Study on Auto Collaborative After-sales Service Based on Value Flow Technology

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Abstract: With the development of auto industries, the auto after-sales service market has become an essential part of automotive industry chain. This article began with analyzing present situation of auto after-sales service, and employed the value flow technology to point out that the current problems in auto after-sales service industry from analysis of auto after-sales service business process. The paper gave suggestions of improvement and proposes the importance of collaborative third-party auto after-sales.
Key Words: Value flow; Third-party after-sales service; Automobiles; Collaborative aftermarket

1 Introduction

With the development of information technology and the economic globalization, automotive industry is flourishing promoted by the booming of the whole manufacturing industry. Because of diversification products and customized tendency, more and more enterprises transfer their core competitiveness from the price and quality to the optimization of services. Good after-sales service has become one of the most essential elements for customers' automobile purchasing demands. Presently three main operation modes exist: 4S service site (Sale, Spare Parts, Sale, and Survey) shop, licensed distributors and service, and chain management. 4S shops are the most common services type in China, and are gradually developing in the direction of 5S, which can maintain brand reputation and collect feedback. While the service offered by chain operation is prevalent in USA—that is: considerate, one-stops, and personalized for a certain brand or a general specific model.

On the basis of a great deal of research materials, advanced methods such as simulation and modeling have been widely used in foreign researches on the auto after-sales service. Fredrik Persson who used the simulation methods on research of the logistics network of after-sales service pointed out that it is helpful for enterprises to find out the core weakness and appraise the effective cost policies when applying the similar spare parts classification model and quantitative analysis. [1]

At the same time, research on the auto after-sales service is falling behind in China. Many scholars in China have done the researches on the service market with Chinese special characteristics based on foreign successful experiences. In the year of 2008, Liu Yongxu and Chang Yuxiang consulted the international operation mode and compared 4S and chain management in China, and found out the drawback of 4S shop, and indicated that the chain management is imperative. [2] Then, in 2010 Zhang Yongmei put forward that the direction of development has transferred from mainly repairing to maintenance, but remained brand-oriented. And she suggested that the service industry should realize the scale and standardized, and improve their professional degree. [3] A seminar on auto after-sales service and service standardization is convened in China in early 2011. Based on auto after-sales market definition proposed by U.S. auto after-sales industry association, a preliminary system framework of auto after-sales service standard is drafted in order to promote standardization. [6] So it is necessary to discuss appropriate mode of after-sales. The paper uses value flow technology to do the quantitative analysis and also presents some useful advices.

2 Feasibility Analysis of Value Flow Technology

The concept of value flow was prospered first by the chief engineers of Toyota Taiichi Ohno and Shigeo shingo. Many scholars focused on researches in this area, and created a series of methods. One of the most famous methods is Seven Tools summed up by Hines. This method includes process activity diagram, supply chain reaction matrix, production variety funnel figure, quality filter graph, demand amplification figure, decision points and entity structure. [4]

Value flow technology, which is used to do systemic quantitative process analysis on business process, operates simply and pays attention to the integration. It has been applied it in various fields, and established successful cases in auto manufacturing industry. However, the process reconstruction, lean production and cost control are mainly analyzed (with the example of Zhang Handong's "The

Application of Value Flow Technology to BPR" [5] in 2005). The value flow technique is rarely applied in service industry analysis.

The application of value flow technology into service industries can also analyze the waste of time, human resources and stock. The methods can be used to offer a long planning of service industry, improve work efficiency and reduce investment. After-sales service is a value-added process in the whole value stream supply chain. Satisfactory service can enhance the brand satisfaction and brand awareness, and conversely will be with harmful effects. So, the application of value flow technology combine with service industries may make a good effect. This technology is used in this essay to analyze the auto after-sales service process to help understanding customer demands, finding out the waste through decision points, and putting forward the optimization scheme.

