

EFFECTIVE OUTSOURCING THROUGHOUT THE SUPPLY CHAIN IN THE AUTOMOTIVE INDUSTRY

Liu Ying

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JYVÄSKYLÄN AMMATTIKORKEAKOULU
JAMK UNIVERSITY OF APPLIED SCIENCES

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Title Effective Outsourcing throughout the Supply Chain of Automotive Industry		
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Abstract The purpose of this bachelor's thesis was to find a method of using outsourcing effectively throughout the supply chain in the automotive industry. Through the data collecting and analyzing, this thesis was written totally based on theory. As the automotive industry has been developing, the outsourcing service has become one of the most popular methods to improve the supply chain management. The auto manufacturer and spare parts supplier are the two most important roles in the supply chain, and the differences between these two kinds of companies could lead to the differentiation in their outsourcing service operations. In this thesis, facts related to the automobile industry are specified and cases are compared. In order to increase the effectiveness of the outsourcing operation, the company needs to make the cost analysis and market analysis, and other preparations depending on different situations for the decision making. During the implementation the company has to cooperate with the partners and collaborate with the competitors; after the operation the company should make the ending of the outsourcing service. The results of the effective outsourcing could lead to fewer differences due to the use of different companies.		
Keywords Outsourcing, Supply Chain Management, Automotive Industry		
Miscellaneous The bachelor's thesis is available in the library of JAMK University of Applied Sciences.		

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1 INTRODUCTION

The Automobile Industry has been developed rapidly after the Second World War and becomes one of the most important Industries in the world. Nowadays, this Automobile Industry is much more competitive than sixty years ago. To open up a better business is the target that everybody is trying to reach.

After my three years study in Logistics engineering and half year practical training in Automobile Industry. I have been thinking the methods to improve the Supply Chain Management of the Automobile Industry. At a Chinese point of view, the auto spare parts suppliers in China have been improving and developing. They are very important in the Supply Chain of Automobile Industry and will be much stronger in the future. At present, they are operating their supply chain at different levels because of their capacity differences and market diversities.

As we know Outsourcing is used widely in every industry. It helps to improve the efficiency and profit. Outsourcing is still a rising operation in the supply chain management of Automobile Industry, and how to use the outsourcing in the right way is the question we need to ask in advance.

In my bachelor thesis, I would like to do the research by collecting the information of Outsourcing services and analyzing the situation of Automobile Industry. My purpose is to find the method to use Outsourcing effectively through the Supply Chain. I would make the cases as examples to better understand the connection between outsourcing and supply chain management.

2 SUPPLY CHAIN MANAGEMENT OF AUTOMOBILE INDUSTRY

2.1 Main roles in the supply chain

In Automobile Industry, the Auto Manufacturer stands at the magisterial position. They are leading the whole Industry developing and advancing. In the business, they are connected to both their customer and their supplier. The customers signify the market sale which is the main target of all the production. The development and research are surely important depends on the customer's need. The way to satisfy customers is always the aspect for the Auto Manufacturer to improve. If we look back to the Auto Manufacturing, we can see the suppliers which offer the raw materials and spare parts for the whole manufacturing process. Sum up the main roles and their connections which mentioned above can be show as the FIGURE 1:



Figure 1 Main roles in Automotive Supply chain

The main roles in this supply chain all act important and effectively. The tight connection between each role contains not only cooperation and service but also offer and need. The supply chain of Automobile Industry has been built up by these main roles and their relationships.

Every industry has the similar supply chain and target. All the companies in each field are trying to manage their supply chain and business. The supply

chain management has been developed and will continue to be developing in the future.

Compare with other industries, the Automobile Industry has a more complex supply chain to manage and operate. How to make progress? How to increase the profit? How to stand firm in this competitive industry? The people work as each role in this supply chain will never stop to look for the answers.

2.2 Automobile spare parts suppliers in China

2.2.1 Introduction of their business

From 2001, which is the year China joined the WTO (World Trade Organization), all the industries in China has been developing rapidly and surprisingly. At the same time, the huge market in China makes all the international trade companies involved in Chinese business. Many Global Organizations opened their branches in China; many international companies and Chinese companies composed new joint-stock companies; many foreign companies merged many small companies in China.

The Chinese Automobile Industry has improved a lot in the last decade. Many local companies become international and their production increased sharply.

From the Chinese Economics Reporting, in 2009, Chinese Auto Manufacturers has produced 13.78 million automobiles, and sold 13.64 million automobiles. That makes China becomes the one of the most active Auto Suppliers in the whole world. The numbers pushed Chinese Automobile Industry to develop and improve from now and then.

As the upsurge in Automobile Industry is making, the auto spare parts suppliers in China has been encouraged and improved a lot. As the important role in Automobile Supply Chain, these companies have to act active and strategic.

Market

- **Half share in the Automobile Industry**

From 2003, the Auto spare parts already hold over 52 percent shares in the Global Automobile supply chain. The export of auto spare parts from China was increased with the 30% speed each year. All the international Auto manufacturers are interested in the low cost and fast offer suppliers in China. With the Global Supply Chain are formed, more and more international manufacturers making the business with the Chinese suppliers. The Chinese suppliers opened their door to the world, at the same time the market is widened little by little.

- **Developing Chinese Market**

The demand of Autos is keeping on increasing while China is developing. Chinese Market is quite large and bright not only for international companies but also the local manufacturers.

The Chinese auto spare parts market can be divided into two parts, one is for auto manufacture, and the other is for maintenance. There are very tight connections between each part in the market. And it can be easily understand as the FIGURE 2:

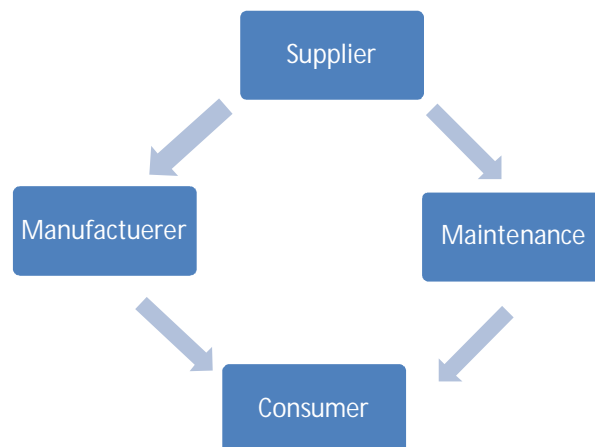


Figure 2 Chinese Auto spare parts market

Network

The supply chain network of the Medium size supplier is not complex.

Because their production system is normally Make to Order. So usually the company has a temporary warehouse to stock the finished products or the materials which will soon be produced by the order.

The orders of the products are from all over the world. Different companies have different market focus but the network of the supply chain could be seen FIGURE 3 as following:

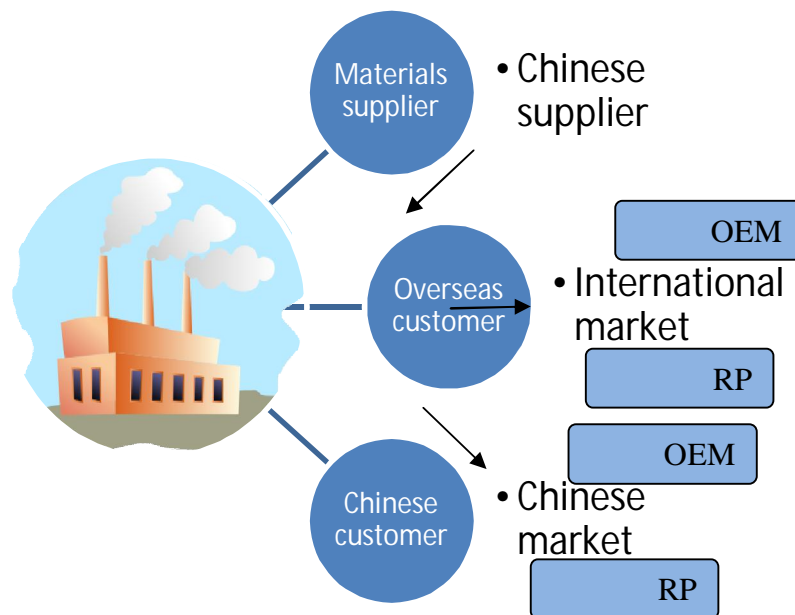


Figure 3 Network of Spare parts supplier

The company gets the order from customer and purchases the raw materials or semi-finished product from the suppliers in China. Depends on the order and its requirement, the factory produce the products and then delivery to the customers.

