Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

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Cost Reduction in the Automobile Industry
—— Case Studies of the Chinese market

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Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

Abstract

Due to the global financial crisis, the European and US automobile market was confronted with a depression. At the same time, the Chinese automobile market maintained a good momentum of development, which attracted more attention and investment of overseas automobile enterprises. However, the competitive pressure has increased gradually with the growing number of overseas automobile companies in the Chinese market. There is a lot of research about how to increase the competitiveness of the automobile industry in China. This dissertation will focus on the reduction costs of automobile enterprises in the Chinese automobile market. Based on prior research we developed a tentative cost reduction model for automobile companies in the literature review, which includes entry strategies, manufacturing sectors and logistics. The tentative model provides a coherent framework and offers some theoretical ideas to reduce costs to scholars and practitioners.

A case study was conducted to further develop and refine the tentative model. The data was collected from case studies at Shanghai Volkswagen and GAC Toyota. The primary data was collected through two video-interviews with the top managers of Shanghai Volkswagen and GAC Toyota, and secondary data was collected from the enterprise’s annual report and official website.

Based on our analysis, we provide some general conclusions for cost reduction in the Chinese automobile market. Our results indicate that transfer factories with cheap labor can help companies reduce labor costs. Moreover, our findings suggest that standardization of materials can help companies to directly reduce material costs. The most interesting findings from our study, however, are that joint ventures and agents cannot help companies reduce entry costs. Additionally, the logistics management and supply chain management play vital roles in cost reduction in automobile companies via professional outsourcing of logistics and effective information systems.

Key words: Reduction costs, Automobile companies, Chinese automobile market.
# Table of Contents

Acknowledgements................................................................................................................................. ii

Abstract....................................................................................................................................................... iii

Table of Contents...................................................................................................................................... iv

List of figures.................................................................................................................................................. viii

List of tables.................................................................................................................................................. ix

List of abbreviations................................................................................................................................... x

1 Introduction............................................................................................................................................... 1

1.1 Background........................................................................................................................................... 1

1.2 Focus and research problems.............................................................................................................. 2

1.3 Purpose................................................................................................................................................ 3

1.4 Delimitation.......................................................................................................................................... 3

2. Literature review....................................................................................................................................... 4

2.1. Conceptualization of cost and its elements.................................................................................. 4

2.2 Factors which impact on cost reduction......................................................................................... 5
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

2.2.1. Production........................................................................................................... 6

2.2.2 Entry strategies................................................................................................... 8

2.2.3 Logistic management........................................................................................ 9

2.3 Conceptual Framework....................................................................................... 13

3. Methodology........................................................................................................... 17

3.1 Case Study........................................................................................................... 17

3.1.1 Case study as the scientific method............................................................... 17

3.1.2 Comparative case study................................................................................ 18

3.1.3 The steps of the case study method............................................................... 18

3.2 In-depth Interview Design................................................................................ 23

4 Empirical data......................................................................................................... 25

4.1 Shanghai Volkswagen Automotive Co. Ltd............................................... 25

4.1.1 Production......................................................................................................... 25

4.1.1.1 Labor & Material....................................................................................... 25

4.1.2 Entry strategies.............................................................................................. 27
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

4.1.2.1 Joint venture ................................................................. 27

4.1.3 Logistic Management .......................................................... 27

4.1.3.1 The third-party logistics company .................................. 28

4.1.3.2 Information system ....................................................... 29

4.1.3.3 Supply chain management ............................................. 29

4.1.4 Others .............................................................................. 30

4.2 GAC Toyota Motor Co., Ltd. .................................................. 32

4.2.1 Production ........................................................................ 32

4.2.1.1 Labor & Material ......................................................... 32

4.2.2 Entry strategies .................................................................. 33

4.2.2.1 Joint venture ................................................................ 33

4.2.3 Logistic management ........................................................ 34

4.2.3.1 The third-party logistics company .................................. 34

4.2.3.2 Information system ....................................................... 34

4.2.3.3 Supply chain management ............................................. 35
4.2.4 Others........................................................................................................ 35

5 Analysis.............................................................................................................. 38