3 Status Analysis of Auto After-sales Service Industry in China

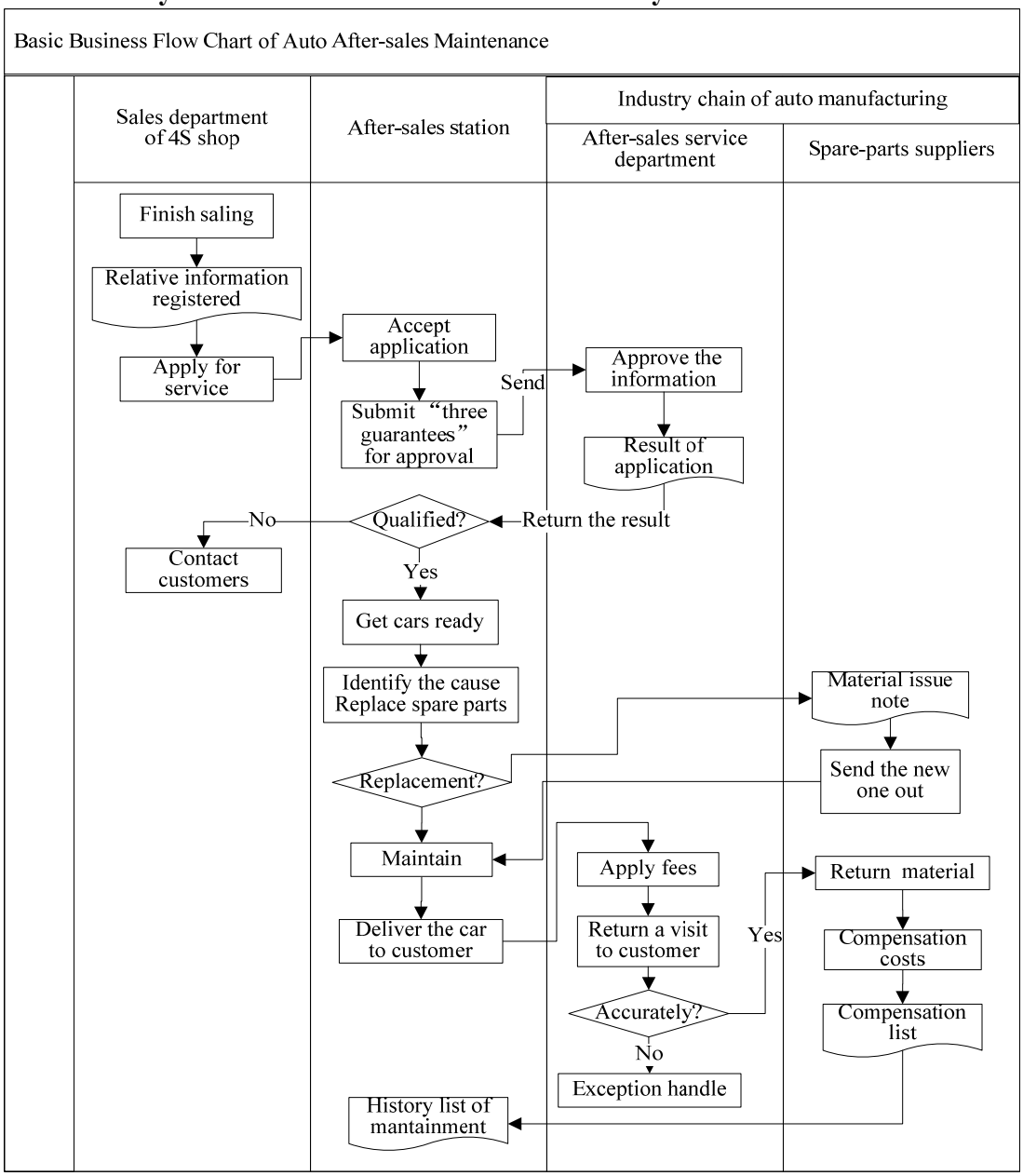

Figure 1 Basic Business Flow Chart of Auto After-sales Maintenance

Along with the saturation of vehicles in many regions, the zeal of chasing a car is cooling down. The demand on auto after-sales service is pushed to the spotlight, and becomes a hot spot. 4S shop, even

5S integrating auto sales and after-sales service appears in China, but still in its infancy on collaborative affect.

3.1 Current value stream of auto after-sales service

4S after-sales service relates with roles of spare-parts suppliers, after-sales service department, after-sales station in 4S and car buyers.

The business process is as follows. The vehicle is possessed by users after sale behavior; user applies for service to 4S shop; 4S service station gives initial screening, and sends report to the after-sales service department and meanwhile feeding back to users; The service department examines users' demand; With the approval, 4S service station supplies corresponding service for the users; After service completion, 4S shop submits report, and returns the damaged parts; Lastly, the service department finishes a return to ensure the service and settles accounts for 4S shop; At the same time, the spare parts suppliers recycle invalid parts, make duty orientation, and lodge a claim for inferior quality. The process is shown in Figure 1.

