	368.9	36.4
2011	122.1	9.8	693.6	55.4	435.6	34.8
2012	137.0	9.5	807.5	55.9	500.6	34.6

Source: Compiled from the *China Statistical Yearbook (2006–2012)*, published by China Statistics Press, and the *Statistical Bulletin of National Economic and Social Development (2012) of Shaanxi Province*, published by the Statistics Bureau of Shaanxi Province

6.1.5 Industrial Development in Shaanxi Province

6.1.5.1 Structure of the Three Industries

With adjustment of its industrial structure in recent years, the proportion of Shaanxi Province's primary industry shows a declining trend year by year. Driven by advanced assembly manufacturing industry, high and new technology industry, energy and chemical industry and other industries with local advantages, the proportion of the secondary industry is growing. The proportion of tertiary industry declines slightly due to the corresponding rapid growth of added value of the secondary industry. In 2012, added value of the primary industry was 137.0 billion RMB, increasing by 6 % over the previous year and accounting for 9.5 % of total output value; that of the secondary industry was 807.5 billion RMB, increasing by 14.9 % and accounting for 55.9 % of the total; and that of the tertiary industry was 500.6 billion RMB, increasing by 11.5 % and accounting for 34.6 % of the total, as shown in Table 6.1.

Shaanxi has been developing its agriculture industry with local advantages. In 2011, its apple yield reached 9.03 million tons, accounting for 1/3 and 1/8 of China's apple output and the world's apple output, respectively. The rate of quality product of Shaanxi's apple was over 75 % and Shaanxi ranked first nationwide in respect of apple's planting area, output quantity and quality. In the same year, Shaanxi Province completed the world's largest Concentrated Production Zone of Kiwifruit in the Northern Foothill of Qinling Mountains; the planting area and output of kiwifruit reached 123,000 acres and 740 kilotons respectively, ranking first in China, and the total output accounting for about 1/3 of the world's output.

Shaanxi's industry exhibits a conspicuous feature of resource orientation and heavy chemical basis. In 2011, the ratio of Shaanxi's light to heavy industry was 1:4; energy and chemical industry, equipment manufacturing industry and non-ferrous metals industry together accounted for more than 80 % of the province's

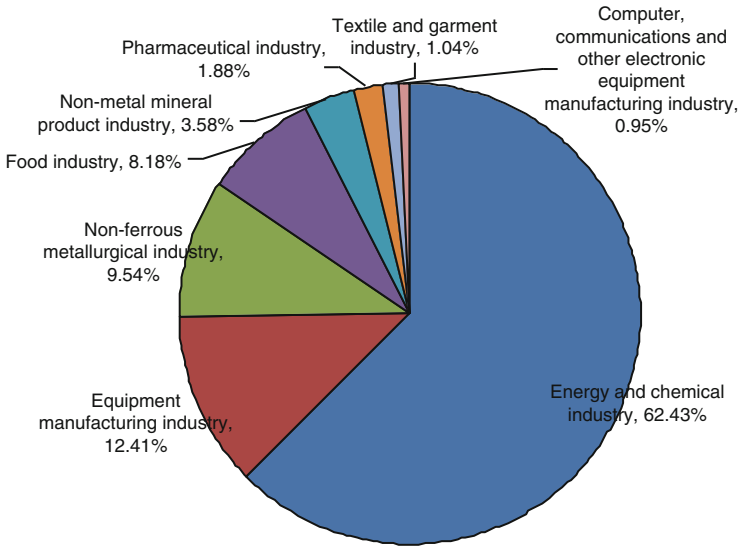

Fig. 6.5 Main industrial sector's gross output values of industrial enterprises above designated size of Shaanxi Province in 2012 (Source: Compiled from the *Statistical Bulletin of National Economic and Social Development (2012) of Shaanxi Province*, published by the Statistics Bureau of Shaanxi Province)

industries above designated size. Heavy chemical industry has been a main driver to lead and support the industrial growth of Shaanxi Province. And energy and chemical industry is the largest pillar industry of Shaanxi Province. In 2012, gross industrial output value of energy and chemical industry was 405.9 billion RMB, accounting for 62.43 % of the total output value of industries above designated size. In addition to energy and chemical industry, the gross industrial output value of equipment manufacturing industry of Shaanxi Province was 80.7 billion RMB, accounting for 12.41 % of the total output value of industries above designated size; that of the non-ferrous metallurgical industry was 62.0 billion RMB, accounting for 9.54 %; that of the food industry was 53.2 billion RMB, accounting for 8.18 %; that of the non-metal mineral product industry was 23.3 billion RMB, accounting for 3.58 %; that of the pharmaceutical industry was 12.2 billion RMB, accounting for 1.88 %; that of the textile and apparel industry was 6.7 billion RMB, accounting for 1.04 %; and that of the computer, communications and other electronic equipment manufacturing industry was 6.2 billion RMB, accounting for 0.95 %. Details are as shown in Fig. 6.5.

Shaanxi Province has been focusing on the development of the following service industries: logistics, finance, information, research and development and design, and other productive service industries; tourism, cultural event, convention and exhibition, and other modern service industries; commerce and trade, catering and other traditional service industries.

Fig. 6.6 Regional industrial pattern of Shaanxi Province

6.1.5.2 Regional Industrial Pattern

Based on its resource characteristics, Shaanxi Province has gradually established a regional industrial pattern oriented towards "advanced manufacturing in the Central Shaanxi Plain, energy and chemical industry in Northern Shaanxi and green industry in Southern Shaanxi," as shown in Fig. 6.6. Xi'an and Baoji in the Central Plain have a relatively complete industrial system and this region is the important base of China's aviation and aerospace industry, chemical industry, pharmaceutical industry, mechanic-electronic industry, equipment manufacturing industry, textile industry, and weaponry industry. Northern Shaanxi is abundant in coal, petroleum, natural gas, rock salt and other mineral resources, so it is an important energy and chemical base of China and focuses on the development of energy and chemical and other related industries. Thanks to its climate conditions, Southern Shaanxi has diverse biological resources and widely cultivated plants for Chinese herbal medicines, so green industry is a key development emphasis of this area. Leading industries in different cities of Shaanxi Province are shown in Table 6.2.

Table 6.2 Leading industries in different cities of Shaanxi Province

	City	Leading industry
Central Shaanxi Plain	Xi'an	Aviation and aerospace, new energy, new materials, automobile, bio-medicine, equipment manufacturing, light textile, food and beverage, tourism, modern logistics, finance, convention and exhibition, commerce and trade, software and service outsourcing
	Xianyang	Energy and chemical, equipment manufacturing, electronic information, food, medicine, building materials, textile, aviation, new energy, environmental protection, tourism, modern logistics, finance
	Baoji	Food and beverage, automobile and parts, equipment manufacturing, non-ferrous metal metallurgy, electronic information, titanium and new titanium alloy, new energy, bio-medicine, tourism, culture, commerce and trade related circulation, logistics
	Tongchuan	Fruit industry and agricultural products processing, building materials, aluminum fabrication, equipment manufacturing, medicine, tourism, commerce and trade related circulation, logistics, convention and exhibition, finance
	Weinan	Coal chemical, non-ferrous metallurgy and building materials, new energy, aviation, light textile, food processing, tourism, culture, logistics
	Yangling Agricultural Hi-tech Industries Demonstration Zone	Modern agriculture, food, biology, environment-friendly agricultural materials, agricultural machinery and equipment manufacturing, modern logistics, financial services, convention and exhibition, education and training, science and technology service, distinctive tourism
Northern Shaanxi	Yulin	Distinctive agriculture, energy and chemical, equipment manufacturing, new energy, energy conservation and environmental protection, tourism, modern logistics, financial services, commerce and trade related circulation
	Yan'an	Energy and chemical, new energy, equipment manufacturing, building materials, green agriculture, culture-oriented tourism, commerce and trade related services
Southern Shaanxi	Hanzhong	Organic agriculture, equipment manufacturing, liquor & tobacco and food, new materials, non-ferrous metallurgy, new energy, bio-medicine, culture-oriented tourism, modern logistics, information service
	Ankang	Modern agriculture, clean energy, new materials, selenium-rich food, bio-medicine, equipment manufacturing, electronic information, tourism, logistics, technology research and development
	Shangluo	Modern materials, tourism, traditional Chinese medicine industry, special green food, new energy, new materials, equipment manufacturing, environmental protection, culture, modern logistics, finance

6.2 Characteristics of Logistics Development in Shaanxi Province

The demand scale of logistics market in Shaanxi Province continues to expand in recent years. Due to imbalanced regional economic development and distinctive regional industry features, logistics development of Shaanxi province features prominent regional imbalance and different regions emphasize development of different kinds of logistics. Over the past few years, Shaanxi Province has made considerable headway in interactive development of manufacturing industry and logistics industry and construction of inland ports. However, the development of logistics industry in Shaanxi Province is still relatively backward on the whole.

6.2.1 Ever-Increasing Scale of Logistics Market

From 2006 to 2011, Shaanxi Province achieved a steady growth in added value of transportation, warehousing and post service sectors, with an average annual growth rate up to 9.9 %. In 2011, the added value of transportation, warehousing and post service sectors was 55.3 billion RMB, increasing by 10.2 % over the previous year, as shown in Fig. 6.7.

From 2006 to 2012, freight volume and freight turnover of Shaanxi Province witnessed a swift growth on the whole, with an average annual growth rate of 20.0 and 19.2 %, respectively. Growth rates of freight volume and freight turnover of Shaanxi Province remained stable generally, excluding the anomaly in freight

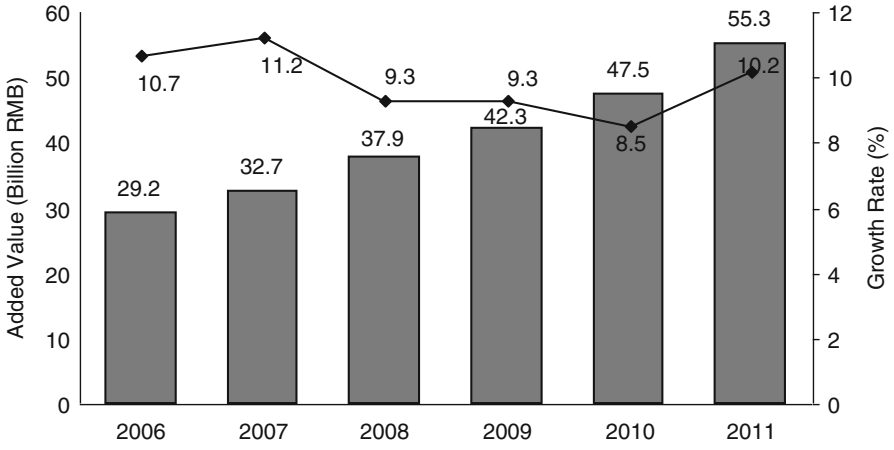

Fig. 6.7 Added value and growth rates of transportation, warehousing, and post service sectors of Shaanxi Province for 2006–2011 (Source: Compiled from the *Statistical Yearbook (2012) of Shaanxi Province*, published by China Statistics Press)

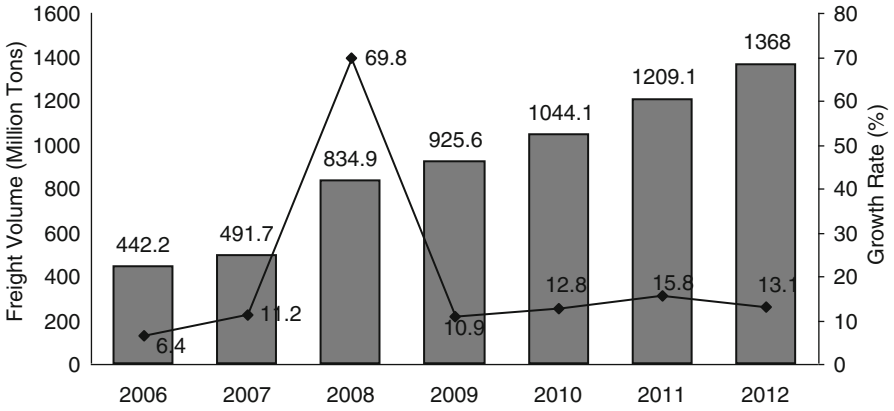

Fig. 6.8 Freight volume and growth rate of Shaanxi Province for 2006–2012 (Source: Compiled from the *China Statistical Yearbook (2006–2012)*, published by China Statistics Press, and the *Statistical Bulletin of National Economic and Social Development (2012) of Shaanxi Province*, published by the Statistics Bureau of Shaanxi Province)

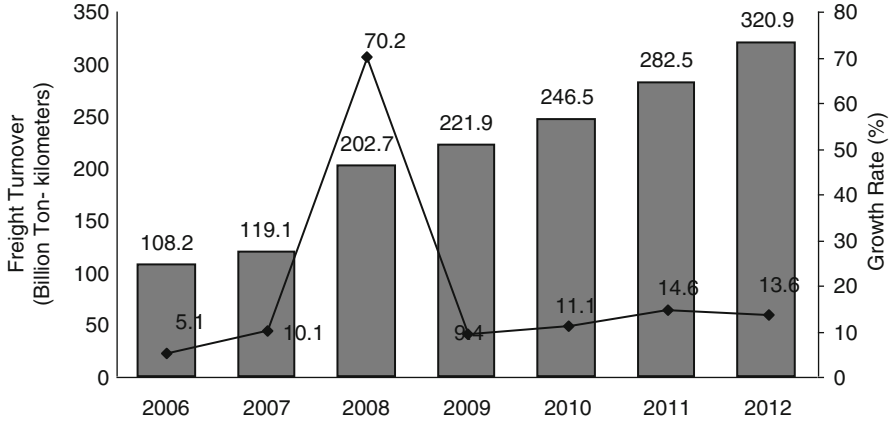

Fig. 6.9 Freight turnover and growth rate of Shaanxi Province for 2006–2012 (Source: Compiled from the *China Statistical Yearbook (2006–2012)*, published by China Statistics Press, and the *Statistical Bulletin of National Economic and Social Development (2012) of Shaanxi Province*, published by the Statistics Bureau of Shaanxi Province)

volume and freight turnover of 2008 caused by the difference in survey methodology and statistic scope.[2] In 2012, freight volume of Shaanxi Province was 1.4 billion tons, increasing by 13.1 % over the previous year; freight turnover was 320.9 billion ton-kilometers, increasing by 13.6 %, as shown in Figs. 6.8 and 6.9.

[2] To solve the glaring problems of serious distortion of transportation volume statistics and missing data, the Ministry of Transport of China, together with the National Bureau of Statistics of China, organized a special survey on national-scale highway and waterway transportation volumes. This survey aims to first find out the base of highway and waterway transportation volumes, and secondly improve the statistic scope and solve the issue of lacking regional and structural data.

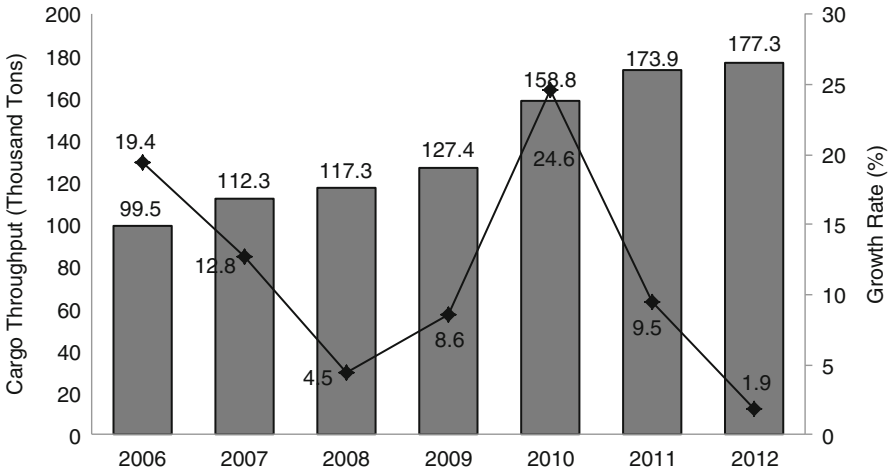

Fig. 6.10 Cargo throughput and growth rate of civil airports in Shaanxi Province for 2006–2012 (Source: Compiled from the *Statistical Bulletin of Nationwide Airports (2006–2012)*, published by the Civil Aviation Administration of China)

From 2006 to 2012, cargo throughput of airports in Shaanxi Province grew steadily, with an average annual growth rate of 11.63 %. In 2012, cargo throughput of airports in Shaanxi Province reached 177.3 thousand tons, increasing 1.9 % over the previous year, as shown in Fig. 6.10.

6.2.2 Prominent Features of Regional Logistics

Shaanxi's regional industrial pattern, which is leaning towards "advanced manufacturing in the Central Shaanxi Plain, energy and chemical industry in Northern Shaanxi and green industry in Southern Shaanxi," also determines the features of its logistics development in different regions.

The Central Shaanxi Plain is the advanced manufacturing center, commerce and trade center and transportation hub of Shaanxi Province. This region prioritizes the development in manufacturing logistics, international logistics and commerce and trade logistics. In this region, Shaanxi Tonghui Automobile Logistics Co., Ltd., Shaanxi Dajian Automobile Transportation Co., Ltd. and other logistics companies specialized in providing third-party logistics services for the automobile industry. Besides, a host of logistics centers and bases for providing storage, processing, packing and transshipment services for manufacturing industry and agricultural and non-staple food products were established in this region, such as Wei Qu Technology Logistics Center, Xi'an Sanqiao International Automobile Logistics Center, Caotan Fruit Logistics Center, China Material Storage and Transportation Company Xi'an Logistics Center, etc. Logistics centers serving the commerce and trade related circulation industry were also constructed in this region, including Xianyang West Trade Logistics Base, and Xi'an Textile City Textiles and Apparel Logistics Center.

Yulin City and Yan'an City in Northern Shaanxi focus on developing energy and chemical logistics, including Sanyu Co., Ltd., Niujialiang Co., Ltd. and some other coal logistics companies. Besides, a batch of energy and chemical logistics parks, including Yulin Energy Chemical Industry Logistics Center and Dabaodang and Mengjiahao Energy Chemical Industry Logistics Base, were established in Northern Shaanxi.

In Southern Shaanxi, a distinctive agriculture belt oriented to grow traditional Chinese medicinal materials, lean hogs, silkworms, tea leaves, edible mushrooms and grapes has taken shape. Relying on the industrialized development of its distinctive agriculture, Southern Shaanxi focuses on developing commerce and trade logistics and distinctive agricultural products logistics. So far it has planned and constructed several agriculture-related logistics parks, such as Baohe Logistics Park, Ankang Logistics Part, Shangluo Special Agricultural Products Logistics Center, Traditional Chinese Medicine Logistics Center, and Shangshan Logistics Park.

6.2.3 Imbalanced Development of Inter-regional Logistics

Due to the imbalanced regional economic development and the uneven development of logistics infrastructure in Shaanxi Province, development of inter-regional logistics is also unbalanced. The economy of the Central Shaanxi Plain and Yulin City in Northern Shaanxi is relatively developed and the geographic locations are favorable, so logistics develops well in these regions. In 2012, the freight volume and freight turnover of Xi'an, Weinan and Yulin ranked as the province's top three. However, logistics development in Southern Shaanxi and Yan'an City in Northern Shaanxi is relatively backward due to the constraints posted by their geographical conditions and economic development. Figure 6.11 shows the highway freight volume of different cities of Shaanxi in 2012 and Fig. 6.12 shows the highway freight turnover of different cities of Shaanxi in 2012.

6.2.4 Development of Interaction Between Manufacturing and Logistics Industry

In 2009, the *Scheme for Implementation of Restructuring and Revitalization Plan on Logistics Industry of Shaanxi Province* listed the interactive development of manufacturing industry and logistics industry as one of the key projects for developing its logistics industry. Manufacturing enterprises such as Shaanxi Automobile Group Co., Ltd., China Xi Dian Group Co., Ltd., and Shaanxi Longmen Iron & Steel (Group) Co., Ltd. had since integrated and optimized their business process, separated their logistics business and outsourced some or all logistics business to specialized logistics enterprises. Shaanxi Tonghui Automobile Logistics Co., Ltd., Shaanxi Dajian Automobile Transportation Co., Ltd. and other logistics

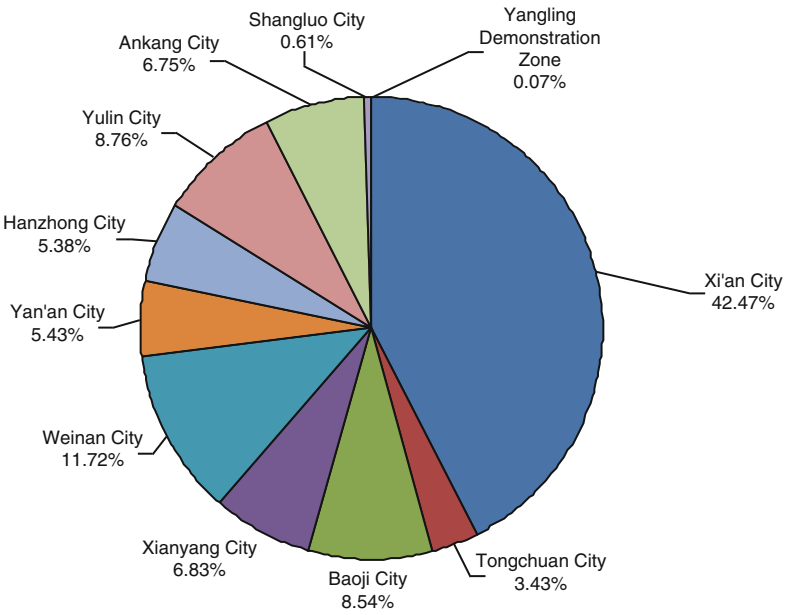

Fig. 6.11 Highway freight volume of different cities of Shaanxi Province in 2012 (Source: Compiled from the *Statistical Yearbook (2012) of Shaanxi Province*, published by China Statistics Press)

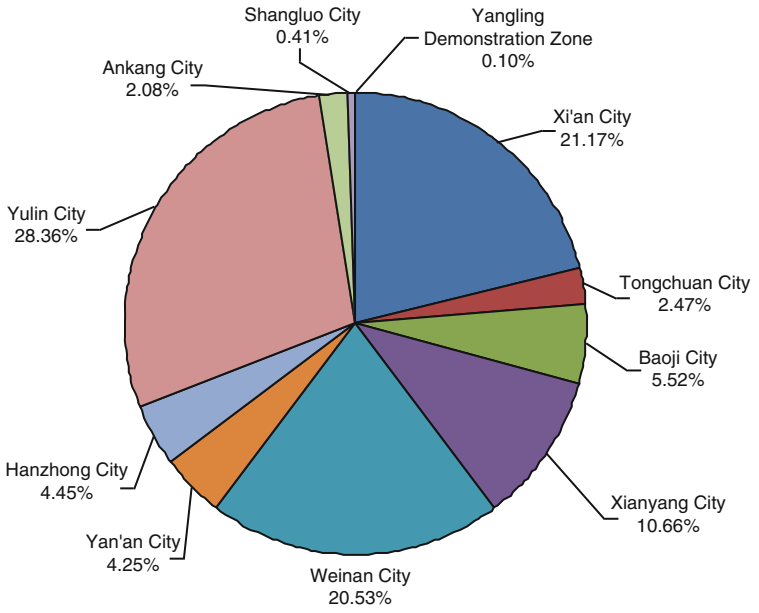

Fig. 6.12 Highway freight turnovers of different cities of Shaanxi Province (Source: Compiled from the *Statistical Yearbook (2012) of Shaanxi Province*, published by China Statistics Press)

enterprises enhanced their cooperation with manufacturing enterprises to promote the logistics industry's penetration into the procurement, distribution, and sales links of industrial enterprises.

Shaanxi Province supports its enterprises to actively participate in national demonstration task of interactive development of logistics industry and manufacturing industry, develops pilot projects for interactive development in Xi'an, Baoji, and Hanzhong, and gives preferential terms and aid to enterprises listed in the pilot projects on taxation, assets disposal, and personnel placement.

In addition, Shaanxi Province promotes interactive development of logistics industry and manufacturing industry by establishing logistics parks. Governments of different regions in Shaanxi Province, relying on high and new technology industrial development zones, economic development zones, industrial parks and other manufacturing clusters, have developed layout plans to construct production service-oriented logistics parks (centers), so as to establish and improve the comprehensive logistics service system. Take the "Project of Interactive Development of Manufacturing Industry and Logistics Industry in Baoji" for example, it plans to establish four large-scale logistics parks with the total area of 329 acres in Caijiapo, Tianwang, High-tech Zone and Qingjiang, relying on the freight railway line of Baoji Southern Railway and Baoji Southern Ring Expressway, to accelerate the interactive development of logistics industry and manufacturing industry.

6.2.5 Construction of Inland Ports to Promote Development of Export-Oriented Economy

Xi'an International Trade & Logistics Park is the earliest and largest international inland port in China. Its development orientation is to establish "the largest international inland port in China and the largest commerce and trade logistics distribution center in the middle and upper reaches of the Yellow River to develop a new town of modern service industry."[3]

Xi'an International Trade & Logistics Park set up the international inland port services platform, relying on three key projects, namely, Xi'an Comprehensive Bonded Zone, Xi'an Railway Container Freight Center and Xi'an Highway Port. It also established the cooperative mode of customs clearance featuring "retracting the port, on-site document processing, sea-railway combined transportation and seamless linkage." Xi'an International Trade & Logistics Park will put forth effort to build six major industrial clusters, including international trade, domestic trade, port-vicinity industry, information industry, production service industry and living service industry.

[3] Website of Xi'an International Trade & Logistics Park. http://www.itl.gov.cn/structure/index.htm.

In recent years, Xi'an International Trade & Logistics Park has become a powerful economic growth pole to attract foreign investment and accelerate economic development in Western China. In 2012, 25 contracts for attracting foreign businesses and investment were signed with total investment amount of 33.26 billion RMB. And some of world's top 500 enterprises like Tata Steel and Nippon Express were located in the park.

6.2.6 Relatively Backward Logistics Industry in Shaanxi Province

Compared with eastern China and other economically well-developed regions, Shaanxi Province is relatively backward in logistics development, reflected mainly in three aspects. First, most of its logistics enterprises are small in size and narrow in service scope. Most of them operate under rudimentary management mode and large-scale modern logistics enterprises are scarce. The enterprises offer simple services centering on transportation and storage functions. Consequently, value-added logistics services such as inventory management and control, procurement and order handling, market survey and forecast, product recycling, establishment of logistics information system, the planning, design, diagnosis and optimization of logistics system, logistics consulting, and training are not nearly developed. Secondly, most of the logistics enterprises still employ traditional management methods and manual operational techniques, which lead to low logistics processing capacity per unit space and limited information. Besides, since new technology and new facilities require huge investment and closer interface with customers, enterprises rarely opt to do so. This condition greatly restricts the effort in fostering modern logistics enterprise and hampers the enterprises' overall competitive strength. Finally, there is a severe shortage of logistics professionals. Logistics enterprises generally lack planning and management personnel with modern logistics concepts and professional knowledge and trained personnel well-versed in logistics information technology.

6.3 Future Direction of Logistics Development in Shaanxi Province

From 2012 to 2015, Shaanxi will be committed to building national key logistics centers and establishing modern logistics system featuring rational layout, advanced equipment and intelligent operations. The development emphasis includes construction of three logistics platforms, construction of seven key logistics parks, development of three major industrial logistics and promotion of third-party logistics enterprises.

6.3.1 Construction of Three Logistics Platforms

Shaanxi Province will focus on constructing three major logistics platforms, including the logistics network and facilities platform, the public logistics information platform and the logistics research & development platform.

In terms of the construction of a logistics network and facilities platform, Shaanxi Province will build a set of transfer and transshipment facilities for container multimodal transport in selected key areas and comprehensive transportation hubs. And it will lay special emphasis on the construction projects like Xi'an Highway Port, Zhong Shan International Logistics Center, Xi'an Bester Logistics Center, Xi'an Railway Freight Station, Yangling Railway Freight Station, Chang'an Yinzhen Logistics Center, and Suide Logistics Center.

The key public logistics information platforms to be built in Shaanxi Province include: three to five specialized e-commerce and logistics service integrated information platforms, more than 10 logistics information platforms for industries with Shaanxi characteristics (such as coal, building materials, fruit, agricultural products and agricultural materials), information platforms in eight key logistics parks, and three to five provincial integrated logistics public information platform systems. Doing these will establish a public logistics information network service system covering the realm of electronic ports, highways and wharfs, intelligent transportation system, transport of hazardous goods, and emergency logistics.

Moreover, Shaanxi Province will actively support enterprises, institutions of higher education and scientific research institutions to establish logistics research & development platforms centering on enterprise-university-research institutes. The construction of logistics research & development platforms will highlight the following functions. First, analyze and study the role played by third-party logistics in the development of Shaanxi logistics and its contribution to the national economy; track the development status of third-party logistics in Shaanxi for a long term to put forward the direction, the pattern of and the measures for third-party logistics development in Shaanxi. Secondly, promote the research and implementation of modern logistics management method. Thirdly, carry out research on logistics standardization and logistics statistics to set up logistics statistical indicators and a logistics standardization system.