Situation

The market of the auto spare parts is as part Market in 2.2.1 described. The products are mainly for two different aspects. One is OEM (Original Equipment Manufacture) the other is for RP (Retail Packaged)

- **OEM**

“Original Equipment Manufacture is a business that manufactures parts or components that are used in products assembled or produced by another company.”---Your Dictionary.com

To be more specific in Automobile Industry, the OEM Company has the design brand and technical requirements of the products. The produce company manufactures the products as the order and also with the brand of the OEM Company. About the supply structure of the OEM, we can see from the FIGURE 4:

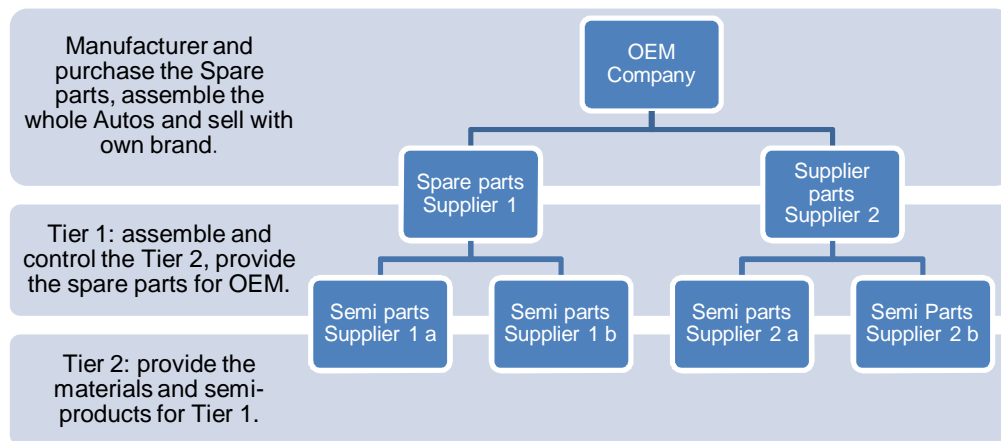


Figure 4 OEM supply structure

Original Equipment Manufacture is used widely in Automobile Industry. In China, over half of the companies rely on the OEM companies. From the structure of the OEM business, we can see the relationships between the companies. The whole supply chain is developing with the Automobile Industry moving on.

The situation of the OEM business is bright. At the same time, the management of the OEM structure is important. How to manage the supply chain? How to get the order and keep the relationship? These are what will discuss in the next part of this chapter.

- **Retail Packaged**

Retail Packaged products are focus on the aftermarket. It sells to the retailer or the seller of the repair and maintenance factory. These products are for replacement of the Auto. This part of business is stable and riskless. The company follows the make to order production system and transferred the most risks to the purchasing company. The situation of Retail Packaged Products is reliable and because of the updating of the products, the company should face the technical system refresh and renewal.

2.2.2 Organization analysis

In organization analysis part, there is an example of a Chinese automobile parts company. The name of the company is Ningbo Huade automobile parts Co., Ltd. And it is a very typical automobile parts supplier in China.

Organizational structure

The FIGURE 5 shows the Ningbo Huade company's organizational structure:

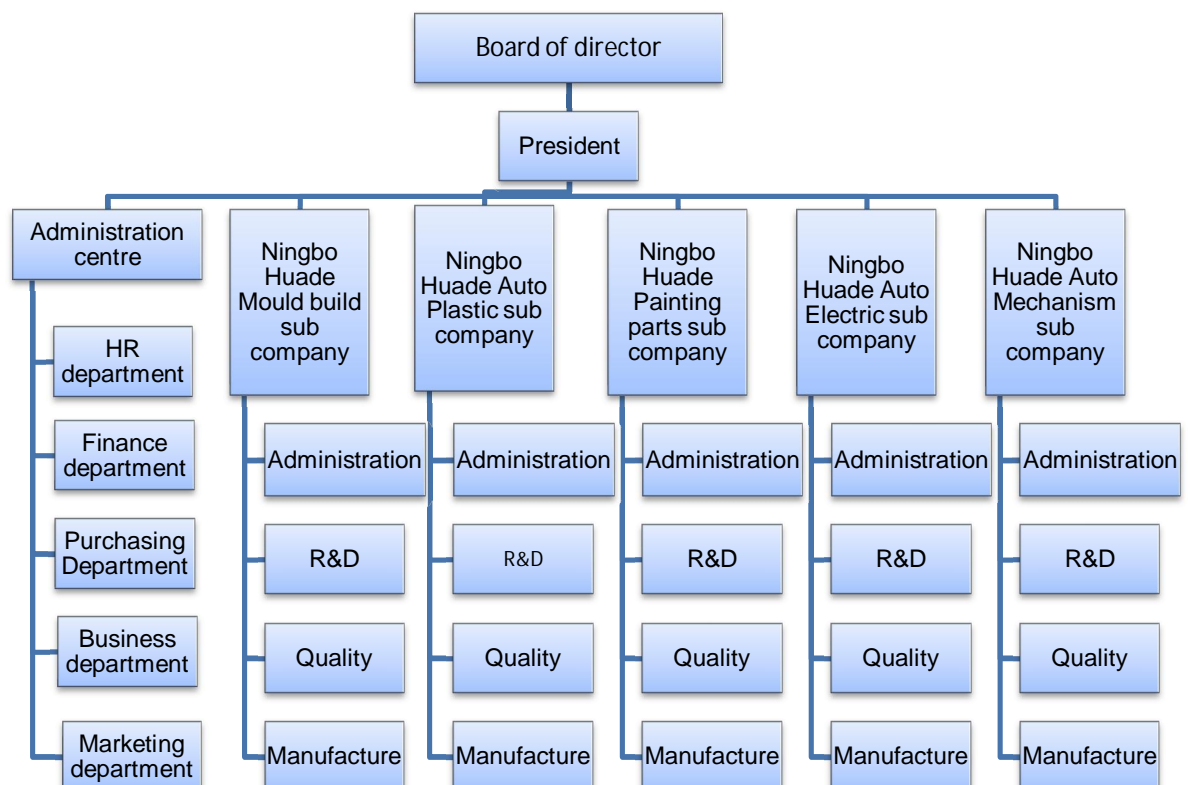


Figure 5 Ningbo Huade Organizational Structure

Ningbo Huade automobile parts company includes five sub companies which manufacture different products. Each sub company has the different production lines. We can see from the structure, the sub companies are administrated by Ningbo Huade Company. And Ningbo Huade automobile parts company controls the business finance and logistics.

Performance

Ningbo Huade auto Parts Company has the long term business with many famous auto manufacture companies (GM, VW, FAW, TOYOTA, NISSAN and so on). Ningbo Huade is their first tier supplier. Their products can be classified into five categories, they are: the auto electrical switches; central collector boxes; car door handle; automotive electrical components; automobile plastic decorations. Those products are manufactured by each sub companies. Ningbo Huade Company exports many of the products to many countries. Their international trade is still developing and improving.

Prospect

The prospect of Ningbo Huade auto Parts Company is cheerful. They have the stable Chinese automobile market and wide global market. There diverse products to satisfy different customers. They have the good cooperation relationship with many famous companies can upgraded their credits and brand.

Not only Ningbo Huade auto Parts Company has a good prospect and also many other auto parts companies in China. At the same time, the Auto parts industry becomes more competitive, the companies have to improve their technological capability and strategic management to stand in this field.

2.3 Management of the Value-added chain

The Value-Added chain could be understood in Automobile industry as the chain which the price of the products will be adding by steps. The chain goes from the raw materials, and the value will be added by each role of the value-added chain. The value-added refers to the costs of the products, for example, materials costs, labour costs, facility costs, and so on. As the FIGURE 4 shows the supply relationships between Auto Manufacturers and the two tiers suppliers. The competition in the supply chain is very serious. All the suppliers want to keep the business in the long term at the same time more new suppliers come to the market.

The price and the quality of the products are always the most significant evidences for the supplier selection. This means the Value-added chain is very important for the production control. The management of the Value-added chain has to be enhance and strategic.

2.3.1 Procurement

In the supply chain, each role provides the goods to the next stage. Purchasing is a very important department in any company. The purchasing people have to always consider about the advantages at the whole company's point of view. The main idea of procurement is costs saving and Just In Time supplying the materials.

The main steps of purchasing are:

1. Define the requirements of goods, the quantities and specification of the need, and also the delivery time of the goods.
2. Supplier selection depends on the price quality and the credits of the suppliers chose the most suitable supplier.
3. Contract; make the agreement of the deal. The agreement includes all the information about the goods and service.
4. Suppliers control, join the supplier's operation and control the producing time and quality, make sure the goods will delivery at the right time.
5. Evaluation of the supplier, depends on the performance of the supplier and give the feedback.

In the processes of purchasing, each step can affect the whole purchasing course. The purchasing department always has to make the purchasing plan beforehand. The purchasing plan includes and analysis the products depending on its cost and the risk, then define the specification quantity and the quality requirement. The supplier selection and supplier managing are also very important. The company has the responsibility to join and help the supplier with the technical problem and the manufacturing needs of the products. Then good communication and relationship can bring the better performance. The company has to know how to collaborate with the supplier and at the same time keep the long term business can also help to save cost and time.

2.3.2 Manufacture

No matter for the Auto manufacturer or the Auto parts suppliers, the manufacturing management is surely significant for the company. The company has to control the whole materials flow and information flow around the manufacture. And in the manufacturing part, the products are the main point.

