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**SWOT Analysis for the Development of Logistics Industry in Liuzhou— A Traditional Heavy Industrial City in China**

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**Abstract:** Liuzhou is a traditional heavy industrial city in China whose situation of logistics industry is very representative among many cities. This study, based on research of Liuzhou, adopts SWOT analysis to get a comprehensive and scientific understanding about the development of logistics industry. In addition to the understanding of the opportunities and excellent regional advantages for logistics development in Liuzhou, the study also discussed the existing problems, such as unbalance of structures and sizes of the logistics demand and supply, unreasonable logistics industrial distribution in the city and so on. Basis on the analysis, some countermeasures on how to promote the development of logistics industry in Liuzhou is provided.
1. Introduction

This paper attempts to study the development situation of logistic industry in the traditional heavy industrial city. Before the economic reform of the late 1970s, logistics industry in China was largely ignored by government. Now some Chinese cities, such as Shanghai, Tianjin, Liuzhou, Shenzhen and Guangzhou aim to establish themselves as regional or international logistics hubs. One of the main objectives of these cities is attracted by the Stimulating effect of logistics on the economy.

Liuzhou is located in the middle of Guangxi Autonomous Region of China. Liuzhou has outstanding geographical location, resource advantage and convenient transportation network. As a result, labor-intensive manufacturing industries, automobile industry, metallurgy industry and machinery industry for example, were established and supported by the government. Good heavy industry foundation brings opportunities and logistics demand to new urban developments. However, it also exposed weaknesses such as unreasonable land-use planning, imbalanced logistics of supply and demand, uncoordinated transport logistics facilities, unreasonable logistics space layout and etc.

The research is based on the first-hand data from field research of Liuzhou to understand the logistics industrial in this city. The remainder of the paper is organized
as follows. In the next section, the basic information of logistics infrastructure and logistics enterprises will be introduced in Section 3. SWOT analysis of the logistics industry in Liuzhou is adopted in Section 4, some countermeasures and suggestions will be derived from the SWOT analysis. In Section 5, in conclusion, Policy implications and the contributions of our study are provided in the final section.

2. Basic information of current logistics industry in Liuzhou

2.1 Logistics infrastructure

Liuzhou is a major intersection of six highways and three railway lines (Xiang-Gui, Qian-Gui and Chi-Liu). Liuzhou port is a national first-class port, and ships from Liuzhou can reach Guizhou, Hong Kong and Macao. Its Airport can meet the state 4D-class standard. According to relevant statistics, Liuzhou now has nine highway freight stations; its daily throughput is 4100 tons, and the total area of storage is nearly 151.7 km$^2$; water transport now has 27 berths, and the total area of storage is 5324 m$^2$. Though the overall size is too small, the logistics node facilities and transport access facilities can achieve a multimodal transport in the network.

2.2 Quantity and composition of Logistics

In 2007, the output of logistics services industrial in Liuzhou is 9.1 billion yuan, and the contribution of logistics to the GDP growth reached 14.9%. The output of road freight transport services is 1.6 billion yuan. From 2006 to 2007, the amount and
composition of logistics in Liuzhou is shown in Table 1.

<table>
<thead>
<tr>
<th>items</th>
<th>2006</th>
<th>2007</th>
<th>growth rate (%)</th>
<th>proportion of the total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>logistics capacity (Million tones)</td>
<td>5323</td>
<td>5899</td>
<td>10.8%</td>
<td>100.0%</td>
</tr>
<tr>
<td>highways</td>
<td>4170</td>
<td>4550</td>
<td>9.1%</td>
<td>77.7%</td>
</tr>
<tr>
<td>railways</td>
<td>952</td>
<td>1097</td>
<td>15.2%</td>
<td>18.3%</td>
</tr>
<tr>
<td>waterways</td>
<td>201</td>
<td>252</td>
<td>25.4%</td>
<td>4.0%</td>
</tr>
<tr>
<td>aviation</td>
<td>0.126</td>
<td>0.191</td>
<td>51.6%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>


2.3 Logistics enterprises

According to relative research data, in 2006, there are 2757 road transport enterprises, of which more than 2000 are individual enterprises, only 20 companies have more than 100 acres of logistics facilities and no more than 20 logistics enterprises have 100 vehicles or more. In most cases, clients of large-scale logistics enterprises are key industries. These logistics enterprises not only have large-scale resources (such as large storage area), but also have large-scale business, concentrated clients, and are located in centre of the Liuzhou.