6.3.2 Construction of Seven Key Logistics Parks

In the "12th Five-Year Plan" period, Shaanxi Province will build seven key logistics parks, namely, Xi'an International Trade & Logistics Park, Xi'an Xianyang Airport Logistics Park, Baoji Chencang Logistics Park, Yulin Energy Chemical Industry Base Logistics Park, Hanzhong Baohe Logistics Park, Weinan Tongguan Logistics Port, and Ankang Integrated Logistics Park.

Xi'an International Trade & Logistics Park refers to an inland collection and junction point of joint sea-and-rail transportation, based on cooperation with coastal international ports. It is an extension of the multiple functions of coastal international ports in Xi'an, a centralized service area in Xi'an for coastal international ports, and also a junction of international logistics and domestic logistics. It is aimed to become a center for product distribution, cargo collection and distributing and container transshipment, and the largest integrated logistics park in Western China.

Baoji Chencang Logistics Park is an integrated logistics park primarily for commerce and trade. This park rolls the six functions- transaction, distribution, conference and exhibition, warehousing, distribution processing and information processing – into one, where numerous wholesalers and logistics enterprises can gather, and thus make it the provider of social logistics resources and the integrator of industrial supply chain.

Tongguan Logistics Port is designed to be an "integrated commerce & trade logistics park combining comprehensive commodity exchange market and integrated service park in Guanzhong-Tianshui Economic Zone."

Yulin Energy Chemical Industry Base Logistics Park is developed jointly with the energy and chemical industry, mainly relying on the completed coal production base with capacity over 100 million tons, the Asia's largest natural gas purification plant and China's largest methanol production base.

Ankang Integrated Logistics Park is positioned as a centralized integrated logistics park with functions like transshipment, storage, delivery and processing. This park will gradually be built into the fastest and most effective information center and the largest entrepot in Ankang.

Hanzhong Baohe Logistics Park is the core of the modern logistics industry in Hanzhong City and Southern Shaanxi. The aim of its development is to establish it as a large-scale, multi-functional, modern ecological and low-carbon provincial integrated park.

6.3.3 Development of Logistics for Key Industries

Key industry logistics developed in Shaanxi Province includes manufacturing logistics, bulk commodity logistics and agricultural products cold chain logistics.

Development of manufacturing logistics focuses on equipment manufacturing, automobile, electronic information, steel, non-ferrous metal, petrochemical and other major industries. The key projects to be constructed include Shaanxi Hongguang Iron & Steel Logistics Park, Baoji Western Logistics Center, Fuping Air Express Logistics Center, Xi'an Sanqiao International Automobile Logistics Center, and Yangling Agricultural Products and Agricultural Logistics Park.

Bulk commodity logistics refers to services for circulation of bulk commodities like iron and steel, energy and chemicals, steel products, food, etc. The key projects implemented include Xi'an Western Commodity Trading Center,

Dabaodang and Mengjiahao Energy Chemical Industry Logistics Base, Baoji Coal Distribution Center, China Material Storage, and Transportation Company Xi'an Steel Logistics Center.

Agricultural products cold chain logistics focuses on building and improving cold chain logistics facilities for storage, processing, transportation, and distribution of fresh agricultural products, so as to increase the preservation ratio of fresh agricultural products during refrigerated transport. The major refrigeration logistics centers include Western Xinqiao Logistics Center, Xi'an Zhuque Agricultural Products Trading Center, Xianyang Xinyangguang Agricultural Products Trading Center, Xi'an Yurun Agriculture Products Global Purchasing Center, Huashen Fruit Group Co., Ltd., Shaanxi Changshen Apple Logistics Center, Xi'an Fangxin Group Co., Ltd., and Weibei Apple Logistics Park.

6.3.4 Development of Third-Party Logistics Enterprises

To vigorously develop the third-party logistics enterprises, Shaanxi Province will adopt a multi-pronged strategy: (1) support industrial and commercial enterprises to detach their self-operated logistics and encourage them to outsource logistics; (2) promote traditional transportation and storage enterprises to transform into third-party logistics enterprise; (3) foster and develop private logistics enterprises and attract domestic and overseas third-party logistics enterprises to settle in Shaanxi.

Next, different modes suitable to local conditions should be adopted to develop third-party logistics. The main ideas are as follows: (1) develop third-party logistics relying on the province's pillar industries, such as advancing energy and chemical logistics based on these pillar industries in Yulin; (2) develop third-party logistics with the support of large-scale enterprises and groups, such as promoting manufacturing logistics with the support of Qinchuan Machine Tool Group Corp. (QCMT&T) and Xijing Electronic Corp.; (3) develop third-party logistics on the basis of various development zones, such as establishing the High-Tech Logistics Co., Ltd. relying on Xi'an High-tech Industry Development Zone; (4) develop third-party logistics based on industries, such as developing specialized logistics companies on the basis of grain, tobacco and postal service; (5) develop third-party logistics relying on the market, such as setting up the third-party logistics of Bester Group by taking advantage of the light products wholesale market, the clothing wholesale market and the freight market.

Furthermore, the government must foster logistics enterprises and groups by supporting key logistics enterprises and integrating available logistics resources through consolidation, leasing, and acquisition. It must take the lead in fostering logistics enterprises and groups in sectors like energy and chemicals, manufacturing, fruit, building materials, postal service, so as to improve the industrial concentration and gain scale advantage.

6.4 Summary

This chapter describes the logistics development of Shaanxi Province in terms of regional economic development, features of its logistics development and the future direction of its logistics development. The economic development of Shaanxi Province is still of inland type and imbalanced among its regions. However, in recent years, Shaanxi Province has realized a sustainable development in regional economic aggregate, total sales of consumer goods and import and export trade. In terms of the features of logistics development, the scale of logistics markets in Shaanxi Province continues to expand and regional logistics of Northern Shaanxi, the Central Shaanxi Plain and Southern Shaanxi are distinctive due to differences in economical activities of the three regions. A regional logistics development pattern featuring "advanced manufacturing in the Central Shaanxi Plain, energy and chemical industry in Northern Shaanxi and green industry in Southern Shaanxi" has taken shape. Meanwhile, Shaanxi Province continues to promote the interactive development of manufacturing industry and logistics industry; Xi'an International Trade & Logistics Park is continually advancing the development of export-oriented economy in Shaanxi Province. In the "12th Five-Year Plan" period, the development mandates of logistics industry in Shaanxi Province are: focusing on constructing three major logistics platforms (including logistics network and facilities platform, public logistics information platform and logistics research & development platform), building seven key logistics parks, developing manufacturing logistics, bulk commodity logistics and agricultural products cold chain logistics, and accelerating the development of third-party logistics enterprises. Construction of all these diversified logistics facilities and systems will play a significant role in supporting the future development of logistics industry in Shaanxi Province.

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Chapter 7
Development of Apparel Logistics in China

Fan Qin

China is a world's foremost nation in apparel production, consumption and exporting. Apparel industry is deemed as an important pillar industry in China's consumer goods production and as one of the industries with export competitiveness on the global market. With the gradual adoption of advanced logistics concepts and specialized logistics facilities and technology in China's apparel logistics field, its logistics network has been gradually improved. Its specialization level continues to rise, the third-party apparel logistics service experiences a rapid development, and the international apparel logistics mode also appears with increasing diversification.

This chapter discusses the characteristics, the main operations model, the development environment and status, the existing problems and development trends of the apparel logistics in China. Section 7.1 gives a comprehensive description of the basic characteristics of the apparel logistics in China and an introduction of its main operations model. Section 7.2 provides an analysis on the development environment of the apparel logistics in China. Section 7.3 analyzes the development status of the apparel logistics in China from four aspects, namely, the layout of logistics network, the specialization level, the third-party logistics services, and the international logistics. Section 7.4 points out the problems existing in the apparel logistics in China and projects the future development trend.

7.1 Overview of Apparel Logistics

Apparel logistics generally refers to a process of planning, execution and control in the forward and reverse flow and storage of finished apparels and related information between the production sites and the consumption destinations. It consists of

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B. Liu et al. (eds.), *Contemporary Logistics in China: Assimilation and Innovation*, Current Chinese Economic Report Series, DOI 10.1007/978-3-642-55282-3_7,

apparel transportation, storage, packaging, handling, distribution, circulation processing, logistics information processing, and other related links.

7.1.1 Basic Characteristics of Apparel Logistics in China

Apparel products feature multiple variety, strong seasonality and short fashion cycle. Therefore, apparel logistics is usually characterized by high requirements for timeliness, wide regional span of logistics network, complex network structure, vast logistics management categories, large difference in logistics management requirements, and complicated return management practices.

7.1.1.1 High Requirements for Timeliness

Apparel products are characterized by strong seasonality and short fashion cycle. Compared to logistics for ordinary life necessities like foods and household chemical products, apparel logistics usually has higher requirements for timeliness as the apparel products are more time-sensitive, which usually require minimum lead time from order receipt to delivery, and call for a more timely and accurate communication of logistics information.

7.1.1.2 Large Logistics Network Span and Complex Network Structure

Apparel logistics in China features a large network span. China's southeast coastal provinces produce more than 80 % of the nation's textiles and apparel products. This means that a large volume of textiles and apparel products from southeast coastal provinces are sold and transported to the Central and Western regions. Therefore, domestic apparel logistics operations generate a massive transportation task (Cao Liping et al. 2012) of shipping from the Eastern region to the Central and Western regions. Seeing from the global logistics network, since the production plants and sales markets of many Chinese apparel enterprises have spanned a large number of countries, apparel logistics needs to be carried out in various countries and regions.

The network structure of apparel logistics in China is very complex. Major sales model for apparel products in China includes self-operation, agent, wholesale, franchise and direct selling. Sales channel involves markets, supermarkets, apparel wholesale markets, textile and apparel markets, specialty stores, discount stores, online stores, etc. Different customer groups in different sales models and channels have significantly different needs for apparel logistics services, which greatly increases the complexity of apparel logistics network structure.

7.1.1.3 Numerous Management Categories

Apparel products come in many varieties. In apparel logistics management, it is necessary to subdivide the products by varieties, patterns, colors, sizes, prices, fabrics and some other attributes. Meanwhile, the SKUs[1] of apparels vary with seasons; therefore, different categories need to be managed in different seasons. Due to the varieties of apparel products, apparel enterprises are required to manage numerous categories of products in storage, transportation, distribution, packaging, returning and other logistics related links. This greatly increases the complexity of the apparel logistics management.

7.1.1.4 Different Logistics Management Requirements

Significant difference exists in the profit margin of sales of apparels in different market segments. This leads to different requirements for logistics management of different categories of products. The major logistics management objective for expensive and high-value-added apparel products is usually to ensure a quick response to the market. The logistics management of such apparels imposes high requirements on timeliness, so logistics operators are more inclined to use advanced logistics equipment and technology to ensure availability and logistics service quality. The major objective of logistics management of inexpensive and low-value-added apparel products is usually to minimize cost. The operators of such apparels pay more attention to the reduction of logistics cost and the improvement of logistics efficiency.

7.1.1.5 Difficult Product Return Management

In order to enhance competitiveness, more and more apparel enterprises adopt a variety of return policies and even resort to the free or no-fault returning policy to attract and keep customers. These competitive tactics increase the frequency of customer's return on apparel products, and making the apparel returning logistics more and more critical to the competition of the apparel enterprises. Presently, the reasons for allowable return of apparel in China mainly include damaged products in the logistics process, order processing errors, delivery delay, excessive retailer inventory, defective products, and non-defective products. Returns of different reasons usually require different return logistics processes. Generally, customers also have different requirements on the apparel returning services regarding the return processing speed, charges for return, etc. All these factors have increased the difficulty in the management of apparel return logistics.

[1] SKU: Stock Keeping Unit.

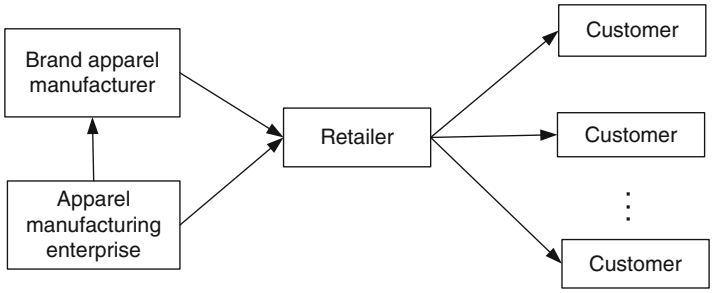

Fig. 7.1 Model of direct delivery from apparel manufacturers

7.1.2 Main Operations Models of Apparel Logistics in China

The participants of the apparel logistics in China mainly include apparel manufacturers, third-party logistics providers and various apparel retailers. The operations models of apparel logistics can be divided into four categories based on the logistics nodes involved in the logistics process, i.e., the manufacturer direct delivery model, the distribution center model, the apparel market gathering and distribution model, and the e-commerce model.

7.1.2.1 The Apparel Manufacturer Direct Delivery Model

Model of direct delivery from apparel manufacturers refers to a logistics operations model in that the apparel manufacturers directly distribute their products to retailers, as shown in Fig. 7.1. In this model, the apparel manufacturers directly provide logistics service to the retailers. This model is suitable for the apparel manufacturers with few points of sales, such as some local apparel enterprises.

7.1.2.2 The Distribution Center Model

The distribution center model refers to a logistics operations model in that the apparel manufacturers deliver their products to retailers through some distribution centers, as shown in Fig. 7.2. At present, the operations subject of apparel distribution center in China mainly includes brand apparel manufacturers, brand apparel distributors and third-party logistics firms. This operations model is suitable for manufacturers with chain stores. It has the advantage in expanding the sales scope of the manufacturer's products and improving its operations efficiency of cross-regional apparel logistics. Furthermore, some brand apparel manufacturers with sales model of self-operating chain stores also use the cross-docking approach for storage management in their distribution centers.

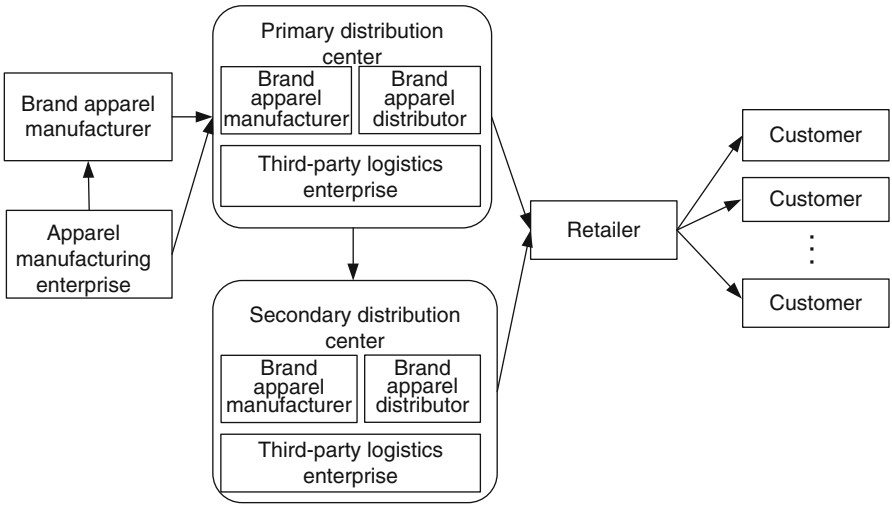

Fig. 7.2 The distribution center model

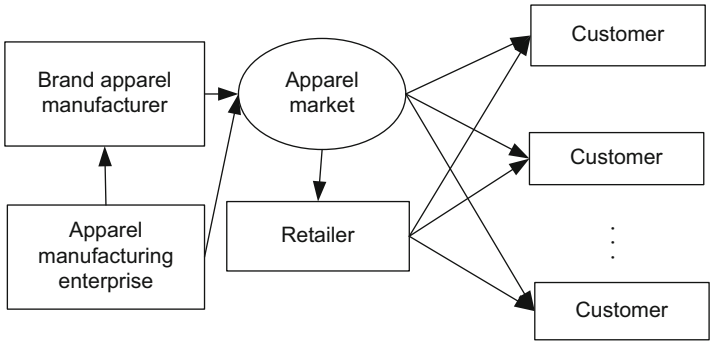

Fig. 7.3 The apparel market model

7.1.2.3 The Apparel Market Gathering and Distribution Model

Apparel market gathering and distribution model refers to a logistics operation model in that apparel manufacturers deliver their products to retailers through some apparel markets, as shown in Fig. 7.3. The textile and apparel market is an apparel products gathering and distributing center, evolved on the basis of the apparel wholesale market in the early years of China's opening-up and reform period, and gradually developed into a large scale wholesale business circle. The textile and apparel market has become an important part of China's apparel circulation system and plays an increasingly important role in connecting the production and sales of apparel products. The apparel market gathering and distribution model is currently widely used in the sales of low and medium-grade apparels in China.

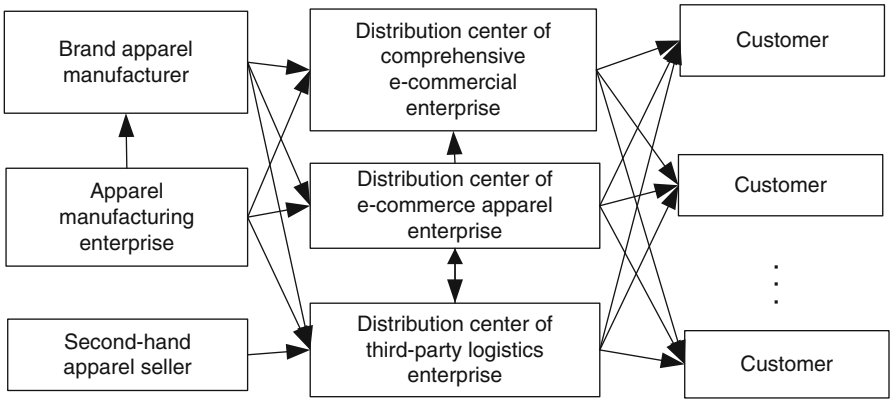

Fig. 7.4 E-commerce model

7.1.2.4 The E-commerce Model

The e-commerce model refers to a model in that apparel manufacturers deliver their apparel products to customers by means of e-commerce logistics in the final link of the apparel sales. Figure 7.4 exhibits the network structure of the e-commerce logistics model. At present, the e-commerce model for apparel logistics in China is mainly divided into two categories: one is the C2C e-commerce model in which the seller enterprise outsources its logistics to a third-party express enterprise for distributing the products; the other one is the B2C e-commerce model in which the seller enterprise combines its self-built logistics center with some third-party logistics firms for distribution. For example, Shanghai Mecoxlane International Mailorder Co., Ltd. and Vancl.com both adopt the logistics distribution system which combines its self-built logistics distribution center with some third-party logistics firms. In addition, JD.com, Amazon China and some other integrated e-commercial enterprises engaged in apparel business have also resorted to such apparel distribution model.

7.2 Development Environment of China's Apparel Logistics

In recent years, the growth of China's apparel export has slowed down since 2011. However, along with the upping of national consumption level, domestic sales of apparels continue to rise, and the consumption structure of domestic apparels is also upgraded gradually. Particularly, e-commerce transactions of apparels have expanded rapidly and the apparel industry is developing toward a clustered industry. This provides a healthy environment for the scale and the specialization development of the apparel logistics in China.

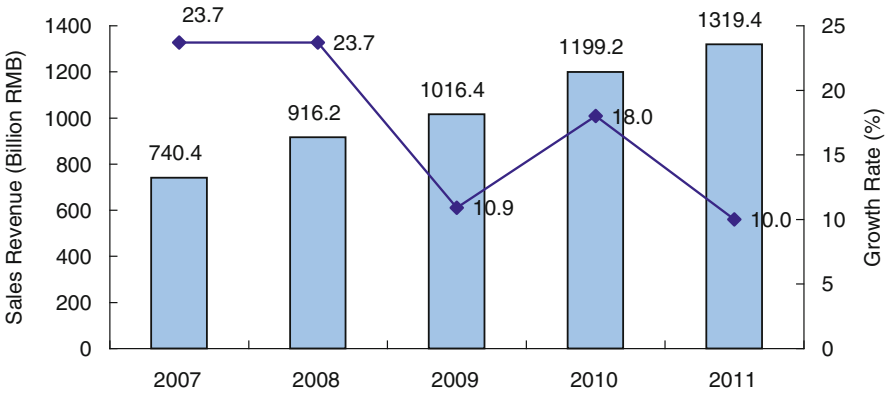

Fig. 7.5 Sales revenue and growth rate of apparel products in China for 2007–2011 (Source: Compiled from the *China Statistical Yearbook (2008–2012)*, published by the National Bureau of Statistics of China)

7.2.1 Scale of Apparel Sales

The scale of sales of apparel products in China continues to grow. The sales revenue of apparel[2] enterprises above designated size had been increased to 1,319.43 billion RMB in 2011 from 740.43 billion RMB in 2007 (as shown in Fig. 7.5). Although the development of apparel industry in China had slowed down to a medium pace in 2012 from the rapid growth before 2008, and the growth of sales revenue also gradually subsided, the continuing expansion of apparel sales still pushed up the total demands for apparel logistics in China.

7.2.2 Apparel Export

For a long period over the past two decades, China's apparel exports had been in a state of rapid growth; apparel export occupied an important place in China's foreign trade. In 2012, apparel export in China was 159.15 billion USD, increased by 3.9 % year-on-year; this growth rate in apparel exports was far lower than the national average growth level of exported goods. Figure 7.6 shows China's export value of apparel products for 2006–2012.

[2]Apparel enterprises above designated size refer to all state-owned and non-state-owned apparel enterprises with annual revenue from principal business over 5 million RMB from 1998 to 2006, all apparel enterprises with annual avenue from principal business over 5 million RMB from 2007 to 2010, and all apparel enterprises with annual revenue from principal business over 20 million RMB since 2011.

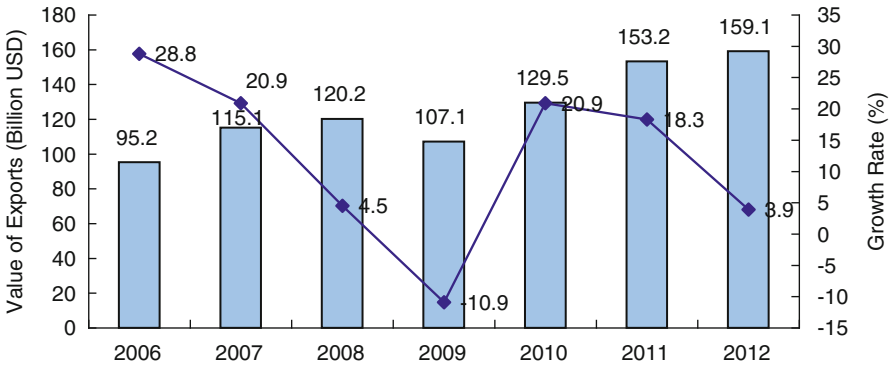

Fig. 7.6 China's export value of apparel products for 2006–2012 (Source: Compiled from the *Major Export Commodities in Quantity and Value (2005–2012)*, published by the General Administration of Customs of the People's Republic of China)

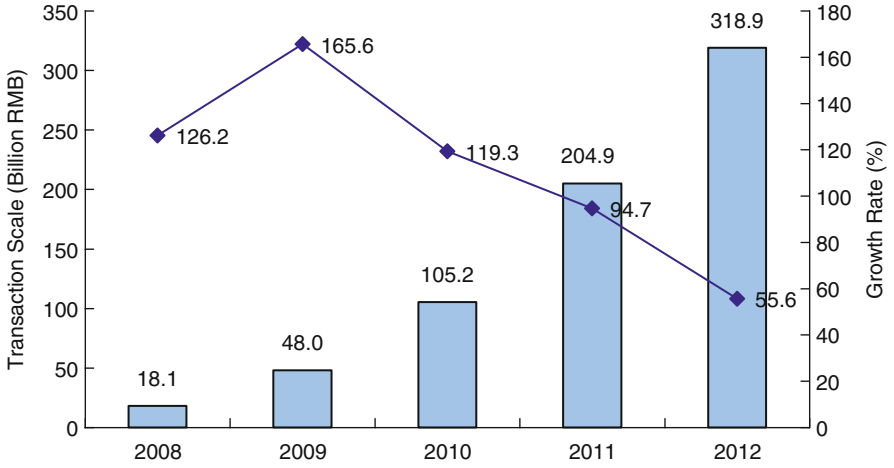

Fig. 7.7 Online apparel shopping transaction scale and growth rate for 2008–2012 (Source: Compiled from the *China Online Apparel Shopping Research (2011–2012)*, published by the iResearch Consulting Group)

7.2.3 E-commerce Transactions of Apparel

In recent years, online shopping transaction for apparels in China has expanded sharply, as shown in Fig. 7.7. In 2012, the transactions of online apparel shopping reached 318.88 billion RMB, achieving an annual growth of about 55.6 % (China E-business Research Center 2013). Meanwhile, the percentage of the sales income from online shopping of apparels in the total volume of retail sales of apparels also shows a rapid increase. From 2009 to 2012, the percentages of sales income of online apparels shopping in the total volume of retail sales of apparels were

respectively 1.8 %, 4.4 %, 8.4 % and 14.3 % (China E-business Research 2012). The growth in online apparels shopping transactions in China promoted the brisk increase in demand of e-commerce logistics for apparels.

7.2.4 Clustered Development of the Apparel Industry

The apparel industry in China features a very prominent clustered development. At present, many apparel industry clusters have formed in the main apparel producing areas such as Guangdong province, Zhejiang province, Jiangsu province, Shandong province, and Fujian province. These apparel industry clusters possess sound industrial chains and have become a major force in the local economic growth.

Since the beginning of the twenty-first century, China's manufacturing industry has begun a large-scale transfer from the southeast coastal regions to the central and western inland regions. The apparel industry has become the major industry in this wave of industrial transfer due to its low financial and technical threshold and high sensitivity to labor cost. According to statistics, the apparel manufacturing industry embarked on an apparent regional adjustment from 2009 to 2011. The total industrial output of apparel manufacturing enterprises above designated size in the Central and Western regions reached 231.0 billion RMB in 2011, up by 112.4 % compared with 2009; this amount accounts for 18.5 % of China's total output of apparel manufacturing industry, and an increase of 6.9 percentage points in comparison with that of 2009 (Ou Haiguang 2012). During the step-ladder transfer of textile and apparel industry to the Central and Western regions, apparel industry clusters also began to appear in these regions like Jiangxi, Hubei, Chongqing, and Sichuan and in the Northeast region like Liaoning.

Apparel logistics system is one of the indispensable service systems for the clustered development of apparel industry. The clusters of the apparel industry in China help promote the specialized, scaled and informationized development of the local apparel logistics.

7.2.5 The Consumption Structure of Apparels

With the rapid economic development in China, consumers impose an increasing demand for more personalized and higher-end apparels, resulting in the continual adjustment and upgrading of the consumption structure of apparels. Furthermore, many overseas apparel brands have entered into China's market, prompting the apparel industry to continually strengthen its R&D efforts and improve through transformation and upgrading. Meanwhile, these moves enable China's apparel industry to provide customers with more diverse products choices.

Viewed from the demands for different grades of apparels, China had become the world's second largest luxury apparel market after Japan in 2011. Viewed from the

consumption mode of segmented apparel market, apparel consumption in China has gradually morphed to online shopping and fast fashion in casual wears.

The upgrading of apparel consumption structure will prompt the proportion of small-lot, customized apparel production mode in China. This in turn will require the upgrading of existing apparel logistics system to ensure faster and more accurate production and sales of apparel products.

7.3 Development Status of Apparel Logistics in China

With the expansion of scale and scope of the apparel consumption, apparel markets and apparel distribution centers in China experienced a rapid growth; apparel logistics network structure, likewise, continued to improve. The apparel industry's increasing requirements for logistics efficiency promoted the improvement of specialization level of the apparel logistics in China. The differentiated customer needs made apparel logistics in China even more diversified.

7.3.1 Apparel Logistics Network

From the perspective of the layout of national apparel markets, large apparel markets in China are mostly concentrated in the eastern coastal regions at the present. Fujian Shishi Apparel Wholesale Market is Asia's largest apparel logistics center and a global designated apparel production and procurement base. Guangdong, Jiangsu and other regions with well-developed apparel industry already own a number of large-scale and highly specialized apparel markets. The share of apparel output in the Central and Western regions has gradually increased, along with the regions' economic development as well as the regional adjustment of the apparel manufacturing industry toward inland. Some report shows that the apparel output in the Central and Western regions accounted for 17.4 % of the total output in China in 2012; the growth rate of apparel output in the Central and Western regions reached 18.29 %, while the growth rate in the Eastern region was only 2.75 % in 2012 (Zhou Shaojie 2013). The increased apparel output in the Central and Western regions will have some impact on the layout of existing apparel markets in China, altering the pattern of east-west one-way flow of apparel sales logistics to a certain extent.