Production line

All the factories have their own production line includes machining jointing and assembly and so on. The raw materials are processed by the workers and equipment. The materials, time, labour and equipment are used before the final products come out. The lean philosophy can be used in the entire production line. No matter for the raw materials inventory or the labour employment or the facility costs, the company should always plan and operate follows the lean philosophy.

According to David B. Grant, Douglas M. Lambert, James R. Strock & Lisa M. Ellram, 2006. Lean philosophy is the strategy to do the operations using less resources like people, space, stock, equipment, time and so on; and organize the efficient flow of materials in order to eliminate waste, give the shortest lead time, minimize stocks and minimize total cost.

Cost saving is obviously an important way to increase the profit. The Lean Philosophy can lead the manufacturing reduce the waste and create the benefit for the entire value-added chain.

Maintenance

The maintenance for the manufacture is mainly for the equipment and the products.

The equipment maintenance can generally follow the preventive maintenance. The scheduled maintenance can decrease the cost of repairing and improve the reliability of the system.

In the practical situation, the maintenance of the equipment is always controlled by the after service of the equipment company. So the company should also take care of the customer service when buy an equipment.

The maintenance for the products is mainly for the failure of products. It occurs by the human errors equipment mistakes and so on. The workers in the factory need to repair or make the failure product to reuse.

Quality Management

Quality management should always be focused on during the manufacture. The customers always care about the quality of the products. So the manufacture has to insure the quality of the products by a comprehensive quality management.

The total quality management can be used to manage the products. TQM is an approach to control the whole materials flow, from the people to the system to the programmes to the products. This approach can be used in any industry and it is a long term continuous improvement for the entire value-added chain.

As the main idea of TQM, the manufacture has to focus on the customer's requirement but not only the short term profit. Manufacturer follows the

customer need and specific requirement to produce the products. The quality of the products can be improved by the TQM. It is an efficient way to meet the customer need and make the long term business relationship with the customers.

2.3.3 Inventory

In Automobile Industry, the different companies act the different roles in the supply chain. As we know there are two tiers supplier under the Auto Manufacturer. And these three levels of companies have their different inventory management.

For the Auto Manufacturer, they usually predict the demand of the new products and analysis the Economic Order Quantity of normal products. In order to reduce the product risk and the inventory carrying cost. Auto Manufacturer has the strategic inventory system for their products. For example they have the advanced information system to control the inventory. Depends on the figures of the order history, they classify the items into ABC categories. They order the materials from the supplier by the latest demand from the customers.

The first Tier suppliers usually follow the Make To Order to reduce the risk of the production manufacture and the warehousing. The company only has a temporary warehouse to stock the raw materials which are going to use into produce and finished goods which are waiting for the delivery. They have some basic inventory system to manage their inventory for example ERP system.

The second Tier supplier usually acts the less motive in the supplier chain; they provide the component and raw materials for the Auto parts manufactures. Most of them follow the Make To Stock approach. But because of the instability of their demand and the raw materials, it is still risky if there is not a suitable inventory management system in the warehouse and

manufacturing line.

2.3.4 Delivery

The performance of the supplier is very important when the company is making the evaluation and selection of the suppliers. The delivery time is surely significant in the performance.

In Automobile Industry, the good delivery is usually by the transportation company. Because of the high cost of the facility and the schedule plan, Company prefer to hire the transportation company to share the risk reduce the cost and reach the better performance. Hence, the company can just focus on the own manufacturing course and make the production schedule. The typical transportation companies are called Freight Forwarder, Shipper and so on. More information about this part will be given and discussed later in the Outsourcing of the supply chain part.

3 OUTSOURCING OF THE SUPPLY CHAIN

3.1 Introduction of the outsourcing

The Globalization affects on every industry and forced on the companies to develop their business strategy. FIGURE 6(Source: 13th Annual Third Party Logistics Report, Dr. John Langley, Georgia Institute of Technology) is the Frequency of the Outsourced Activities on different regions in 2008, we can generally know the situation of the different Outsourced Logistics Services all over the world:

Table 1 Frequency of the Outsourced Activities on different regions in 2008

Outsourced Logistics Service	All Regions	North America	Europe	Asia Pacific	Latin America
Domestic transportation	85%	78%	92%	91%	70%
International transportation	81	69	89	89	70
Warehousing	72	70	73	75	62
Customs clearance and brokerage	65	66	57	81	56
Forwarding	52	48	44	70	45
Shipment consolidation	46	46	43	55	38
Reverse logistics (defective, repair, return)	38	31	42	41	34
Cross-docking	38	37	43	35	25
Transportation management (shipment planning and execution with one or more carriers)	37	39	38	36	25
Product labeling, packaging, assembly, kitting	36	29	42	37	35
Freight bill auditing and payment	30	54	20	21	14
Supply chain consultancy provided by 3PLs	17	21	15	14	14
Order entry, processing and fulfillment	15	12	14	21	17
Fleet management	13	9	15	14	15
LLP/4PL services	13	11	13	14	12
Customer service	12	11	10	12	22

In order to improve the efficiency and focus on their core business, the Global Auto Manufacturers lead the Logistics service providers to involve in their supply chain management. Outsourcing service has been improving and still increasing their developing speed in Automotive Industry.

3.1.1 Categories

Outsourcing can be divided into three categories depends on the service differences and the range of the outsourcing. The outsourcing service providers offer these services as products; the customers can select the product as their specific requirements and situation.

- Co Outsourcing: This is the basic service for the customers. The customers can buy the individual service for one operation. For example, company A already planed the time and route for packed goods. The company A outsources the trucks and drivers from the Transport Company.

This is the simplest operation of Outsourcing. The company has to plan and work with the service provider for one operation.

- **Partial Outsourcing**: This is the widely used outsourcing service in all the Industries. The Third Party Logistics Providers are the typical roles to offer the services. 3PL provide their solutions and operations for each part of the case. 3PL operate the specific service for the customers. For example, 3PL Warehouse & Distribution provider and the Freight Forwarder (the details can be seen in 3.2.1).
- **Full Outsourcing**: the definition of 4PL from Patric Jonsson 2008, it is an integrator that assembles the resources, capabilities, and technology of its own organization and other organizations to design, build and run comprehensive supply chain solutions. 4PL has the most specific service of Outsourcing. 4PL offers the end-to-end service which means they take the responsibility for the whole processes. The 4PL company will manage all the operations include plan, implementing, follow up and supervise and so on. They cooperate with the 3PL company to provide the service. The company can just hire the 4PL company to finish the entire work. Generally 4PL is the manager and 3PL is the operator.

3.1.2 Processes

The outsourcing process is very significant to follow when a company outsources a service from external organization. And it effects the performance of the outsource service.

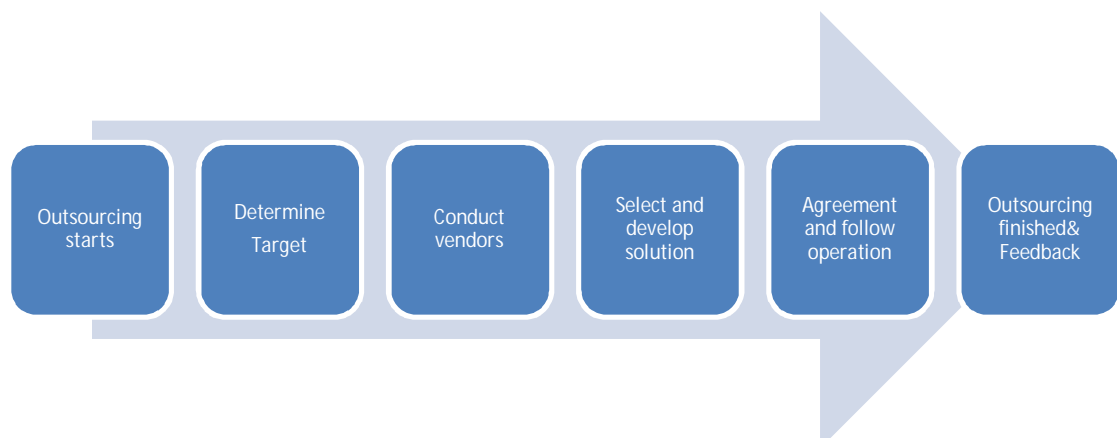


Figure 6 process of outsourcing service

From the FIGURE 6 above we can see the process of outsource a service from external company.

