

Logistics Analysis of Parts Supply in Automobile Industry Based on Fourth Party Logistics Model

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Abstract

Compared with foreign automotive industry, China's automotive industry has high total production cost, slow production efficiency and weak industry competitiveness. There are many reasons for this phenomenon, such as capital, technology and management, but a large part of them is caused by the lack of logistics. Domestic automobile industry logistics mainly adopts self-run logistics and third-party logistics outsourcing mode. In today's production environment dominated by multi-variety, small batch and multi-batch production mode, these two logistics modes can not meet the needs of enterprises and customers more and more. In order to change this situation, we need to study and explore new ones. Method. In this paper, through the application of the fourth party logistics model to improve, so that the entire automotive industry parts supply chain to achieve optimization, so that the whole logistics resources around the automotive enterprises are used most rationally, so as to greatly improve the efficiency of logistics, and thus enhance the competitiveness of automotive enterprises.

Keywords

Fourth Party Logistics, Supply Chain, Third Party Logistics.

1. Introduction

With the rapid growth of China's economy, the living standards and consumption standards of the Chinese people have also increased. In order to meet the quality of travel, the number of automobiles entering ordinary families is also increasing. According to the balance of supply and demand, the inevitable automobile industry has become a new field of competition. Therefore, the automobile industry ushered in a new spring.[1] In order to compete for the share of Chinese automobile market, the domestic and foreign automobile industry continuously increased resources investment, such as updating equipment, increasing investment and introducing new technologies, in order to improve product quality and output, reduce costs, and hope to attract customers with the lowest price and the best quality. Thus increase the profits of enterprises. In order to achieve the goal of increasing profits, the business community has gone through two stages at first: one is to simplify the manufacturing process as much as possible to reduce the input of raw materials; the other is to increase the degree of equipment mechanization to make the work of employees more professional and efficient. In these two stages, some enterprises have defeated the overwhelming majority of enterprises and emerged as giants in the automotive industry. However, with the rapid development of science and technology, the cost of many enterprises in these two areas has been reduced to the lowest level at this stage. In order to cope with the increasingly fierce market competition, enterprises have to find another way out.[2] It is found that the logistics cost of automobile manufacturing occupies a high proportion of the cost. Immediately, it has become the focus of many enterprises.

In the automobile manufacturing industry, its logistics activities cover a wide range of areas, and its operation is very complex. The division of labor and cooperation of all members of the entire logistics supply chain is not high, which results in a huge cost of logistics in the automobile industry, a great waste, and a great impediment to the operation profits of the industry and the development of enterprises. Obstruction. Therefore, how to control and reduce logistics costs and optimize supply chain management is the key to maintain the competitiveness of the automobile industry and improve economic efficiency under the current economic conditions. Therefore, according to the current logistics operation mode and shortcomings of the automobile industry, this paper studies the automobile industry spare parts supply chain management under the relevant concepts and methods based on the fourth party logistics mode, which is important for improving the logistics management level of automobile manufacturing enterprises and improving the efficiency of logistics activities. The Significance of Theory and Practice.

2. Summary of Fourth Party Logistics Theory

2.1 Supply Chain of Automobile Industry

The automobile industry is a very complex logistics industry. The fields and industries involved in the whole life cycle of purchasing raw materials, manufacturing, selling, returning and recycling are not only large in quantity, but also wide in scope. Therefore, it is impossible to accomplish such a huge amount of work by relying solely on one or several automobile manufacturing enterprises.[3] which determines that the logistics of automobile industry must be a supply chain organizational structure model. In order to meet the production needs of automobile enterprises, automobile enterprises and salesmen who supply spare parts and other related materials in time, automobile enterprises and salesmen who produce automobile finished products according to the manufacturing process from upstream, will sell the automobile finished products manufactured from middle to distributors and customers, and provide after-sales service for the products. The composition of downstream enterprises of services.