Viewing from the layout of apparel distribution (storage) centers, some apparel enterprises or apparel logistics enterprises in China have begun to expand their logistics network on the basis of their existing logistics networks in order to realize a national or global layout of apparel logistics network. For example, the Semir Group signed an agreement of investment intent in Tianjin in April 2012 and proposed to set up a wholly-owned subsidiary in Wuqing district, Tianjin. This subsidiary was responsible for the establishment and operations of the storage and settlement logistics center for the Northern Region. This project would further

improve the business layout of the Semir Group and achieve the strategic plan of national coverage. Vancl's wholly-owned and self-built distribution company Rufengda Express now have already set up distribution warehouses in Beijing, Shanghai, Guangzhou, Xi'an, Chengdu, and Wuhan, in addition to the five stations established in Beijing, Shanghai and Guangzhou in 2008.

Some Chinese apparel enterprises further build distribution centers abroad to expand their global logistics network. For example, in January 2008, Youngor merged the Xinma Group, an affiliate of Kellwood – a top-5 apparel company in the US, thereby obtaining its apparel design capability and the logistics distribution system in the United States. Moreover, some foreign logistics companies also begin to build apparel logistics distribution centers in China according to their business development needs. For example, in 2013, DHL set up the Fashion Center of Excellence in Shanghai, which lays a good foundation for the expansion of its logistics market in China.

7.3.2 Specialization Level of Apparel Logistics

In recent years, the specialization level of apparel logistics in China continues to rise with the establishment of specialized apparel logistics/distribution centers. Some brand apparel enterprises begin to accelerate the construction of modern and specialized apparel logistics centers due to business development needs. Brand apparel enterprises like the Metersbonwe Group and the Semir Group have already built their modern logistics management centers in Zhejiang and put them into operation. Advanced logistics technologies such as bar code management, automated vertical storage, automatic storage/retrieval system (AS/RS), wireless terminal technology, automatic sorting technology have been widely adopted in the apparel logistics network of these enterprises. Modern logistics centers of Quanzhou's brand enterprises like the Septwolves Industry Co., Ltd. and the Seven Brand Group Co., Ltd. are also under construction. Vertical warehouses, intelligent scanning systems, automatic hanging conveyor lines and other intelligent logistics facilities also begin to be applied in the apparel logistics field of these enterprises.[3]

For apparel storage management, some brand apparel enterprises have successively adopted the storage management information system. In 2008, the Semir Group developed a storage management system in cooperation with the U.S. Manhattan Corp., implemented on its Wenzhou and Shanghai logistics centers, to achieve a real-time sharing of information from development, design, production, logistics distribution of products to the end consumers. Hangzhou JNBY Finery Co., Ltd., Eland Fashion Co., Ltd. and some other brand apparel companies improved their operations efficiency of apparel storage by implementing the seed-sowing type of electronic label sorting system.

[3] "Quanzhou Enterprises Build Billion 'Three-dimensional Warehouse' and Apparel Can Be Stored without Folding," http://nz86.com/article/, 2012-11-15.

With the increasing proportion of customers for medium and top-grade apparels, hanger-mounted type of transportation mode has been gradually employed in the apparel logistics field. Currently, some large apparel production enterprises already possess the capability of handling hanger-mounted transportation. Some third-party logistics companies at home and abroad have been able to provide hanger-mounted apparel transportation services as well.

7.3.3 Third-Party Logistics Service

Some brand apparel enterprises in China gradually outsource their production and logistics activities. As the scale of outsourcing demand for apparel logistics continues to expand, many third-party logistics enterprises begin to develop specialized apparel logistics services and even deem apparel logistics as their core business.

Some international third-party logistics enterprises have also move into the field of apparel logistics. IDS Logistics, a subsidiary of Li & Fung Group, has already shifted its core business in China from the original chemical logistics to apparel logistics since 2004; it provides third-party logistics services for brand apparel manufacturing enterprises like the Nike Sports (China) Co., Ltd., the Adidas Group, and the Puma Group. In May 2009, DHL announced that it would move its north Asia Pacific office of Global Forwarding to Kwai Chung Kowloon Commerce Center in Hong Kong, set up a fashion apparels freight management center and develop a special one-stop fashion apparels logistics service. For China's own third-party logistics enterprises, the Beijing UNI-E Logistic Services Company Ltd. was established in 2002 as the first company to provide third-party logistics services for apparel and accessories retail enterprises in Beijing, and then in China. The Beijing Southwest Logistics Center provides logistics distribution service for numerous well-known brand apparels like Septwolves, JOEONE, Ochirly, and Eve in Beijing. The China Chaintek United Co., Ltd. provides apparel storage and distribution services for the nation's well-known apparel enterprises such as the Seven Brand Group Co., Ltd., the China Lilanz Group Co. Ltd. and the K-boxing Fashion Co., Ltd.

Value-added services from China's third-party apparel logistics service providers also continue to multiply. For example, the Hoau Logistics Group provides the Adidas Group a middle and high-end freight service – the "Arrival on Pre-set Date" delivery service, combining airfreight and regular less-than-truck-load transportation. This service allows the Adidas Group to pay only one-third of the airfreight cost to have its apparels delivered from Shanghai to Guangzhou in two days. Vancl.com's wholly-owned and self-built logistics company Rufengda Express offers the "24 Hours Delivery," the "Free Postage-included Return and Replacement within 30 Days," and the "On-site Try-on" logistics services for its customers.

7.3.4 *International Apparel Logistics Pattern*

International apparel logistics in China exhibits a high-degree of diversification, in order to meet the diverse requirements for apparel logistics of the foreign customers and brand manufacturers. Presently, container is used for international apparel transportation of general products, usually involving sea transportation and railway transportation. Air transportation is usually adopted for the middle and high-end apparel products with higher added values in order to lower the damage rate during transportation and to reduce the time to the market.

In terms of logistics for imported apparels, some internationally renowned brand enterprises usually adopt the approach of delivering directly from abroad or establishing own distribution centers for the distribution and sales of their products. For example, Zara airlifts its apparel products to retail outlets in China directly from the logistics centers at its headquarters in Spain in order to achieve a faster delivery. The Etam Group transports and delivers its products to more than 1,000 stores throughout China directly from its central distribution center (CDC) in Fengxian, Shanghai and five other domestic regional distribution centers (RDC). For export logistics, apparel products manufactured in China mainly achieve their international transportation and distribution through the logistics networks of international buyers or third-party logistics firms.

With the increasing export volume of apparels, China's demand for international procurement, international transfer, distribution and other supporting logistics services become increasingly pronounced. At present, some bonded areas in China have started to provide specialized bonded apparel logistics services for apparel enterprises, thus accelerating the development of China's bonded apparel logistics. For example, Dalian Bonded Area provides a convenient bonded apparel logistics environment for apparel enterprises. Logistics enterprises like Sanxing Logistics, Itochu Logistics (China) CO., Ltd., and Mage-Link Logistics CO., Ltd. in bonded area have successively launched specialized apparel logistics services, established apparel logistics centers, and started bonded storage, international distribution, international trade, transit trade and other modern logistics services.[4] The Tianjin Port Commercial Bounded Warehouse, CBW, in Tianjin Bonded Area also carried out specialized apparel logistics services such as bonded storage, freight forwarding, and international distribution tailored to apparel enterprises.

7.4 Problems and Development Trend of Apparel Logistics in China

At present, problems such as low operations level, lack of specialized third-party logistics service enterprises and low degree of standardization still exist in the apparel logistics in China. As for future development, along with the transformation

[4] "'Three Specialties' in Bonded Area to Create Apparel Logistics Advantages," http://www.runsky.com/, 2011-09-04.

and upgrading of the apparel industry and the gradual push of the process of building own apparel brands, the network layout of the apparel logistics in China will be adjusted and apparel logistics will migrate toward an integrated and specialized development.

7.4.1 Problems Existing in Apparel Logistics in China

7.4.1.1 Low Degree of Logistics Equipment Modernization

At present, except for a few large enterprises which have adopted modern logistics equipment with higher logistics operational efficiency, a considerable number of apparel enterprises are still hampered by the low grade of logistics equipment. For example, some apparel enterprises still employ some primary transportation equipment such as plain trolley and carrier tricycle to handle and distribute their goods, resulting in problems of serious waste of human resources, and high rate of lost and damaged goods. Some apparel wholesale markets are not equipped with special logistics channels and have low degree of mechanized capability for goods handling and storage, causing logistics inefficiency and serious waste of resources (Xu Ying and Xu Qingqing 2012).

7.4.1.2 Low Operational Level of Logistics Enterprises

Except a few large apparel enterprises in China, a majority of apparel enterprises' logistics operations level needs improvement. For storage management, many apparel enterprises' picking operation is still manual, relying on paper list, with low efficiency and high error rate. In the distribution link of their apparel distribution system, many enterprises show little concern for the service, and time, resulting in long delivery lead-time., Compared with the advanced distribution operations of some foreign logistics firms, the service level of these domestics logistics firms is way too low. In China, only few logistics enterprises with high-value-added products and international cooperation consciously improve their distribution efficiency and quality by establishing specialized apparel distribution system.

7.4.1.3 Lack of Specialized Third-Party Apparel Logistics Service Enterprises

Due to apparels distinctive attributes of large varieties, small batch size in production and demand, the apparel industry requires more precise and specialized logistics services. Apparel industry in China attaches more importance to the speediness, low cost and security of third-party logistics services in outsourcing its logistics business. Currently, there are few specialized apparel logistics enterprises

in China. Many third-party logistics enterprises, constrained by inadequate hardware facilities, lacking in management skills and low quality of personnel (Bi Kang and Zhang Dongliang 2005), provide logistics services which fail to fully meet the specialized needs of the apparel enterprises. This has led many apparel manufacturers to organize and manage their own logistics activities.

7.4.1.4 Low Degree of Standardization of Apparel Logistics

The degree of logistics standardization for the apparel industry in China is relatively low, compared with that of developed countries. Presently, China has not yet achieved a uniform standard in apparel logistics operations. Due to absence of necessary industrial standards and regulations (Bi Kang and Zhang Dongliang 2005) for the packaging, transportation and handling of apparel and other logistics links, logistics standards are mostly determined by the cooperating enterprises through negotiation.

The main apparel logistics standard in China is set by the *Labeling, Packaging, Transporting and Storage for Apparels* issued by the National Development and Reform Commission and implemented in 2008. This standard only specifies the general technical requirements for partial logistics activities of batch-produced apparels and does not apply to the batch-produced apparels with technical requirements for the packaging, transporting and storage otherwise agreed on by the contracting parties. The low degree of logistics standardization, to some extent, hinders the improvement of apparel logistics operations efficiency in China.

7.4.2 Development Trend of Apparel Logistics in China

7.4.2.1 Gradually Adjusted Apparel Logistics Network Layout

With respect to the network layout of enterprises' distribution centers, brand apparel enterprises will continually adjust and expand their apparel logistics network by establishing distribution centers/storage bases, mergers and acquisitions, logistics outsourcing and other methods, in order to bolster their international influence and to achieve the expansion goals of their brand. For the network layout of apparel market, the number and scale of apparel markets in the Central and Western regions in China will increase to some extent due to the westward transfer of apparel manufacturing industry in recent years.

7.4.2.2 Integrated Apparel Supply Chain Logistics

Apparel logistics in China will be gradually developing toward the direction of integrated supply chain logistics. In June 2012, the Alliance of Textile and Apparel Supply Chain was established in Ningbo. The Alliance would organize and carry

out a series of projects and cooperation among its core members, clusters and leading enterprises on supply chain management. The intent is to reach an ultimate strategic "Win-win" or "Multi-win" supply chain cooperation model via knowledge and information sharing, experience and heritage transfer, resource integration, establishment of industry billboard, and exploration of business models among the members. The Alliance would promote the apparel logistics to develop towards the direction of integrated apparel supply chain logistics. With the recent development of third-party logistics services in China, some specialized third-party apparel logistics enterprises such as Beijing UNI-E Logistic Services Company Ltd. will be able to offer fast, comprehensive and efficient outsourcing services for apparel supply chain logistics, and to provide necessary organizational assurance for the integration of apparel supply chain logistics. The gradual application of various advanced information technologies and automation techniques will also provide a strong technical support for the integration of apparel supply chain logistics.

7.4.2.3 Gradually Improved Level of Apparel Logistics Specialization

With the elevated competitive pressure as well as the transformation and upgrading of apparel industry in China, many apparel enterprises have improved their efficiency in logistics management and distribution by enhancing the informationization construction of apparel logistics, establishing specialized apparel logistics systems and other measures. RFID technology will be gradually popularized in apparel logistics to improve its timeliness and accuracy. With wider application of advanced logistics technologies in the field of apparel logistics, such as automated sorting, automated conveyor, intelligent packaging, and goods tracing, the construction of specialized apparel logistics system integrated with a variety of advanced logistics management philosophies and technologies will continue to press forward. These developments will enhance the specialization level of the apparel logistics in China.

7.5 Summary

This chapter discusses the basic characteristics, the main operations modes, the development environment and status, the existing problems and development trend of the apparel logistics in China. The apparel logistics in China has the characteristics of high requirement on timeliness, wide logistics network span, complex structure, huge number of management categories, large difference in logistics management needs, and difficult return management practices. The major operations models include model of direct delivery from apparel manufacturers, distribution center model, apparel markets gathering and distribution model, and e-commerce model. The market environment of apparel logistics in China features the continual growth of apparel sales revenue, rapid rise of demands for e-commerce apparel logistics,

emergence of apparel industry clusters and elevation of apparel consumption structure. At present, China's apparel logistics network is becoming more and more complete and the specialization level is also gradually raised. Third-party logistics services continue to develop and international logistics models become increasingly diversified. However, China's apparel logistics operations level is still relatively low; the degree of logistics standardization needs to be further enhanced. In the future, the network layout of apparel logistics in China will be further adjusted, and the integration level of supply chain logistics will also be gradually improved.

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Chapter 8
Development of China's Port Logistics

Xiang Li

Port logistics is a significant support to China's international economy and trade and also an important growth point of economic development in its coastal and hinterland regions. In recent years, the Chinese Government has strengthened its efforts in developing port facilities and improving the logistics policy environment, so at present, port logistics has stepped up to a rapid development phase. Port logistics[1] becomes more and more important in China's national economy and social development.

This chapter introduces the development status and prospect of China's port logistics. Section 8.1 describes the development environment of China's port logistics, including the world's shipping market, China's domestic and foreign trade and logistics industry, as well as policies on China's port logistics. Section 8.2 introduces the current development status of China's port logistics, including the layout of its transport system, the infrastructure construction, the logistics scale, the business entities, the service functions, and the logistics network. Section 8.3 discusses the problems in the development of China's port logistics and suggests some plausible ways of dealing with them.

8.1 Development Environment of China's Port Logistics

The development environment of port logistics is affected by many factors. In this section, the development environment of China's port logistics is analyzed in aspects of world economic conditions, development of China's domestic and foreign trade and logistics industry, and its policies on port logistics.

[1] Research object of the report is coastal and inland river port logistics system, exclusive of airport and its logistics system.

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B. Liu et al. (eds.), *Contemporary Logistics in China: Assimilation and Innovation*, Current Chinese Economic Report Series, DOI 10.1007/978-3-642-55282-3_8,

8.1.1 Poor Overall Performance of World Shipping Market

Currently, the overall environment of global trade is moving toward contraction. For the past few years, the growth of international logistics demand has slowed down, the operating pressure in shipping market has been mounting and the price of shipping market has remained low. In the container shipping market, during the heavy export freight period in the Spring Festival of 2012, the comprehensive index of China's export container freight rate[2] is only 946.0 points; for some voyages, the utilization of shipping capacity was only about 75 %. In the shipping market of dry bulk, since the outbreak of the global financial crisis in 2008, the Baltic dry index (BDI)[3] has been declining for four consecutive years. All these point to an overall depressed shipping market, which affects the demand for international port logistics service.

8.1.2 Sustainable Growth of China's Domestic and Foreign Trade

Amid the recent complex international economic condition, China has achieved an overall stable development of foreign trade through adjustments in export structure and improvement of trade quality. Since 2009, the total volume of China's imports and exports freight has maintained a growth rate of above 5 %. In 2012, the total value of imports and exports was 3,866.8 billion USD, increasing by 6.2 % compared with that of the previous year. Therein, export value was 2,048.9 billion USD, increasing by 7.9 %; and import value was 1,817.8 billion USD, increasing by 4.3 % (National Bureau of Statistics of China 2013).

Flourishing domestic trade greatly accelerates the development of port logistics. Currently, overall domestic trade in China develops steadily, and consumer markets in urban and rural areas also show a good momentum. From 2008 to 2012, the annual growth rate of total retail sales of consumer goods in China exceeded 10 %. In 2012, the total retail sales of consumer goods was 21,030.7 billion RMB; compared with last year, this represents an actual increase by 12.1 % after adjusting for inflation (National Bureau of Statistics of China 2013).

[2] The index, taking 11 ship routes as sample routes, is compiled according to the freight rate information provided by 16 domestic and foreign shipping companies which hold large shipping market shares. The index takes January 1, 1998 as the base period, with an index of 1,000 points. The index has become an important and objective indicator reflecting China's container shipping market and provided a basis for enterprises' decision-making and the government's regulation-setting.

[3] The index is compiled on the basis of freight rates of 12 global traditional and main dry bulk carrier ship routes according to their degree of importance and market share; it has become an important price index in international trade and shipping market and an important indicator for assessing the price and the market trends of large volume of dry bulk.

8.1.3 Smooth and Steady Development of China's Logistics Industry

In recent years, China's logistics market maintains a smooth, steady and rapid growth on the whole. In 2012, the total amount of China's social logistics reached 177.3 trillion RMB, with the year-on-year growth of 9.8 % in comparable price. In terms of the composition, total logistics of industrial products reached 162 trillion RMB, with the year-on-year growth of 10 % in comparable price. Added value of nationwide logistics industry for 2012 was 3.5 trillion RMB, with the year-on-year growth of 9.1 % in comparable price. Therein, logistics value-added of transportation and warehousing increased by 8.7 % and 6.8 %,[4] respectively, compared with the previous year.

8.1.4 Gradual Perfection of China's Port Logistics Policies

8.1.4.1 The 12th Five-Year Plan on Transport

In April 2011, the *"12th Five-Year" Plan on Transport* was issued by the Ministry of Transport, in which quantitative indexes for China's port logistics development from 2011 to 2015 were put forward, as shown in Table 8.1. In addition, specific plans for 12th Five-Year plans on transport were also promulgated successively, as shown in Table 8.2.

8.1.4.2 Administrative Regulations and Opinions

In order to establish a modern logistics development environment for ports, featuring fairness, openness and orderly competition, various transport agencies in China have successively released a series of administrative regulations and opinions as shown in Table 8.3.

8.1.4.3 Regional Development Plan

According to the overall national development strategy, a series of local planning policies were released by many provinces and cities of China. The *Opinions on Promoting Shanghai to Accelerate Development of Modern Service Industry and Advanced Manufacturing Industry and Build International Financial Center and Shipping Center*, the *Development Plan on Liaoning Coastal Economic Zone* and the *Development Plan on Jiangsu Coastal Areas* had been approved by the Central Government. Meanwhile, a series of development plans and schemes concerning port logistics were also released by some local governments. Table 8.4 gives a brief description of these plans.

[4] *National Logistics Operation Report* (2007–2012), published by the National Development and Reform Commission, the National Bureau of Statistics of China, and the China Federation of Logistics & Purchasing.

Table 8.1 Key indexes of China's port logistics development in the "12th Five-Year" plan period

	Index	2010	2015
Infrastructure	Fitness of coastal port throughput capacity	0.98	1.10
	Number of deep water berths in coastal ports	1,774	2,214
	Mileage of inland high-grade waterway (1,000 km)	10.2	13.0
Transportation service	Percent of standardized inland river cargo ships (%)	20	50
	Total decrease in average loading and unloading time per kiloton of cargo at coastal main ports (%, base year: 2010)	15	
Technology and informatization	Percent of monitored sections of major nationwide and provincial highways and important segments of inland main waterways (%)	30	≥70
	Percent of monitored important profit-making transport equipment (%)	70	100
Green transport	Total increase in throughput capacity of coastal port per unit length (%, base year: 2010)	5	
	Total decrease in energy consumption per unit of transport turnover of operating ships (%, base year: 2005)	15	
	Total decrease in carbon dioxide emission by operating ships (%, base year: 2005)	16	
Emergency safety	Decrease in annual number of accidents and death toll at ports with megaton throughput capacity (%)	5 %/year	
	Arrival time of supervision and rescue airplane in important coastal water areas in emergency (minutes)	≤150	≤90

Source: Compiled from the *"12th Five-Year" Plan on Transport*, published by the Ministry of Transport of China

Table 8.2 Various policies for the "12th Five-Year" plan on port logistics

Release date	Name of plan	Issuer	Main content
April, 2011	*The "12th Five-Year" Plan on Transport*	Ministry of Transport	Continue to carry forward infrastructure construction of coastal ports, optimize structure and layout of coastal ports, accelerate improvement of logistics service level of ports, achieve objects such as improving transportation organization system, etc.; put forward quantitative indexes for China's port logistics development in the "12th Five-Year" plan period
April, 2011	*The "12th Five-Year" Development Plan on Transport Informatization of Highway and Waterway*	Ministry of Transport	Perfect the information system of traffic management, waterway management and port safety management; improve the real-time monitoring and safety warning system of the status of coastal ports' critical water areas and inland high-grade waterways; establish a comprehensive information service system of inland water transportation, and provide information service for port intermodal container transport; achieve sharing of documents and information for multiple modes of transport and integration service of cargo clearance

(continued)

Table 8.2 (continued)

Release date	Name of plan	Issuer	Main content
June, 2011	*The "12th Five-Year" Scientific and Technological Development Plan on Highway and Waterway Transportation*	Ministry of Transport	Carry on research and development of key technology for construction of coastal ports and waterways, port maintenance, and inland waterway governance; carry out research and development of key technology for safety of hub navigation; put forward research and development on major scientific and technological projects such as construction project of large-scale cross-ocean channels, key technology for upgrading the throughput capacity of the golden waterways of Yangtze River, etc.
January, 2012	*The "12th Five-Year" Development Plan on Environmental Protection in Highway and Waterway Transportation*	Ministry of Transport	Reinforce the construction of pollution abatement facilities in operating ports and ships; conduct research and formulate technical guidelines for eco-type ports and waterway projects; put forward key projects such as demonstration project of eco-type ports, ecological restoration pilot project of ports and inland waterways, pollution abatement of ports and waterways during construction, dust control of bulk cargo in port, etc.
September, 2012	*The "12th Five-Year" Plan on Nationwide Marine Economy Development*	The State Council	Carry forward effective connection and interaction between port and port-surrounding industry parks, build nationwide logistics hubs, logistics parks and international logistics centers based on the port; accelerate construction of electronic port, and establish port and electronic data interchange center of ships at important ports; carry forward construction of significant demonstration projects like public information platform and e-commerce platform of port logistics
October, 2012	*Guiding Opinions concerning the Acceleration of Structural Adjustment of Water Transport in the "12th Five-Year" Plan Period*	Ministry of Transport	In the "12th Five-Year" plan period, accelerate the construction of un-clogged, and efficient modern inland water transportation system, greatly promote the quality and efficiency of ports, and improve the comprehensive competitive shipping capability

Table 8.3 Administrative regulations and opinions in port logistics released in recent years

Release date	Name of plan	Issuer	Main content
April, 2007	*Administrative Regulations on Port Construction*	Ministry of Transport	Regulate newly built, expanded and reconstructed port construction projects and construction activities of supporting facilities; specify management responsibility, and put forward requirements on construction procedure, market management, information management, etc.
December, 2007	*Administrative Regulations on Port Planning*	Ministry of Transport	Settle on the overall structure of China's port planning system in two types and three levels, and make detailed regulations on preparation, review, approval and implementation of port planning
November, 2009	*Administrative Regulations on Port Operations*	Ministry of Transport	Specify the necessary requisites, needed documents and materials, administrative licensing procedures, release form of administrative licensing results, validity period and extension of certificate for activities concerning port operations, port cargo handling, etc.
November, 2011	*Opinions on Promoting Sound and Sustainable Development of Coastal Ports*	Ministry of Transport	Actively promote coordinated development of ports, orderly carry forward construction of wharf with professionalized transportation system; continue advancing the structural adjustment and resources integration of ports; reinforce the construction of port receiving and distributing system, and focus on promoting port transformation and upgrading

Table 8.4 Development plans on regional port logistics released in recent years

Release date	Name of plan	Issuer	Main content
April, 2009	*Opinions on Promoting Shanghai to Accelerate Development of Modern Service Industry and Advanced Manufacturing Industry and Build International Financial Center and Shipping Center*	The State Council	By 2020, an international shipping center with highly concentrated shipment resources, full shipping service functions, favorable shipping market environment, efficient modern logistics service and operating capability in global shipping shall be completed; an international shipping hub port with Shanghai as the center, Jiangsu and Zhejiang as two wings and Yangtze River Basin as the hinterland, and in close cooperation with other domestic ports through rational division of labor shall be constructed; a rapid, efficient and modernized receiving and distributing port system with scale, intensification and optimal structure shall be established

(continued)

Table 8.4 (continued)

Release date	Name of plan	Issuer	Main content
July, 2009	*Development Plan on Liaoning Coastal Economic Zone*	The State Council	Accelerate the construction of transport system with Dalian Port as the core, integrate port resources, optimize division of port functions, build cluster of modernized ports and establish the Northeast Asia International Shipping Center in Dalian
September, 2009	*Development Plan on Jiangsu Coastal Areas*	The State Council	Accelerate the construction of coastal port clusters with Lianyungang Port as the core, make full use of the location advantage of Lianyungang which connects the north and the south as well as the east and the west; develop Lianyungang Port to be an important comprehensive transportation hub and regional center port in China, as well as the eastern "bridgehead" of the New Eurasian Continental Bridge with strong radiation capacity
November, 2009	*Overall Plan on Port System Integration in Fujian Province*	Government of Fujian Province	Integrate all port resources of the province to form the layout of three major ports, namely, Fuzhou Port, Meizhouwan Port (Quanzhou-Putian) and Xiamen Port; specify the geographical layout, the positioning of logistics functions, and the management system of these ports
March, 2010	*Overall Plan for Beibu Gulf Port in Guangxi*	Government of Guangxi Zhuang Autonomous Region	Define Beibu Gulf Port as an important element of the port cluster in southwest coastal area, the southwest sea-exiting channel and an important hub of national comprehensive transportation system in China; establish the port layout system of "one port, three areas, eight districts and multiple harbors"
December, 2012	*Opinions on Coastal Port Development of Guangdong Province in the "12th Five-Year" Plan Period*	Government of Guangdong Province	Put forward three strategies on coastal port development of Guangdong Province, i.e., the "Asia-Pacific Center Strategy, South-north Hub Strategy and Portal Strategy of the Pearl River;" target the quantitative indexes of coastal port logistics in Guangdong Province to be achieved by 2015

8.2 Current Development Status of China's Port Logistics

With continually extending foreign trade and gradual perfection of the policy environment, China's port logistics has developed rapidly in many aspects. The layout of port transportation system has taken shape, the port infrastructure construction has been strengthened, a diversified pattern of business entity has emerged, the scale of port logistics has increased, and the functions and coverage of logistics service have also been continually expanded. These developments are described in more detail in the following paragraphs.

8.2.1 Layout Formation of Port Transportation System

Five major coastal port clusters, reflecting the nation's economic development, the layout of industries, and specific division of labor and functions have been basically formed in China. These are: the Circum-Bohai Port Cluster, the Yangtze River Delta Port Cluster, the Pearl River Delta Port Cluster, the Southeast Coastal Port Cluster and the Southwest Coastal Port Cluster. Meantime, China has also established eight port-centered transportation systems, including those for coal, crude oil, iron core, container, grain, automobile, transportation from land to island by roll-roll shipment, and passenger. Table 8.5 and Fig. 8.1 give the details of the five major coastal port clusters and their key ports.

In terms of inland water transport, China has formed a layout of "two horizontal main lines, one vertical line, 2 networks and 18 waterways,"[5] and 28 main inland river ports, consisting of the Yangtze River, the Pearl River, the Beijing-Hangzhou canal, the Huaihe River, the Heilongjiang River, and river systems of Songhua River and Liao River. Table 8.6 gives a list of the waterways and ports.

8.2.2 Apparent Elevation of the Modernization Level of Infrastructure

8.2.2.1 Quay Berth

In recent years, China has continually upgraded its quay berths toward larger scale and more specialization. By the end of 2012, there had been 31,862 quay berths owned by ports nationwide; including 5,623 quay berths in coastal ports, and 26,239 quay berths in inland ports. The number of berths of 10,000 tons level and

[5] This layout includes the main line of Yangtze River, the main shipping line of Xijiang River (two horizontal main lines), the Beijing-Hangzhou Canal (one vertical line), the high-grade waterway network of Yangtze River Delta, and that of Pearl River Delta (two networks), 18 high-grade waterways of main and branch rivers (18 waterways).