1. Outsourcing starts: The company has to decide whether the outsourcing service should be used or not. The evaluation of the cost and the analysis of the situation should be done before the decision. The Outsourcing will be starts if the company decided to use the outsourcing instead of operate by the internal company.
2. Determine the target: To outsource a service is as similar as to do a project. The company has to determine the target of this project, and this individual project has to support the company's strategy as the whole point of view. The target of the outsourcing could be quality improving or time saving or cost saving and so on.
3. Conduct vendors: The vendors will be contacted with the company. There are also the providers market on the internet company can also look for the vendors if they are operating the e-business. Normally the company will contact the long term relations partner company to work with and also search the new vendors who have better service, performance and price.
4. Select and develop solution: The vendor will be selected by their products (service products), credits, quality, and customer service and so on. In order to achieve the better performance of the operation, the company can discuss with the vendor about the specific requirement of the service. The vendor should also provide the service differently by the situations of each company. So the company can cooperate with the service provider to develop the solution and improve the work.
5. Agreement and follow the operation: After the solution decided, the company will negotiate with the service provider about the agreement. They will decide the price and details of the service and punishment and many more details in the contract. The vendor has the responsibility to operate due to the contract and the company has to also follow and supervise the operations.

6. Outsource finished and feedback: When the service provider finished their work, normally they will give a report or feedback to the company. The company will also evaluate the work of service provider. The operating time cost and all the performance will be evaluated and it is also affects on their business in the future.

3.2 Operations of outsourcing

As the cost price of the Automotive Manufacturing has been increasing, the cost of Logistics in Automotive Industry is rising up at the same time. All the Auto Manufacturers are trying to develop the logistics performance to improve their competitiveness in the market. Outsourcing service becomes their important solution for their supply chain management.

The Outsourcing services of the Automotive Industry are mainly three parts: Transportation, Procurement and Warehousing.

3.2.1 Transportation

Transportation in the manufacturing industry is not only for Just-In-Time. The supply chain has been developed more comprehensive, so does the operations of transportation service provider.

Freight Forwarder is used most widely in Chinese Automobile Industry. During my practical training, I had the chance to work with them. From a case that exports the auto parts from china to abroad; their business processes are generally as following:

i. Get order from customer

The Freight Forwarder is like to sell their production which is their Logistics service.

So first of all, the Freight Forwarder will get the order from the customer. By the order paper, the Freight Forwarder get the permission to transport those goods, and also with the Agreement for the security and duty. And there will be the information about this deal, like name of the goods and the departure place, the destination place, the date and the harbour.

ii. Make sure of the papers, goods and cases

All the papers are prepared by the customer. The paperwork is used for custom checking, the Freight Forward company has the duty to make sure and check it beforehand.

The paper work includes: **1.** sales invoice (with export companies' names, production's name amount and price) **2.** Case list (each case has a paper with the general information like gross weight and net weight and case number. The Case list is a form should be written with all the information about all the cases, like the name and the amount of the production in each case, and also the net weight and gross weight) **3.** Custom Declaration (this is to declare the tax with the goods, and it will be the Tax refund to the company which export the goods).

iii. Order the place of the ship

Before transport the goods, the Freight Forwarder need to contact the shipping company and check the time for the ship. Calculate the time with transport the goods to harbour and import and export custom checking and transport goods from the other harbour to destination, then decide the shipping time and order the place for the goods.

iv. Transport to the custom

The Freight Forwarder could use railway or road to transport the goods to the custom. And this should be just in time; otherwise the custom checking might be delay or miss the ship and maybe the warehousing problems.

V. Pass the exports custom and transport it

The custom checking takes one day or two, it is depending on the products. Normally there will be generally check, but there is about 0.1% -0.3% probability to check all the cases in detail. After checking, the goods will be sent to the harbour to wait for the scheduled ship.

Vi. Imports custom and deliver to the destination

The goods arrive the harbour; the custom of destination country will check the goods. The popular service nowadays Door to Door Service will send the goods to customer on hand. So there will be the partner who is Local Freight Forwarder Agency get the goods and freight to the destination, or the Freight Forwarder Company will hire other transport company to send the cases to the destination.

The more comprehensive service they offered the more companies will join this outsourcing operation. The company can just supervise the service provider and follow the order online.

Instead of expensive facility costs and labour cost the company saved the time and reduced the delivery delay risks.

3.2.2 Purchasing

As the Global Supply Chain is expanding more and more widely all over the world, the materials flow is controlled by each company quite seriously. The cost quality time issues are always considered when manufacturer think of outsource the materials. The procurement is obviously very important in Automotive Industry. Auto Manufacturers are trying to reduce the cost and improve the efficiency all the time, but in the meanwhile, the risks are contained. Hence, outsource the materials is not as easy as it was before. At the same time the market of the suppliers is more competitive.

In the Automobile Industry, most of the materials flow is the spare parts. As much research has been reported that U.S.A and Japan are the two biggest spare parts supply countries, the Chinese suppliers are also improving with

the surprising speed and will be most likely beyond the first two.

The strategies of procurement should be managed in the company. And the materials purchasing need to connect to the products manufacturing at the same time.

- **Product analysis**

With the Lean philosophy has been used in the manufacturing process, the manufacturers also analyze the different products by the risk analysis and financial analysis and market analysis. These analyses of the products will not only support on the production demand predict and also the materials purchasing plan.

The analysis could be done as portfolio. Which products are new and riskless, or which products are risky should all be analyzed. The purchasing products portfolio FIGURE 7(Source: from Arjan. Van Weel, Purchasing& Supply Chain Management, P150) can be shown as following:

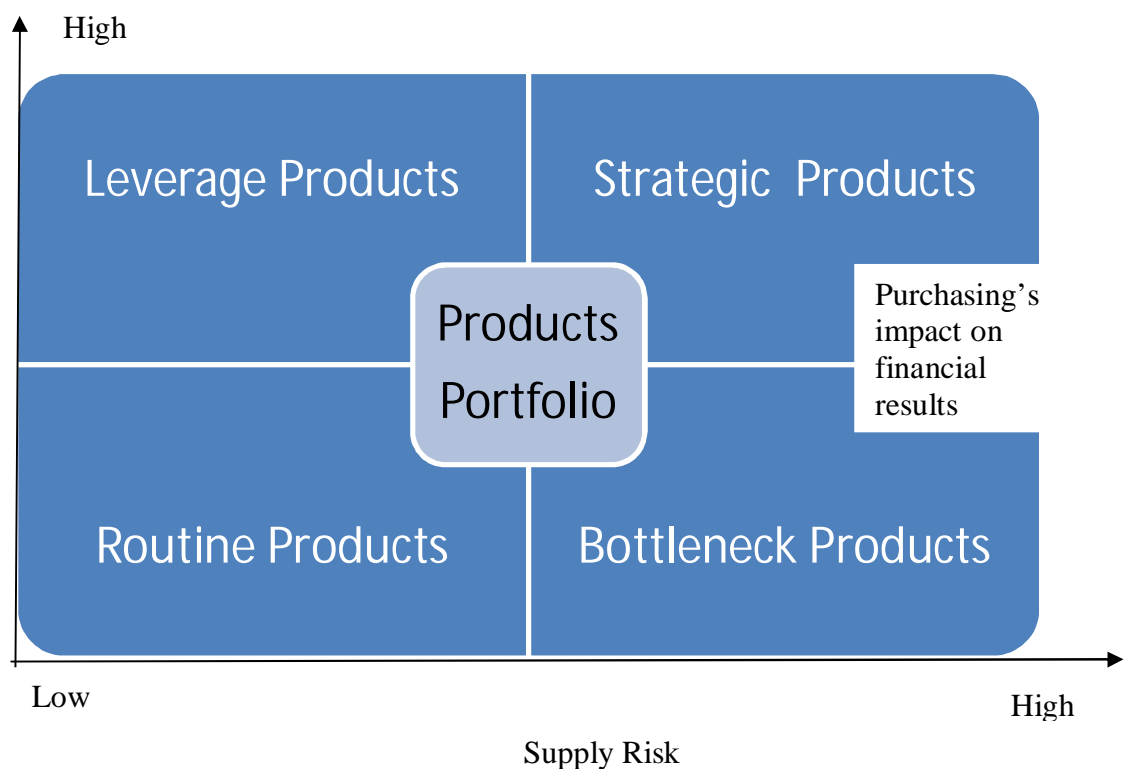


Figure 7 Purchasing Products Portfolio

With the analysis of the products, the company can deal with the materials

purchasing suitably and select the supplier better depends on the requirements.

- **Integrating Purchasing**

In order to develop the Purchasing to support the company's strategy, The Integrating Purchasing is useful for the strategic purchasing plan.

In the supply chain, the main roles are supplier manufacturer and customer, in the market; the main roles are customer seller and competitors. Combined the important roles, there are customers supplier manufacturer and competitors. The integrating purchasing will be considered and analyzed with all the roles to improve this strategic management.