5.1 Production....................................................................................................... 38

5.2 Entry strategies.............................................................................................. 39

5.3 Logistic management..................................................................................... 41

5.3.1 The third-party logistics company.............................................................. 42

5.3.2 Information system..................................................................................... 44

5.3.3 Supply chain management........................................................................ 46

5.3.4 Others......................................................................................................... 48

5.4 summary.......................................................................................................... 49

6 Conclusion......................................................................................................... 53

6.1 Conclusion and discussion............................................................................ 53

6.2 Implications..................................................................................................... 55

6.3 Limitations and Further Research ................................................................. 56

References............................................................................................................ 58

vii
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

Appendix........................................................................................................................................65
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

**List of figures**

Figure 2.1 ................................................................................................................................. P 5

Figure 2.2 .................................................................................................................................. P 11

Figure 2.3 .................................................................................................................................. P 12

Figure 2.4 .................................................................................................................................. P 16

Figure 4.1 .................................................................................................................................. P 23

Figure 5.1 .................................................................................................................................. P 47
List of tables

Table 4.1 .......................................................................................................................... P25

Table 4.2 .......................................................................................................................... P33

Table 5.1 .......................................................................................................................... P38

Table 5.2 .......................................................................................................................... P39

Table 5.3 .......................................................................................................................... P41

Table 5.4 .......................................................................................................................... P43
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

**List of abbreviations**

GM-General Motors

CCA- the association for low cost operation

ILO-International Labor Organization

SAIC-Shanghai Automotive Industry Corporation

PCDI-per capita disposable income

AAA-American Accounting Association
1 Introduction

The introduction includes four subsections. First of all, the background shows the importance and interest of the topic. Second, the problem area will be discussed and lead to the purpose of this study. Then, the research question will be addressed. In order to provide a clear focus and outline the concepts, delimitation will be explained as well.

1.1 Background

In the global automobile market, the sales of automobiles in the U.S and Europe have been confronted with a depression since 2008, because of the serious decline of European and American purchasing power. General Motors Corp. and Ford Motor Co., which are two famous and dominant automobile manufacturers in the United States, experienced steep losses in their sales and operations. Furthermore, another famous automobile manufacturer, Chrysler, went bankrupt due to the financial crisis of 2008. Those companies’ dropping sales and bankruptcy raise the possibility to meet the phenomenon again that the automobile industry would be minimized during a historic financial crisis (Dolan & Stoll, 2008).

However, the phenomenon of sales in the Chinese market is distinct from the U.S and Europe. The sale of automobiles is gradually overtaking the U.S and Europe. According to the Ministry of Industry and Information Technology of the People's Republic of China's Statistical data, in 2011, the sale of automobiles in China is 14,000,000, which means that 38,356 cars were sold every day.

The huge sales of automobiles in the Chinese market attracted almost all of the auto
manufacturers around the world. More than 100 automobile brands have entered to the Chinese auto market, but *the more sellers there are, or the smaller the share of the market any one of them has, then the more competitive in the market* (Reed, 2009). In 2010, Toyota sold 8,418,000 vehicles in the global market, and 780,345 were sold to Chinese consumers, accounting for 9.2% of the total sales. Meanwhile, Volkswagen sold 7,278,000 vehicles in the global market, and 1,871,336 were sold to Chinese consumers, accounting for 25.71%. Additionally, the GM group sold 8,390,000 vehicles in the global market, and 1,089,857 were sold to Chinese consumers, accounting for 12.98%. According to the data mentioned above, the competition of the Chinese automobile market was quite intense. Facing the competition in China and global pressures, some methods had been formulated and implemented by management teams in every company. In order to maintain their competition in the global market, there is an increasing phenomenon that management teams pay attention to cost reduction (Maximov & Gottschlich, 1993). Beheshti (2004) pointed out that the competitive advantage can be achieved by implementing a strategy of cost reduction, without ignoring quality and service.

Among all the carmakers in the Chinese market, Toyota's cost management system has earned high praise in 2010, since their low-cost operation helped Toyota earn more than 3 billion Yuan (Toyota 2011 annual report). Moreover, Volkswagen's material costs strategy offered the company a positive effect on their sales, increasing the 4% of sale volumes (Volkswagen 2011 annual report).