Table 8.5 Five major coastal port clusters and their key ports of China

Port cluster		Range of hinterland and important ports in this area
Circum-Bohai region	In coastal areas of Tianjin and Hebei	Mainly serves Beijing, Tianjin, North China and the regions extending westward. Consists mainly of Tianjin North International Shipping Center and Qinhuangdao Port; also including Tangshan Port and Huanghua Port
	In coastal areas of Liaoning	Mainly serves three provinces in the northeast of China and the eastern region of Inner Mongolia. Consists mainly of Dalian Northeast Asia International Shipping Center and Yingkou Port; also including Dandong Port and Jinzhou Port
	In coastal areas of Shandong	Mainly serves Shandong Peninsula and partial areas extending westward, with Qingdao Port, Yantai Port and Rizhao Port as the main ports; also including Weihai Port
Yangtze River Delta		Based on Shanghai International Shipping Center, composed mainly of Shanghai Port, Ningbo Port and Lianyungang Port and serving Yangtze River delta and areas along Yangtze River
Pearl River Delta		Composed mainly of Hong Kong Port, Guangzhou Port, Shenzhen Port, Zhuhai Port and Shantou Port, serving southern and southwestern areas of China, and linking Guangdong Province with inland areas, Hong Kong and Macao
Southwest coastal area		Composed mainly of Zhanjiang Port of Guangdong, Fangcheng Port of Guangxi and Haikou Port of Hainan, serving the development of southwestern areas and providing transportation guarantee for expanding the material exchange between Hainan Province and the outside areas
Southeast coastal area		Composed mainly of Xiamen Port and Fuzhou Port, serving the transport need of some areas in inland provinces like Fujian and Jiangxi towards Taiwan

Source: Compiled from the *Layout Planning of Nationwide Coastal Ports*, published by the Ministry of Transport of China, 2006

above increased by 124 over that of 2011, making the total number of such berths 1,886. Of this total, 997 were specialized berths, 379 were common bulk cargo berths and 340 were general break-bulk cargo berths. Tables 8.7 and 8.8 shows the details.

8.2.2.2 Inland Waterway

Inland water transportation has the advantages of large transport capacity and low energy consumption, and plays an important role in modern comprehensive transportation system. By the end of 2012, the length of navigable inland waterways in China has reached 125,000 km, including 63,000 km of graded waterways, accounting for 51.0 % of the total length and increasing by 0.7 percentage points over that of 2011. Figure 8.2 shows the lengths of navigable inland waterways of various grades.

Fig. 8.1 Layout of five coastal port clusters and key ports in China

8.2.2.3 Equipment Technology

In recent years, through development of new techniques, and improvement of technology, China's ports have attained modernization of transportation mode, rationalization of port handling technology and automation of port handling equipment. In some main domestic ports such as Tianjin Port, Shanghai Port and Shenzhen Port,

Table 8.6 Main inland river systems and corresponding ports in China

Name of waterway	Waterway system	Port
Yangtze River system	"One horizontal main line, one network and ten waterways": "one horizontal main line" refers to the main line of Yangtze River; "one network" refers to the high-grade waterway network of Yangtze River Delta; "ten waterways" refer to Minjiang River, Jianling River, Wujiang River, Xiang River, Yuan River, Han River, Jianghan Canal, Ganjiang River, Xinjiang River and Heyu waterway	Luzhou Port, Chongqing Port., Yichang Port, Jingzhou Port, Wuhan Port, Huangshi Port, Changsha Port, Yueyang Port, Nanchang Port, Jiujiang Port, Wuhu Port, Anqing Port, Ma'anshan Port, Hefei Port, Huzhou Port, and Jiaxing Inland River Port
Pearl River system	"One horizontal main line, one network and three waterways": "one horizontal main line" refers to the main shipping line of Xijiang River; "one network" refers to the high-grade waterway network of Pearl River Delta; "three waterways" refer to Youjiang River, Beipan River-Hongshui River, and Liujiang River-Qianjiang River	Nanning Port, Guigang Port, Wuzhou Port, Zhaoqing Port and Foshan Port
Beijing-Hangzhou Canal and Huaihe River system	"One vertical canal and two waterways": "one vertical canal" refers to the Beijing-Hangzhou Canal; "two waterways" refer to Huaihe River and Shaying River	Jining Port, Xuzhou Port, Wuxi Port, Hangzhou Port and Bengbu Port
Heilongjiang River and Songhua River & Liao River system	"Two waterways": refer to Heilongjiang River and Songhuajiang River	Harbin Port and Jiamusi Port

Source: Complied from the *Layout Plan on China's Inland Waterways and Harbors*, published by the Ministry of Transport of China, 2006

Table 8.7 Berths of 10,000 tons level and above in nationwide ports in 2012 (unit: set)

Berth tonnage	National ports	Increase over last year	Coastal ports	Increase over last year	Inland ports	Increase over last year
Total	1,886	124	1,517	95	369	29
10,000 to <30,000 tons	732	24	564	16	168	8
30,000 to <50,000 tons	335	24	232	16	103	8
50,000 to <100,000 tons	581	53	489	40	92	13
100,000 tons and above	238	23	232	23	6	–

Source: Compiled from the *Statistical Bulletin of Highway and Waterway Transportation Industry (2012)*, published by the Ministry of Transport of China

Table 8.8 Composition of berths of 10,000 tons and above in China (classified according to main usage) (unit: set)

Main usage	2012	2011	Increase over last year
Specialized berth	997	942	55
Therein: Container	309	302	7
Coal	189	178	11
Metallic ore	60	52	8
Crude oil	68	68	–
Refined oil product	114	111	3
Liquid chemicals	141	123	18
Grain in bulk	34	33	1
Common bulk cargo berth	379	338	41
General break-bulk cargo berth	340	322	18

Source: Compiled from the *Statistical Bulletin of Highway and Waterway Transportation Industry (2012)*, published by the Ministry of Transport of China

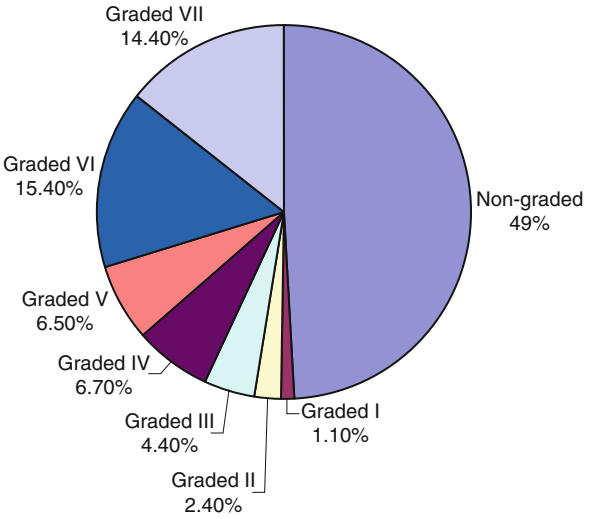

Fig. 8.2 Composition of length of navigable inland waterways in 2012 (Source: Compiled from the *Statistical Bulletin of Highway and Waterway Transportation Industry (2012)*, published by the Ministry of Transport of China)

intelligent port system planning has been conducted, and intelligent equipment and technology for port logistics has been applied in some port areas.

For example, automated bulk cargo logistics system based on accurate distribution, port container logistics system based on electronic tag, automobile roll-roll shipment logistics system based on value-added service, unmanned automatic container yard and other projects have been implemented in Shanghai Port in recent years, raising Shanghai Port's logistics operations efficiency to the world level. Especially in 2008, Shanghai Luojing Phase II bulk cargo terminal adopted the world's first fully-automatic ship loading/unloading system developed by China, and achieved unmanned automatic ship loading/unloading and automatic uniform dispersion. This system signifies that China's port bulk cargo equipment technology has advanced to a new level in the innovation process of digitization and intelligence.

Table 8.9 Ports with container throughput above five million TEUs in China

	Port	Container throughput in 2012 (million TEUs)
Coastal ports	Shanghai Port*	32.53
	Shenzhen Port*	22.94
	Ningbo-Zhoushan Port*	16.18
	Guangzhou Port*	14.55
	Qingdao Port*	14.50
	Tianjin Port*	12.30
	Dalian Port	8.06
	Xiamen Port	7.20
	Lianyungang Port	5.02
Inland ports	Suzhou Port	5.86

Note 1: Hong Kong Port is a world-class hub port and shipping logistics center; its operations mode and characteristics differ much from that of the Mainland ports, so it is not included in this table
Note 2: The "*" marks the port ranking in the world's top 10 container ports in 2012
Source: Compiled from the *Statistical Bulletin of Highway and Waterway Transportation Industry (2012)*, published by the Ministry of Transport of China, and www.chineseport.cn

8.2.3 Continual Growth in Scale of Port Logistics

In recent years, the scale of China's port logistics has grown continually; total cargo throughput and container throughput of ports have ranked first in the world for 10 years since 2003. From 2008 to 2012, cargo throughput and foreign trade throughout of China's ports maintained an annual growth of over 7 %. In 2012, cargo throughput in nationwide ports was 10.78 billion tons, increasing by 7.3 % compared with previous year; of which foreign trade cargo accounted for 3.06 billion tons, increasing by 9.7 % compared with previous year.

Container is an important growth item in China's port logistics. In 2012, container throughput of nationwide ports was 180 million TEUs, increasing by 8.4 % compared with previous year; this total included 160 million TEUs of coastal ports and 19.50 million TEUs of inland ports, increasing by 8.0 % and 12.3 %, respectively, as compared with those of previous year. At present, China has established its mainline ports for container transportation in Shanghai Port, Shenzhen Port, Ningbo-Zhoushan Port, Guangzhou Port, Qingdao Port, Tianjin Port, Dalian Port, and Xiamen Port. Therein, Shanghai Port, Shenzhen Port, Ningbo-Zhoushan Port, Guangzhou Port, Qingdao Port and Tianjin Port ranked in the world's top 10 container ports in 2012. Table 8.9 lists the main container ports in China and their cargo handling capacity in 2012.

8.2.4 Obvious Diversification Tendency of Business Entity

Since the reform of port management system was implemented in China in 2001, domestic and overseas large shipping companies and cargo-owning enterprises have intensified their involvement in China's port logistics. These enterprises

Table 8.10 Main shipping companies which have currently invested in China's coastal ports

Name of company	Shareholder or actual controller	Investment in port
COSCO Pacific Ltd.	China Ocean Shipping (Group) Company	Has invested in the Circum-Bohai Port Cluster, Yangtze River Delta Port Cluster, Pearl River Delta Port Cluster and Southeast Coastal Port Cluster
China Shipping Wharf Development Co. Ltd.	China Shipping (Group) Company	Has completed main coastal container terminal layout in China
Sinotrans Guangdong Huangpu Warehouse & Terminal Co. Ltd.	China Sinotrans & CSC Group Co., Ltd.	Mainly invested in port wharfs of Pearl River Delta Region
APM TERMINALS	Maersk Group	Qingdao Qianwan Port Container Terminal, Dalian Port Container Terminal, Xiamen Songyu Container Terminal, etc.
Hutchison Whampoa Port Holdings Group	Hutchison Whampoa Ltd.	Shanghai Pudong International Container Terminal, Shenzhen Yantian International Container Terminal, Xiamen International Container Terminal, etc.
China Merchants Holdings (International) Company Ltd.	China Merchants Group	Has established sound wharf operating networks in main coastal hub ports of China
PSA International Pte Ltd.	Temasek	Dalian Port Container Terminal, Tianjin Port Alliance Container Terminal
Dubai Ports World	Dubai World	Tianjin Orient Container Terminal, Yantai Global Terminal, Qingdao Qianwan Port Container Terminal, etc.
Ninterin Ltd.	Mediterranean Shipping Company S.A.	Has invested in the construction of Ningbo Gangji Terminal with Ningbo Port
Nippon Yusen Kaish	NYK Group	Has invested in five main automobile roll-on roll-off terminals in Shanghai Port, Tianjin Port, Dalian Port, Xinshan Port and Nansha Port of Guangzhou

participated in the construction and operations of wharfs and transshipment centers, and thus formed a diversified pattern of port logistics business entities.

Currently, enterprises which participate in China's port logistics business mostly are large-scale shipping companies and cargo-owning enterprises of bulk goods. Main shipping companies are shown in Table 8.10. Cargo-owning enterprises contribute mainly on investment in bulk cargo terminals such as specialized iron ore, crude oil and coal. These enterprises include domestic large-scale iron and steel enterprises like the Shougang Group, the Baogang Group, the Angang Group and the Shenhua Group, as well as domestic large-scale energy enterprises such as CNPC, Sinopec, China Huaneng, etc.

8.2.5 Further Expansion of Port Logistics Service Functions

8.2.5.1 Achieving Cumulative Logistics Functions in Constructing Shipping Centers

Construction and operations of shipping centers can effectively promote the cumulative port logistics functions, improve the logistics development level, and strengthen the international competitiveness of China's ports. Presently, the Government is actively promoting the construction of Shanghai International Shipping Center, Tianjin Northern International Shipping Center, Dalian Northeast Asia International Shipping Center, Chongqing Yangtze River Upper Reaches Shipping Center and Wuhan Yangtze River Middle Reaches Shipping Center to demonstrate the convenience and comprehensiveness of one-stop port service.

For example, the Shanghai International Shipping Center focuses on developing modern shipping service industries such as shipping finance, shipping insurance, freight index futures trading, maritime arbitration, ship information service, etc. Currently, branches or administrative offices of global top 20 common ocean carriers have been set up in Shanghai; representative organizations of foreign companies engaged in international marine transport and auxiliary industries established in Shanghai have amounted to more than 250; representative offices of the global largest nine classification societies have also been set up in Shanghai. In addition, thousands of international marine transport and auxiliary enterprises are engaged in business activities in Shanghai; the number of registered ships in Shanghai takes up about 70 % of all certified domestic ships.

8.2.5.2 Progress Made on Electronic Port Construction

Electronic port enables the enterprises to process various import and export formalities on the internet by applying to government administrative authorities like customs, inspection, foreign trade, foreign exchange, industry and commerce, and taxation offices, and hence improves the efficiency of foreign trade and international logistics. China is actively carrying on the construction of electronic ports, which has brought about significant social benefit and economic benefit.

By the end of 2010, China's electronic port private network has covered all the provincial capitals and some selected municipalities, with the availability rate of the backbone network reaching 99.9 %. The electronic port platform has achieved networking with 13 national main port management departments, 15 commercial banks, as well as the Trade and Industry Department of Hong Kong, the Macao Economic Services, and the Revenue and Tariff Alliance Head Office of European Commission. The platform has also developed 23 networking application projects, having about 664,000 enterprises accessing the net, and processing over 1.3 million documents every day. It has essentially achieved online verification and business affairs for the key steps in rapid customs clearance.

At the local level, the *Memorandum of Cooperation on Local Electronic Port Construction* was signed by all provinces (regions and municipalities), and local electronic port construction system led by local government and with the joint participation of relevant port management departments has been established. Local electronic port construction developed in an all-around way and a batch of comprehensive application projects were developed in succession. Examples are the "Comprehensive Management System of World Expo Logistics Information" of Shanghai, the "customs clearance system of filing-once for various succeeding inspection and customs procedures" of Tianjin, the "comprehensive management system of Yiwu Small Commodity Market" of Zhejiang, as well as the "electronic rapid inspection system of inspection and quarantine ports" of Shenzhen. By the end of 2010, it is conjectured that 35 local electronic port platforms will have been established based on the actual needs of these provinces and cities. By then a construction pattern featuring entity platform construction in coastal and border areas and virtual platform in inland areas will have been formed.

8.2.5.3 Bonded Port Zones Becoming Highlight

Bonded logistics is the extension and expansion of port logistics functions. In recent years, China has accelerated the development of bonded port zones. Presently, bonded port zone is the supervision area with the highest level of bonded logistics, most preferential policies and most complete functions in China. The advantages of possessing comprehensive logistics functions with the "integration of bonded port zone and port" are becoming more evident.

By 2012, 14 bonded port zones[6] have been established with approval of the State Council in China. Currently, all bonded port zones are operating in good status, cargo throughput and container throughput of port zones have risen continuously, and business income of logistics enterprises has increased year by year. Table 8.11 summarizes the economic indicators of (some) bonded port zones in China for 2011.

8.2.5.4 Accelerated Development of Port Service Industry

China's port service industry has developed continuously in recent years, contributing to the overall transformation and upgrading of China's port logistics. Administrative departments such as Railway, Customs, Maritime Affairs, Inspection

[6] In chronological order, they are respectively Yangshan Bonded Port Zone of Shanghai, Dongjiang Bonded Port Zone of Tianjin, Dayaowan Bonded Port Zone of Dalian, Yangpu Bonded Port Zone of Hainan, Meishan Bonded Port Zone of Ningbo, Qinzhou Bonded Port Zone of Guangxi, Haicang Bonded Port Zone of Xiamen, Qianwan Bonded Port Zone of Qingdao, Qianhaiwan Bonded Port Zone of Shenzhen, Nansha Bonded Port Zone of Guangzhou, Lianglucuntan Bonded Port Zone of Chongqing, Zhangjiagang Bonded Port Zone, Yantai Bonded Port Zone and Fuzhou Bonded Port Zone.

Table 8.11 Summary statistics of economic indicators of (some) bonded port zones in China in 2011

Indicator	Business income of logistics enterprises	Total amount of foreign investment	Cargo throughput of port zone	Container throughput of port zone	Tax revenue	Volume of investment in fixed assets	Employee at the end of year
Unit	Million RMB	Million USD	Million tons	Million TEU	Million RMB	Million RMB	Person
Yangshan Bonded Port Zone	52,000.00	252.69	117.36	13.10	2,045.00	42.00	8,000
Dayaowan Bonded Port Zone of Dalian	570.81	0	0.93	1.99	156.26	93.00	3,000
Yantai Bonded Port Zone	163.57	16.98	34.61	0.50	540.98	262.53	–
Zhangjiagang Bonded Port Zone	5,916.47	5.12	0	0	0	0	3,972
Haicang Bonded Port Zone of Xiamen	531.52	381.28	20.69	2.50	132.50	1,382.68	12,140
Nansha Bonded Port Zone of Guangzhou	1,140.88	60.00	36.18	3.91	54.35	617.27	2,500
Meishan Bonded Port Zone of Ningbo	–	45.94	5.18	0.54	665.65	205.981	9,233
Dongjiang Bonded Port Zone of Tianjin	–	309.57	23.49	2.45	536.51	564.53	1,900

Note 1: In bonded port zones, Dayaowan Bonded Port Zone of Dalian subsumed the previous Dalian Bonded Logistics Park; Yantai Bonded Port Zone subsumed the previous Yantai Export Processing Zones (Zone A and Zone B); Nansha Bonded Port Zone of Guangzhou subsumed the previous Nansha Export Processing Zone; Haicang Bonded Port Zone of Xiamen subsumed the previous Xiamen Export Processing Zone; Meishan Bonded Port Zone of Ningbo subsumed the previous Ningbo Bonded Logistics Park

Note 2: Data on this Table for Yangpu Bonded Port Zone of Hainan, Qianwan Bonded Port Zone of Qingdao, Qianwan Bonded Port Zone of Shenzhen and Lianglucuntan Bonded Port Zone of Chongqing were not published in the Statistical Yearbook of 2011. Relevant statistics were not available in 2011 for Yantai Bonded Port Zone and Fuzhou Bonded Port Zone due to their short operating periods

Source: Compiled from *China Ports Yearbook (2012)*, published by China Ports Press

and Quarantine, Immigration and Border Patrol all set up their offices near the ports, providing convenience to the ships for carrying out the relevant procedures. As a result, the business scale of shipping agencies, insurance firms, arbitration offices, and information service providers has expanded noticeably. By 2011, there were more than 1,700 international shipping agencies with management qualification and 3,897 enterprises with non-vessel operating carrier management qualification in China. And presently there are 16 classification societies, 49 offices, 29 provincial ship-inspection organizations and 495 branch offices in China. In terms of insurance, nationwide ship insurance expenses was 5.59 billion RMB in 2011, increasing by 10.0 % compared with the previous year. Therein, cargo transportation insurance expense was 9.78 billion RMB, increasing by 24.3 % (Ministry of Transport of China 2012) compared with that of 2010.

8.2.6 Extension of Port Logistics Network Towards Inland Areas

8.2.6.1 Steady Advancement of Combined Transport

Combined transport based on coastal container port and inland container freight station is an important part for extending port logistics services. Currently, China's port logistics combined transport includes sea-highway combined transportation, sea-railway combined transportation and river-ocean combined transportation. Therein, sea-highway combined transportation is the most prominent combined transport mode, taking up about 84 % of port container's receiving and distributing volume. As for sea-railway combined transportation, the Dalian Port/Yingkou Port to Northeast China route, the Tianjin Port to North China/Northwest China route, and the Lianyungang Port/Qingdao Port to New Eurasian Continental Bridge area route are the three busiest container sea-railway combined transportation channels, with the traffic volume accounting for about half of the national total. Several block container trains traveling towards inland provinces with "five fixed items" (fixed price, fixed point, fixed railway, fixed train and fixed schedule) have been instituted from Shanghai Port, Ningbo Port, Xiamen Port, Guangzhou Port, Shenzhen Port, and Beibuwan Port. In addition, the scale of sea-railway combined transportation covering East China, South China and Southwest China is also expanding.

The river-ocean combined transportation has been developing rapidly over Yangtze River, Pearl River and Songhua River. For example, Shanghai Port has been advocating the "development strategy of Yangtze River" to push for the standardization of river-ocean combined transportation, increase the support and cooperation to river-ocean combined transportation businesses, and improve the share of river-ocean combined transportation by a large margin.

8.2.6.2 Accelerated Construction of Dry Port

Establishing dry ports in inland provinces based on coastal ports and expanding port logistics service network towards the hinterlands via receiving and distributing system have become an important characteristic of China's port logistics development. Currently, four dry port clusters have been formed from north to south in China. The first one is the Northeast dry port cluster with Dalian Port and Yingkou Port as its outlet, composed mainly of dry ports at Shenyang, Changchun, Harbin, and Tongliao. The second one is the North and Northwest dry port cluster with Tianjin Port as its outlet, consisting mainly of dry ports at Chaoyang of Beijing, Shijiazhuang, Zhengzhou, Baotou, Huinong, Urumqi and Dezhou. The third one is the dry port cluster with Qingdao Port and Rizhao Port along Shandong Peninsula as its outlet, including mainly dry ports at Qingzhou, Linyi, Zibo, and Luoyang. The fourth one refers to the dry port cluster composed of Ningbo Port, Xiamen Port, and Shenzhen Port in southeast coastal areas and covering the inland areas, comprising dry ports at Jinhua, Yiwu, Shaoxing, Quzhou, Nanchang, Ganzhou, Shangrao, Jinjiang, Longyan, Nanning and Kunming.

8.3 Problems Existing in the Development of China's Port Logistics and Suggested Actions

Even with the rapid development of China's port logistics, there still exists a large room for improvement on the management system, the receiving and distributing system, the service level, and logistics informatization. In this section, problems existing in the development of China's port logistics will be analyzed and then suggestions to accelerate the development of China's port logistics will be put forward on this basis.

8.3.1 Problems Existing in Port Logistics Development

8.3.1.1 Ineffectual Management System

Local port administrative organizations of China at all levels have gone through reform and reorganization; yet there are still major differences among them in organizational settings, names and management functions. In some areas, unified management system integrating port, shipping, waterway, local maritime affairs and ship inspection is implemented in one office, while in other areas these functions are managed by different independent departments under different names. On the whole, there exist many port management levels, having dispersed management functions and ineffectual organizations. This results in poor coordination among

logistics linkages. Conditions like unjustified charges and local protectionism are rather common, which hinder the improvement of the execution of port and shipping management and the efficiency in port logistics service.

8.3.1.2 Development Level of Port Comprehensive Transport System Remains to Be Improved

Currently, the overall development level of the receiving and distributing capability of China's ports lags behind the development of port trade, which becomes a bottleneck to port logistics development. Although inland receiving and distributing networks have been established, they rely mainly on highway transportation. Yet there are no special dispersing channels to connect the ports to arterial highways. And due to insufficient special railway lines, the capacity of sea-railway combined transportation is still limited. Presently, with the disparate distribution of stations in port area and insufficient integration of logistics infrastructure of railway, highway, and airport, a rapid, uncongested and efficient logistics infrastructure network has not been formed.

8.3.1.3 Port Logistics Service Level Is Still Low

Compared with ports of developed countries, traditional logistics service of China's ports are still predominantly relying on loading/unloading and transporting activities. Though modern higher-level port and shipping services with high value-added activities has begun to develop, yet the service level and the scale still cannot meet the present development needs of China's port logistics. Some service activities, well-developed overseas, such as shipping trading market, have yet been fully built up in China. Consequently, there exists an important task of improving port logistics service level and developing knowledge-intensive and technology-intensive modern port and shipping logistics service, involving shipping consultation, ship information, credit rating as well as finance, insurance, law and information.

8.3.1.4 Port Informatization and Intelligentization Construction Remains to Be Enhanced

In recent years, the pace of China's port informatization and electronic port construction has accelerated rapidly. However, there is still a noticeable lag in overall construction level and service capacity relative to advanced countries. The efficiency of integrated applications of logistics information remains to be developed, and the overall planning, business collaboration and data sharing among electronic ports need to be further deepened. A long-term guarantee system of funds on

construction, operations and maintenance is still lacking. High-tech information technologies like logistics network are still in the R&D and experimental stage in current port logistics environment; the intelligentization of China's ports is still in the preliminary stage of information gathering or local application. Making further progress in this regard in a short time is certainly a daunting task.

8.3.2 Suggestions for Accelerating China's Port Logistics Development

Facing the above-mentioned problems in China's port logistics, the following countermeasures and suggestions are put forward in hope to build the core competence and promote a sound development of China's port logistics, thus improving its international competitiveness.

8.3.2.1 Enhance Unified Planning Management and Resources Integration

Suggestions: (1) Relevant departments of the Government shall plan to manage and integrate the ports and shipping resources and accelerate the unification of port and shipping management; (2) Each port shall actively try to obtain support from its local government, to establish uniform port and shipping management organization and reduce its management levels to improve efficiency and execution capability; (3) All areas and relevant departments shall bolster the communication among them and establish a sound communication and coordination system.

8.3.2.2 Accelerate the Construction of Receiving and Distributing System

Suggestions: (1) Transportation departments shall accelerate the construction of cargo dispersing expressways in port areas and build a highway system which separates passengers from cargos in large-scale comprehensive port areas; (2) Enlarge highway throughput capacity in main container ports and explore better use of existing highway capacity; (3) Strengthen the coordination in construction of port railway channels and stations, establish inland railway transit shipment stations, especially container freight stations, and improve the branch network of inland container transportation; (4) Properly coordinate the proportion of three main transportation modes (i.e., highway, railway and waterway) and fortify the connection among various transportation modes. Accelerate the development of multimodal transport in port areas and make efforts to promote rail-water combined transportation.

8.3.2.3 Promote the Transformation and Upgrading of Port Logistics Service

On the whole, the level and functions of China's port logistics service need to be further improved and the task of transformation and upgrading of logistics service is urgent. Suggestions: (1) Build regional logistics centers based in the main ports, develop functions for storage and cargo trade service, boost the construction of logistics parks, freight transport stations and logistics channels, and actively develop bonded business such as international transit shipment, distribution and export processing; (2) Fully develop port service industry in ports, and accelerate the improvement of service level, including rapid development of high-end shipping service industry specializing in maritime arbitration, information, shipping trade and shipping finance.

8.3.2.4 Improve the Level of Information Technology in Port Logistics

Suggestions: (1) Accelerate the construction of port transportation information system, logistics resources trade system and public information service platform open to enterprises, and realize combined transportation information service of waterway-waterway, highway-waterway and waterway-railway for port container; (2) Carry forward construction of provincial comprehensive information platform of port, waterway, transportation and maritime affairs, and promote the service level of documentation and information sharing of multiple transportation modes and integration of customs clearance; (3) Actualize the internet of things platform for electronic port, and explore cloud service system for electronic port; (4) Carry forward demonstration projects for building port container multimodal transport information service system.

8.4 Summary

This chapter discusses the main issues on the environment, status and problems of China's port logistics development and suggests some measures for its future development. In terms of development environment, although the world shipping market has been depressed in recent years, domestic and foreign trade of China grew continually; the logistics industry evolved consistently and numerous port logistics policies were issued by the governments of all levels in succession. In respect of development status, the layout of port transportation system in China has basically been formed, port infrastructure construction has increased, a diversified pattern of business entity has emerged, the scale of port logistics has been expanded steadily, and the functions and coverage of logistics service has been extended continuously. To further promote the development level of China's port logistics, supporting measures shall be formulated in aspects of management system, receiving and distributing system, service level, and logistics informatization.

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Chapter 9
Logistics Service Innovation of China

Weihua Liu

At present, China's economy has entered into the pivotal stage of transformation of its economic development mode and optimization of its economic structure; logistics service innovation is urgently needed for providing strong support for these advances. For the past few years, thanks to the vigorous promotion by related departments of the State, China's logistics service innovation has developed rapidly with the emergence of many typical innovation modes and several demonstration cases of logistics service. These cases provide good reference for accelerating the release of business enterprises' logistics demand and the promotion of logistics enterprises' service level.