In this supply chain, the automobile manufacturing enterprises occupy the core position. The other enterprises in the supply chain cooperate with each other in five processes including information flow, product flow, knowledge flow, capital flow and service flow, and accept logistics scheduling arrangements to meet the needs of the core enterprises. To form a value-added chain.

Fourth Party Logistics

The fourth party logistics is to integrate all the resources, knowledge, experience and ability of the whole society to provide solutions for the growing geographic coverage and activities of customer enterprises by applying them to areas where third party enterprises are not good at from the perspective of supply chain optimization. It emphasizes the use of resources to complement each other, and with third-party enterprises to provide services for corporate customers.

Third-party logistics is to develop the most suitable transport business for customers according to their needs, relying on their own resources, knowledge, technology and ability and experience, and providing logistics services with customers as the sole core, so that customers can save time, energy and logistics costs, so that they can devote themselves to the research and development and production of enterprises' industries. [4] Its shortcomings are mainly due to the rapid expansion of the scope and quantity of customer logistics activities. By contrast, third-party logistics is characterized by insufficient resources and equipment, limited technology level, weak information management capability, insufficient standards and norms in logistics management, less management consulting, technological value-added and business operation services for customers. Not enough to meet the needs of customers.

Compared with the above description, the fourth party logistics has absolute advantages in terms of service destination, scope, content and capability. It can integrate not only the own resources of the third party logistics enterprises, but also all the resources, information, knowledge that the whole society can use, covering almost everything. [5] A large number of information network technologies

are used to strengthen business exchanges and cooperation in the whole supply chain. Having rich experience in logistics management, especially focusing on the customer's supply chain, participating in the customer integration plan, through understanding the customer enterprises, using their own advanced management technology to correctly use the transport and storage resources of professional logistics enterprises, the most reasonable way to plan the whole supply chain is to use the transportation and storage resources of professional logistics enterprises.

3. Literature References Current Situation and Analysis of Logistics Operation Mode of Parts Supply in Automobile Enterprises

3.1 Current Logistics Operation Mode of Parts Supply in M Enterprise

M enterprise's spare parts supply logistics activities mainly adopt two kinds of logistics modes: (1) self-operated logistics mode. That is to say, M enterprise will transport the necessary parts and raw materials from the suppliers with its own fleet; design and plan the logistics activities of the production process of raw materials according to the process flow; and transport the finished automobile products to the distributors. In this case, the manufacturer can control all logistics activities, can have face-to-face direct contact with customers, obtain the latest demand, and can make the best service according to the needs of customers. However, with the advent of the Internet era, especially the rise of network marketing, the globalization of online and offline logistics business is growing, which has higher requirements for automobile manufacturers relying solely on self-supporting logistics mode. In order to survive, automobile manufacturers can only increase capital and human investment to improve logistics capabilities. To meet the needs, but this has brought greater impact on the development of enterprises, seriously restricting the economic benefits of enterprises. (2) Third-party logistics outsourcing model. With the development of the times, in order to meet the needs of customers' diversification, speediness and globalization, logistics activities need to operate faster, more accurate and more comprehensive, so as to better meet the needs of customers. Therefore, the automobile enterprise also adopts the way of letting the third party logistics enterprises do some business, such as letting the professional logistics enterprises transport the spare parts provided by foreign suppliers, which is conducive to M enterprise concentrating resources on automobile production and manufacturing, and improving the quality and output of products. However, such logistics services are limited to providing the best solution under the current conditions for a few or even single enterprise customers; the scope of service can only involve the external procurement or sales of logistics activities, and can not go deep into the internal logistics operation of enterprises; moreover, the logistics operation has a high degree of specialization, No. It can adapt to sudden situations and make flexible changes; the resources available are very limited and can not achieve optimal resource complementarity; service capability only stays in transportation, storage, distribution, information transmission and other services, cannot meet the higher service requirements of enterprises; the relationship with customers is only contract-based employment relationship. There is not enough mutual trust between the two.