Therefore, how to reduce costs in the Chinese market and gain a competitive advantage becomes a recurring argument.
1.2 Focus and research problems

There are some available literatures in the field of cost reduction in manufacturing. However, little research has been done to focus on costs reduction of the automobile industry in the Chinese market. Therefore, the study will summarize and analyze what kind of factors of cost reduction could help automobile manufacturers in the Chinese automobile market, and how those factors help companies reduce costs.

The main research problems will focus on the area:

- What kinds of factors can help automobile enterprises to achieve cost reduction in the Chinese automobile market?
- In terms of those factors, what kinds of methods have been taken to reduce costs?

1.3 Purpose

The purpose of this study is to summarize some factors, which can help automobile companies reduce costs, and analyze what kinds of methods have been taken around those factors and how those methods help automobile companies reduce costs in the Chinese market. As a result, the contribution to the cost reduction in the automobile industry can provide a coherent framework for companies’ management teams with some ideas to reduce cost.

1.4 Delimitation

There are various definitions about cost and there are many types of methods which can help companies complete cost reduction. In this dissertation, the material cost, labor cost, joint venture, just-in-time and logistic cost are focused.
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

Although some same strategies of cost reductions could have different effects in different markets, the strategies in this dissertation are concentrated on the Chinese market. There is scant literature which focuses on how an automobile company’s costs may be reduced in the Chinese market.
2. Literature review

A literature review was undertaken, in order to pursue the purpose and focus which is presented in chapter 1. Additionally, some figures will be shown to provide readers with a comprehensive and clear picture of the framework. Therefore, we will introduce the conceptualization of costs and their strategies first. Then the method of cost reduction will be shown with key concepts. Finally, the conceptual framework will be given.

2.1. Conceptualization of cost and its elements

According to CCA (the association for low cost operations, 2005), the definition of cost is the resource expense for having added value to the process and the result. In order to reach special aims, whether the expenses have been spent or not. It can be calculated and measured by currency (American Accounting Association, 2008). Carroll (1953) considered that cost reduction can help companies keep competitive positions. In short, cost is a kind of expense, which people spend on the production.

According to Jinkens and Yallapragada (2010), cost categories are the several kinds of expenses that should be taken into account when a firm is manufacturing a product or providing services. Cost categories can be divided by different situations, for example, fixed costs and variable costs. Cost can be divided into financial costs and management costs. Generally, types of cost structures include material costs, labor costs, transportation costs and R&D costs, etc. Compton and Brinker (2005) mentioned that every cost is different, and only some should be evaluated for decision-making purposes (Compton and Brinker, 2005). Different researchers distinguished different kinds of costs. Martin (1992) distinguished cost control
includes direct costs, third-party costs, distributable costs, indirect costs and associated costs. Compton and Brinker (2005) distinguished marginal costs and sunk costs.

Cost of production per unit is the cost associated with production, divided by the number of units produced (Webner, 1911). He provided that material, labor and expenses are the three constituent elements of production costs (Webner, 1911). Watts (1902) considered that production cost includes material, labor, manufacturing supplies, special items of cost and general expense. Stefania-Eliza and Florin (2009) considered that the information regarding the production cost is used in goods evaluation and profit growth.

The book named Qfinance-The Ultimate Resource, mentioned that entry cost is the cost of introducing a product to the market, which includes the cost of all research, development, production, testing, marketing, advertising and distribution of the new product. According to the above theory, this research will give the cost structure, linking the cases chosen.

Table 2.1 Constituent elements of the cost
2.2 Factors impact on cost reduction

Initially, the difference between cost reduction and cost control should be given attention. Cost reduction is an unstoppable process of critical cost examination, analysis and challenge of standards. Mersereau (1994) pointed out that cost reduction exists everywhere in the business, in other words, productions, processes, manufacture, methods, organization and staff should be considered. Moreover, cost reduction is critically examined and reviewed with a view to improving efficiency and effectiveness and reducing the costs (Murphy, 2009).