This chapter discusses the recent progress and problems of China's logistics service innovation. Section 9.1 introduces the development status of China's logistics service innovation, Sect. 9.2 presents the basic processes and major patterns of logistics service innovation, and Sect. 9.3 shows the constraining factors and suggests some development proposals for China's logistics service innovation.

9.1 Development Status of China's Logistics Service Innovation

Logistic service innovation refers to innovative behaviors and actions taken during logistics activities; it aims at achieving differentiation in logistics service and competitive advantage through innovation to form an inimitable service capability,

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B. Liu et al. (eds.), *Contemporary Logistics in China: Assimilation and Innovation*, Current Chinese Economic Report Series, DOI 10.1007/978-3-642-55282-3_9,

thus gaining higher customer satisfaction and market shares.[1] Generally speaking, logistics service innovation features include the complexity of innovation process, systematic coordination of factors, and interaction with customer demand.

9.1.1 *Vigorous Promotion of Service Innovation by the Central and Local Governments*

With increasing effort placed on the adjustment of China's economic structure, the Central and local governments have recognized logistics service innovation as an important factor in promoting the development of logistics industry and service industry (Liu Weihua and Ge Meiying 2012). The State Council, the National Development and Reform Commission, the Ministry of Science and Technology, the Ministry of Industry and Information Technology, and the Ministry of Commerce have issued important documents in succession to direct logistics service to transform into an intensive development mode. This transformation mode is innovation-driven and emphasizes prioritized benefit, thus giving more support for the development of logistics service innovation. Since 2011, the Ministry of Commerce has successively issued five important policy documents concerning logistics service innovation, such as the *Special Plan on the Development of Business Logistics*, which afford a vigorous boost for innovation of business logistics service.

Many local governments and relevant industry associations are actively fostering a sound development environment for logistics service innovation. After the issuance of the *Adjustment and Development Plan of Logistics Industry* by the State Council in March 2009, most provinces and cities such as Shanghai, Tianjin, Shandong, and Hunan also issued supporting plans for logistics adjustment and revitalization planning,[2] and regarded logistics service innovation as a key development direction. Beijing, Shanghai, Shenzhen, Zhejiang and several other provinces and cities listed logistics service innovation as preferential strategic option in issuing their respective *"Twelfth Five-Year" Plan for Modern Logistics Industry.* Shaanxi, Shandong, and Anhui successively formulated guiding opinions for promoting the development of logistics industry to support the innovation of logistics service models.

[1] Definition of service innovation given by Lin Lei and Wu Guisheng (2007) is adopted herein.

[2] *Report of China Logistics Development (2010)*, published by the Bureau of Economic Operations Adjustment, the National Development and Reform Commission, and the Research Center of Logistics, Nankai University, 2010.

9.1.2 Growing Awareness of Logistics Service Innovation Among Logistics Enterprises

Many logistics enterprises regard logistics service innovation as an effective strategy for coping with the rising logistics cost. According to a recent survey report,[3] 86.9 % of logistics enterprises think logistics service innovation is very necessary, indicating a strong intention among logistics enterprises with respect to service innovation. Besides, this survey also shows that 69.2 % of the logistics enterprises have already engaged in logistics service innovation, and another 29.9 % of the enterprises are planning to embark on logistics service innovation. Therefore, the survey reveals that most of China's logistics enterprises are developing or planning to develop service innovation.

9.1.3 Widening Scope of Logistics Service Innovation

Logistics service innovation not only covers a broad scope of subdivided sectors but also involves numerous fields. During the appraisal (China Federation of Logistics and Purchasing (CFLP) (2012)) process of the first "Enterprise Management Modernization Innovation Achievement of the Logistics Industry," enterprises chosen for outstanding innovation achievements cover many fields, including resource-based production enterprise logistics, processing and manufacturing logistics, commercial circulation logistics, agricultural and rural logistics, third party logistics, and logistics parks (centers). A total of 35 enterprises spreading over 13 provinces and 10 industries were selected, which indicates that logistics service innovation in China has developed with a relatively broad scope. See Figs. 9.1 and 9.2 for details.

9.1.4 Increasingly Diverse Patterns of Logistics Service Innovation

Recently many business enterprises and logistics enterprises have actively carried out logistics service innovation in diverse patterns, coupled with their own logistics service capability upon customer demands. These innovation patterns involve many types of innovation, such as various functional logistics service innovations, integrated logistics service innovation, as well as supply chain integration service innovation; both logistics service innovation within the enterprise and that external to the enterprise, of supply chain network; both service innovation with application

[3] "Survey on Development of China's Modern Logistics Market," published by the Bureau of Economic Operations Adjustment, the National Development and Reform Commission, and the Research Center of Logistics, Nankai University, April 2013.

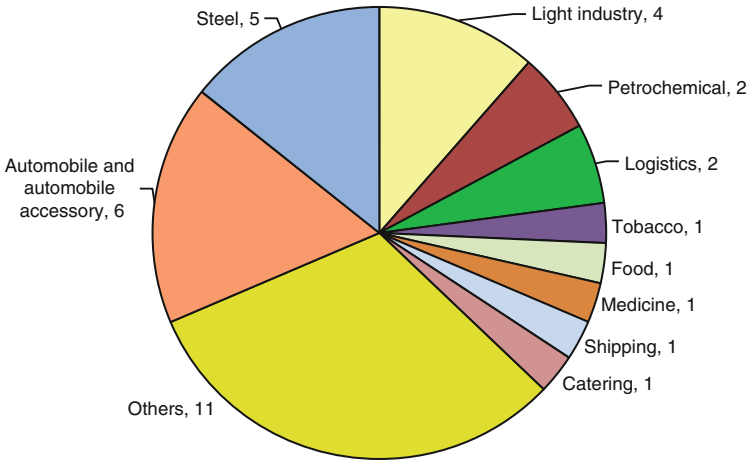

Fig. 9.1 Distribution of enterprises with logistics innovation achievements by industry (unit: number of enterprise) (Note: "Others" in the figure refers to the demonstration enterprises provide logistics service for multiple industries instead of a specific industry. Source: Public Announcement: "Award of Enterprise Management Modernization Innovation Achievement of Logistics Industry in 2012," by the China Federation of Logistics and Purchasing (CFLP). http://www.chinawuliu.com.cn/office/18/104/9577.shtml, 2012-10-08)

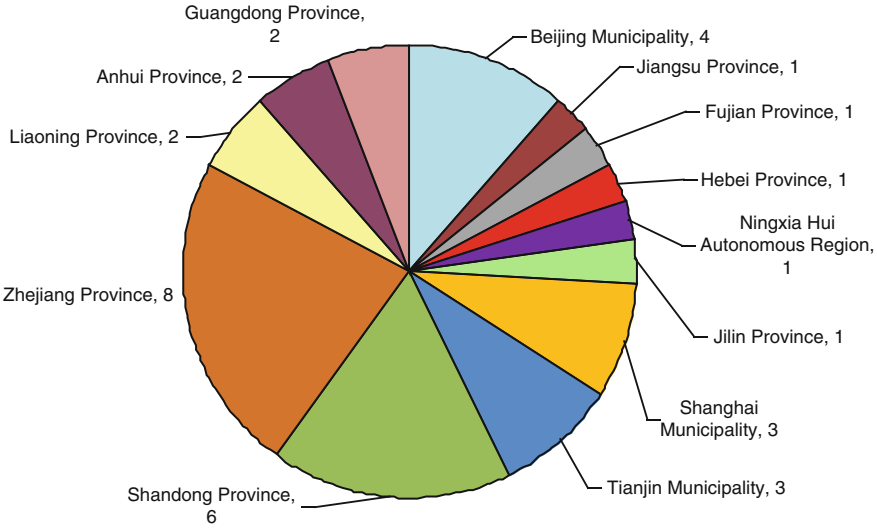

Fig. 9.2 Distribution of enterprises with logistics innovation achievements by province and city (unit: number of enterprise) (Source: Public Announcement: "Award of Enterprise Management Modernization Innovation Achievement of Logistics Industry in 2012," by the China Federation of Logistics and Purchasing (CFLP). http://www.chinawuliu.com.cn/office/18/104/9577.shtml, 2012-10-08)

of existing technology and that with completely independent development; both service innovation for logistics enterprise and logistics service innovation for manufacturing enterprises, commerce and trade enterprises and agricultural enterprises. These innovations are distinctive so as to meet the different service demands.

9.2 Basic Process and Main Patterns of Logistics Service Innovation

In recent years, many manufacturing enterprises and logistics enterprises actively boost their logistics service innovation and generated a number of successful cases and some typical development patterns. These innovation patterns involve different subjects, different innovation links, different innovation technologies and different industries, thus providing valuable reference for China's enterprises to join in on logistics service innovation.

9.2.1 Main Patterns of Logistics Service Innovation

Chinese business enterprises and logistics enterprise have developed distinctive patterns of logistics service innovation due to different demands. Table 9.1 shows the main patterns, main features and typical cases of logistics service innovation. Specifics of these patterns of logistics service innovation based on innovation types are described below.

9.2.2 Classification Based on Links of Logistics Service Innovation

The complexity of logistics service innovation is reflected in its different innovation links. Based on the classification of innovation links, logistics service innovation can be divided into functional logistics service innovation, integrated logistics service innovation and supply chain integration service innovation. Therein, functional logistics service innovation includes six patterns: transport innovation, warehousing innovation, circulation processing innovation, handling innovation, information innovation, and distribution innovation. Integrated logistics service innovation involves two patterns, namely, combined innovation of two functional logistics and combined innovation of multiple functional logistics. Supply chain integration service innovation includes combined innovation of production and sales links, combined innovation of procurement and production, combined innovation of procurement, and production and innovation in integration of procurement, production and sales. These different modes of logistics service innovations are illustrated by category with typical cases below.

Table 9.1 Classifications and main features of logistics service innovation patterns

Classification	Innovation patterns		Main features	Typical cases
Based on links	Functional logistics service innovation	Transport innovation	Developing new transport modes, such as drop and pull transport, convective transport, etc.	Solutions of highway drop and pull transport by Qingdao Haier Logistics Co., Ltd.
		Warehousing innovation	Carrying out various value-added services based on warehousing link	Financial business innovation by Zhongchu Development Co., Ltd.
		Circulation processing innovation	Carrying out service innovation for circulation processing link by use of new circulation processing technology and equipment	Logistics service innovation of commercial steel bar by Shandong Boyuan Logistics Development Co., Ltd.
		Handling innovation	Designing new handling equipment or adopting new handling modes	Improvement of truck handling equipment by Zhejiang Bada Logistics Co., Ltd. and Hangzhou Iron & Steel Group Company
		Information innovation	Carrying out innovation for logistics information link by use of various information technologies or information platforms	Real-time management system of container yard by Qindao Ocean & Great Asia Logistics Co., Ltd.
		Delivery innovation	Designing new delivery modes, such as date-definite delivery, joint urban and rural delivery, milk run distribution, etc.	"Date Definite" highway express products of Shanghai TNT Hoau Logistics Co., Ltd.
	Integrated logistics service innovation	Combined innovation of two functional logistics	Carrying out innovation for two functional logistics services simultaneously	Transparent logistics management solutions of Tsingtao Beer by Wuhu Annto Logistics Co., Ltd.
		Combined innovation of multiple functional logistics	Carrying out innovation for multiple functional logistics simultaneously	Supply chain integration solution of the intelligent "One-Card Through Logistics" by Shandong Logistics & Communication Transportation Association

	Supply chain integration service innovation	Combined innovation of production and sales links	Carrying out innovation in integrating the production logistics link and sales logistics link	"Nanny style" supply chain service solution for petrochemical enterprise by Shandong Zhengben Logistics Industrial Co., Ltd.
		Combined innovation of procurement and production	Carrying out innovation in integrating the procurement logistics link and production logistics link	Integration management pattern for procurement supply chain of automobile spare parts by Tianjin Fengtian Logistics Co., Ltd.
		Innovation in integration of procurement, production and sales	Carrying out innovation in integrating several links such as procurement logistics, production, distribution logistics, etc.	Logistics service innovation of Tibet 5100 Water Project by China Railway Express Co., Ltd.
Based on scope of innovation subject	Innovation within enterprise		Carrying out innovation for logistics service activities within enterprise	Solution for coordination operation in multiple warehouse areas by P.G. Logistics Group Co., Ltd.
	Joint innovation among enterprises		Carrying out innovation between enterprises and cooperation partners	Pattern of combined industrial innovation of Zhejiang Lutong Logistics Co., Ltd.
	Innovation of supply chain network		Carrying out innovation for network between upstream and downstream enterprises of supply chain	Comprehensive service pattern of supply chain of Tianjin Products & Energy Resources Development Co., Ltd.
	Innovation of industrial cluster		Carrying out innovation oriented to manufacturing industry cluster	Supply chain service solution of manufacturing industrial cluster by Zoje Huanzhou Supply Chain Group Co., Ltd.

(continued)

Table 9.1 (continued)

Classification	Innovation patterns	Main features	Typical cases
Based on application of innovation technology	With application of existing advanced technology	Applying existing advanced technology in innovation achievement	Public service platform of manufacturing logistics of Zhejiang Yushi International Logistics Co., Ltd.
	In-house development	Developing new technologies based on respective specific conditions	Visual management platform for information of ANJI-CEVA Automotive Logistics Co., Ltd.
	Outsourcing development	Developing new technology through cooperation with other enterprises or in discretionary way	Information solution of centralized logistics management and control by Zhejiang Materials Industry Logistics Co., Ltd.
Based on integrated industry through innovation	Integration with finance	Carrying out innovation of logistics finance and supply chain finance centering on financial field	Supply chain finance logistics service of Tianjin Binhai Teda Logistics (Group) Corporation Ltd.
	Integration with environmental protection	Carrying out innovation in links such as green logistics, reverse logistics, etc.	Innovation of creating ecological logistics pattern in coastal steel plant by Angang Steel Company Ltd. Bayuquan Branch
	Integration with production	Carrying out logistics service innovation in production and manufacturing fields	Supply chain management operation pattern of auto spare parts by China Logistics Co., Ltd.
	Integration with consumption	Carrying out service innovation in field of wholesale and retail of consumer goods	Innovation of logistics information service by Wu Mart
	Integration with e-commerce	Carrying out innovation in e-commerce field	Service pattern of "the third party logistics + e-commerce management" by Shanghai Sunjex Logistics Co., Ltd.

Based on innovation subject	Logistics service innovation of logistics enterprises	Platform logistics enterprises	Carrying out innovation with large-scale logistics parks and logistics centers	Construction and operation of logistics service platform for highway port by Zhejiang Transfar Co., Ltd.
		Functional logistics enterprises	Carrying out innovation with functional logistics enterprises as subject	Star-level service operation pattern by Yuan Cheng Group
		Comprehensive logistics enterprises	Carrying out innovation with large-scale third party comprehensive logistics enterprises as subject	Double-network interactive pattern of logistics and sales by Shanghai Huier Logistics Co., Ltd.
		Supply chain enterprises	Carrying out innovation with supply chain enterprises as subject	Innovation pattern of VMI combined with JIT by Shenzhen Eternal Asia Supply Chain Management Ltd.
	Logistics service innovation of manufacturing enterprises		Carrying out innovation with manufacturing enterprises as subject	Enterprise MCU management mode by Anhui Jianghuai Automobile Co., Ltd.
	Logistics service innovation of commerce & trade enterprises		Carrying out service innovation with commerce & trade enterprises as subject	Solution for construction of international logistics center by the Shaoxing Branch of Zhejiang China Light & Textile Industrial City Group Co., Ltd.
	Logistics service innovation of agricultural enterprises		Carrying out service innovation with agricultural enterprises as subject	Whole-process quality tracing system of vegetable supply chain by Beijing Tianan Agricultural Development Co., Ltd.

Source: [1] "The 16th National Enterprise Management Modernization Innovation Achievement," issued by the State-owned Assets Supervision and Administration Commission of the State Council. http://www.sasac.gov.cn/n1180/n1566/n258252/n258614/6909601.html, 2010-01-18. [2] "Award of Enterprise Management Modernization Innovation Achievement of Logistics Industry in 2012," issued by the China Federation of Logistics & Purchasing. http://www.chinawuliu.com.cn/office/18/104/9577.shtml, 2010-10-08. [3] "Cases of Interactive Development of National Manufacturing Industry and Logistics Industry," by the Inter-ministerial Joint Meeting Office of National Modern Logistics Work; "Survey Report on Logistics Development of Six Pillar Industries in Shanghai," by the Shanghai Economic Committee

9.2.2.1 Functional Logistics Service Innovation

Innovation in Transportation – Example: Haier Corp

Haier learned from the advanced drop and pull transport technology from UK's Argos Co., Ltd., and developed its Haier logistics drop and pull transport pattern. Popularization of drop and pull transport has generated considerable economic benefit, far-reaching social benefit and sound environmental benefit. Qingdao Haier Logistics Co., Ltd. improved its transport efficiency by more than 30 % and reduced the cost by about 8 % comparing to its previous practice. It also greatly shortened its vehicle idling time and time for dispatching goods from storage and accelerated the turnover of goods.

Innovation in Warehousing – Example: Zhongchu Development Co., Ltd.

Zhongchu sought to develop logistics financial business based on its core warehouse service. Its main patterns cover two operational modes: movable assets supervision (such as Pledge-monitoring, mortgage supervision and trade supervision) and logistics supervision (such as bill of lading pattern, confirming storage pattern, supply chain pattern and other patterns), which greatly enhance the profit margin of warehousing business. As a result of this innovation, its revenue from warehousing business increased dramatically from the prior 0.4 million RMB/year in 1999 to 8.92 million RMB/year in 2011, showing a growth of 22.3 times.

Innovation in Circulation Processing – Example: Shandong Boyuan Logistics Development Co., Ltd.

The company cut commercial steel bar employing imported advanced fully-automated digital cutting equipment and distributed well-cut commercial steel bar to major construction sites in Shandong, replacing the original method of manually cutting of commercial steel bar in each construction site. Therefore, it not only reduced cost of steel bar cutting but also improved the consumers' satisfaction, thus achieving excellent results.

Innovation in Packing – Example: Shandong Boyuan Logistics Development Co., Ltd.

The company adopted the advanced iron sheet packing method in place of its original wood packing for transportation of Weichai engine. This adoption not only reduced the packing cost but also effectively reduced the waste of timber resources, thus promoting the recycling of packing materials. The company saves 300 RMB for packing each Weichai engine on average, so it will saves 30 million RMB per year in transporting a total of 100,000 engines.

Innovation in Handling Operations – Example: Zhejiang Bada Logistics Co., Ltd.

The company customized a special K14k dump truck for Hangzhou Iron & Steel Group Company. It designed the truck based on the special vehicle of Hangzhou Iron & Steel Group Company, applying a self-discharging mechanism to shorten the unloading time of the whole caravan of 44 trucks from the original average of 5 to 1.5 h, and reduced the unloading operators from the original four per caravan to two, thus significantly improved the discharging efficiency.

Innovation in Information – Example: Qingdao Ocean & Great Asia Logistics Co., Ltd.

As for practical problems of container management, this company achieved real-time collection of container and cargo operations information and recorded them in database by applying advanced technical solution in real-time management system of container yard. On this basis, it redesigned a real-time container and cargo operational process, and established a sound scheduling management system via optimized process, thus creating a completely new management order and management mode for container yard and logistics center. The innovation brought about excellent economic benefits: accuracy rate of container cargo was always maintained at 100 %, labor productivity was raised by 33 %; efficiency of mechanical handling was raised by 125 %, utilization rate of warehouse was more than doubled then before; overall operating cost saving amounted to more than 20 %.

Innovation in Distribution – Example: Shanghai TNT Hoau Logistics Co., Ltd.

In February 2009, this company launched the first nation-wide advanced highway express "Date-Definite" service. The company adopted a special line for implementing a "dispatching at fixed location and time" operation, and specified very detailed time windows for each link along the "Date-Definite" route, thus ensuring goods being delivered within appointed time and keeping the on-time rate above 95 %.

9.2.2.2 Integrated Logistics Service Innovation

Combined Innovation of Two Logistics Functions – Example: Annto Logistics Co., Ltd.

Transparent logistics management solution for Tsingtao Beer implemented by this company falls in the category of combined innovation of two functional logistics modules. The innovation pattern included two major service links, namely, warehouse monitoring/management system, and transportation management system. This innovation promoted the popularization and application of visual management

technology for the whole process of logistics supply chain. The application of such innovation helped Annto Logistics Co., Ltd. win the trust of Tsingtao Beer, and gain an indirect revenue of approximately 12 million RMB.

Combined Innovation of Multiple Logistics Functions – Example: Shandong Logistics & Communication Transportation Association

This association put forward the supply chain integration solution of intelligent "One-Card Through Logistics." Through this application featuring value-sharing, interconnection and intercommunication, logistics enterprises could establish supply chain integration management involving information, payment and settlement, procurement of transport resource, refueling, vehicle management, logistics park, gas station and expressway, thus achieving overall solution from mobile internet to internet of things.

9.2.2.3 Supply Chain Logistics Service Innovation

Combined Innovation of Production and Sales – Example: Shandong Zhengben Logistics Industrial Co., Ltd.

The "Nanny Style" supply chain service solution for petrochemical enterprise applied by this company illustrates the combined innovation of production and sales links. Shandong Zhengben Logistics Industrial Co., Ltd. was engaged in providing all-around nanny service for Shandong Fangyu Lubricating Oil Co., Ltd. Both parties had established long-term strategic cooperation alliance; such integrated service had a strong cost control benefit. Five categories including more than 30 varieties of products of Shandong Fangyu Lubricating Oil Co., Ltd. were cheaper by more than 20 % than other brands of lubricating oils of same quality.

Combined Innovation of Procurement and Production – Example: Tianjin Fengtian Logistics Co., Ltd.

This company created an integrated supply chain management platform to provide service for Toyota Motor Corporation based on the latter's domestic and overseas procurement logistics of spare parts. The platform integrated innovation of several aspects including the integration and optimization of "demand-driven" logistics process, the optimization of international business clearance, the spatial layout of comprehensive transportation system and warehousing system based on dynamic scheduling, the VMI (Vendor Managed Inventory) replenishment system, and the delivery scheduling with time windows.

Innovation in Integration of Procurement, Production and Sales – Example: China Railway Express Co., Ltd.

China Railway Express Co., Ltd. independently accomplished procurement and supply of all raw materials, design of production logistics, product sales logistics and product merchandising for Tibet 5100 Water Resources Holdings Ltd., achieving innovation in integration of procurement, production and sales.

9.2.3 Classification Based on Scope of Logistics Service Innovation

There are four types of logistics service innovation according to the scope, namely, innovation within enterprise, innovation among enterprises, innovation in supply chain network, and innovation in industrial cluster.

9.2.3.1 Innovation Within Enterprise – Example: P.G. Logistics Group Co., Ltd.

Supported by advanced IT technology, this company conducted the reformation and reorganization of operations mode and operations process of its distribution warehouses in many warehouse areas, in terms of inventory layout design, warehousing control mechanism and order allocation processing mechanism. By implementing the coordinating operation solution, it effectively solved the problem of delivery from multiple warehouses. After the implementation of its three-warehouse coordinating operation solution and the IT system, the daily processing capacity of distribution orders exceeded 2,100 tons, the frequency of less-than-full pallet in high-rise warehouse section over the total number of less-than-pallet picking had reduced from 10 % to below 1 %, and the annual order processing capacity much increased to exceeding 150,000 orders.

9.2.3.2 Joint Innovation Among Enterprises – Example: Zhejiang Lutong Logistics Co., Ltd.

Relying on Yuhuan Lutong Logistics Center and freight dedicated lines, this company had completed many logistics enterprise integrations through institutional innovation, operations innovation, mechanism innovation, technology innovation and cultural innovation. The company had developed from an initially limited-scale integration of 38 logistics enterprises into a grand alliance comprising more than 130 enterprises, and successfully achieved transformation and

upgrading of its logistics. In 2012, the operational revenue of Zhejiang Lutong Logistics Co., Ltd. was 500 million RMB and the logistics cost of its customers was reduced by about 15 %.

9.2.3.3 Innovation in Supply Chain Network – Example: Tianjin Products & Energy Resources Development Co., Ltd.

This company had proposed effective solutions for problems and demands of China's iron and steel enterprises in terms of resources acquisition, financing, logistics, processing, and product distribution, through the innovation pattern of "comprehensive service based on supply chain." In 2012, the company completed warehousing of a total of 1,375,400 tons for logistics financial services, representing a year-on-year growth of 416 %, and received business income of 1.3 million RMB; completed freight forwarding of 896,700 tons with year-on-year growth of 162 %, and earned an agency fee of 650,000 RMB. It also sifted iron ore of 1,212,100 tons with year-on-year growth of 357 % and gained processing charges of 13.5 million RMB. Overall, this company had achieved marked economic benefit through innovation in supply chain network.

9.2.3.4 Innovation in Industrial Cluster – Example: Zoje Huanzhou Supply Chain Group Co., Ltd.

In order to meet the requirements of industrial development and logistics service reformation by Zhejiang Yuhuan Auto, Motorcycle and Parts, Zoje Huanzhou Supply Chain Group Co., Ltd. resorted to the logistics service innovation of the industrial cluster. It provided the industrial cluster of auto, motorcycle and parts with complete supply chain services such as steel trading, auxiliary steel processing, wharf warehousing, logistics distribution, financial service, industrial investment, and import/export. By so doing, it could attain a cost saving of 100 RMB/per ton for the manufacturing enterprises in the cluster. It had saved more than 300 million RMB in cost in the past 5 years for Zhejiang Yuhuan Auto, Motorcycle and Parts.

9.2.4 Classification Based on Application of Innovation Technology

During logistics service innovation, some new logistics technologies will generally be adopted. Based on the application of innovation technologies, the innovation can be divided into three patterns, namely, application of existing advanced technology, in-house development and outsourcing development.

9.2.4.1 Application of Existing Advanced Technology – Example: Zhejiang Yushi International Logistics Co., Ltd.

In 2006, this company developed a package of management operating software, established its own server, and loaded the global satellite positioning system (GPS) on each of its container trucks. Since January 2007, the company began to carry out the informatized management system, operations, accounting and settlement in an all-round way, and provided logistics information service for the Jushi Group Co., Ltd.

9.2.4.2 In-House Development – Example: Anji-CEVA Automotive Logistics Co., Ltd.

This company made use of IT information system in their visual management of logistics information to establish a visual management platform, so as to ensure the managers an effective grasp of enterprise information and achieve transparency and visualization in management. The visualization system established by Anji-CEVA Automotive Logistics Co., Ltd. afforded great convenience for its customers to inquire and track the delivery process, thus directly enhancing its customers' satisfaction.

9.2.4.3 Outsourcing Development – Example: Zhejiang Materials Industry Logistics Co., Ltd.

This company's information solution of centralized logistics management and control, developed by Hangzhou Golden Software System Co., Ltd., could resolve the conflict between regional differentiation and centralized management and control. The solution met the technological requirements of cross-regional supervision and full-scale monitoring on materials circulation process via supply chain financing. In terms of management, the solution enabled the headquarters to achieve centralized management and control and regional differentiation management for all its nation-wide logistics bases. Through application of this centralized management and control information solution, Zhejiang Materials Industry Logistics Co., Ltd. had achieved resource sharing, and resulted in a reduction of management cost by 15 %, an improvement of comprehensive throughput by over 15 % and an increase of sales revenue by more than 17 %.

9.2.5 Classification Based on Industries Integrated Through Innovation

During logistics service innovation, it is common for logistics industry to integrate with other industries such as finance, production, consumption, environmental protection, e-commerce, etc., and form an inter-sector innovation pattern.

9.2.5.1 Integration with Finance – Example: Tianjin Binhai Teda Logistics (Group) Co., Ltd.

This company's core business mode was to firmly control the merchandise purchasing right with procurement and sales of goods, utilizing self-owned or rented warehouses as its main supervision sites. Its major business types included procurement and supply logistics of raw materials, trade-based purchasing logistics and export-oriented financial logistics. In the first half of 2010, the logistics income of Tianjin Binhai Teda Logistics Group Co., Ltd. from supply chain finance increased by 71 % over the same period of previous year; the amount of funds utilized increased by 73 % and sales profit increased by 126 %.

9.2.5.2 Integration with Environmental Protection – Example: Bayuquan Branch of Angang Steel Co., Ltd.

With the goal of creating the most globally competitive ecological logistics model of coastal steel plant, this company continued to improve in terms of systematic planning, process arrangement, facility layout, green operations, information technology, and enterprise management. The company had created a logistics operation model of modern coastal steel plant which practiced recycling economy, and was able to save about 32,500 tons of standard coal and 34.1 million RMB in production cost annually.

9.2.5.3 Integration with Production – Example: China Logistics Co., Ltd.

In providing production logistics service for Huachen Auto Group Holding Co., Ltd., China Logistics had rationally planned its placements of logistics centers and scientifically formulated its standard operations process. In addition, it continually improved its operational schemes by means of setting up reliable IT system platform and enhancing the establishment of a learning organization. The Huachen project had achieved successful transformation from the initial "batch-supply" mode to a leaner "Kanban pull" supply mode, which greatly improved the management level of production logistics, attaining an error rate of parts distribution of less than 1 % and an on-time rate of 100 %.