Here is the strategic triangle as the FIGURE 8(Source: from Arjan. Van Weel, Purchasing& Supply Chain Management, P145)

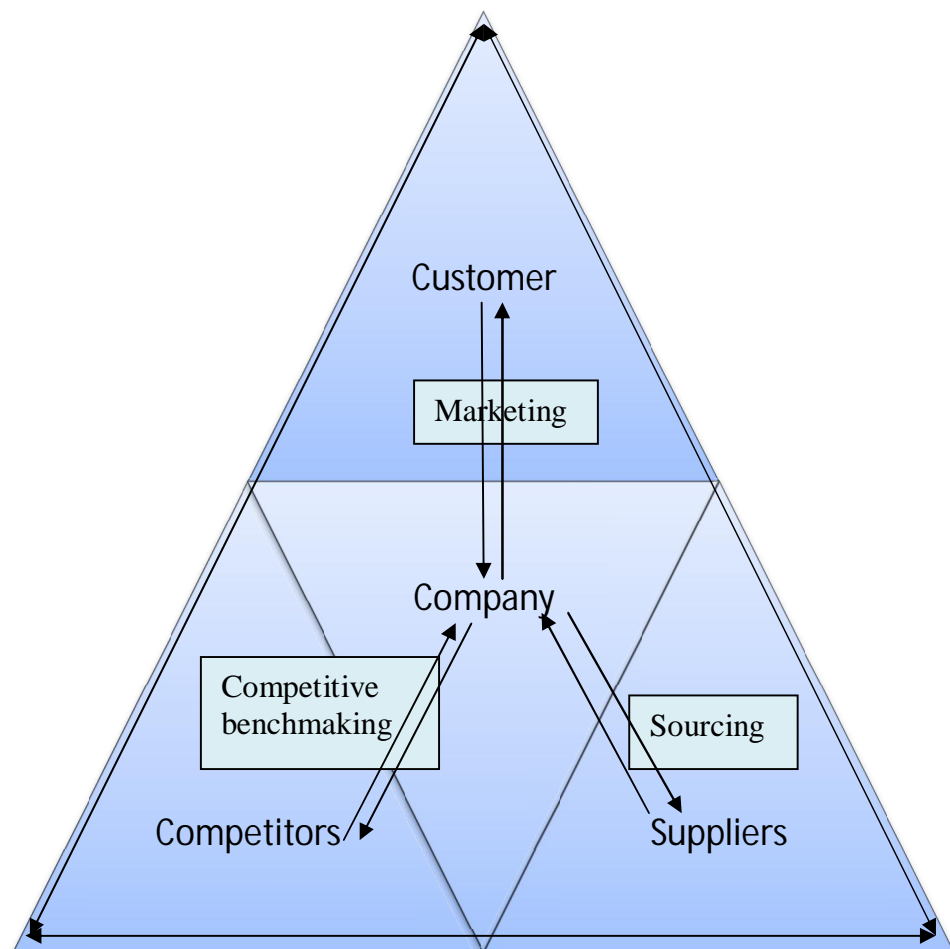


Figure 8 Strategic Triangle

From the Figure 8 we can understand that Company always has to consider about the Customers Suppliers and Competitors to enhance the strategy. The Company is at the centre of the triangle and other three roles at angle all connected to each other. In order to manage this relationships and business between, there are also some points can be followed to make the Purchasing operate efficiently with better performance.

- Customers: the customers are always the first to consider no matter in which area. The products are developed by different focus, and the target group of the products has to be decided beforehand. So this target group in the market is always the main point for the products. The company has to always understand the customer's need and develop the technology and service to achieve them.
- Competitor: To know the competitor is another significant point to be strategic. The company needs to analyze the competitor's product and their strategy in order to find own lacks to correct and own advantages to advocate. In this way, the company can be competitive in front of the competitors in the market.
- Suppliers: The good business relationships can improve the performance of the materials supply. In the long term, supplier will give the better service and price to the company.

3.2.3 Warehousing

As we know the Third Party Logistics Companies has been developing and improving very fast and integrating. They offer their customers the comprehensive logistics service for their materials flow.

For the Auto Spare suppliers in China, they follow the make to order production system, so normally they do not have a certain warehousing

management for their warehouse. What they have is a temporary warehouse to stock. When the batch size is bigger than the capability of the warehouse, the company need to find the way to solve the problem.

The large Freight Forwarder Company also offers the warehouse for the goods which are waiting for delivery. If the stock time of the finished products is short so the company can use the warehouse of Freight Forwarder.

The company may also outsource only one service such as the warehouse relocation, pack and move service, loading and unloading service and so on. These services are offered when the warehouse of the company needs to be rearranged or the equipments are not available. The purpose of this one service outsourcing is to solve one or few problems in the warehouse.

In order to achieve the better performance of the inventory control. There are also the professional warehousing company offer the inventory management service which includes the warehouse analysis and stock control and so on.

There are many Third Party Logistics Company also provide the distribution network service with variable locations. The company that need to outsource the whole processes of the warehousing service which includes the warehouse pick-pack and inventory management and other related activities. The company will take the responsibility of control and manage all of those warehousing and distribution issues.

The company which outsource the warehousing service from 3PL company can always get the good inventory control and improve the warehousing performance.

3.3 Benefits of outsourcing

When the companies start an operation it might be support their company's strategy. More companies use the outsourcing service in order to use the

internal organization facility, it means the outsourcing service can support their strategy and increase the profit or efficiency. The FIGURE 9 is the 3PL revenue by Industry from Fortune 500Global; we can understand outsourced service stands a very important position in each industry.

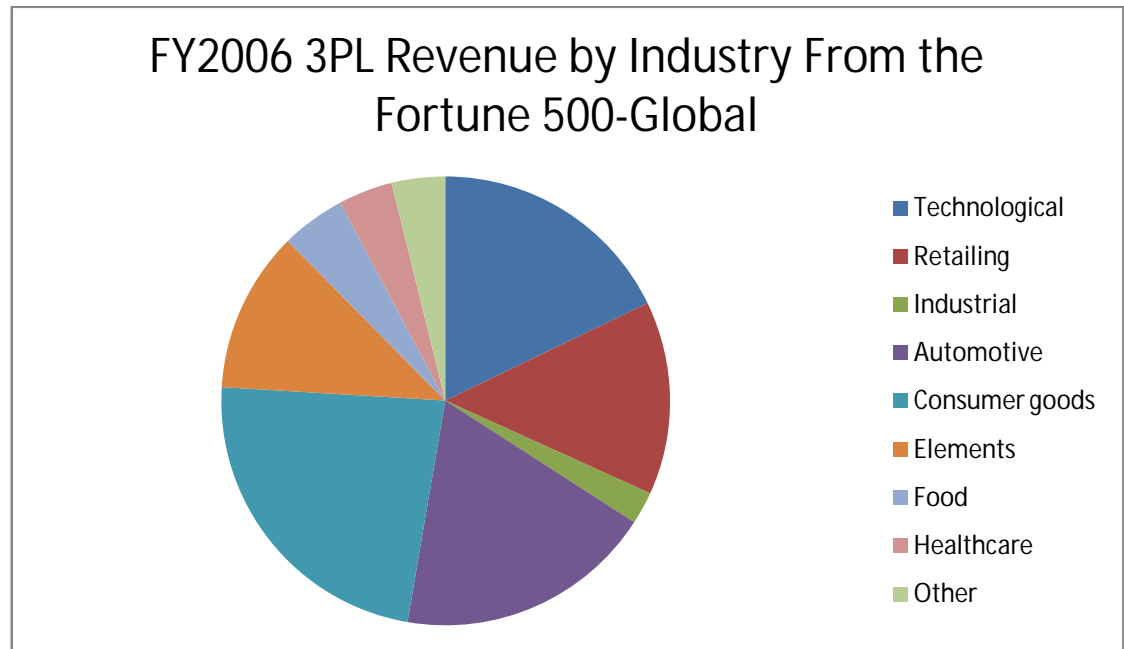


Figure 9 3PL revenue by Industry from Fortune 500Global

Obviously, Outsourced services bring the company many advantages so they spend lots of money on these. There are some points of the benefits of outsourcing listed below:

- The company can focus on their core business
- Reduce the risks of delay of the materials flow
- Improve the efficiency
- Save time and resource
- Total operation cost saving
- No extra facility and labour cost
- Better performance
- Improved the customer service
- Improved the quality
- Enlarged the business
- Enhanced the capacity

3.4 Partnership Strategy

In order to achieve a better performance of the total work, the company has to cooperate with the outsourcing service company and also collaboration with other companies.

The partnership strategy should be made to achieve a goal which follows the organization's strategy.

3.4.1 Collaboration

In any industry, the competition is very serious to all the companies. But if the competitive company has the same goal to reach, it would be nice to build a good partnership with them and improve the operation.

There are some situations of outsourcing that the company might need to collaborate with competitive companies.

- Procurement: when the company is outsourcing the materials from some companies. Because the balance of the order quantity and the price, the company might not get the price as good as the quantity limitation. At this time, the company could search the information in the same area. If the company can collaborate with other companies to order a bigger quantity of the material, both of them can get the lower prices from the supplier and the supplier can also get a high profit with the order quantity. In this case, the collaboration can be managed by two competitive companies. They could reach the same goal that purchases the certain goods with low prices. The collaboration would be successfully that all the roles in this business can get the benefit, and this is beyond the win-win strategy but all-win.