There exist many types of logistics enterprises in Liuzhou, which basically can be divided into the following types:

- Production-oriented logistics enterprise: separated from industrial production enterprises, the main logistics services of these enterprises are focused on the storage and transportation of raw materials and products for key industrial enterprises;
- Transport-based logistics enterprise: separated from transport enterprises which
original attached to various types of transport sector, the main logistics services of these enterprises are the main trunk transportation and urban distribution;

- Storage-based logistics enterprise: separated from warehousing company which original attached to food, foreign trade, commerce, the main logistics services of these enterprise is storage of commodities;

- Integrated third-party logistics enterprise: these enterprises emerged for market demand, such as third-party logistics enterprises providing supply chain logistics services.

3. SWOT analysis for the logistics industry in Liuzhou

SWOT analysis is one of the most effective tools to assess the industry situation and identify the direction of improvement for government or enterprises, it discusses four major factors – Strengths, Weaknesses, as well as Opportunities, Threats, which make the suggestions and measures of development correspond with the reality of industry, maximize the use of the internal strengths and external opportunities, and minimum the disadvantage of the enterprises and the government and the impact of environmental threats.

3.1 Strengths

Located in the area where Southwest China, South China and Middle of China connect, Liuzhou is the transportation and communication hub of Southwest China with desirable geographic advantages manifested in the following aspects:
**Multi-modal transport network:** Since the founding, a modern transport network began to shape, Liuzhou has a well-developed road and rail waterway network; the whole city was surrounded by Liujiang River and it has its own airport. The coexistence of various modes of transportation has formed a modern three-dimensional transport network with four kinds of transportation modes in one city, which are highways, railways, waterways, aviation.

**Hub-type city:** Liuzhou city itself is a logistics hub with outstanding geographical location. In its east, Liuzhou is close to the Guangdong, Hong Kong and Macao where economy is highly developed; in its south, it is next to the North Gulf and The ASAN where the economy is under fastest development; in its west, it is close to Yunnan, Guizhou and Sichuan province; In its north, it is connected to the middle and lower Yangtze Valley. Back to the Southwest of China and facing the Southeast Asia, Liuzhou is located in the area where the south economic development zone (south China economic circle) and the southwest under-developed zone (southwest economic circle) connect. It is a transition between the high-gradient economic region and the low-gradient economic regions.

**Hub-type traffic:** The four kinds of ways of transportations modes (highways, railways, waterways, aviation) themselves have strong hub characteristics. The four ways of transportation will be discussed separately. Liuzhou is one the earliest 45 road hubs in China, national highway 209, 322 and 323 converge in the Liuzhou; Liuzhou is the railway hinge connecting southwest China, middle China and South China, it is also the joint where several railway trunks converge, which can directly access to
Beijing, Shanghai and other large and medium cities nationwide; and also achieve international transport with Vietnam and Australia by waterway.

In addition, with the development of heavy industry and the proper understanding of the importance of logistics industry, the logistics demand is sufficient in Liuzhou.

_Economic development has a strong leading effort on the development of logistics._ As can be seen from the following diagram, at the year of 2006-2008, Liuzhou economic growth rate (the average is 17%) rose with the country's economic growth rate. The economic growth calls for the development of logistics in capacity and quality, and logistics demand will be further enhanced.

![Figure1. Liuzhou GDP movements in the country's total GDP figure between 2000 and 2008](image)


_Huge logistics demand in key industries:_ The secondary industry accounts for more than 50% of the industrial structure. As can be seen from the table below, from the typical enterprises in the key industries, the actual predicted quantity of logistics is 108 million tons per year, which is far more than the amount of annual goods shipments (54.33 million tons).

<table>
<thead>
<tr>
<th>Year</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>0.0022</td>
</tr>
<tr>
<td>2001</td>
<td>0.0023</td>
</tr>
<tr>
<td>2002</td>
<td>0.0024</td>
</tr>
<tr>
<td>2003</td>
<td>0.0025</td>
</tr>
<tr>
<td>2004</td>
<td>0.0026</td>
</tr>
<tr>
<td>2005</td>
<td>0.0027</td>
</tr>
<tr>
<td>2006</td>
<td>0.0028</td>
</tr>
<tr>
<td>2007</td>
<td>0.0029</td>
</tr>
<tr>
<td>2008</td>
<td>0.0030</td>
</tr>
</tbody>
</table>

**Table 2. The Quantity of Logistics in key Industries in one year**
3.2 Weaknesses

Logistics development has also just started in China, inevitable, there are many of the problem is not resolved in cities. The following are some of the problems summed up through research in Liuzhou:

*High logistics cost:* It is a major obstacle to the revitalization of logistics industry and also a serious constraint in Liuzhou’s urban development. For instance, the tariffs of Liuzhou are peculiar. According to research, freight costs 0.4 Yuan / ton-km, the current market price is extraordinarily low, most of them remain at 0.2 Yuan / ton-km. As a result, the transportation companies have to carry on overload transportation to make profits. Price mechanisms are inadequate and lack of regulatory mechanisms, which will affect the city’s orderly development of logistics market.