9.2.5.4 Integration with Consumption – Example: Logistics Information Service of Wu Mart

Wu Mart had established strategic cooperation relations with the Yanjing Beer Group, the Uni-President Enterprises Corporation, the Yili Group, and the Procter & Gamble Company, and provided these suppliers with special reports and promotion support like information sharing, inventory analysis, etc. The SAP – ERP

system of the company was used to effectively support forecast of customer demands, purchasing operations, supplier management, and logistics distribution.

9.2.5.5 Integration with E-commerce – Example: Wu Mart Co., Ltd.

In order to cooperate with Minnesota Mining and Manufacturing Company (3 M) to expand its sales markets in the third- and fourth-tier cities of China, Wu Mart had invested five million RMB in the transformation of its information system and the construction of supporting facility in logistics. Consequently, operations service of online mart and after-sales support service were added, and offline distribution service also had been expanded across the country. The development project of supply chain and e-commerce integration of Shanghai Sunjex Logistics Co., Ltd. helped 3 M Company in cutting the needed cost of more than 10 million RMB for establishing its own e-commerce management platform, including management team and logistics facility.

9.2.6 Classification Based on the Type of Innovating Enterprise

According to the type of innovating enterprise, logistics service innovation can be classified into innovation by logistics enterprise, by manufacturing enterprise, by commerce & trade enterprise, and by agricultural enterprise. Therein, logistics enterprise innovation can be divided into platform logistics enterprise, functional logistics enterprise, comprehensive logistics enterprise and supply chain logistics enterprise.

9.2.6.1 Platform Logistics Enterprises – Example: Highway Port of Zhejiang Transfar Co., Ltd.

The logistics port of Transfar is a development platform of logistics enterprise cluster "with information transaction as core, highway transportation as support and domestic logistics as basis." The platform has a functioning pattern of "6 + 1", that is to say, it will eventually become a logistics service platform of highway port in specialization operations through six centers as "management service, information transaction, transportation, warehousing, distribution and less-than-truck-load express," and a complete supporting service function module. Highway port of Zhejiang Transfar Co., Ltd. also achieved obvious economic and social benefits; tax paid to local government rose from 30 million RMB in 2003 to 140 million RMB in 2008. More than 480 logistics enterprises had settled in Xiaoshan Base and created more than 5,000 jobs for local surplus labor.

9.2.6.2 Functional Logistics Enterprise – Example: The Yuan Cheng Group

This company introduced the star-graded service of hotel management into the logistics industry. It formed a customer-oriented service standard for each post in Yuan Cheng Group based on its own logistics service process, then conducted a comprehensive training session for its staff, implemented it through supervision and inspection and strengthened it through competition. After the implementation of the star-graded service measures within Yuan Cheng Group, the enterprise brought huge impact within the logistic industry and impressed customers with its first-rate service.

9.2.6.3 Comprehensive Logistics Enterprise – Example: Shanghai Huier Logistics Co., Ltd.

This company has merged the logistics facility, equipment and personnel of Shanghai Jahwa United Co., Ltd. in stages through adopting a step-by-step interaction method to integrate the logistics network and sales network. It solved the logistics problem for Shanghai Jahwa United Co., Ltd. by undertaking the latter's logistics outsourcing business. Through logistics service innovation, the inventory turnover of Shanghai Jahwa United was reduced by 10 days on average, the logistics cost per unit of its finished products was reduced by 20 %, its order completion rate reached above 99 % and the order-to-delivery cycle was shortened by 30 %.

9.2.6.4 Supply Chain Enterprise – Example: Shenzhen Eternal Asia Supply Chain Management Ltd.

The WMS system of Shenzhen Eternal Asia Supply Chain Management Ltd. gathers various raw materials from suppliers, conducts order picking and timely shipment in accordance with the production BOM information of its customer enterprises. It also assists the suppliers to adjust their inventory of VMI Hubs based on the customers' production forecasts and plans. The WMS system can provide replenishment reminder to its clients; this function is beneficial for the clients in cutting their inventory level and procurement price, and shortening the procurement lead-time.

9.2.6.5 Logistics Service Innovation of Manufacturing Enterprises – Example: Anhui Jianghuai Automobile Co., Ltd.

This company implemented a project of MCU (Mini Cost Unit) management pattern innovation with vehicle logistics. The project had achieved innovation and breakthrough in many aspects, such as division of business entity, budgetary structuring, performance evaluation, and compensation management. Under this comprehensive innovation pattern scoped by the overall budget, with refined operations units, guided by the operations target, the performance system, the organizational

transformation, and the personnel safeguards, Anhui Jianghuai Automobile Co., Ltd. earned an income of 720 million RMB with a profit of 23 million RMB in 2011. Nearly 20 % of the profit was achieved through the innovation of refining the operations units.

9.2.6.6 Logistics Service Innovation of Commerce & Trade Enterprises – Example: The International Logistics Center of Shaoxing Light & Textile Industrial Group

The Shaoxing Light & Textile Industrial Group was built around a wholesale market district of light and textile products in the Keqiao area of Shaoxing city. It was established based on the transformation of the original traditional logistics mode and logistics integration. To further strengthen its development, the Group constructed the International Logistics Center, which relied firmly on the local industries and ensured reasonable allocation of local warehousing resources. The Logistics Center fostered eight major logistics service functions to form an integrated and one-stop service capability. Annual revenue of the center in 2011 was 63.81 million RMB with a profit of 18.59 million RMB, making it a steady economic growth point for Shaoxing Light & Textile Industrial area. By integrating and optimizing the logistics resources of the local area, the innovation made significant contributions to the improvement of the area's markets and the urban environment of Keqiao.

9.2.6.7 Logistics Service Innovation of Agricultural Enterprises – Example: Beijing Tianan Agricultural Development Co., Ltd.

This company is a demonstration enterprise in terms of tracing vegetables safety in Beijing Municipality. It was the first such company to explore and achieve whole-process quality tracing system of vegetable supply chain and to adopt an ERP (Enterprise Resource Planning) system; the first to employ information management in vegetable production, picking and distribution fields. It was the first company to thoroughly master data in ordering, procurement, production, inventory, distribution, and quality tracing, to provide quality vegetables and distinctive agricultural products for customers.

9.3 Restrictive Factors and Development Suggestions for Logistics Service Innovation of China

It can be seen from the above-mentioned cases in the previous two sections that China has made a good stride in the field of logistics service innovation, reflected in a broader innovation scope, further innovation extensions and the increasingly prominent benefit accrued from innovation. On the whole, however, China's

logistics service innovation is still restricted by many factors, which must be noted and resolved in future logistics service innovation so as to promote a sounder and more rapid development in China's logistics service.

9.3.1 Main Restrictive Factors for China's Logistics Service Innovation

9.3.1.1 Main Factors Pertaining to Enterprises

Awareness of Logistics Service Innovation Remains to Be Elevated

Many Chinese logistics enterprises still lack an adequate awareness of the process and method of logistics service innovation and a full knowledge of its procedures. Some logistics enterprises regard that logistics service innovation would require a comprehensive reform of the enterprises' operations process and the process of innovation is too complicated, so they dare not attempt it. Some others consider that the risk and cost of logistics service innovation are high but its economic benefit is not apparent, so they are unwilling to implement an innovation. Therefore, the enterprises' awareness of the importance and benefit of logistics service innovation still remains to be enhanced.

Innovation Motivation of Some Enterprises Is Insufficient

Influenced by the legacy of national long-term planned economic system of many years, many industrial and commercial enterprises of China are still operating under the traditional organizational mode, which inherits many restrictions for the innovation mechanism. For example, many enterprises consummate their logistics activities mainly on internally-organized self service; the motivation of service innovation is insufficient. Although some relatively modern enterprises wish to engage in logistics service innovation, they are unable to effectively break away from the inefficient logistics facility and organization, due to their systems' imperfection. Thus, enterprises fall back to continue with the previous logistics mode, which results in poor service quality, low management level, and difficulty in implementing innovation.

Logistics Service Innovation Is Restricted by the Scale and Operations Level of Some Other Enterprises

Because most of logistics enterprises to-date are transformed from traditional transportation companies and warehouse centers, they generally feature small scale and with singular function. Restricted by scale, fund and some other factors, many logistics enterprises, especially those of small and medium scale, find it hard to raise

itself to a higher level with respect to information system application, management operating system, and quality of personnel. Hence, it is difficult (Wang Shuting 2008) for them to initiate systematic logistics service innovation.

9.3.1.2 Main Factors with Respect to Industry

Logistics Management System Is Not Suitable for Logistics Service Innovation

Logistics industry is one with compound services integrating the transportation industry, warehousing industry, freight forwarding industry, and information industry. Most provinces and cities in China have established inter-ministerial joint conference system for the logistics industry, but the leading agencies of the conferences are different. Some are subordinate to the National Development and Reform Commission (NDRC), others are under the Ministry of Economy, or Information, or Commerce, or Transportation. Some of these conference systems from the same province are subject to different ministries, adding to the difficulty in coordination. In addition, departmental territorial protectionism is serious. Such an intersected administrative system segregates the logistics management as a whole, thus restricting an ordered development of logistics service innovation.

Insufficient Logistics Infrastructure and Shortage of Talents Restrict Logistics Service Innovation

In recent years, China's logistics infrastructure has gained much investment and development. Yet there is still a large gap between the level of logistics infrastructure and the development requirements of the logistics industry, which to a certain extent hampers the logistics service innovation. For example, presently the sea-railway combined transportation infrastructure and the coordination mechanism of containers in China are still inadequate, making it hard to achieve integrated and efficient circulation of many containers in transportation, loading/unloading and distribution links. Logistics service innovation of sea-railway combined transportation is thus restricted.

At present, logistics education and talents training in China are relatively lagging. According to a recent survey,[4] 82.24 % of the enterprises in the study regard the lack of talents specializing in logistics service innovation as the major difficulty during the firms' implementation of logistics service innovation. Due to lack of professional talents, many logistics enterprises cannot but formulate service contents based mainly on their own experience, thus resulting in logistics service being less creative to meet the society's demand and logistics service innovation being limited.

[4] "Survey on Development of China's Modern Logistics Market," by the Bureau of Economic Operations Adjustment, the National Development and Reform Commission, and the Research Center of Logistics, Nankai University, April 2013.

Logistics Service Innovation Is Held Back by Other Industries

Service innovation by logistics enterprises involves not only the logistics industry but also other related industries. For example, logistics enterprises will be subject to the information technology industry in providing logistics information service, and to the banks in providing logistics financial service. Great obstacle exists in the way of China's logistics financial service innovation due to uncertain social credit risks, information asymmetry and even some other more serious problems. For instance, in 2012, the incident of logistics finance crisis of steel traders in Shanghai is one of the problems spawned during the logistics financial innovation process.[5]

9.3.2 Some Suggestions for Accelerating Logistics Service Innovation in China

For the purpose of promoting the development of logistics service innovation, it is necessary for China to pragmatically boost the economic development and the logistics industry (Wang Yaoqiu 2011). Some suggestions in the following aspects are put forward herein.

9.3.2.1 Continually Heighten the Awareness of Logistics Service Innovation

Enterprises engaged in logistics service business shall enhance the knowledge on logistics service innovation by carrying out in-depth discussion and synopsis on the fundamental process, method, as well as basic approach and precondition of logistics service innovation. Relevant research institutes shall come up with new methods of logistics service innovation which can serve as a reference for logistics enterprises and logistics departments of industrial and commercial enterprises. Logistics industry associations at all levels shall actively play their role to strengthen the communication of service innovation among enterprises, to publicize successful cases of logistics service innovation via multiple channels, to select typical case as demonstration, so as to improve the logistics enterprises' awareness of logistics service innovation.

[5] The incident of logistics finance crisis of steel traders in Shanghai refers to that some steel traders lacking integrity colluded with some bank staffs to borrow cash from the bank by means of pledging goods which have already been pledged by other banks many times. Such illicit practice eventually induced huge loss to many banks and iron and steel enterprises. As a result, this incident caused a wide-spread shock to the logistics financial industry.

9.3.2.2 Governments Shall Foster a Sound External Environment for Innovation

Departments of each province, city and autonomous region responsible for logistics development are urged to promulgate policies which are conducive to local logistics enterprises to engage in service innovation based on practical development conditions, thus providing a sound policy environment for logistics service innovation. While creating a sound external environment for innovation, it is necessary to pay attention to the cooperation in the following aspects: (1) Relevant government agencies shall actively perform market survey to gain a better understanding of the development status, problems and trends of the local logistics enterprises; they shall, with renewed mindset, put forward specific policies which are suitable for local logistics service innovation. (2) Administrative units of the government shall eliminate various administrative monopolies, such as local protectionism, which are not beneficial to logistics service innovation and abolish relevant provisions which are not conducive to the development of logistics market. (3) Logistics associations shall timely communicate rationalization proposals of logistics service innovation by enterprises, to spread the development of logistics service innovation.

9.3.2.3 Continually Advance the Technology of Logistics Service Innovation

Governments at all levels shall pay close attention to new trends of scientific and technological development in fields of emerging technology, new energy, energy conservation and emission reduction, logistics informatization, etc., so as to advance the technology of logistics service innovation. Relevant departments, by way of the comprehensive reform pilot work of national modern service industry, shall lead the scientific and technical innovation as well as popularization and application of modern logistics. Governments at all levels shall encourage eligible logistics enterprises and enterprises by providing the latter technical services to apply for certification of high and new technology enterprise. It is suggested that the Ministry of Science and Technology and other departments shall reform and improve the certification standards for logistics enterprises to apply for high and new technology enterprise status, so that eligible logistics enterprises can take advantage of the benefits of the relevant policies. In addition, it is advisable to promote the construction of green logistics system by means of enhancing the directives in energy conservation and environmental protection, and by carrying out pilot applications of utilizing new energy in automobiles in urban logistics distribution.

9.3.2.4 Actively Carry Out Popularization and Demonstration of Innovation Achievements

It is suggested that government agencies at all levels shall issue relevant and cohesive guiding opinions for logistics service innovation and coordinate with the Ministry of Finance and other related departments to set up special funds for demonstration projects. They can select some logistics service innovation projects which have scientific logistics planning and well-founded organizational guarantee as demonstration subjects. They can actively coordinate with relevant departments to strengthen the policy support for these demonstration projects by means of special financing, tax reduction and exemption, etc. Furthermore, they can also appraise local advanced enterprises with logistics service innovation for excellent achievements, synthesize and popularize their accomplishments to further promote the adoption of logistics service innovation.

9.4 Summary

This chapter focuses on the current status of China's logistics service innovation, describes some typical patterns of the logistics service innovation, analyses its existing problems and restrictive factors, presents the trend, and suggests some ways to promote the development of logistics service innovation. As for the development status of recent years, relevant Central Ministries and Commissions have successively issued policies aiming at promoting logistics service innovation; various local governments have actively popularized the concept of logistics service innovation, and logistics enterprises also have actively engaged in logistics service innovation. The innovation patterns are quite diversified, including not only various functional logistics service innovations, but also integrated logistics service innovation and supply chain integration service innovation. The patterns also encompass logistics innovation within enterprise as well as service innovation external to the enterprise and across the supply chain network. However, China's logistics service innovation is still subject to many restrictive factors, so in order to move forward in the development of logistics service innovation, China must strengthen its learning and communication, improve the awareness of logistics service innovation, create a sound external environment, promote logistics service innovation in science and technology and vigorously popularize the existing logistics service innovation achievements.

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Chapter 10
Development of China's Logistics Financial Service

Jun Liu

Banks play a leading role in the development of supply-chain finance in western countries. In contrast, China's logistics financial service is mainly a kind of value-added lending service out of convenience, and mostly set up on the basis of logistics service. Such type of logistics financial service provided for industrial and commercial enterprises by logistics enterprises in collaboration with financial institutions is an integration of logistics service and financial service. In recent years, more and more Chinese logistics enterprises have engaged in logistics financial service, so logistics financial service has become an emerging business field of China's logistics industry.

This chapter comprises three sections. Section 10.1 introduces the contents and development background of China's logistics financial service. Section 10.2 shows the current development and main features of logistics financial service and Sect. 10.3 points out problems in the development of China's logistics financial service and the future development trend thereof.

10.1 Contents and Development Background of Logistics Financial Service

Logistics financial service is a new financing mode which is different from traditional bank loaning and supply-chain finance. The core content of logistics financial service is for the logistics enterprises to provide financing service for industrial and commercial enterprises in cooperation with financial institutions. At present,

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B. Liu et al. (eds.), *Contemporary Logistics in China: Assimilation and Innovation*, Current Chinese Economic Report Series, DOI 10.1007/978-3-642-55282-3_10,

many logistics enterprises have engaged in various forms of logistics financial service in China and logistics financial service has been an important means for improving the competitiveness and a new driver of growth of some logistics enterprises.

10.1.1 Contents of Logistics Financial Service

10.1.1.1 Definition of Logistics Financial Service

Traditionally, the financing arrangements between financial institutions and industrial and commercial enterprises in China take on the mode of mortgage/pledge backed loan in general. Due to information asymmetry, financial institutions have limited ability to supervise and control the collaterals, they have set definite and even stringent requirements on collaterals and guarantee types for this form of financing. These limitations lead to great difficulty for enterprises in meeting the financing requirements of acquiring bank loans, especially for those small and medium-sized enterprises.

Logistics enterprises have the auxiliary functions of managing the raw materials or finished products of industrial and commercial enterprises and know all about the production and operation activities thereof. Therefore, when certain qualified logistics enterprises provide industrial and commercial enterprises with logistics service, they may also be qualified to offer corresponding delegated custody on goods to financial institutions that provide loans for these enterprises. Consequently, logistics enterprises, rolling logistics service and custody service into one, can accept the commission of both the industrial and commercial enterprises and the financial institutions by providing logistics financial service. This service also solves the problem of information asymmetry which exists when the financing activities are conducted directly between the financial institutions and the enterprises.

Logistics financial service is a kind of innovative financing arrangement based on logistics service and founded on the cooperation of the logistics enterprises, the financial institutions and the industrial and commercial enterprises. It takes the raw materials, finished products and other movable property of the industrial and commercial enterprises in logistics activities as collaterals for financing from the financial institutions, without affecting the formers' production and operations activities, through the cooperation between the financial institutions and the logistics enterprises. In this way, the financing needs of the industrial and commercial enterprises can be met while the loan safety of the financial institutions is ensured.

Hence, logistics financial service refers to a type of composite business which integrates logistics service and financial service. Viewed from the logistics enterprises, logistics financial service is a logistics service with financial service super-imposed on services like transportation, warehousing, etc.; viewed from the financial institutions, logistics financial service is a way of providing industrial and commercial enterprises with services such as financing, settlement and insurance through the cooperation with logistics enterprises. This mode of business operation can help the industrial and commercial enterprises overcome financing barriers and realize low-cost financing,

Table 10.1 Comparison among traditional financing, logistics financial service and supply-chain finance

	Traditional financing	Logistics finance	Supply-chain finance
Participant	Bank and client enterprise	Bank, logistics enterprise, and client enterprise	Bank, supply chain core enterprise, and supply chain member enterprises
Leader	Bank	Bank or logistics enterprise	Bank and supply chain core enterprise
Beneficiary	Bank and client enterprise	Bank, logistics enterprise, and client enterprise	Bank, supply chain core enterprise, and supply chain member enterprises
Risk-control mechanism	Loan guarantee	Inventory collateral	Business relationship between bank and core enterprise and supply chain cooperative partnership

and enhance the business scope and service level of the logistics enterprises, as well as reduce the financial institutions' risk due to information asymmetry.

10.1.1.2 Comparison of Logistics Financial Service with Traditional Bank Loan and Supply-Chain Finance

Logistics financial service is different from traditional mortgage or pledge financing and supply-chain finance service developed by financial institutions aiming at supply chain enterprises. Supply-chain finance refers to a kind of systematic financing arrangement reached between the financial institutions and the supply chain core enterprises, regarding to the supply chain member enterprises. In supply-chain finance, when the financial institutions render financing and other settlement and financial services to the supply chain core enterprises, they will also provide the convenience to the suppliers of these core enterprises to obtain loans more timely, or offer to their distributors services like advanced payment and inventory financing. For logistics financial service, the financial service is embedded on the basis of logistics service, while supply-chain finance refers to further optimization of capital flow based on cooperative partnership in supply chain.

The differences and similarities of traditional financing, logistics financial service and supply-chain finance are shown in Table 10.1.

10.1.2 Development Background of Logistics Financial Service

Financing difficulty is a major cause hindering the development of industrial and commercial enterprises in China. Along with the advancement of marketization, competition pressure also requires the logistics enterprises and financial institutions

to further improve their service level and develop new ways for business growth. Logistics financial service has emerged as an effective means to solve the financing difficulty of industrial and commercial enterprises and to realize tripartite benefit. With the deepening of trilateral cooperation and the improvement of legal and regulatory environment, the development of China's logistics financial service has also been accelerating.

10.1.2.1 Increasing Financing Needs of Enterprises

Logistics financial service allows enterprises to take movable property as loan guarantee and revitalize their temporarily idled funds in raw materials and finished products, thus it is an effective way for easing their financial burden. Hence, logistics financial service has long caught the attention of small and medium-sized enterprises in China. However, due to its immature operational mode and the overall development environment, this type of service has developed rather slowly in the past.

In recent years, with gradually maturing of the theory, practice and operations environment of logistics financial service, small and medium-sized enterprises have become the most important demand subject of China's logistics financial service. Up to June 2012, there were about 13 million enterprises in China, with small and medium-sized enterprises accounting for over 95 % of the total enterprises in number (State Administration for Industry and Commerce of China 2012). In this context, logistics financial service has grown rapidly and become an important avenue for financing by China's small and medium-sized enterprises.

10.1.2.2 Increasingly Fierce Competition of Commercial Banks

After China's accession into WTO, foreign banks began to enter China's banking market. Meanwhile, local commercial banks in China also developed rapidly. By the end of 2012, 3,747 financial institutions had been established.[1] Due to the rapid increase of financial institutions, competition among them becomes fiercer than ever. To gain a competitive advantage, financial institutions generally resort to adopting more innovative financial products. Through cooperation with the logistics enterprises, financial institutions solve the problem of guarantee in loan service and transform the invisible credit risk into visible operations risk. Since industrial and commercial enterprises generally adopt the supply-chain management mode, logistics financial service is also beneficial to the financing institutions in developing the upstream and downstream customers of the industrial and commercial enterprises. Therefore, many commercial banks actively develop such business and regard it as a new driver of growth.

[1] *2012 Annual Report of China Banking Regulatory Commission*, China Banking Regulatory Commission, 2013-05-24. http://www.cbrc.gov.cn/chinese/home/docView/18492CCBDD04435A8BFAB3FF6F2CA51C.html.

10.1.2.3 Logistics Enterprises Actively Seeking Service Innovation

The competition in China's logistics industry is fierce and the overall profit margin of this industry is low. Under the condition that traditional logistics business is nearing the saturation level, providing more value-added service has become an important way for logistics enterprises to acquire new customers. Since raw material or finished product assets of industrial and commercial enterprises are under the control of the logistics enterprises in the process of logistics service, some large-sized logistics enterprises with sound credit standing begin to regard logistics financial service as an important field of business innovation.

Benefits achieved by logistics enterprises from the development of logistics financial service may accrue from two aspects: one is charging for storage and management of goods from the industrial and commercial enterprises; the other is charging for the intermediary services of value assessment and collateral supervision from the banks. Promoting logistics financial service not only can help logistics enterprises develop high value-added services, but also is an effective way for logistics enterprises to provide differentiated service to gain added competitive advantages. Therefore, logistics enterprises play a significant role in promoting the advancement of China's logistics financial service.

10.2 Current Development and Features of China's Logistics Financial Service

China's logistics financial service began in the 1990s and has developed rapidly since 2000. At present it has evolved into a major business field developed by a number of logistics enterprises and banks. The development of logistics financial service is the result of promoting the value-added services and the transformation and upgrading of China's logistics industry; it is also closely linked to the service innovation of China's banking industry.

10.2.1 Current Development of China's Logistics Financial Service

Logistics financial service is the integration of logistics service and financial service. Since these services differ greatly in terms of theirs features and innovation approaches, logistics financial service has exhibited multiple levels and diverse forms during its development. This report will, from the perspective of logistics service, discuss the development of China's logistics financial service and give only a brief mentioning to the development of such business by the financial institutions.

10.2.1.1 Development of Logistics Financial Service by Logistics Enterprises

Logistics financial service mostly carried out by China's logistics enterprises can be classified into three types in general.

The first type is the "Finance-Transportation and Warehousing (FTW)"[2] business. Such business occurs in the warehousing link of the logistics service and goods for financing guarantee are static in the warehoused location. It mainly refers to a type that logistics enterprises are commissioned by commercial banks to supervise goods for financing guarantee from the industrial and commercial enterprises, and to provide corresponding logistics service.

This type of business is the earliest and the most popular logistics financial service carried out by China's logistics enterprises. Many warehousing logistics enterprises with sound credit status have developed such business. As early as 1999, China National Materials Storage and Transportation Corporation (CMST) had pioneered such business in China. By 2011, this Corporation's income from such business had exceeded 200 million RMB and goods involved in such business have amounted to almost 50 million tons.[3]

The second type is "the entire-process logistics finance" service. This type of business occurring in the entire logistics process, from materials acquisition to finished goods sales, is a kind of financing facilitation service covering multiple logistics service links. Goods for financing guarantee are in a dynamic state along the logistics links. The service is based on the inventory financing mode under mortgage supervision of "multi-node, in stock and in transit," including collection and payment for goods, pledge by warehouse receipts,[4] supervision in transit[5] logistics insurance, etc.

At present, Chinese logistics enterprises possessing nationwide logistics operational network, such as CMST, China COSCO Logistics Co., Ltd., China Shipping Logistics Co., Ltd., and Sinotrans Logistics Investment Holding Co., Ltd. have already carried out this type of business. The "Sea-land-warehouse" business launched by COSCO Logistics Co., Ltd. belongs to the entire-process logistics financial service. This business refers to the entire-process pledge financing based on pledge of goods in transit by sea and warehouses in related place of dispatch and destination; it is developed by COSCO Logistics Co., Ltd., combining the

[2] Finance-transportation and warehouse (FTW) is the integration and unified management of finance, materials circulation and warehouse and is a kind of business innovation comprehensively coordinating logistics, information flow and capital flow.

[3] CMST Development Co., Ltd. http://finance.sina.com.cn/stock/t/20120330/053511717507.shtml/2012.

[4] The pledge by warehouse receipts is a way of using the warehouse receipts as subject for financing guarantee; it is an important means for enterprises to acquire financing from banks and also a value-added service of the warehouse enterprises.

[5] The supervision in transit is a financing method that industrial and commercial enterprises leverage the logistics information and supervision of logistics enterprises to obtain short-term credit for goods in transit.

traditional marine transport business and borrowing the idea of pledge by warehouse receipts. COSCO Logistics Co., Ltd. is responsible for the entire-process of pledge supervision from the production site to the place of consumption, as well as the in-transit sea-land transportation.

The third type of logistics financial service is oriented towards the multiple members of a supply chain. It is the systematic financing service solutions for multiple members of supply chain provided by the logistics enterprises. The service refers to that the logistics enterprises, on the basis of pledge of movables,[6] accounts receivable financing, collection and payment for goods and other single logistics financial services, integrates capital service into the operations and management of many enterprises in supply chain through the comprehensive application of trade bill, bank draft, payment guarantee, letter of credit and various other credit instruments.

Developing this type of logistics financial service not only requires the assurance of scale, reputation and financing ability, but also needs strong capability in supply chain management and integration of industry and finance. Currently, there are relatively few logistics enterprises which provide this type of service in China; these include YH Global Logistics Co., Ltd., Pegasus International Supply Chain Co., Ltd., Eternal Asia, etc. For example, this type of financing business developed by YH Global Logistics Co., Ltd. basically covers transportation and delivery, international freight forwarding, import and export, VMI warehousing, bonded logistics, international purchasing, supply chain finance, distribution and channel management, supply chain solutions, e-commerce logistics and various other modules and links. In recent years, business volume of YH Global Logistics Co., Ltd. has grown rapidly. In 2009, its business volume was 22.3 billion RMB; the business volume rose to 26.9 billion RMB in 2010, and reached 39.9 billion RMB[7] in the following year.

10.2.1.2 Development of Logistics Financial Service by Banks

Logistics financial service is the further extension of commercial financing by banks. Since inventory, accounts receivable, advance money and other assets of industrial and commercial enterprises can be used as financing guaranty, China's banks have launched various logistics financial services oriented to small and medium-sized enterprises in succession. As logistics service is very different from financial service, logistics financial service is an emerging business for which specific industrial specifications and service standards are unavailable; different commercial banks thus have quite different understandings and nomenclatures for such service.

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[6] The pledge of liquid assets refers to the assets not for possession transfer but for debt fulfillment guarantee by the debtor or the third-party person; the creditor has the right to sell the assets at the current rate and be paid in priority, in case the debtor fails to fulfill the obligations.