- Vendor selection: in the case of vendor selection, the company outsource the service from another area or industry, and it won't affect the competitiveness between two competitive companies. Hence, some certain information could be shared between the companies. For example the credits of the vendor and the performance of the vendor, this might help a lot with the vendor selection. And this collaboration can be operated with each other all the time to promote cooperation.

3.4.2 Cooperation

The cooperation with the service company can affect the work performance in total.

- Join the operation: even though the contract will announce about the duty of each role, it is still the company's duty to make sure all the operation is processing well. The service company shares the risks with the company; on the other hand the company share the responsibility of the operation. The company could join the outsourcing operation in order to enhance the work and the management of service company.
- Help with the technical issue: when the service company meet the technical problems, host company should send the specialist to the service company in order to solve the problem more effective and fast. In this way, the company can get the better result from the service company. With the help and cooperation, the service company could improve the speed and quality for the company.
- Supervise the operation: In order to be familiar with the operation, the company should always supervise the service company instead of set the service company finish everything alone. The company should control the operation in general and always know the latest information and situation of the operation. The good supervise can improve the operation and the

management.

- Sufficient communication: The host company has to communicate with the service company sufficiently. The host company has to make the service company understand their requirement and condition. The sufficient communication can help the service company clear their goals and emphasis on the main points.
- Optimize the relationship: The good relationship can be made during the cooperation. The good relationship can also help to promote the cooperation. In the long term, the business can be made by the good business relationship.

The good cooperation can achieve the Win-Win Partnership and business. And the host company and outsourcing service company should both keep on improve the cooperation with each other to enhance the partnership.

3.5 Customer service

At the outsourcing service provider's point of view, the customer service is apparently very important to their business. They provide the service to their customer is as similar as they sell their products... In order to understand the customer's needs and provide better products, we can firstly have a look how the customers measure the customer service that offered from the provider. There some points that is important:

- Reliability: The service provider should be reliable. The contract will announce about the security issues to make sure the information flow will be safe to the service company. The service should be reliable as they guaranteed. For example, the goods during the delivery or stock in the warehouse by the service provider, this operation should be reliable that the customers do not need to worry about the safety or over damaged.

- **Efficiency:** The efficiency of the operations will be surely considered of the customer service. At the customer's point of view, the operations of service company should be more efficient than themselves so they would outsource the service instead of wasting time. At the same time, the quality of the operation will be measured as well as the work time.
- **Cost:** The cost of the service is obviously an important factor about the business. During the measurement of the operations, the company will find out whether the service provider has done their work right with the suitably facility and management. The price could be measure with other service providers. To consider about the long term business, this is the essential measurement for the customers.
- **Communication:** During the operations, how the service performed can be also measured by the communication. If the service company could have the good contact with the customers and make customers pleasure with their work. The good communication can gain the impression about their service, whether they supervised the operation properly or not and how they operate the service for the customers. And the service company should always understand the customer's need by communicate with them.
- **Adaptability:** Each customer has different situation and requirement. The service company has to try their best to achieve them. With the understanding of customer, they can arrange the operation for the customer with variable service. The adaptability will be measured if the service company has achieved the different customer requirements.

With the understanding of the customer's measurement, the service provider should always think about the customer's benefit. The good customer relationships will be built with the good customer service.

Customer Experience Management is a strategy to satisfy the individual customer with different requirement. In order to move the customers from satisfied to loyal and from loyal to advocate, the management strategy is focus on the operation and service design and processes of the business to reach

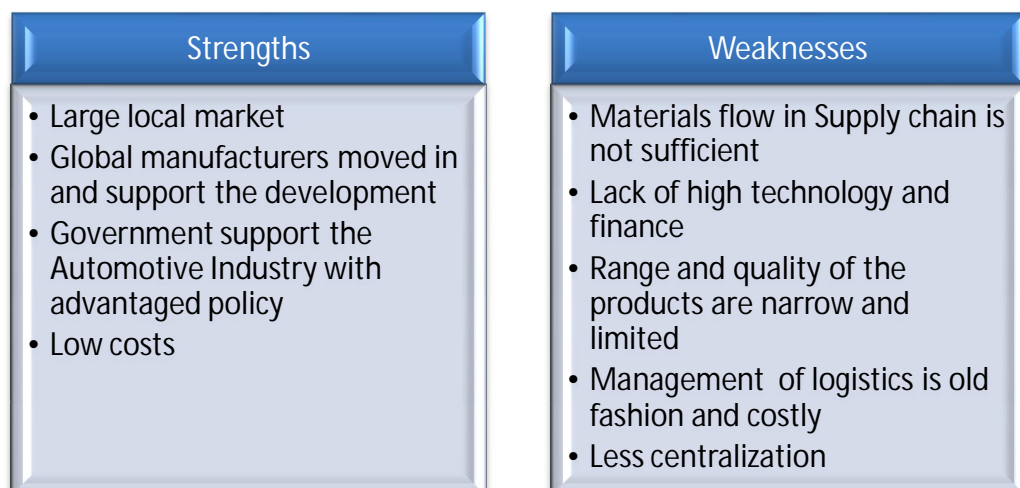
the customer's needs.

Service provider company could always follow the Customer Experience Management in order to reach the high level customer service. The more consideration of customer the better performance could be made by the service company. To make the customer a good experience with the service can surely improve the business with them. At the same time, the customer will be loyal and helpful to the company.

4 ANALYSIS OF THE OUTSOURCING WITH EFFECT IN AUTOMOBILE INDUSTRY

4.1 SWOT analysis of Chinese Automobile Industry

As we know that the Auto spare parts industry is still developing in China. Because of their important position in the Auto Manufacture Supply Chain, these supply companies affect the whole Automobile Industry very fundamentally. In order to analyze how the Outsourcing Service affects on the Automobile Industry, firstly we can understand the Automobile Industry deeper and further. Set Chinese spare parts industry as the example, and FRIGURE10 is the SWOT analysis of it:



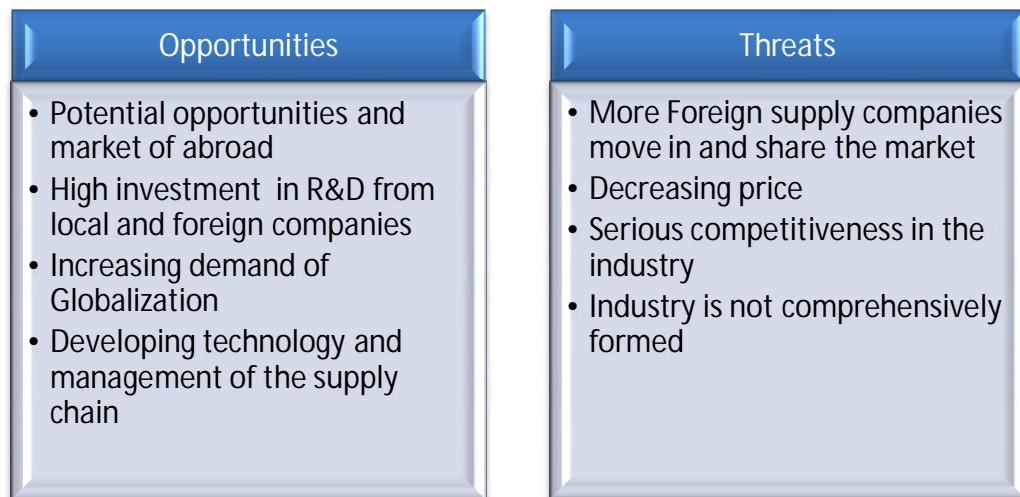


Figure 10 SWOT of Chinese spare parts industry

From the SWOT analysis of the Chinese Auto spare parts Industry, we found out that the Outsourcing Service can help with many points.

To consider about each aspect, this industry has the strengths that Large market and expecting development from different supports, but the weaknesses include the materials flow in the supply chain is not favourable enough for the developing; the logistics cost is high; the technology is not advanced. With those problems, the outsourcing service could help to solve the Materials flow problem and at the same time the manufacture companies could focus on the company main business strategy and development. The Auto spare parts Industry has the Opportunities that the potential market abroad and increasing demands of the global business, and there are also the certain threats inside. The Outsourcing Service could help to support the development and market research and information share to overcome the Threats.

4.2 Facts and challenges

In the recent decade, Outsourcing has become one of the most strategic management of Automobile Industry. China as one of the biggest Auto supplier country in the world, which the Automobile Industry has a really bright prospect to look forward.

From Table 2, we can see the export value of Auto parts to different countries in November.2009:

Table 2 Auto parts export value of products by country list(Nov.2009)

Rank	Country	Amount(US \$)	Percentage (%)
1	America	656451200	23.35
2	Japan	378004288	13.45
3	Korea	145027872	5.16
4	Germany	86297568	3.07
5	Holland	85034400	3.02
6	Australia	80315248	2.86
7	UK	77163200	2.74
8	UAE	72287120	2.57
9	Canada	62559024	2.23
10	India	55928420	1.99
Total		1699068288	60.44

With the huge amount of the export value, Chinese Automobile Industry has to be reliable and flexible to face the Global Market. At the same time, the Outsourcing Services also have to meet the different challenges according to different situation.