3.2 Current Situation of Parts Supply Logistics

Since the pipelining method invented by Ford Company and Just In Time (JIT) method invented by Toyota Company were introduced into M Enterprise, the average time spent in manufacturing a car in M Enterprise nowadays is less than three minutes. The production rhythm is so rapid that only when the corresponding parts are provided in time. Only then can it be guaranteed. Because of the large number and variety of automotive parts, and the parts provided to automotive manufacturing enterprises are not simple industrial products, but the most basic raw materials are processed step by step through complex process flow, which involves many fields and industries of technology and methods, which determines the supply of automotive parts. A large number of suppliers should be needed to support it. With the trend of economic globalization, in order to ensure the high quality of automobiles, the suppliers of spare parts used by M enterprises are not only scattered in all parts of the country, but also in the world, with the number of suppliers exceeding 400.

In order to meet the diversification and customization needs of customers, M enterprise adopts multi-variety, multi-batch, small-batch production mode, according to customer orders to arrange automobile production tasks. According to the application of lean production management technology in enterprises, timely supply of spare parts, zero inventory and elimination of waste are important concerns of the enterprise, which put forward high requirements for suppliers. Therefore, suppliers close to the manufacturer can supply spare parts in time through self-operated logistics according to the real-time orders of the manufacturer. Distant suppliers have to spend a lot of money to build their own logistics fleet, transfer stations or even shipping teams, or outsource part or all of logistics to third-party logistics enterprises, as well as in automobile manufacturing. Establish warehouses near factories and other means, according to demand forecasting and orders to timely meet the supply of spare parts. The specific supply logistics process is shown in [Figure 1](#) below.

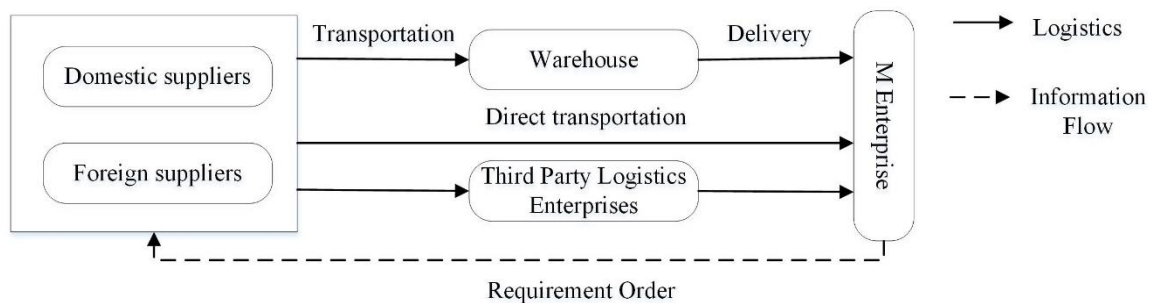


Fig. 1 M Enterprise Parts Supply Logistics Model

3.3 Analysis of Logistics Operation Mode of Parts Supply in M Enterprise

In this part supply logistics, M enterprise plays a leading role. In order to achieve the goal of timely production and zero inventory, suppliers supply parts in time according to the manufacturer's order requirements. Although this enables the enterprise to achieve zero inventory, it is a passive state for suppliers of spare parts, causing serious damage to suppliers' economic returns. From the point of view of the whole supply chain, the overall inventory cost has not been reduced, and even affects the cooperative relationship between the two enterprises. During this period, there are problems of logistics waste as follows:

Firstly, there are many kinds of spare parts, tools and equipment needed by M enterprise to produce automobiles. The size and physical characteristics of these parts vary greatly, and different kinds of automobiles require different parts. At the same time, the shape, size and weight of the automobiles produced are different. M company's spare parts suppliers always use cartons to pack their parts, which is simple and affordable for current suppliers, but in the long run, it will cause huge cost waste. The isolation and protection of cartons are very poor. Parts will be damaged in the transportation process. Cartons can only be dismantled by a large number of manual treatment, and a large number of parts should be repositioned to meet the needs of production logistics, which will increase labor costs. Although some parts suppliers of M enterprises have cancelled carton packing and transportation and changed to standard material containers, many suppliers adopt different standard containers for packaging, and M enterprises are limited to production lines and warehouses and other conditions, so it is very troublesome to deal with parts and components. Management is time-consuming and laborious, which also invisibly increases the cost of automobile production.