[7] "Why can YH Global Logistics fly against the wind?" Phoenix Finance. http://finance.ifeng.com/roll/20120925/7079928.shtml/2012.

Shenzhen Development Bank[8] was the first in proposing the development strategy of "Aiming at the small and medium-sized enterprises and being oriented to commercial financing" to focus on the development of logistics financial service for small and medium-sized enterprises. Following it, China CITIC Bank, China Guangfa Bank, Industrial Bank Co., Ltd., Hua Xia Bank, China Merchants Bank and other commercial banks also successively launched this type of service. At present, all major commercial banks of China have developed logistics financial business.

10.2.2 Main Development Features of China's Logistics Financial Service

Logistics financial service refers to a type of business innovation conducted by logistics enterprises and financial institutions based on market demand. Therefore, the development of logistics financial service also reflects some typical features of China's logistics market, financial market and to some extent its overall market environment.

10.2.2.1 Logistics Enterprises and Small and Medium-Sized Commercial Banks Are the Primary Driver for Logistics Financial Service

In recent years, logistics market in China has become more and more competitive. Market for traditional logistics business tends to be saturated and logistics enterprises are in sore need of developing new service field, and are highly motivated to step into the area of logistics financial service.

As for the financial industry, five major State-owned commercial banks, namely, the Bank of China, the Agricultural Bank of China, the Industrial and Commercial Bank of China, the China Construction Bank and the Bank of Communications, possess the vast majority of high-caliber customer base in the market. The new-entrant commercial banks need to establish new customer resources and business field for their development. Consequently, a group of joint-stock commercial banks with superior business innovation capability, represented by Shenzhen Development Bank, became China's pioneering financial institutions of the development of logistics financial business.

10.2.2.2 Service Objects of Logistics Financial Service Are Mainly Small and Medium-Sized Enterprises

Difficulty in obtaining loans has hindered the development of small and medium-sized enterprises in China for a long while. Logistics financial service satisfies the financing demand of small and medium-sized enterprises, by linking the supervision of logistics enterprises and meeting the credit requirements of the financial institutions,

[8] Now renamed as Ping An Bank.

thus achieve the tripartite benefit, and to some extent solve the difficulty of the small and medium-sized enterprises in acquiring bank loans. Therefore, logistics financial service oriented to small and medium-sized enterprises has in recent years become a major development direction of logistics enterprises and financial institutions in China. China National Materials Storage and Transportation Corporation (CMST) is the most representative logistics enterprise that affords this service, and more than 90 % of its customers of this service are small and medium-sized enterprises.[9]

10.2.2.3 Great Variety of Businesses, Primarily Inventory Financing and Accounts Receivable Financing

Since the market demand for logistics financing is complex and diverse and corresponding service specifications are yet to be established, there are a great variety of logistics financial services with various nomenclatures in China. On the whole, constrained by the service capability of logistics enterprises, the risk control of financial institutions and some other factors, China's logistics financial service is mainly FTW business with relatively simple operations; comprehensive logistics financial solutions are few. At present, statistical data of such service in China's logistics industry are deficient. Table 10.2 presents the percentage of banks which provide each kind of logistics financial service in different samples from a total of 138 commercial banks operating in China, as of the end of 2011.

The data in Table 10.2 show that among commercial banks, the number of banks developing inventory financing and accounts receivable financing reaches 63.0 % and 68.8 % respectively, indicating that these two kinds of logistics financial services are most common in China. The percentage of advance money logistics financial business amounts to only 31.9 %, showing that this type of financing could be further developed. The proportions of domestic banks developing inventory financing business and accounts receivable financing business are about equal in general; foreign banks attach more emphasis to accounts receivable financing and the percentage of inventory financing business by them is merely 25.9 %. Comprehensive logistics financial business like comprehensive credit line and joint guarantee credit is carried out by fewer commercial banks and accounts for only 30 % of all the sample banks.

10.2.2.4 Mortgage/Pledge Guarantee Is the Leading Means for Risk Control

The major difference between logistics financial service and traditional bank credit is that the former adopts an integrated risk management. In traditional lending service, much attention is paid to evaluating the scale, the fixed assets value, the financial indicators, the guarantee types of the applying enterprise. While in logistics financial

[9] "Logistics Financing is Growing Rampantly," China's logistics and purchasing network. http://www.chinawuliu.com.cn/zixun/201205/25/182957.shtml/2012.

Table 10.2 Development of logistics financial service by banks (number of banks providing such service/total number of samples)

	Service type\number of banks	Inventory financing (%)	Accounts receivable financing (%)	Advance money financing (%)	Comprehensive credit line (%)	Joint guarantee credit (%)
Total sample	138	63.04	68.84	31.88	31.16	28.26
State-owned commercial banks	5	100.00	80.00	60.00	20.00	0.00
Nationwide joint-stock commercial banks	12	100.00	100.00	58.33	41.67	41.67
Municipal commercial banks	94	67.02	64.89	32.98	35.11	34.04
Foreign banks	27	25.93	66.67	11.11	14.81	7.41

Note: Inventory financing business includes pledge by warehouse receipts and inventory pledge; accounts receivable financing business includes accounts receivable financing and overseas and domestic factoring business (Factoring business refers to that the seller transfers its existing or future accounts receivable incurred based on goods sales or service contract entered into between it and the buyer to the factor, and the factor shall provide the seller with at least two services among trade financing, management of sales subsidiary ledger, collection of accounts receivable, credit risk control, full protection against bad debts, etc.); advance money business mainly refers to confirming storage (Confirming storage means that an industrial and commercial enterprise pays some security deposit to a bank and then the bank issues bank's acceptance bill, and the payee is upstream manufacturer of the industrial and commercial enterprise. After the upstream manufacturer receives bank's acceptance bill, it will deliver goods to the logistics company or the warehouse. Upon arrival of goods at the warehouse, pledge by warehouse receipts shall be adopted. If the financing industrial and commercial enterprise fails to repay bank loans upon maturity, the upstream manufacturer shall be responsible for buying back the goods pledged. In the process of this business, banks will control right of goods and the logistics company or the warehousing party will be entrusted with storage of goods) business; comprehensive credit line refers to a kind of credit risk management system for centralized and unified control over the maximum credit line of customers upon comprehensive assessment by commercial banks on financial situation and credit risk of customers; joint guarantee credit refers to the lending pattern that multiple small and medium-sized enterprises constitute joint guarantee team and sign agreement that members of joint guarantee team shall undertake joint liability in case the borrower fails to repay loans according to agreement
Source: Compiled from business briefings on official websites of the 138 commercial banks operating in China, as of December 31, 2011

service, when emphasis is placed on the inventory or the security of right of small and medium-sized enterprises, more consideration is given to the business relationship between the loan applying enterprise and the upstream and downstream enterprises. However, due to the current incomplete market credit system, the unstable cooperative relationship among enterprises, the lack of mature service standards and risk control mechanism in China's logistics market, the means of risk control for China's logistics financial service differ greatly from that of the developed countries. Mortgage/pledge guarantee led by banks is still the chief risk control means in China's logistics financial service.

10.3 Main Problems in and Trend of Development of China's Logistics Financial Service

At present, logistics financial service in China is still not mature in terms of the mutual relationships between participants, the mode of risk control, and the service specifications, so there is a certain degree of uncertainty in its future development. Nevertheless, with the promotion of overall service level of logistics enterprises, there exist ample room for the future development of logistics financial service. Logistics enterprises will undoubtedly play a more important role in such service.

10.3.1 Main Problems in Development of China's Logistics Financial Service

Operation of logistics financial service involves many links, such as the production and distribution function of industrial and commercial enterprises, the credit lending department of the banks, and the supervision process of the logistics enterprises. This is especially evident in the entire-process logistics finance with high level of integration and financing service oriented to supply chain, where there are numerous participants and the relationship of rights and obligations among all parties is comparatively complex. This seems to be the root cause of the problems in the development of logistics financial service.

10.3.1.1 The Cooperative Relationship Is Not on Completely Equal Basis, So Logistics Financial Service Has Yet Become the Real Driver of Growth of Logistics Enterprises

Compared with the financial industry, China's logistics industry is a relatively low-end service industry which features low market concentration and fierce competition. In the process of forming cooperation between the logistics enterprises and the

financial institutions, though their inherent interests are consistent, they often disagree in respects of mutual rights and duties. The logistics enterprises, due to their industrial standing, are often in weaker bargaining position. Their disadvantages are mainly reflected in low supervision income, numerous additional responsibilities, assumption of high risk, and incomplete withdrawal mechanism.

Due to the unequal cooperative relationship between them, the logistics enterprises often cannot accrue the commensurate rights and interests, hence are only willing to undertake the supervision responsibility. Logistics enterprises thus cannot receive substantial benefits in spite of the huge financed value. According to the survey conducted by China Materials Storage and Transportation Association (CMSTA), in 2012, the amount of pledge supervision of 67 members increased by 39 % whereas the income of logistics financial service increased only by 15 %. Therefore, oftentimes logistics financial service remains only as a marketing method employed by logistics enterprises to conduct business activities, yet it has not become the real driver of growth.

10.3.1.2 Risk Control Mode Is Not Mature, So Logistics Financial Service Is Greatly Influenced by Economic Environment

Though logistics financial service, driven by growing demand, has developed rapidly, no industrial service specifications or standards have been established. All parties of the service have incongruent understanding of the nature, the features, the mode and the risk of logistics financial service. The problem of risk control in logistics financial service is becoming more evident.

In 2012, under the economic background of implementing tighter monetary policy in China, enterprises were confronted with shortage of funds; several cases of firms taking advantage of logistics financial service to swindle bank credit funds took place. For example, in 2012, several incidents of logistics financial risk erupted in China's steel trading field. Due to lack of appropriate risk control measures, both supervision enterprises and financial institutions are caught in a quandary of business development and risk control.

10.3.1.3 Few High-End Businesses Are Developed, So Logistics Financial Service Is Limited Only in Few Industries or Locales

At present, the FTW business with relatively simple operations grows rapidly and is the most common type of logistics financing in China. The entire-process logistics finance and financing service oriented to supply chain are less-well developed. The entire-process logistics financial service is mainly concentrated in bulk goods like steel, energy resources, etc.; financing service oriented to supply chain mainly focuses on industries like electronics, automobile, and telecommunication.

Insufficient service capability of China's logistics enterprises, incomplete market credit system and relatively lagging application of information automation

technology are the main factors constraining the development of high-end logistics financial service. First, there are few logistics enterprises possessing nationwide logistics operations network and entire-process logistics service capability in China. Secondly, the relationship among supply chain members is loose and it is difficult to guarantee the effectiveness of internal control mechanism, which makes financing oriented to supply chain hard to achieve. Finally, formalization and automation of business platform operations of China's commercial banks are still of low caliber and many links need to be confirmed manually; this inadequacy causes severe adverse impact on the efficiency of supply chain financing and also increases the business operations risk to a large extent.

10.3.2 Development Trend of China's Logistics Financial Service

10.3.2.1 The Role of Logistics Enterprises Will Change Markedly

As the market order being perfected step by step and the service capability of logistics enterprises being enhanced, the bargaining power of logistics enterprises in logistics financial service will be gradually fortified. The intensification of financial industry's market competition will also steer the financial institutions to place more weight on logistics financial service. Logistics enterprises can integrate the responsibilities of warehouse enterprises and lending banks to make logistics financial service more convenient and efficient. Under such model, commercial banks can grant certain line of credit to logistics enterprises in accordance with the scale, business performance, current operating state, credit rating and other conditions of the logistics enterprises. Banks do not directly participate in logistics financing operation of small and medium-sized enterprises, but delegate loan granting to logistics enterprises; logistics enterprises carry out pledged loan transaction directly with the industrial and commercial enterprises. Integrated management tactics applied in unified credit appraisal or the operations mode of logistics enterprises not only reduces risks to the banks, but also greatly improves the status and role of logistics enterprises in logistics financial service.

10.3.2.2 Risk Control Technology and Laws and Regulations Have Been Gradually Perfected and Service Specifications Are Being Standardized

Logistics financial service has for a long while been short of unified and formalized process flows and standards of conduct. As risk control technology and relevant laws and regulations have been perfected, logistics financial service also will tend to be standardized. With respect to risk control technology, Internet, wireless transmission, computerized management and other information technology will be

widely used in the information systems of banks, logistics enterprises and industrial and commercial enterprises. These control technology will make on-site supervision, remote query, joint inspection and other risk control means more effective. In aspect of policies and regulations, the Ministry of Commerce has already commissioned CMSTA and other agencies to compile the "Service Specifications for Movables Pledge Supervision" and the "Evaluation Index for Movable Property Supervision Enterprise" in 2012. Hereafter, risk prevention will be placed in a significant position in the process of logistics enterprises engaging in logistics financial service; the coarse management style of logistics finance will be transformed to a refined management style.

10.3.2.3 Business Mode Will Be Continually Innovated and High-End Logistics Financial Service Will Gradually Increase

The development level of China's logistics financial service is directly related to the development level of logistics industry and banking industry. Along with the transformation and upgrading of the logistics industry and the constantly improving market and competitive mechanisms in the banking industry, the service objects, the business fields and the risk management means of logistics finance will likely be expanded and promoted further. Systematic financing service from static state to dynamic state, from clients in the circulation fields to the clients in the production fields, from physical commodity pledge to buyer's credit, from single link to multiple links, and from single client to multiple members of a supply chain will be an inevitable trend of development of China's logistics financial service.

10.4 Summary

The integration of logistics service and financial service in logistics financial service can result in the tripartite benefit of the logistics enterprises, the financial institutions and the industrial and commercial enterprises. Logistics financial service is an effective means to solving the financing difficulty of small and medium-sized industrial and commercial enterprises, so it possesses great development potential. Accordingly, a great many of logistics enterprises and financial institutions regard logistics financial service as an important way to improve the enterprises' competitiveness and garner more market shares. Currently, most of logistics financial services carried out by China's logistics enterprises are guaranteed by stationary goods or warehouse receipts; few logistics financial services are provided with dynamic goods as guaranty. Deficiency in market credit and inadequacy in risk control mechanism are main factors hampering the development of China's logistics financial service at present. Meanwhile, since the logistics industry is void of corresponding service specifications and standards, banks are still the primary rule maker and leader of China's logistics financial service. In the future, with improved

development environment and elevated operations management and service levels of the logistics enterprises, logistics financial service will be continually innovated and logistics enterprises will play a more prominent role in logistics financial service.

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Chapter 11
Operations Mode and Development Trend of Online Shopping Logistics in China

Zhilun Jiao

In China, modern information technology is rapidly remodeling its distribution channel of social products and the transaction mode of online shopping is gradually accepted by more and more consumers. For e-commerce enterprises engaged in online sales, design and execution of logistics operations mode, especially the outsourcing decision for each logistics link, is one of the key components of strategy for e-commerce enterprises at the present stage. This decision not only directly influences the operating cost and service level of an enterprise, but also is crucial to the formation of long-term competitive advantage of an enterprise.

This chapter describes the operations mode of online shopping logistics in China and comprises four sections. Section 11.1 shows the development background and current situation of online shopping logistics and summarizes the general flow and service types of online shopping logistics in China. Section 11.2 introduces the outsourcing modes of online shopping logistics in China by giving illustrative examples. Section 11.3 analyzes various key factors influencing the operations mode of online shopping logistics at the present stage, while Sect. 11.4 presents an outlook on the development trend of online shopping logistics in China.

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B. Liu et al. (eds.), *Contemporary Logistics in China: Assimilation and Innovation*, Current Chinese Economic Report Series, DOI 10.1007/978-3-642-55282-3_11,

11.1 Development Background and Current Situation of Online Shopping Logistics

E-commerce may involve a host of different participators. Therein, e-commerce between enterprises and customers (B2C, i.e. Business to Customer) and among customers (C2C, Customer to Customer)[1] is referred to as online shopping. Online transactions develop rapidly in China and online shopping logistics also shows diversified characteristics in terms of operations process and business type.

11.1.1 Development Background of Online Shopping Logistics

Rapid advancement of online shopping in China drives the expansion of overall scale of online shopping logistics and the enhancement of service capability. From 2006 to 2012, the scale of online shopping transactions in China grew by 74.6 %[2] annually. Except for few digital products which are transmitted via network, most of physical commodities are delivered through logistics channels. Online shopping is featured with a wide range of products, widely scattered customers, and diverse service needs. Such requirements prompt the logistics enterprises to improve their logistics operations efficiency and service level continually, so as to meet the demands of rapidly-developing online shopping.[3]

11.1.2 Overall Scale of Online Shopping Logistics

Online shopping logistics has shown a sweeping growth recently in China. In 2012, online shoppers amounted to 247 million in number, increasing by 21.7 % compared with 2011; the scale of online shopping transactions was about 1,300 billion RMB, increasing by 66.2 % over that of previous year. Expansion of the scale of online shopping directly promotes the development of online shopping logistics, wherein express logistics grows most rapidly. From 2008 to 2012, the average annual growth

[1] In China, the complete C2C online second-hand goods market is not well-developed. In general, small-scale individual business online shops are classified as C2C e-commerce. The difference between small-scale C2C shops and small-scale B2C shops lies in that small C2C shops are not registered as company and do not apply for business license or pay business tax. Although they purchase, display and sell products on network platform, their transactions are regarded as second-hand goods transactions in view of market regulation. Both "e-commerce enterprise" and "online shopping enterprise" mentioned in this chapter include B2C and C2C types.

[2] Compiled from relevant data released by iResearch, an independent marketing research firm in China.

[3] Refer to Liu et al. (2013, Chapter VIII) for more details concerning China's e-commerce as well as the development background and development status of online shopping.

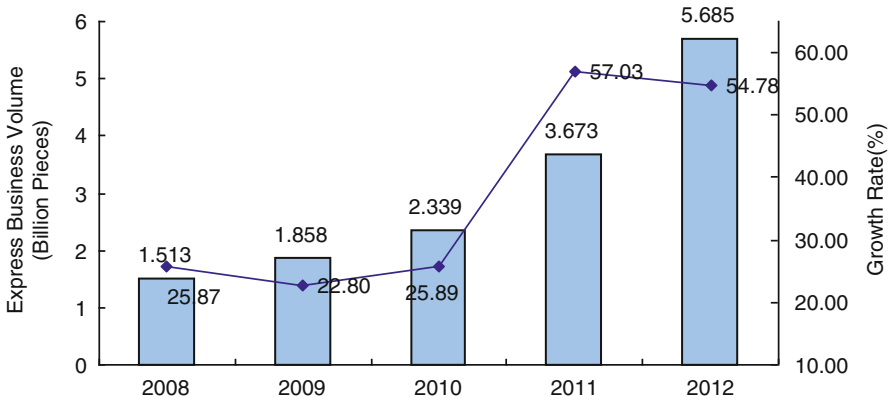

Fig. 11.1 Business volume and growth rate of express delivery in China for 2008–2012 (Source: Compiled from the *China Statistics Yearbook (2012)* and the *China Statistical Bulletin of National Economic and Social Development (2012)*, published by the National Bureau of Statistics of China)

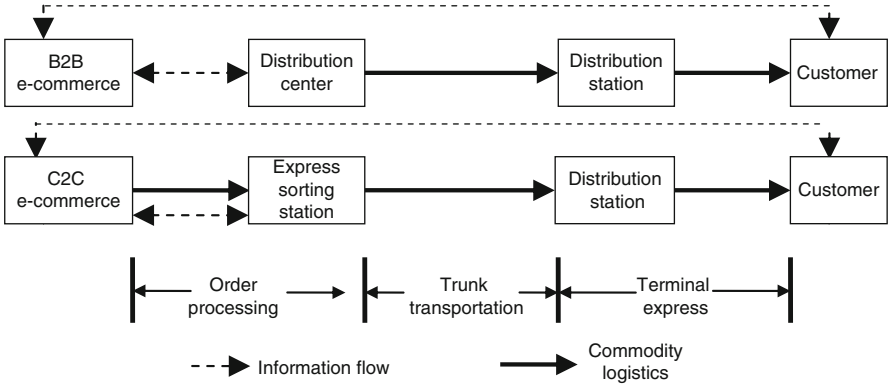

Fig. 11.2 General flow of online shopping logistics

rate of express parcel service in China reached 39.2 %, and therein, more than 60 % of the volume of express logistics parcels is from e-commerce.[4] Figure 11.1 shows the business volume of express industry of China for 2008–2012.

11.1.3 General Flow of Online Shopping Logistics

Online shopping logistics in China can be divided into three parts in general, i.e., order processing, trunk transportation and city express. Based on enterprise scale, the process can be classified into two types in detail (as shown in Fig. 11.2).

[4] Compiled from China Research Center of the Internet of Things (2012).

The first type involves B2C e-commerce platform of relatively large scale. After the customers issues the orders, the e-commerce platform will collect and sort out the orders and select appropriate regional distribution centers[5] for unpacking, sorting, handling, loading, and delivering as the first step, then goods will be transported to small city distribution stations by trunk line, and finally delivered to the receiving location designated by the customer through terminal express service. The second type involves C2C merchants of small scale. Generally the merchants collect and sort out the orders and pack the goods and then let the express enterprises undertake the handling, loading, trunk transportation and city express to complete the final delivery.

11.1.4 Main Business Types of Online Shopping Logistics in China

Business concerning China's online shopping logistics can be classified into basic service and value-added service. The former refers to the basic logistics services completed by the logistics service providers. For example, order processing, products sorting, composition, packing and other services are generally completed by the distribution centers. Long-distance trunk transportation among cities is completed by transport company or nationwide express company. And home delivery service at the end of supply chain is completed by the express company. For basic services of each link, the e-commerce enterprise can choose either the self-operated or the outsourcing operations mode. Value added service provided by logistics service providers for e-commerce enterprises and customers refers to non-logistics service, including cash on delivery, installation of appliances, fitting assistance of apparels, handling of return and exchange at customer's location, etc.

11.2 Main Operations Mode of Online Shopping Logistics in China

Different operations links of online shopping logistics can be operated by e-commerce enterprise itself or outsourced to third-party logistics enterprise. Self-operated business can be undertaken by either the company's wholly-owned subsidiaries or its logistics department. As for outsourced business, either a simple contractual outsourcing relationship can be selected or a long-term stable alliance relationship

[5] Also known as order fulfillment center.

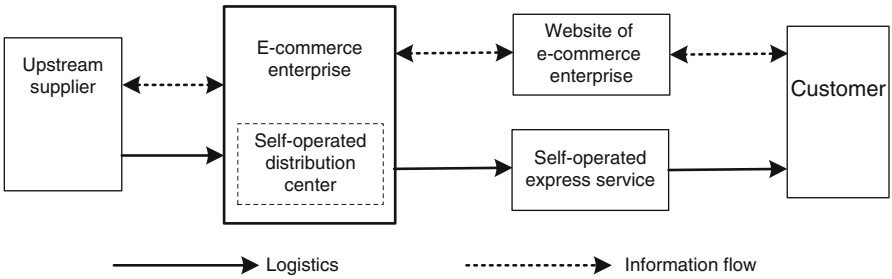

Fig. 11.3 Self-operated distribution center and self-operated express service

can be established. This section presents the survey results on the operations modes of two main logistics links, namely, the distribution center and the express service, from the perspective of the choice of self-operated and outsourcing mode.[6]

11.2.1 Self-Operated Distribution Center and Self-Operated Express Service

Some e-commerce enterprises choose the online shopping logistics operations mode primarily by self-operated logistics system, including self-operated distribution center service and self-operated express service. In such a mode, the enterprises perform the collection, distribution and delivery functions for nationwide commodity logistics using self-built or leased regional distribution centers. Meanwhile, the enterprises develop self-operated express service in most regions of China relying on their own express company or express department (as shown in Fig. 11.3). Enterprises choosing self-operation oriented logistics mode include JD.com, suning.com, etc.[7]

[6] Except for a few large-scale e-commerce enterprises (such as JD.com), the trunk transportation link of online shopping logistics is generally undertaken by third-party transport companies with long-distance trunk transportation capability.

[7] For each link of online shopping logistics, classification of self-operation and outsourcing is directed at the main service contents of enterprise. In fact, there is no enterprise in China that realizes the complete self-operation of distribution center and express service. In some remote regions, only few express enterprises like EMS can provide delivery service; online shopping enterprises can only choose outsourced logistics service to fulfill orders for these regions. Moreover, in addition to its self-operated B2C platform, JD.com also has an open online shopping platform, by use of which small-scale B2C or C2C enterprises can provide online shopping service, so the logistics service of these enterprises are in essence outsourced to the logistics system of JD.com or its contracted partners.

11.2.1.1 JD.com

At present, JD.com[8] is the comprehensive B2C e-commerce enterprise ranking first in China in terms of sales volume. In 2009, JD.com acquired an external investment of 21 million USD and expended 70 % thereof on its self-built logistics system, including self-built distribution centers and its own express company. Afterwards, it made several large-scale investments in improving its warehousing, distribution and delivery, after-sales service and other logistics express services. Up to the present, JD.com has owned six large-scale logistics centers located in Beijing, Shanghai, Guangzhou, Chengdu, Wuhan and Shenyang and set up second-level warehouses in Xi'an, and Hangzhou. Total area of the logistics centers and the warehouses exceeds 500,000 square meters. Besides, JD.com also established city distribution stations in more than 180 cities like Tianjin, Suzhou, Hangzhou, Nanjing, Shenzhen, and set up on-campus agency locations and self-pickup locations in most colleges and universities nationwide. In addition to basic services, self-operated logistics system of JD.com also provides customers with additional services like cash on delivery, credit card payment via mobile POS, pickup and exchange at customer's location, etc. Data in the *2012 Monitoring Report for Online Retail Market of China* indicate that daily orders received by JD.com amounted to 0.8 million on average and 80 % of the goods were distributed and delivered through its self-built logistics system (China e-Commerce Research Center (CECRC) 2013).

11.2.1.2 suning.com

suning.com is a comprehensive B2C online shopping platform subordinate to Suning Commerce Group Co., Ltd., an appliance sales enterprise in China. In February 2012, suning.com announced it would invest 22 billion RMB in developing logistics projects in the next three years, to build 60 regional logistics terminals, more than 10 trans-regional sorting centers and many transit points. At present, based on the enterprise's original sales network, suning.com owns 10 logistics centers located in Nanjing, Beijing, Shanghai, Guangzhou, Shenyang, Chengdu, Wuhan, Xi'an, Hangzhou and Shenzhen. Therein, warehouses in Nanjing, Beijing, Shanghai and Guangzhou provide nationwide shipping service; warehouses in Shenyang, Chengdu, Wuhan and Xi'an provide shipping service for Northeastern China, Southwestern China, Central China and Northwestern China, respectively; the warehouse in Hangzhou provides shipping service for Zhejiang Province and the warehouse in Shenzhen provides service for the city. Thus Suning's logistics service can cover most regions of China. Suning plans to achieve its goal of constructing 60 logistics bases, 12 automatic sorting centers and 5,000 after-sales service outlets by 2015, and allow its self-operated regional distribution centers reach further to smaller cities and townships at the same time.

[8] On March 30, 2013, the original domain name of 360buy.com is officially changed to JD.com.

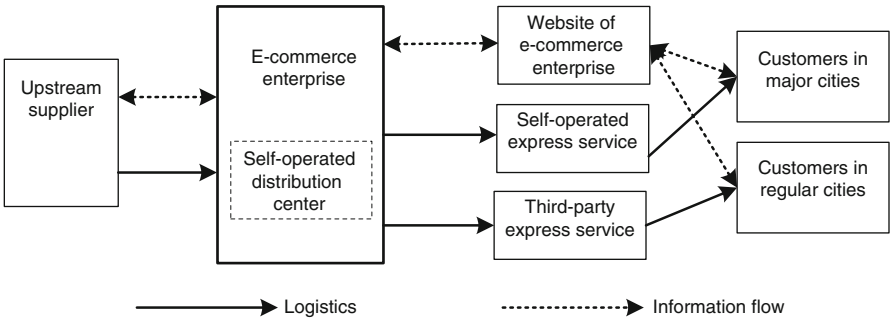

Fig. 11.4 Self-operated distribution center and self-operated express service in major cities

11.2.2 Self-Operated Distribution Center and Self-Operated Express Service in Major City

On the basis of self-operated distribution centers, some e-commerce enterprises concentrate their self-operated express service on the major cities, and choose the strategy of outsourcing the express service for regular cities (as shown in Fig. 11.4). Their focused self-operated express service generally covers some large-sized cities with concentrated consumer demands, such as Beijing, Shanghai, Guangzhou, Shenzhen, etc. With such a mode, the limited express service capacity of e-commerce enterprises is reserved and expended in a few cities with concentrated demands. Enterprises adopting such a logistics mode include Amazon.cn, and Okbuy.com.