3.2 Problem in after-sales service

According to the survey report on auto after-sales service satisfaction, the mainstream of joint venture brands and import brands firmly occupy the top ten with far higher scores than the independent car brand in the surveyed 58 car brands. But "brake gate" events emerging in endlessly makes people have to re-examine the auto after-sales service of joint venture brands. After the event of "Smashing Benz" and "cow pulling BMW", people have paid more attention to Chinese after-sales market. After-sales service as a soft spot in Chinese independent automobile brands, has not reached the industry average. Thus, it is now clear that it still exists a big gap between Chinese and international general level of after-sales service with the main performance in the aspects of "the poor technical support of maintenance worker", "the quality and aging of parts supply", "disputes over the actual maintenance time and commitment" [7] etc.

As a large commodity, vehicle has the characteristics of long life in product life cycle in manufacturing industry. So the after-sales requests longer time and wider scope. Generally the warranty period for vehicles is two to three years or 20,000km to 30,000 km. Customers share regular and irregular service such as maintenance and repair, etc. Mass of design and manufacturing data is involved in after-sales service. The complex process produces much waste mainly in the following aspects.

(1) Waste of time: Firstly, the disjunction of the information interaction between service department and the core industry chain, and complex data lead to information transmission delay and information duplication, which makes the waste time in after-sales. Secondly, after-sales service needs strong support of parts and components, but the insufficient cooperation between auto parts suppliers and after-sales makes lack age of communication. So both sides cannot well understand each other's needs and actual data of inventory, which lead to the waste of time for the shortage of spare parts inventory.

(2) Waste of human resources: Various contents and complex service in auto after-sales services need a large number of personal and technical supports. Each car is assembled by thousands of spare parts. The non standardization of techniques and diversity of failures brings uncertain of auto after-sales services, which requires the support technicians, good skills and knowledge related with automobiles. With the development of science and technology, many advanced diagnosis and maintenance equipment are applied in after-sales service, which puts forward higher and a large demand for technicians.

(3) Waste of inventory resources: The insufficient coordination between spare part suppliers and after-sales departments leads to the hard control of inventory. Consequently, many after-sales service providers adopt strategy of increasing storage to ensure the supply of spare parts for reducing the time wasted.

(4) High cost and serious waste of resources: In after-sales service station of every brand, automobiles accept the service according to the process of after-sales, which requests logistics, software and hardware resources of all kinds of models so that the investment would be larger. Therefore, discontinuous work creates a huge waste of resources.

4 Optimization Scheme of After-sales Service

According to analysis of the current after-sales service process, value flow technology is used to reduce many kinds of waste and reconstruct cooperated service department with the core of after-sales service station. Compared with the current business flow, the improved business chart (see Figure 2) has advantages in several aspects.