Secondly, M enterprise is an order-based mode of production. Sometimes the number of orders is too small, and the suppliers of spare parts are very scattered. There is no unified distribution platform, but the suppliers have to meet their requirements for transportation, resulting in the low utilization of vehicle space, or even the situation of no-load return, which brings to suppliers. Loss. Sometimes when the demand is very large, the supplier needs to store a large amount of stock in the warehouse in advance in order to ensure timely supply without affecting the production rhythm of FAW-Volkswagen, which causes a large backlog of goods to the supplier, only this one will cause a loss of about 10% of its revenue.

Thirdly, when outsourcing, there is only a simple contractual relationship among M enterprises, suppliers and third-party logistics enterprises. The supplier can't know the production task of M enterprise and the arrangement of logistics enterprise. M enterprise doesn't know the inventory information of supplier, while the third party logistics enterprise can only passively accept the task. The information can't be shared in real time among the three enterprises, which results in the delay of parts delivery and the high cost of logistics because of the delay. Great increase.

4. Fourth Party Logistics Optimizing Parts Supply Logistics of M Enterprise

Based on the above analysis, we can make use of the advantages of fourth party logistics in parts arrangement, transportation, distribution and information transmission from the aspects of large number of parts, scattered suppliers and low degree of informatization.

Firstly, M enterprise needs a large number of spare parts, supplier's sub-shipment, manufacturer's disassembly, classification and warehousing need to consume a large amount of time and labor, which accounts for a large proportion of supply logistics costs. Therefore, using the strategic alliance relationship among the fourth party logistics enterprises, M enterprises and suppliers, the fourth party logistics enterprises will inform the suppliers of the types and assembly methods of modular components required by M enterprises, and the suppliers will assemble the required components into complete modules according to the requirements. Modular transportation not only integrates a large number of parts into a small number of modules, but also eases the complicated sorting and classification work. At the same time, it greatly reduces the assembly work of parts in the automobile production process, shortens the entire production cycle, and more quickly meets the needs of customers.

Secondly, using the advantages of the fourth party logistics service providers in network information technology, the whole M enterprise supply chain logistics information system is constructed, and under its guidance, M enterprise, suppliers and third party logistics enterprises form strategic alliance partnership to realize the complete sharing of information and business cooperation. In this supply chain logistics information system, M enterprise uploads the information of the main production plan made in the enterprise every month and every day to enable the manufacturer to prepare spare parts module in advance, and the supplier shares the information of its inventory and internal manufacturing preparation to the third party logistics enterprise, so that it can prepare in advance according to the route already analyzed and planned. Transportation vehicles and personnel, third-party logistics enterprises locate the real-time status of transport vehicles to the sharing information platform according to satellite tracking technology, so that manufacturers can control the location information of parts at any time, so as to prepare for receiving in advance. Realize sharing these information, and let the whole M enterprise supply logistics form a virtuous circle under the support of network technology.

Thirdly, the number of automobile parts suppliers in M enterprise is large and very scattered, and the vast territory and unreasonable transportation mode of our country lead to high transportation and storage costs. In this regard, the transport mode of M enterprise is redesigned by utilizing the ability of the fourth party logistics service providers to integrate resources and analyze design. Firstly, for the suppliers close to M enterprise and the order quantity is large, the transportation clothing of the third party logistics service enterprise can be used directly.