*Immature logistics market:* There has emerged integrated third party logistics enterprise in Liuzhou, but they occupy only small part of the total number of the enterprises and the profit growth highly depends on government preferential policies. In general, Liuzhou logistics services market has many disadvantages, such as narrow range of logistics services, low level of information technology, too many

<table>
<thead>
<tr>
<th>industries</th>
<th>output (million tons)</th>
<th>coefficient of logistics capacity *</th>
<th>annual Logistics capacity (million tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>metallurgy industry</td>
<td>700</td>
<td>6</td>
<td>4200</td>
</tr>
<tr>
<td>automobile industry</td>
<td>150</td>
<td>6</td>
<td>900</td>
</tr>
<tr>
<td>machinery industry</td>
<td>190</td>
<td>3</td>
<td>5700</td>
</tr>
</tbody>
</table>

logistics capacity of key industries:108 million tons per year

* Source: survey datas of typical enterprises in key heavy industries(Liugang, Wuling, Liugong)
small-scaled enterprises, high cost, poor facilities and equipment and so on. The low-end logistics enterprises are in fiercely competition and has basically reached the saturation point. The situation has seriously affected the ordinary operation of the logistics market in Liuzhou.

*Inadequate logistics supply capacity:* As a large industrial city, the overall logistics demand is far more than the supply. On the one hand, there is movement in domestic and international at the same time, logistics enterprises become increasingly demanding. On the other hand, there are many problems of the level of logistics industry, from the perspective of modernization internationalization, the logistics demand can not be met no matter quality or quantity.

*Weak coordination between transport and logistics infrastructure:* The construction of transportation infrastructure in Liuzhou concentrated on the trunk channels and transport hubs. Except infrastructure around the high-grade roads, most low-grade roads can not march with the logistics infrastructure. Under such situation, no one can guarantee a smooth and accurate transportation when transport raw material or product between the key industries enterprises and the logistics parks or distribution center.

*Difficult to operate the intensive goods flow in urban areas:* The key industry headquarters and most of the factories are located in Liuzhou urban area. According to research on key industry, Liuzhou Iron and Steel factories in the northern suburbs, about 10 kilometers from the city center; Liugong and Wuling, two machinery enterprises, located the west. Their raw material and product needs to travel several
times in the city. From the urban development and distribution of logistics industry perspective, the urban transport network load is too heavy and the operation of these enterprises is too difficult.

2.3 Opportunities

External policy support, such as, favorable regional development policy, country’s logistics policy and regional logistics plan, provides a good development environment to logistics industry in Liuzhou.

*Regional development policy support:* The policy-makers promulgated many policies to guarantee the future development of the region. Such as, Northern Gulf Economic Zone, which was formally included in the development of national strategies, provides various preferential policies, abundant human resources, and potential market for the logistics industry in Guangxi. Liuzhou, as the region's traditional old industrial city, should take the advantages of its traffic advantages to integrate into the construction of logistics base of the northern Gulf trade. Besides, western development strategy and China – Asian Free Trade Area, the main components of the two strategies include the development of infrastructure (transport, hydropower plants, energy, and telecommunications) and promotion of the international logistics market. Infrastructure investment and Multi-national cooperation, which will give Liuzhou a rare opportunity for regional and international logistics market development.

*Logistics Policy support:* In March 2009 the State Council issued the “logistics
industry restructuring and revitalization plan” The role of the logistics industry has been widely recognized and a rapid development of the logistics industry is coming. Guangxi and the Liuzhou Government's modern logistics development plan have clear objectives. Such as "the Eleventh Five-Year plan of the modern logistics industry development in Guangxi ", "Liuzhou Modern Logistics Development Plan"

Strong industrial foundation together with a forward-looking government is the strong support of logistics industry development.

2.4 Threats

The factors to be considered as threats for Liuzhou logistics industry are:

*The location of Guangxi 's economic center moving southward rises a threat to Liuzhou:* Considering the volume, size or grade of Liuzhou and other central port cities such as Nanning, Beihai, Fangchenggang, the construction of North Bay Economic Zone-commerce logistics base will provide greater development space for the central cities. There will be a gap between them and the original location and traffic advantages will lose if Liuzhou does not accelerate the development.