- **Off shoring VS. Outsourcing**

As we know that China has the huge amount of resources which with much lower costs than the Western Countries. Many Auto Manufacturers decided to open the sub factory to offshore in China in order to save the costs and share the Chinese market.

Many Auto parts suppliers in China does not have a certain popularity as the famous companies. At the same time, many Auto Manufacturers prefer to control their supply chain systematically. In this situation, how to stand firm in this competitive market, the Chinese suppliers have to manage their business

in a strategic way.

- **Service variety**

As FIGURE 11 shows above, the export value of Auto parts is very high. Moreover, the production variety is also wide. From FIGURE 13 we know that there are more than ten categories of the products which have different brand size and style to export. This facts occurs the complexity of the Outsourcing services. No matter for procurement or warehousing or transportation services, all these services should be flexible and adaptive for different situation. This is obviously a big challenge for the Outsourcing provider. To offer the different service and arrangement for different customers, the Outsourcing provider has a long way to form a comprehensive service system.

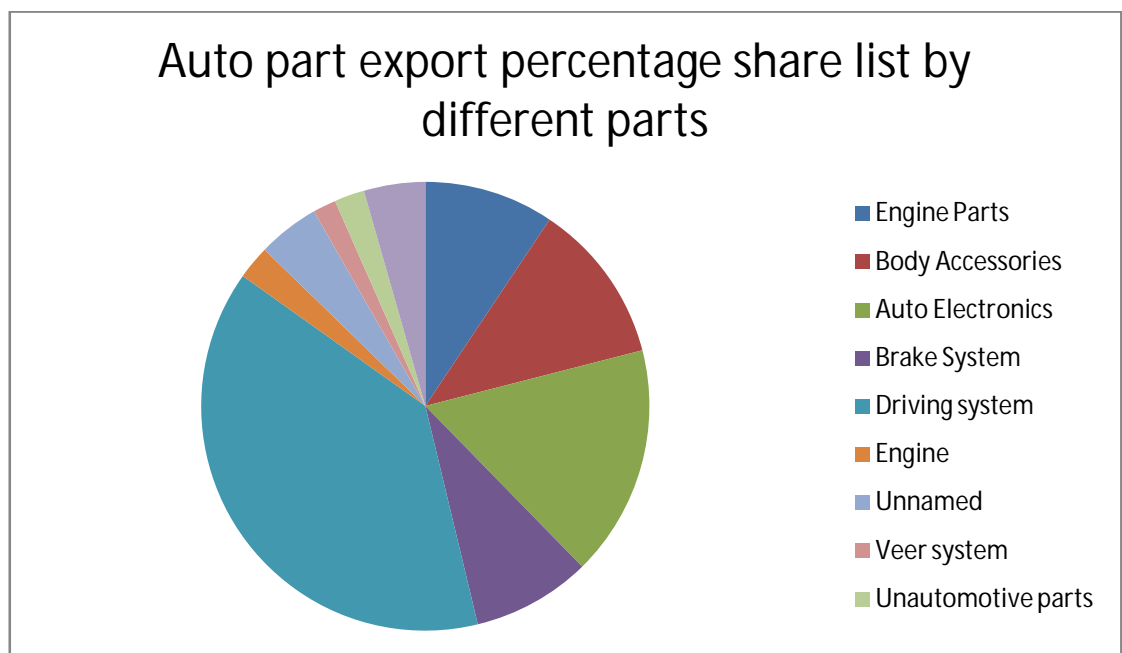


Figure 11 Auto parts export percentage share list by different parts

- **Interaction**

For a service company, the interaction with different customers is obviously important. Especially the Outsourcing service provider has to interact with the customers during the whole service processes to arrange their supply chain and materials flow.

From the project starts, the service provider has to collect many related

information for the customer. In order to understand sufficiently of the customers' needs, service provider has to prepare the preferable plan for the customer and understand customers' reflection and thoughts. During the arrangement and the development of the project, the service provider might need to visit the company. The warehousing checking or products packaging, container arranging and so on, those activities are important for the project implement.

The way to interact with customer and the adaptability and agile ability for the customers needs are quite challenging for the Outsourcing service provider.

- **Language and Culture Barrier**

As the Globalization effects on every corner of the world, the barriers are always existent in the international business.

For Outsourcing services, the international business is still potential. But because of the culture and language differences, the communication between people is not as easy as before. If the outsourcing service provider would like to open their international business in a good way, they have to offer the suitable services for different customers. With the culture understanding and language skills, the service might be easier and better.

- **Competitiveness**

Nowadays, there are more and more Outsourcing Service Companies all over the world. All the companies are trying to offer the integrating services to customers.

In order to stand firm in this competitive market, the Outsourcing Service Company has to overcome many problems and meet those challenges. Simultaneously, they have to form their service system and find their own position and focus of their business.

4.3 Costs analysis

Before the company decide to outsource a service from other companies, surely they have to make the cost analysis of the operation in order to evaluate the accuracy of outsourcing. Activity-Based Costing management is a method to help the organization to analyze and make the decision.

According to Alan G Dunn, *“Activity-Based Costing is a managerial accounting system which determines the cost of activities without distortion and provides management with relevant and timely information. It does not represent just a new set of overhead allocation rules or techniques to value inventory. ABC represents a way to look at operating costs and provides methods to dissect the underlying activities, which case costs to exist.”*

Table 3 is a form (Source from P.140,Make or Buy Decision: Format, Wiersema,1995, Activity-Based Management) which the company could use to analyze the cost:

Table 3 Make or Buy Decision

Cost allocation	BUY	MAKE
Initial investment:		
Equipment costs	N/A	€__
Tooling purchases	N/A	€__
Setup cost	N/A	€__
Learning costs	N/A	€__
Total		€__
Fixed overhead:		
Occupancy	€__	€__
Indirect labour	€__	€__
Other	€__	€__
Total	€__	€__
Variable:		
Direct material	€__	€__
Material-related costs	€__	€__

Direct labour	€__	€__
Labour-related costs	€__	€__
Normal inefficiency	€__	€__
Variable indirect labour	€__	€__
Equipment-related costs	€__	€__
Other operating costs	€__	€__
Total	€__	€__

Based on the cost of each activity and the comparison of the total costs, the company could decide whether outsource or not.

4.4 Time-based performance

In most of the cases, the outsourcing operations could be implementing while the other operation is going on in the company.

Each project has the preparation; plan; implementing and closing processes. Outsourcing services could save this time in different ways.

- **Professional analysis**

Because the outsourcing company has the specialists for the project analyzing. Instead of a department of the company spend the time on the analysis without enough facilities and knowledge. The outsourcing service providers can always give the professional analysis and minimum the operational risks. They have their equipments or IT systems which can support their operation. For example the Warehousing Management, the outsourcing company can offer the different inventory management for different situation. They can use the ABC-Analysis; ERP system and so on. The company does not have to spend time on each process but get the right solution of the project from the outsourcing company.

- **Familiar work**

The outsourcing providers have much work experiences and quite familiar with the work. They always care of the news in the field. They have sufficient information and network to do the project. For example, Freight Forwarder companies can offer their trucks and drivers and scheduled plan, their information is always latest and accurate. Depends on their information they can easily analyze and operate with the project.

Hence, compare to the company use time to search information and contact people and so on, the service company will always offer the operations of the entire process for the company.

- **Effective operation**

As I mentioned above, the outsourcing service providers have the enough facilities; sufficient work experiences professional analysis to support the project.

In Logistics Management, we always follow the Just-In-Time principle. To achieve the target that work the project just in time and efficiently, that is not easy for a company which is in this area. For the company, they can use more time to focus their core business. With the firm fundament of the organization and strategic business management, the company could be competitive in the field. On the other hand, if this project is not a part of their core business, the company should not separate the resources and may not get the expected result.

The Outsourcing Service Provider can offer their operation which is their core business in the field. And obviously they are working their core business more strategic than the unprofessional company. Moreover, they must offer the best customer service to their customer. Hence, the company can ask the outsourcing service company to follow their requirement as they need. The operation could be more effective then.

4.5 Risks Management

As the coin has two sides, a company outsourced a service from outside the organization can improve the performance and may also bring some risks at the same time. There are some risks might be carried by the outsourcing service:

- **Complex process between two companies**

The process to work a project is continuously step by step, but there is always the unexpected situation happens when they are operating the actual work. The company may have proper the contract and plan with the outsourcing company. That is hard to predict what will happen later in the next steps. When the changes have to be made in order to face the different emergency problems, those changes will definitely occur a series of documentation changes and operation changes. The process to rearrange the work between two companies is not as easy as to rearrange inside the organization. The complexity will take time and cost money.

- **Unstructured team work**

When outsource a service, it means two companies will work together as a team. The different companies have different organization culture; the combined team might not harmonic enough.