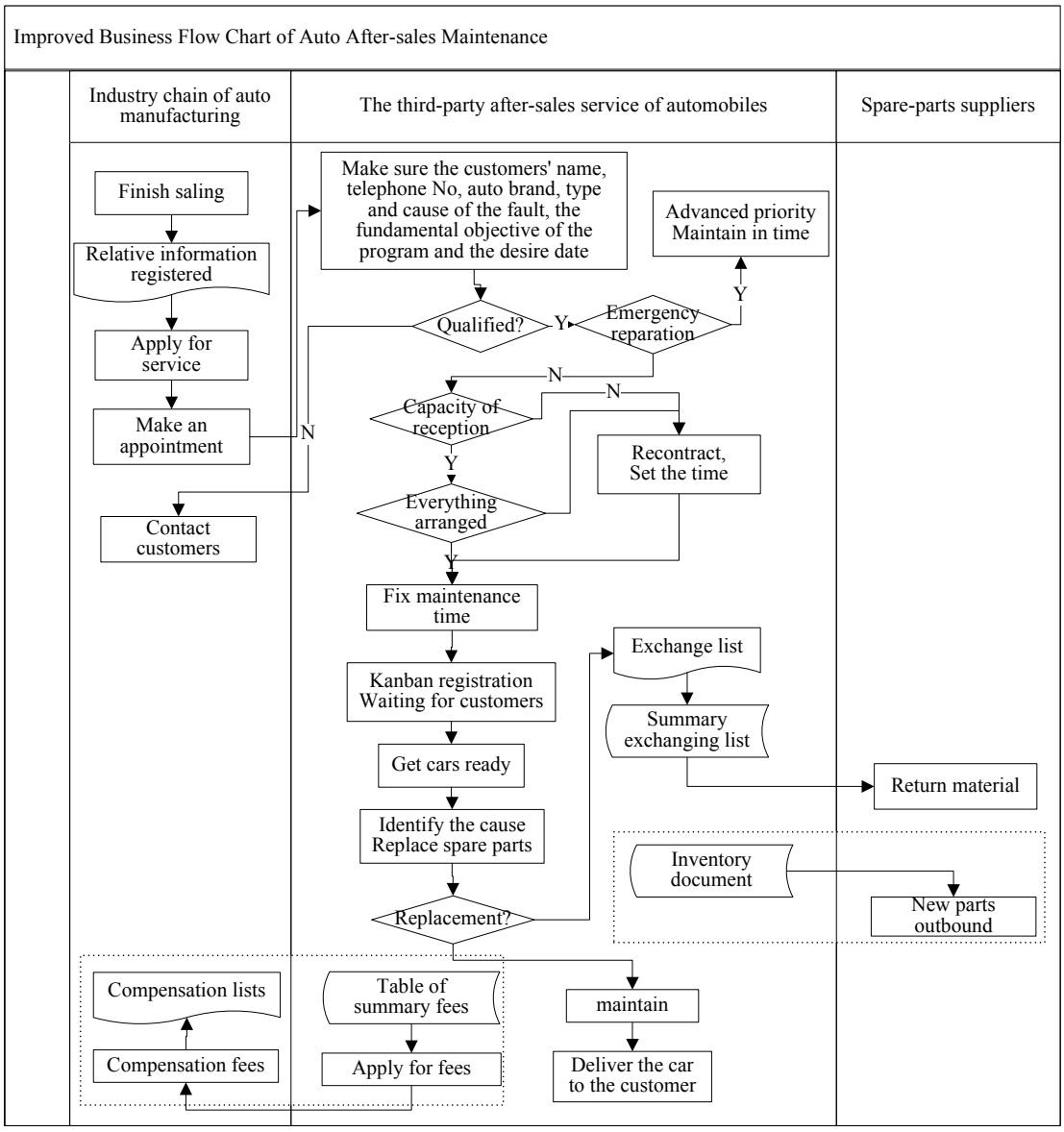

Figure 2 Improved Business Flow Chart of Auto After-sales Maintenance

4.1 The third-party after-sales service

The third-party after-sales service should be introduced to the automobile industry, by means of chain management with multi-brand, adopting supermarket mode of service. The pattern is shown in Figure 3.

By the form of the third-party after-sales service of automobiles, all brands outsource their after-sales services to a company professionally in car maintenance and repair and pay outsourcing fees for it. This model calls for third-party sales company to make sure its core status in the value chain, with car manufacturers in the upstream and users of each brand. The upstream firms provide costs of automotive spare parts, vehicle maintenance and repair; and downstream gain the necessary after-sales service from the third-party after-sales companies. It runs mainly in order-driven approach. It mainly runs with mode of order-driven.

For the automotive supply chain, this after-sales model will focus on multi-brand sales, and realize execute large-scale services. It can not only reduce the human resources invested into auto industry and the fees produced by establishing the service stations and the competition game, but also improve after-sales quality and promote the quality of customers' satisfaction of service. Meanwhile this batch operation of after-sales service can reduce the logistics cost produced by repeatedly supplying small batch supply. In this mode, all after-sales service share same industry standards, which helps to

accelerate the implementation and perfection of auto after-sales service industries' standardization. It is adhered that standard promotes the service, which then promotes the economy.