Bruce (1992) defined that cost reduction is the application of procedures to monitor expenditures and performance against progress of a project and manufacturing operations with projected completion to measure variances from authorized budgets and allow effective action to be taken to achieve minimal costs (Bruce, 1992).

According to Carroll (2009), it is essential that a firm implements the strategy of cost reduction whenever the firm experiences tough time or to propel future growth. A lot of literatures have been written about the methods of cost reduction. According to John, Brierley, Cowton & Colin (2007), cost reduction can be achieved through several approaches. However, there are some popular approaches, like elimination in the form of nonessential, non-value adding activities and modification of manufacturing activity. In short, through in depth analysis, the best and least cost path is adopted for each activity.

McCormick (2010) provided 10 steps to reach cost reduction as follows: 1. Set a minimum cost reduction target, 2. Establish whether budgeting can achieve the target, 3. Place cost reduction into the wider strategy of the business, 4. Identify the economic drivers of cost, 5. Analyzing costs with the value chain, 6. Select
appropriate tools from the operational toolbox. 7. Consider outsourcing non-core activities, 8. Restructure the labor force, 9. Manage the change process carefully, 10. Monitor the results diligently.

More researchers showed their own opinions about cost reduction in detail.

### 2.2.1. Production

- **Material**

Material is the basis of manufacture and in a system of factory costs, it should be first considered (Watts, 1902). Kiesling (2010) considered that material handling can influence operation cost. Bisset (1960) mentioned that material cost is the largest element of manufacturing costs in our company. Penfield (2007) mentioned that depending on the industry much of the supply chain costs can be contained in material purchases. Hence, most companies focus their cost reduction efforts on the materials they purchase. Therefore, cutting materials costs can reduce costs directly.

Some previous scholars mentioned how to reduce materials costs, such as picking appropriate materials and avoid the use of expensive materials; check and minimize waste concerning all materials in the process of production; develop a budget related to materials; avoid the loss of materials due to faulty equipment; establish strict control over all materials; be sure that employees do not use the wrong materials for specific projects (May, 1994, Tait, 2004).

- **Labor**

Labor has equal importance with the cost of the materials used in the process of manufacturing (Watts, 1902). McCally (1998) considered that labor cost is perhaps the largest risk faced by the self-performing contractor and control of the labor cost is
one of the tool used to reduce costs. McCormick (2010) considered that restructuring of
the labor force is a necessary step of cost reduction. Watts (1902) divided this into two
kinds of labor: productive labor and non-productive labor. According to the
International Labor Organization (ILO)’s definition, labor cost covers wages, earning
and compensation.

Some previous scholars provided some methods to reduce labor costs, such as
minimize excessive and expensive repeat work; set accurate work standards with the
labor force and periodically update your work standards; monitor worker performance
in real time; increase employee morale through improving the working environment;
break down the language barrier (May, 1994, Maida, 2002).

2.2.2 Entry strategies

Spulber (2003) mentioned that the process of entry is costly, as companies incur
substantial costs of learning about the market, researching products and production
processes, establishing facilities, contacting suppliers, and raising finance capital.
Appropriate entry strategies can help companies reduce those costs (Ross 2004).

There are many types of entry strategies, Isbel and Robin (2008) divided four kinds of
entry strategies as follows:

Indirect exporting: Trading companies, Domestic purchasing

Direct exporting: Agents, Distributors

Cooperation strategies: Joint venture

Direct investment: Subsidiary

Direct exporting and cooperation strategies have become the main channel for
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

overseas automobile enterprises to enter the Chinese automobile market. According to the China Development Research Center of the State Council's Report of Chinese Automobile Industry development (2011), there are 117 automobile manufacturers in China, including 42 joint ventures, such as Shanghai Volkswagen, GAC Toyota, Shanghai General Motors, Changan Ford and so on. Joint venture is becoming a common model in the Chinese automobile market. According to the China Association of Automobile Manufacturers' statistics, agents have become the only way for overseas luxury automobile brands to sell products in China, For example: Ferrari, Lamborghini and so on.