*Urban development facing the resources and the environment pressures:* As an industrial city, heavy industry and logistics industry development lack of policy guidelines in the resource utilization and Environmental Protection. With regard to the resource utilization, the Liuzhou government doesn’t have a unified land-use plan, so land acquisition becomes the biggest obstacle to Liuzhou logistics infrastructure expansion. With regard to the environmental protection, by 2020 China's CO₂
emissions per unit of GDP will fall 40%-50% as compared to the level in 2005. In Liuzhou, the lack of guidance on vehicles and industrial waste treatment will present a more severe test of heavy industry and logistics.

**The unhealthy competition between the Intra-industry and industries:** On a large numbers of small and high concentric logistics enterprises provide only cargo transportation service. There is intense competition within the industry and such logistics market is basically saturated in Liuzhou. On the other hand, heavy industry enterprises squeeze the profits of logistics enterprises by using their Superiority, and improve the logistics supply level. But the government has not done enough on support and plan, making the development of Liuzhou's logistics market bear the intense competition from intra-industry and the up-downstream business pressure, the development environment for logistics market is poor.

4. **Countermeasures for the development of logistics industry in Liuzhou**

When the overall contribution of SWOT analysis is examined, the following points emerge as important for the government and enterprises. The following strategies are proposed in terms of SWOT factors mentioned in Section3:

First, Liuzhou logistics industry policy-makers should have an explicit industry orientation and seize the opportunity to revitalize its logistics industry. If the governor ignores the importance of industry orientation, they will also lose the advantage of
good transport infrastructure and sufficient logistics market demand preferential policies by misleading the understanding and the development of the industry.

Second, the demand for industrial and domestic logistics services in Liuzhou is sufficient, while the supply of integrated and advanced modern logistics services is inadequate. So, the contradictions should be resolved from the aspects of total logistics amount and logistics service levels. On the one hand, government should strengthen transport and logistics facilities, at the same time accelerate the construction of large-scale transport and logistics network to enhance the support capabilities for the scale of logistics; On the other hand, government should attach importance to third-party logistics enterprises and the introduction of advanced logistics concepts and logistics technology to increase the logistics services level.

Third, rational layout of the urban logistics industry. The logistics demand is intensive in downtown. So it is not only difficult for logistics operation but also the development of the whole logistics industry. Logistics supply and demand should have spatial layout consistency. Based on the urban spatial planning of logistics industry, logistics nodes with different size, grades, and functions should form a reasonable logistics network system in a certain geographical space \(^1\). As shown in Figure -1, in order to form a rapid response, low-cost logistics supply chain service system, the rational spatial layout of urban logistics industry is a good starting point.
Finally, optimizing the environment for the development of logistics market. Liuzhou is facing with the threat of the moving southward of Guangxi’s economic center and pressure on resources and development environment. Therefore, on the one hand, it should establish transport corridors and turn into the transit city for the northern Gulf Economic Zone and the ASEAN countries as soon as possible. On the Other hand, the Liuzhou Government should coordinate the development of the urban integrated logistics system; draw up land and tax policy which is conducive to the development of logistics market, strongly supports the development of modern logistics enterprises and standardizes the order of the logistics market.

5. Conclusions

The SWOT approach was developed and applied in this article in order to have a
comprehensive and scientific understanding of Liuzhou logistic industry. In SWOT, the internal and external factors are discussed, outstanding geographical location and convenient transportation network and good economic development trend offer Liuzhou the potential and opportunities to revitalize the logistics Industry. Now Liuzhou logistics industry is experiencing the transformation of modern logistics from traditional logistics. Understanding, it is a very important period for Policy-makers should understand this situation industry’ specific requirements and take effective measures. The description of the problems is very objective and in line with the actual situation in Liuzhou. The empirical results in this paper have the stress importance of balance of supply and demand and the reasonable layout of logistics industry in Liuzhou, and Proposed solutions such as improve the collaboration ability between transport infrastructure and logistics facilities, provide higher level of logistics supply services and what a reasonable spatial layout like and etc.

Several contributions have been made by this study on both the theory and practice of Liuzhou logistics industry development and practical measures and proposals. From the perspective of the whole of China's urban logistics industry development, the city's situation is very typical and representative. Many cities’ logistics industry have the same problem and a lot in common, so this study offer other cities a good reference. Logistics is a relatively new research area in most cities in china so there still exist many avenues and problems for further research.
REFERENCES