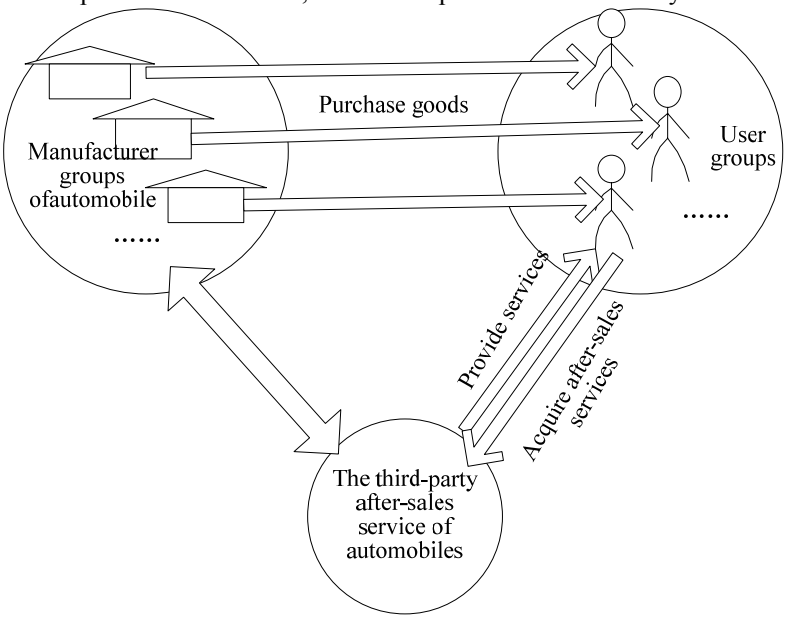

Figure 3 Business Model of the Third-party After-sales Service of Automobiles

4.2 The third-party data center

Setting up the third-party after-sales service center which collects sorts of brands together involves the large quantities of data, including the relevant date of auto spare parts suppliers and the core car manufacturers, sales data and user data of 4S shop, "three Guarantees" data and maintenance data of the third-party after-sales service department. In order to ensure absolute security of information, data center must be established on the basic of trust and be specialized, which is helpful for the data exchange and ensure the data security.

The third-party data center is a data cooperation platform which offers the support information from the enterprises of two or more supply chains taking the management contractors of auto third-party after-sales service as a data acquisition center for the purpose of supporting the collaborative aftermarket. In this platform, the upstream enterprises of supply chains can supply with rations at fixed period and return the changed parts regularly. This process keeps accounts absolutely clear. The core manufacturers of automobile can acquire the updating information of automobile maintenance, and then settle fees of the service, simultaneously gain the feedback from the customer and the analysis report between different brands on the after-sales service. Through this platform, the manufacturing enterprises can evaluate themselves more clearly, promote communication and collaboration between partners, avoid the game caused by imbalance of information exchange between upstream and downstream enterprises in the supply chain, and reduce the business errors and delay to control the cost. All of this can take advantage of supply chain collaboration.

The third-party data center which provides the data support for the third-party after-sales center can acquire the auto parts of each brand for related model and its maintenance plan. Consequently, the after-sales center can easily get information of the core industry and spare parts of each supplier, which help to accelerate after-sales service operations. At the same time, a series of matching and contrast of the information customers feedback can be taken to make the information more valuable. Hence, the after-sales services established on the basic of the third-party data center can help the service thoroughly in a reasonable and orderly way.

4.3 Collaborative platform of auto after-sales service

The collaborative platform of auto after-sales service can be established according to the deep understanding of the third-party after-sales and third-party data center. Through this platform after-sales service will achieve real synergy.

Auto after-sales service system is a business interaction and information sharing platform. This platform clarifies the central position of the third-party after-sales service center and the shared alliance system formed with other members of the supply chain, which makes the auto third-party after-sales

center and its suppliers, service stations realizing the real-time interaction by the network. For the customers, they can scan the information of the services and products, consult the reasons of the malfunctions, book or apply for the services, and do some queries of some business data and the state of audit from this platform. For suppliers they can acquire the situation of spare parts usage to ensure the delivery of warehouse timely, and do the queries of fault spare parts for the responsibility orientation through the platform. With this collaborative shared platform, each enterprise in automobile industry chain can fully exchange and coordinate so that the enterprises in the chain can avoid the extra payment due to information imbalance caused by the inadequate intercommunion; The time of service can be shorten; The errors and delays can be reduced; The management can be expanded; The advantage of the collaboration can be taken to the full to enhance competitiveness of the brands.

5 Conclusions

As a gold industry, the auto after-sales service owns huge development potential in China. Value flow technology, a new type of systematic analytic method, optimizes and improves auto after-sales service from the whole process, to speed up after-sales service time, consequently enhance the satisfaction of brands. Highly collaborative after-sales service is a tendency in future development. It can not only realize the interaction of business and the sharing of information, but also reduce games and costs, to finally improve customer satisfaction.

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