The improvement measures of supply logistics led by the above-mentioned fourth party logistics can basically optimize the supply logistics supply chain, as shown in Figure 2 below.

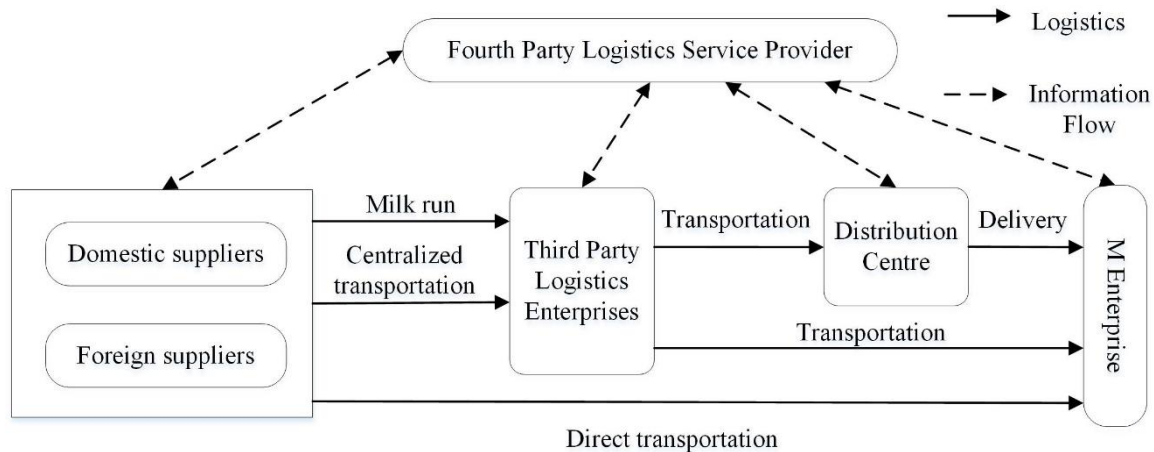


Fig. 2 M Enterprise Parts Supply Logistics Model

5. Conclusion

In this era, logistics activities are no longer confined to a certain region, but have gradually become a trend of global integration. With the expansion of business scope and geographical coverage, both in enterprise production and in people's daily life, there is a higher demand for logistics activities, which requires faster, more convenient and safer logistics services. The fourth-party logistics model is just adapted to this era. This is especially true for the automobile industry with a very wide range of logistics. If we want to survive in the industry, we must change the unreasonable logistics activities.

In this paper, the logistics status of automobile parts supply chain is analyzed, and the existing problems and shortcomings are briefly described. At the same time, the characteristics and advantages of the fourth party logistics model are introduced. Taking the spare parts supply logistics of M enterprise as an example, the paper focuses on the analysis and points out the existing problems. Utilizing the advantages of the fourth party logistics model to optimize and improve the current M enterprise parts supply logistics, and optimize its overall integration, the logistics efficiency of the whole supply chain is greatly improved, the logistics cost is reduced, and the competitiveness of the automobile industry is greatly improved.

References

- [1] Ting Bin, Wu Zhishu. Supply Chain and Logistics Management [M]. Beijing: Tsinghua University Press, 2008, 23-24.
- [2] Cao Cuizhen. Supply Chain Management [M]. Beijing: Peking University Press, 2010: 1-6.
- [3] Chen Tingbin, Wu Zhishu. Supply Chain and Logistics Management [M]. Beijing: Tsinghua University Press, 2008, 23-24.
- [4] Li Yu. A Brief Analysis of the Relationship between Reverse Logistics and Fourth Party Logistics [J]. Manager, 2013, (24): 115.
- [5] Mauro Vivaldini, Silvio R. I. Pires. Applying a business cell approach to fourth-party logistics freight management in the food service industry [J]. International Journal of Logistics: Research and Applications, 2013, 16(4): 296-310.