Two companies have their cooperation strategy, but consider about the actual work is implementing by the employees who do not know each other; the work might not operate as smooth as before. Because of the unfamiliar relationship between team members, they will spend time to communicate and always consider a lot before the operation. In that case the time might be waste in the new team.

- **Uncertain value**

The outsourcing service provider could introduce and promise their service as the advertisements of all products in the market. Even though they have a certain contact, the value of the service is still uncertain. As the two risks

mentioned above, the performance of the work is hard to measure beforehand, which the different situations will occur different problems. Further, the outsourcing company's performance will affect on the whole performance of the company, this uncertainty is a big risk for the company.

- **Security problem**

When the two companies are working together for a project, the information sharing is necessary and important. Even they always have the agreement which includes the security issues, it is still unsure for the information flow. The security problem is potential during the business.

Risk management is indispensable for the company no matter for their outsourcing operation or supply chain management. When company realized the risks, they need to reduce the risks as much as possible by strategies. The process to overcome the risk is: 1) Identify the risks; 2) Analyze the risks; 3) Define the options; 4) Decide the resolution; 5) Implementation.

According to the risk management, the company can achieve the better performance from the outsourced company and force the outsourced company provides the better service.

5 SUCCESSFUL AUTOMOBILE COMPANIES AND THEIR OUTSOURCING STRATEGY

In this part, I would like to introduce two Chinese companies which are successful with their outsourcing operation. One company is the Auto Manufacture Beijing Hyundai, the other one is the auto spare parts company Ningbo Huade. In these two cases, we can see their strategic management of their organization and logistics.

5.1 Beijing Hyundai

Beijing Hyundai Auto Co., Ltd is founded on 18th October of 2002. This company is invested by Beijing Automobile Investment Company and South Korea Hyundai Motor Corporation.

From they started their business till 2009; Beijing Hyundai has become one of the most popular Auto Manufacturers in China. They had 570 thousand sales in the passenger autos market, and that was the NO.4 in the ranking of China. In the last seven years, Beijing Hyundai has been developing with the surprising speed; from their 5 thousand sales to 57 thousand sales. But it was not formed by chance or miracle, we can analyze their management of their company then we will find the successful and advanced strategy.

- **Outsourcing service operations in the company**

During their establishment period, they outsourced many companies to supply the spare parts for auto producing; they cooperate with other transportation company to support their materials flow. With all those processes operating at the same time, Beijing Hyundai used very short time to work their business on track.

Beijing Hyundai has about 500 Sales & Service network all over China. In order to give the financial support each branch, Beijing Hyundai built the business relationships with Chinese banks and make sure each agency has the sufficient cash flow to make the business. They also cooperate with the Third Part Logistics companies to manage their products stock and delivery all the products to each distribution.

The company used Outsourcing services from their organizational fundament to the products end-users, Beijing Hyundai was very successful with their strategic operation and also so business management.

- **Outsourcing Management**

Since the Outsourcing services acted the significant role in Beijing Hyundai's

business, the organization has to improve their management to keep the business relationship and ensure their partners' work. The performance of partner company will affect on the whole performance of Beijing Hyundai company, hence the company has a standardized management for their service suppliers:

1. Supplier assessment: Beijing Hyundai has their Five-Star Assessment and SQ-MARK Assessment to evaluate their supplier's performance. These two assessments are always made by another company which is professional and fair for the evaluation. The evaluating company will give the assessment report based on these aspects: a, research & development ability; b, quality & environment management; c, producing processes management; d, cooperation management; e, correction and protection implementation, and so on.
2. Development: depends on the assessments, Beijing Hyundai will ask the supplier companies (assessments are lower than three stars, or fail in SQ-MARK) to correct the disadvantages. If the suppliers who failed twice in the assessment, they will stop the business with those companies. Beijing Hyundai also keeps the frequent communication and negotiation with the suppliers to discuss the new products with the technical problems and so on.
3. The Win-Win target: Beijing Hyundai has the high level of standards for their suppliers and also high self requirement for their cooperation. Beijing Hyundai has been trying to improve their business with the outsourced companies, which is based on the Win-Win target. Their aim is not only to make the profit for own company but also make the benefit for their partners.

5.2 Ningbo Huade Auto spare parts Company

Ningbo Huade auto spare parts Company is one of the active Suppliers in China. In the part 2.2.2, there is the organization analysis of Ningbo Huade Auto spare parts Company.

As the typical auto spare parts supplier, Ningbo Huade has their strategic way to manage their supply chain. One of their most important strategies is cooperate with the outsourcing company and operate the materials flow together.

About seven years ago, Ningbo Huade was operating their warehouse in a very old traditional way. They follow the first in-first out rule but they did not have a system to manage the stock in their warehouse. When the problems came, the company decided to outsource the warehouse operation from a logistics company which can plan and help to manage their materials flow.

- **Old way of warehousing**

Because the old traditional way was usually implemented by workers and without any IT system, there were many mistakes in the items inventory. The human errors are difficult to avoid.

The system of warehouse was nearly none and they do not have a certain strategy for the items category and production plan.

The time took really long for the worker's handling operation, and each operation has to be done one by one. The time was lost and wasted during those operations.

- **Advanced Inventory Management**

The outsourcing company send the specialist with the group to Ningbo Huade company. They checked and measured their warehouse; they collected the information about the items; they analyzed their production line.

With their analysis of Ningbo Huade's situation, they made the plan for their warehousing management. The outsourcing company suggested using the

ERP system to manage the items, and they rearrange their warehouse by categories which depend on the orders history. They also suggested the company to combine the Purchasing department into the manufacturing department, which can manage their materials purchasing plan related to the production plan.

Since Ningbo Huade outsourced the logistics service for their materials flow management. The efficiency, cost and time have all saved a lot. The most important is Ningbo Huade has the more advanced way to manage their manufacturing line. In that way, the company was improved more systemic with the better performance.

5.3 Summary and comparison of the cases

Beijing Hyundai and Ningbo Huade are two different roles in the Automotive supply chain, and both of them are very significant at their positions.

As the Auto Manufacturer, Beijing Hyundai has a certain system to outsource the services. Their strategy is just focus on the development of Auto design and products research; outsource the operations which are not important for their core business. Moreover, Beijing Hyundai has the supplier management which can ensure the outsourcing operations and improve the value of the outcome.

Ningbo Huade is the supplier for the Auto Manufacturers. They do not have a large scale of the supply chain as the Auto Manufacturers, but the aim of their outsourcing operation is almost the same as the Auto Manufacturer's. They also need to focus on their core business and at the same time improve their efficient.

Because of the two companies have their different requirements; they have to operate their outsourcing strategy differently and flexibly. Auto Manufacturers have to systemize their supply chain with the outsourcing service inside,

because the company is on a large scale, one small risk or mistake may occur a serious consequence. At some point of view, the Auto Manufacturers are relying on the suppliers; their outsourcing strategy can change the whole supply chain.

For the auto spare parts companies, outsourcing service has been treated differently. Because they do not have the ability to contain the big risks, so they have to control the outsourcing services as YES or NOT more than GOOD or BAD. Table 1 is check-list example for medium size companies to decide whether outsource or not.

Table 4 Outsourcing decision check-list

Requirements	Self-made	Outsource
<u>Manufacturing</u>		
1, High technical requirement and specific control		X
2, High investment for facility and labour		X
3, High quality requirement and standards level	X	
4, Intense security of the products	X	
<u>Marketing</u>		
1, Large demand of the products		X
2, Increasing market position		X
3, Wide variety of products		X
<u>Management</u>		
1, High risks of security ...	X	
2, Complex supply chain control		X
3, Core business centralization		X

Each company has to plan the check list depends on their own situation. And when they decided to outsource, the outsourced companies have to fulfil all the requirements which the company needs.

6 CONCLUSION

In conclusion, the effective outsourcing operation could surely improve the supply chain management of Automobile Industry. The cost could be saved and the time could also be accurate if the company used the Outsourcing correctly.

As the analysis of the Automotive Industry above, we all know the risk and the benefit are consisted at the same time in this industry. Depends on the different organization situation, the companies have to use the outsourcing operation differently. No matter the product manufacturing; materials flow; delivery of the goods; these operations are all considerable for the company.

Before the decision of the outsourcing, the company need to consider the details of the production and follow the company's strategy to analyze which way is better and suitable for the operation. The company need to evaluate to outsource or make in-house; if outsource, then how to select and implement.

The main idea of the advance is of course to make the profit. For the companies, to decide the Outsourcing operation is not only for one deal and also in the long term. The partnership with the co-operators need to be managed well and positive. The good business relationship could also make the whole operation with better performance.

The effective outsourcing could help the companies stand firm in these competitive Automobile Industry, such as the Auto manufacturer Beijing Hyundai and spare parts supplier Ningbo Huade company. With the example in this thesis, we can also see the successful and effective Outsourcing could develop and improve the whole company and their supply chain.

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