11.2.2.1 Amazon.cn

Global e-commerce giant Amazon attaches great importance to the management and control of its logistics operations in China. Unlike JD.com, the logistics operations mode of Amazon.cn has the following characteristics. First, its coverage of self-operated express network is relatively limited. The express enterprise subordinate to Amazon mainly undertakes express services in Beijing, Shanghai and Guangzhou at present. For other cities, Amazon.cn mainly adopts outsourced express logistics to accomplish the final delivery. Second, the proportion of self-operated express service in its total express services is relatively low. Third, self-built distribution centers are of large scale but are few. In China, Amazon's logistics system has 11 distribution centers, covering 500,000 square meters in total.

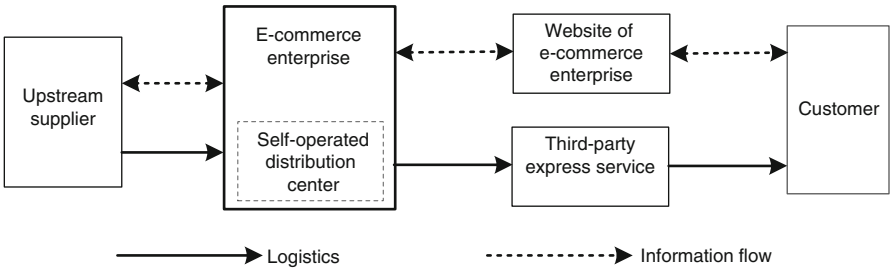

Fig. 11.5 Self-operated distribution center and third-party express service

11.2.2.2 Okbuy.com

Okbuy.com is a vertical e-commerce website[9] specializing in online shopping for footwear in China. By 2012, okbuy.com has built its own logistics distribution centers and distribution teams in more than 10 large- and medium-sized cities like Beijing, Shanghai, Guangzhou, Chengdu and Hangzhou to support its logistics distribution throughout these areas. At present, the number of orders in these areas with self-operated logistics service is close to 40 % of all the orders of okbuy.com. And in other areas, okbuy.com generally adopts the form of outsourced express service.

11.2.3 Self-Operated Distribution Center and Third-Party Express Service

Different from the completely self-operated logistics or outsourced logistics, many of e-commerce enterprises choose a compromised "asset-light" mode, i.e., self-operated distribution centers coupled with third-party logistics express enterprises to complete the terminal express service, as shown in Fig. 11.5. The distribution center can take charge of the main links in the e-commerce logistics, such as order processing, receiving and inspection, warehousing, sorting, packaging, etc. Most of China's e-commerce enterprises tend to build their own distribution centers at the present time. E-commerce enterprises adopting this logistics mode include Dangdang.com, Vipshop.com, and Wine9.com.

[9] Vertical e-commerce refers to an e-commerce mode operated in depth in certain industry or market segment, and all commodities on a vertical e-commerce website are products of the same type. Comprehensive e-commerce is the opposite and refers to an e-commerce mode with diverse products. With the intensified competition of e-commerce market, vertical e-commerce enterprises with business covering specific types of commodities and services emerge among online shopping enterprises. Currently, they are mainly specializing in books, garments/shoes/hats, digital/electronic products, maternal and infant products, cosmetics, tickets, etc.

11.2.3.1 Dangdang.com

Dangdang.com is a comprehensive e-commerce website which started out as an online book seller. Dangdang.com operates its own logistics distribution centers and outsources all its terminal delivery links. Under normal circumstances, products requested in customer's order are shipped directly by supplier to Dangdang's regional distribution center, and then the distribution center entrusts the third-party express enterprise to complete the delivery tasks. Dangdang.com has established cooperative relationships with more than 100 domestic express enterprises and third-party logistics enterprises, which collect goods from the regional distribution centers of Dangdang.com and make the terminal delivery. Some distribution centers of Dangdang.com are built by its own funds and others are leased warehouses.

11.2.3.2 Vipshop.com

Vipshop.com is an e-commerce enterprise featuring sales of brand-name goods and is presently the largest B2C vertical e-commerce enterprise in Southern China. The company adopts the mode of "zoned self-operated distribution centers plus third-party express," namely, building its own warehousing and distribution center in each large region in China to shorten the logistics radius and strengthening its cooperation with the third-party logistics enterprises to improve distribution and delivery speed and efficiency. In the second half of 2011, the logistics centers of Vipshop.com in Southern China, Eastern China, Southwestern China and Northern China were expanded or put into service successively. In 2012, warehouses in Wuhan and Shengyang were completed and put into use. And by the end of 2012, warehouse space of the company across the country has exceeded 100,000 square meters.

11.2.3.3 Wine9.com

Wine9.com is a vertical e-commerce enterprise specialized in retail sales of imported wines; 80 % of its products are purchased directly overseas. Wine9.com achieved a sales volume of 130 million RMB in 2011 and its customers exceeded 3 million in 2012. The area of its self-operated warehouses exceeds 12,000 square meters and all these constant-temperature warehouses are leased. The company employs the strategy of letting each regional warehouse establish direct cooperation with its local logistics express enterprises. Its trans-regional express services are completed by ZTO Express, YUNDA, ZJS EXPRESS and other nationwide express enterprises.

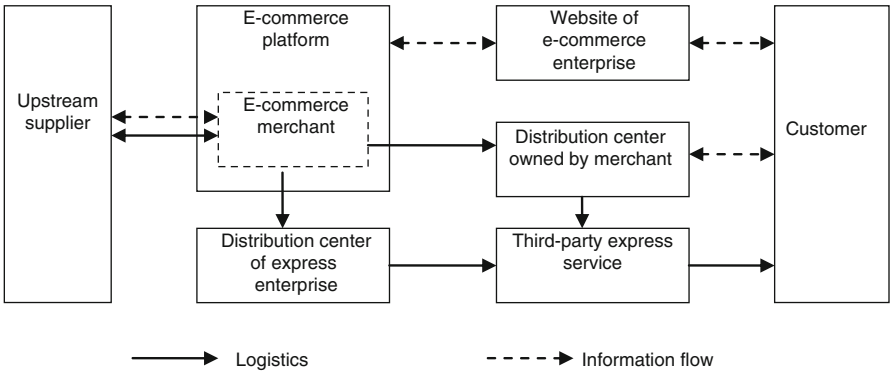

Fig. 11.6 Third-party distribution center and third-party express service

11.2.4 Third-Party Distribution Center and Third-Party Express Service

In addition to the above modes, quite a few small- and medium-sized e-commerce enterprises adopt the strategy of complete logistics outsourcing, that is, distribution center service and terminal express service are realized by cooperating with third-party express enterprises. E-commerce enterprises adopting this mode are classified into two types as follows.

One type refers to small online shops relying on Taobao.com and other large-scale e-commerce platforms. After customer orders are generated, these small online enterprises will conduct simple product disassembly and packaging operations according to customer's requirements, and then hand over products to the third-party logistics enterprises for subsequent sorting, order assembly, trunk transportation, city distribution and express service.

The other type refers to Tmall.com and other similar e-commerce platform enterprises. They provide online trading platform for brand-named e-commerce enterprises instead of being directly engaged in product trading. Distribution center and express operations of such platform-based e-commerce enterprises are settled independently by the enterprises operating on the platform, and their logistics operations are completed by the enterprises' own logistics system or the third-party logistics enterprises. The details are shown in Fig. 11.6.

11.2.4.1 Smaller Retailers on Taobao.com

Taobao.com is China's largest e-commerce marketplace across B2C and C2C modes. Taobao.com provides only the platform for online e-retailing and second-hand goods trading for various small and medium-sized retailers and customers, rather than directly conducting e-commerce transactions. Merchants of Taobao.com are of small scale in general and they do not need to establish self-operated logistics

system or possess the capability of operating logistics activities by themselves. Taobao.com reached agreements with a great many third-party logistics enterprises in the form of alliance and integrates supply/demand information and resource to provide logistics support for small merchants engaging in business on its platform. On demand side, Taobao.com collects, sorts out and broadcasts a mass amount of customer shipping information; while on supply side, Taobao.com integrates the transport capacities of numerous allied small logistics companies. Either for warehousing and distribution or in terms of terminal express delivery, the "cloud logistics" concept is adopted for setting up logistics platform, to achieve real-time contact between the merchants and the third-party express enterprises, and by so doing form the cooperation between small- and medium-sized merchants and small- and medium-sized warehousing and express companies.

11.2.4.2 Tmall.com

Tmall.com is a B2C e-commerce platform for online retailing of brand-named products. Both Tmall.com and Taobao.com belong to the Alibaba Group. Like Taobao.com, Tmall.com is a platform-based e-commerce enterprise. The logistics distribution of Tmall.com is settled by brand retailers based on the features of their products and by their own business operational mode. Enterprises developing e-commerce on Tmall.com platform generally operate warehousing by themselves and outsource their express services, such as the cooperation between SAMSUNG and certain logistics service providers like SF Express, EMS, and FedEx. Express delivery of large and easily-damaged commodities like display device and notebook is undertaken by EMS; heavy, hard to handle commodities, such as television set, refrigerator, and washing machine, are delivered by FedEx. Another example is the cooperation between Uniqlo and its 3PL providers, YAMATO, SF Express, EMS, and other express companies. YAMATO takes charge of the express service in Shanghai; SF Express and others undertake the express services in other cities.

Some other merchants also accomplish the express service for their products sold on Tmall.com through their own distribution centers and logistics service providers. For example, large-sized appliances of Haier Group like refrigerator, washing machine and air conditioner are distributed by the self-operated logistics center of Haier Group for order processing and delivered to customers.

11.2.5 Summary

On the whole, large-scale B2C e-commerce enterprises generally operate their own distribution centers and to various degrees outsource the city express link in three forms, namely, complete outsourcing, outsourcing in major cities, and basically total self-operation. Small-scale C2C e-commerce enterprises generally adopt

Table 11.1 Self-operation and outsourcing of enterprise's logistics links

	Distribution center	Trunk transportation	City express	Other links
JD.com	Self-operation	Self-operation	Self-operation oriented	Self-operation oriented
Suning.com	Self-operation	Combination	Self-operation oriented	Self-operation oriented
Amazon.cn	Self-operation	Outsourcing	Self-operation for key regions	Combination
Okbuy.com	Self-operation	Outsourcing	Self-operation for key regions	Combination
Dangdang.com	Self-operation	Outsourcing	Outsourcing	Combination
Vipshop.com	Self-operation	Outsourcing	Outsourcing	Combination
Tmall.com	Outsourcing or merchant's self-operation	Outsourcing	Outsourcing or provided by merchant	Outsourcing oriented
Taobao.com	Outsourcing	Outsourcing	Outsourcing	Outsourcing oriented

outsourcing their distribution and express services to external express enterprises. As to other logistics links, trunk transportation is generally outsourced to external transport enterprises, and the warehousing link is usually achieved by combining outsourcing and self-operation in various degrees, depending on the enterprises' specific conditions and the regional distribution of their markets. The details are shown in Table 11.1.

11.3 Factors Influencing the Selection of Operations Mode of Online Shopping Logistics

Self-operation and outsourcing decision of logistics system is an important strategic choice of business mode for e-commerce enterprises. A large number of factors influence the choice of self-operation or outsourcing of the logistics system of e-commerce enterprises. The main factors in consideration include: the service capability of third-party logistics enterprises, the capital scale and financial strength of the e-commerce enterprise, the enterprise's strategy of space layout in urban areas, the logistics characteristics of its main products, the enterprise's positioning and business strategy, which will be discussed in turn below.

11.3.1 Service Capability and Level of Third-Party Logistics Enterprises

Currently, most large-scale State-owned and foreign-funded logistics enterprises operating in China concentrate their service mainly in domestic and overseas large-scale manufacturing enterprises and trading enterprises, and few get involved in

online shopping e-commerce logistics. Compared with the scale of rapidly expanding e-commerce transaction, third-party logistics and express enterprises are still deficient due to insufficient supply capacity, low degree of network coverage, poor infrastructure and low professional quality of employees. The development of third-party logistics enterprises lags behind and fails to meet the service requirements of e-commerce enterprises, which is one reason why a lot of e-commerce enterprises seek the self-operation mode of logistics.

Due to excessive demand during holidays induced by intensive online shopping and sales promotion by e-commerce enterprises, warehouses of express enterprises are being packed, expressed parcels being delayed or lost, goods being damaged and other similar congestion problems always occurred in grand scale; this anomaly is vividly dubbed "warehouse blasting." For example, on November 11, 2012, the Alibaba Group conducted a large-scale promotion. On that day, the total sales generated by Tmall.com and Taobao.com through Alipay[10] amounted to 19.1 billion RMB and the sales volume increased by more than twice over the same period last year, which overwhelmed the handling capability of numerous express enterprises. The frequent occurrence of the "warehouse blasting" phenomenon reveals that the service capacity and level of China's express logistics industry cannot keep up with the current rapid development of e-commerce.

As for customers' complaints, Table 11.2 shows the overall complaints about express industry in 2011 and 2012 posted by the State Post Bureau. The table shows that complaints against China's express logistics enterprises in 2012 increased substantially by 87,886 cases compared with that of 2011. For this reason, many e-commerce enterprises attempted to improve their express delivery service by operating their own express service. By so doing, some have achieved certain improvement. For example, JD.com, Amazon.cn, okbuy.com, etc. are all operating their own express logistics to improve their service level and reduce the rate of complaints.

11.3.2 Enterprise Scale and Financial Strength

The scale and financial strength of an online shopping enterprise are important factors influencing its selection of operations mode of logistics enterprises. At the present stage, due to the limited capacity and service level of express firms, many large scale e-commerce enterprises with strong financial strength are expanding the scope of their self-operated logistics, thus leading to the advancing of the capacity and level of express logistics service. For example, currently JD.com can realize the service of "prompt delivery" through self-operated logistics for customers in more than twenty cities such as Beijing, Shanghai, Guangzhou and Chengdu, which enhances its customer's buying experience to a large extent.

However, the huge investment expense and high operating cost of self-operated logistics increase the e-commerce enterprise's cost burden. Since November 2011,

[10] Alipay is an online payment enterprise subordinate to Alibaba Group, similar to Paypal of Ebay.

Table 11.2 Comparison of effective complaints about express service between 2011 and 2012 (unit: case)

	Delay	Missing and shortage	Damage	Illegal charges	Collection and receiving service	Delivery service	Cash on delivery	Others	Total
Total in 2012	63,138	21,993	8,273	1,213	3,392	37,455	1,535	352	137,351
Proportion in total complaints (%)	46.0	16.0	6.0	0.9	2.5	27.3	1.1	0.3	100.0
Total in 2011	25,704	8,753	3,779	638	0	9,829	684	78	49,465
Proportion in total complaints (%)	52.0	17.7	7.6	1.3	0.0	19.9	1.4	0.2	100.0
Number of increase in 2012 over 2011	37,434	13,240	4,494	575	3,392	27,626	851	274	87,886
Percent of increase of 2012 over 2011	145.6	151.3	118.9	90.1	–	281.1	124.4	351.3	177.7

Source: Compiled from the *Notice on Consumer Complaints on Post Industry* (2012.12), published by the State Post Bureau. http://www.spb.gov.cn/folder87/2013/01/2013-01-17119916.html

JD.com had to change its previous logistics strategy of "free shipping for all goods" and began to collect delivery charge of 5 RMB for orders valuing below 39 RMB. In 2012, RFD Express, a subordinate to Vancl.com, could no longer bear the logistics cost burden that it had to lay off employees on one hand and reduced the number of cities for which it provided self-operated express service from 26 to 6 on the other hand. These cases illustrate the financial pressure brought about by self-operated logistics services to e-commerce enterprises.

11.3.3 Enterprise's Strategy for Space Layout in Urban Areas

Regional development of China is imbalanced due to its economic and demographic disparity. Generally the economic scale for self-operated logistics can be achieved in Beijing, Shanghai, Guangzhou and other large-sized cities in the Eastern region owing to the solid economic base, large population and concentrated demand. A lot of e-commerce enterprises implement the strategy of self-operation for logistics in these cities, building logistics distribution centers and even operating terminal express service by themselves. On the contrary, in smaller cities and towns or villages with dispersed demand, e-commerce enterprises always outsource their logistics service.

For example, Dangdang.com, Amazon.cn, Vancl.com and other e-commerce enterprises all adopt self-operated logistics system in large-sized cities. Amazon.cn, Vancl.com and other e-commerce enterprises even establish their own express teams to complete the terminal deliver service. However, in some remote regions, even JD.com, suning.com and other e-commerce enterprises with high level of self-operated logistics can only adopt the outsourcing logistics mode, fulfilling the terminal express service through EMS and other express enterprises with wider network coverage, or through local express companies.[11]

11.3.4 Type and Logistics Characteristics of Enterprise's Main Products

Market segmentation in China's online shopping also advances rapidly and vertical e-commerce enterprises operating in depth for certain industry or market segments increase accordingly. In terms of logistics operations strategy, vertical e-commerce enterprises typically select the strategy that adapts to the type of its main products.

[11] Shen Xuanhao, President of Lefeng.com holds that, it will be more or less sufficient for vertical type e-commerce enterprises with annual sales volume between 2 billion RMB and 3 billion RMB to set up warehouses in Beijing, Shanghai, Guangzhou and Chengdu in general. The reason being that major online shoppers at home are mostly concentrated in large-sized cities; these four cities can radiate to the Yangtze River Delta, the Pearl River Delta and other regions with concentrated online shopping. He also believes that it is not cost-effective for e-commerce enterprises with annual sales volume below 3 billion RMB to build more warehouses than these four, for the additional gain will be very minimal. Above view compiled from: Shen (2012).

For instance, Vancl.com, okbuy.com, Moonbasa.com, Vipshop.com, Letao.com, Xiu.com, and M18.com are in business for garments, shoes, hats and similar products. These products feature diverse styles and sizes, so customers may request inspection and fitting of goods on delivery, and the frequency of return and exchange is also high. Therefore, e-commerce enterprises of this type generally build their own logistics systems to a certain extent. Take RFD Express, a subordinate to Vancl.com, for example, it can provide quality customer service such as cash on delivery, on-the-spot fitting, free return and exchange within 30 days, etc., thus improving its level of customer satisfaction.

Take another example, 3C electronic information products are small in size, of relatively standard package shape and have comparatively low requirement for timeliness. But air transport of electronic products containing lithium battery is restricted, such products are more easily damaged in the transport process comparing to other common products, and their return and exchange frequency is also slightly higher. Consequently, 51buy.com, newegg.com.cn and other 3C e-commerce enterprises for digital products generally adopt the strategy of mixed logistics. For instance, newegg.com.cn built a logistics park in Jiading of Shanghai and operates OZZO Logistics by itself to complete door-to-door express delivery in major cities; while in other cities, it entrusts YTO Express, EMS, etc. to provide the express service.

11.3.5 Enterprise's Positioning and Business Strategy

Enterprise's business strategy and strategy transformation are significant factors affecting its choice of self-operated and outsourcing logistics decision. On one hand, in view of the diversification strategy, some enterprises made large-scale investment in the construction of logistics infrastructure and express delivery teams, creating conditions for them to set foot in the third-party logistics service field and even the chain operations field. For instance, JD.com puts forward the open logistics strategy and hopes its logistics system will develop into a third-party logistics platform serving the entire nation in the future.

On the other hand, an enterprise's market positioning will direct it toward adopting the compatible logistics strategy. Kuaishubao.com positions its operation as "choiced," "low price" and "arrival within an hour;" it publishes daily-selected books on its website and promises to deliver these books to the customers in designated locales within 1 h. Based on such positioning, Kuaishubao.com limits its service in Beijing, Shanghai and several other metropolitan areas.[12] Besides, it also adopts the mode of small warehouse, limited offerings and quick order processing. After it receives an order on line, it will seek out the small warehouse nearest to the customer, to process the order and deliver immediately.

[12] Customers beyond the service scope cannot enjoy the service of 1-h delivery, but can buy books through online shops operated by Kuaishubao.com on Taobao.com and receive regular express service.

Table 11.3 Factors of self-operation and outsourcing decision for online shopping logistics

Influencing factors	Inclined to self-operation	Inclined to outsourcing
Third-party logistics service capability and level	Large gap between requirements and capability	Basically meeting the requirements or perfect match
Enterprise scale and financial strength	Large scale and solid strength	Limited scale and unable to bear the investment expense
Space layout strategy	Major cities with concentrated demand	Scattered regions with low demand
Type and characteristics of main products	Products have special logistics requirements and supporting facilities are insufficient.	No special requirements for logistics of products
Enterprise positioning	Logistics service is required to be of high quality.	Logistics service is required to be of low cost
Diversification strategy	Logistics service can be platform-based, which becomes a new profit avenue.	Focusing on operation of online shopping platform

11.3.6 Summary

Different logistics operations modes of e-commerce enterprises have their own merits. Self-operated logistics has the advantages of high controllability and guaranteed service efficiency and service level, while the advantages of outsourced logistics lie in less capital spending and lower operating cost for the enterprise and the achievement of efficiency improvement through division of labor and specialization.

Upon a comprehensive analysis, the objective factors of self-operated logistics of China's enterprises are mainly due to inadequate supporting service capacity of the current logistics industry and the distinctive requirements suited to the logistics characteristics of the enterprises' products. The subjective factors for the choice of logistics mode are the enterprises' overall strategy, including positioning and business strategy, and space layout strategy. Furthermore, if an enterprise selects the self-operated mode of logistics, it will be constrained by its financial strength. Table 11.3 presents the main factors influencing the enterprises decision for self-operation or outsourcing of logistics.

In addition to the above factors, an enterprise's decision for self-operation or outsourcing of logistics system may be affected by yet other elements. For example, due to the rapid rise in land cost, for the purpose of accruing appreciation in asset value, an enterprise is often willing to invest in the construction of logistics infrastructure like warehouses. Besides, lack of sound credit system or the entrepreneur's preference can also affect the enterprise's selection of logistics operations mode.

11.4 Development Trend of Operations Mode of China's Online Shopping Logistics

Recent rapid development of online shopping in China has made profound impact on market behavior of customers and manufacturers, and is changing the commodity circulation mode; it will also exert great influence on China's future market system, industrial system and economic development. Moreover, operations mode of online shopping logistics in China also will evolve continually and develop toward the direction of expansion of enterprise's online services, integration of physical channel and network channel, connection of cloud logistics platform, specialized third-party logistics, integration of express terminal network, and product virtualization.

11.4.1 Integration of Logistics Resources and Expansion of Online Services by Various Enterprises

Online shopping is an important distribution channel of modern circulation system. Along with the rushing development of online shopping, various market entities will more actively attempt to expand their online services. (1) With respect to manufacturing, large-scale enterprises like the Lenovo Group and the Haier Group are aggressively expanding their online services and operate online shopping logistics based on the existing mature logistics system. (2) As for commerce and trade, traditional electric appliance retailer GOME established a comprehensive online distribution channel through merger and acquisition of Coo8.com. And Suning upgraded its own online shopping mall to set up a comprehensive online shopping platform – suning.com. In terms of logistics system construction, these enterprises also make full use of their own logistics resources. (3) Besides manufacturing and commerce and trade, banks and financial organizations (such as e-mall BOCOM), internet service providers (such as MALL.10086.cn), online content providers (such as L.sina.com.cn), express logistics enterprises (such as sfbest.com), etc. are attempting to provide online shopping service.

11.4.2 Integration of Physical Sales and Online Shopping to Share Logistics Resources

Retail chain entities and virtual network shops begin to integrate for the purpose of sharing logistics resources. For instance, Leyou not only has a vertical B2C e-commerce enterprise "Leyou.com" specialized in sales of maternal and infant products, but also builds more than 100 chain stores in Beijing, Tianjin, Xi'an, Shenyang, Langfang, and Qingdao, and establishes many distribution centers in Beijing, Tianjin, Xi'an, Shenyang, and Qingdao, to support the operations of the

chain stores and Leyou.com. Currently the mode of logistics resources sharing by catalogue sales, telemarketing, retail chain entities and many other sales patterns has taken shape.

Stores and internet sales can support each other in logistics operations. Each store can serve as a distribution station to realize rapid response to network orders and proximate delivery. And Leyou can deliver goods on orders (in by 15:00) on the same day in many cities relying on the delivery service supported by the stores.

11.4.3 Connection of Cloud Logistics Platform with Online Shopping Platform

There are a large number of small-scale online retail enterprises and plenty of miniature logistics companies with concentrated network coverage and limited service capacity in China's market. To achieve connection between the supply and the demand of small- and medium-scale e-commerce enterprises and the express logistics firms, some platform-based e-commerce enterprises begin to build the "cloud logistics" information platform to integrate information on the demand and the supply of online shopping logistics. The connection helps realize timely and dynamic cooperation between e-commerce enterprises and logistics demanders, improve the efficiency of logistics transactions through outsourcing and reduce the transaction cost.

In 2013, the Alibaba Group is trying to set up a type of multipoint-to-multipoint dynamic cooperation platform so as to achieve the objective of delivering goods within 24 h in any region nationwide. It attempts to form the intensive "cloud logistics" pattern, connecting logistics enterprises and miniature e-commerce enterprises through direct investment, and forming strategic alliance with multiple third-party logistics service providers. On May 28, the Alibaba Group, Yintai Group, Fosun, Fuchun, and Shunfeng jointly announced the launching of the project for building "China Smart Logistic Network" (CSN) in the form of cloud logistics.

11.4.4 Specialized Third-Party Logistics Operations Becoming More Widespread

Specialized third-party logistics represents the general trend of operations mode of online shopping logistics. On one hand, outsourcing of online shopping logistics can cope with the fluctuations of logistics demand to realize better utilization of the logistics resources. For instance, RFD Express, subordinate to Vancl.com, not only provides express service for Vancl.com, but also undertakes express service of vertical shoes e-commerce platform Yougou.com, vertical cell phone e-commerce platform Xiaomi.com, etc. in some cities. In this way, RFD Express can avoid the idleness of its logistics resources and attain more income. On the other hand,

promotion of the specialization level of online shopping requires specialized logistics service. For example, online shopping channels for drugs and food needs the cooperation of low-temperature logistics system, and e-commerce logistics for jewelry, diamond and other expensive luxuries depends on much safer and closed-loop logistics operations.

11.4.5 Increasing Integration of the "Last-Mile" Express Network

In order to deal with he various problems of the "last-mile" delivery link encountered by express enterprises, the city terminal express network begins to show further integration. Therein, network construction for self-pickup locations in communities is a typical mode. Under such a mode, physical stores in communities accept the express delivery parcels and customers can pick up goods purchased on line in the stores at their convenience. This mode shows many advantages of network integration. First, self-pickup locations can alleviate the problem when the delivery time of a courier does not match with the customer's needs. Second, self-pickup locations can reduce the frequency of "last-mile" deliveries to individual customers to improve distribution efficiency. Besides, self-pickup locations also can protect the customer's privacy and prevent leakage of customer's personal information like address, commuter time, etc. On July 9, 2012, Dangdang.com announced the establishment of 120 self-pickup locations in nine major cities like Beijing, Shanghai, Guangzhou, Shenzhen, Wuhan, Jinan, Fuzhou, Qingdao and Wuxi. Customers in local communities can choose the "self-pickup" express service and pick up delivered goods within three days. JD.com had already set up self-pickup stores in university campuses and other institutions with concentrated demand. Since October 2012, users of Taobao.com and Tmall.com in Beijing also could collect parcels of online shopping in 243 "Community Service Stations of Tmall.com" established in Beijing's Chaoyang District, Fengtai District, Tongzhou District, Changping District, and Haidian District. It can be predicted that community-based self-pickup network will also become one development trend of the terminal express logistics service.

11.4.6 Bypassing Logistics Services Through Product Virtualization

Some special virtual digital products like music CDs and movie videos do not require physical logistics operations. By altering the form of physical commodities to digitalized commodities in the downloadable form provides a new way of meeting online shopping logistics needs, which also will be a new development trend of online shopping logistics.

First, e-book, stocks, financial funds and similar digital products can be delivered directly through network. Secondly, ticketing service, catering service

and other traditional transactions for fee-paying services can be achieved through digitalized sales via methods like barcode printing and password sending, thus avoiding the physical logistics services. For instance, through group purchase e-commerce platforms like Meituan.com and Dianping.com, customers can obtain SMS barcode, password and similar voucher and then enjoy corresponding service in designated physical stores within a specified time. Moreover, the development of 3D printing technology makes possible many commodities be converted from physical media into information "bit" media and be delivered to customers directly through network, thus avoiding the physical logistics services.

11.5 Summary

Section 11.1 of this chapter discusses the development background and current situation of online shopping logistics in China and describes the general flow and main service types of online shopping logistics in China. Section 11.2 introduces four operations modes of online shopping logistics in China in details with respect to the self-operation and outsourcing decision, and illustrates the enterprise's operations modes with various cases. The four operations modes include self-operated distribution center and self-operated express service, self-operated distribution center and self-operated major city express service, self-operated distribution center and third-party express service, and third-party distribution center and third-party express service. Section 11.3 analyzes the factors influencing the outsourcing of online shopping logistics service, which mainly include: third-party logistics providers' service capability and level, enterprise's scale and financial strength, enterprise's strategy for space layout, types of enterprise's main products, enterprise positioning and business strategy. The last section gives a brief discussion on the development trend of online shopping logistics in China, including expansion of online services by various enterprises, integration of physical channel and network channel, connection of cloud logistics platform, specialized third-party logistics, integration of express terminal network, and product virtualization.

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