**Joint venture:** Isbel and Robin (2008) provided the definition of joint venture was that a company decides to share ownership of a specially set up new company for marketing. Joint venture can reduce the costs of a company to enter the new market, because the partner of the host country can increase the speed of market entry due to their familiarity with their market environment as well as their communication channels with the government (Isbel & Robin, 2008).

**2.2.3 Logistic management**

The soul of business is to earn money. In order to survive in the competitive market, enterprises have to seek their new profit spot. It is easy to find that saving money/reducing costs is a way to increase profit by eliminating waste (Mintcloud, 1995). This an idea shared with Davis (2008) that any money saved becomes the company’s profit. Logistic management is the idea that saving money in the whole industry (Visser, 2007) so that manufacturers could reduce their costs, whilst increasing profits simultaneously.

A good approach to reduce costs, especially in inventory costs, was named Just-in-time. According to Polito and Watson (2006), low inventory relies on effective
logistic management and quick responses from suppliers. Bartholomew (1984) pointed out that the philosophy of Just-in-time is to take immediate action to meet the demand and requirement. According to Foster and Horngren (1987), although Just-in-time will increase the direct traceability of costs, it eliminates more facility of the warehouse and materials handling costs. In addition, Grout and Christy (1999) stated that U.S companies found the Japanese method could control inventory trickier and improve the efficiency.

According to Geng and Guo (2004), (a) we can find that the first source of profit is to exploit resources to gain profit; (b) the second source of profit is to manage human capital more efficiently and reduce labor costs to get profit; (c) the third resource is to manage logistics. Currently, faced with the development of the global economy, manufacturers would spend a huge amount of money on purchasing raw materials, marketing and internal inventory security (Visser, 2007). Those costs could be computed into logistic costs.

According to Chun (2010), a traditional delivery route is from a single supplier to customers. Faced with a huge amount of the suppliers to an automobile company, Milk-run is a wise choice, providing a variety of raw materials and a smaller quantity of components. The trait of Milk-run is a circle of delivering between suppliers and customers with high frequency (Newing, 2008). Additionally, Newing (2008) pointed out that planning the best route from the suppliers to manufacturer has a positive effect on reducing delivery costs. Furthermore, due to the frequent transportation, the inventory cost will also reduce in this approach (Shi, 2010). Furthermore, the best route can make up for the traditional transport defect of the transport network optimization, continuous improvement of product delivery frequency, reducing transportation costs and supply chain costs and provide a more effective control of inventory.
The third-party logistics company

Looking back several years, there are many authors writing about the logistics industry (Minahan, 1997). The third party logistic can provide professional services and impressive savings (Terreri, 2001).

According to Minahan (1997), using a third-party logistics provider, an employer can benefit from cost advantages and contract logistics which can offer expertise. Additionally, third-party logistics companies have an advantage that individual businesses can become economies of scale, which can lead the whole chain to reduce costs.

Cooke (1998) pointed that a third-party logistics provider can invest in warehouses and equipment and spread those assets' costs over a group of clients. The same holds true for the purchase of supply chain software systems that allow them to optimize distribution operations.

Not only do the automobile manufacturers in the USA focus on supplier chain management, but also the famous carmaker, BMW, concentrates on it. According to a case study in Henry’s (2011) “Understanding Strategic Management”, TNT serve BMW’s logistic with reducing by 10-15 per cent from BMW’s logistics cost and increasing efficiency by a large percentage. “Great reliability in the supply chain has allowed BMW to reduce the inventory in its warehouse”, said by Mr. Hurleys, managing director of TNT logistics in North America.

Information system

According to Abdul and Charoenngam (1999), a management information system refers to three main sources - people, technology and information. A Management information system is a system to deal with data collection, trans-information and
storage of information via utilizing hardware and software of computers. Degraeve and Roodhooft (2005) pointed out that a management information system aims to maintain core competence, increasing profit and efficiency, providing a medium to monitor the total costs in the company.

- **Supplier chain management**

Since the 1980s, a supply chain had been developed that was based on the value chain. The definition given by the Supply Chain Council is that the supply chain includes production and effort of delivery of a final product and service from the suppliers of suppliers to the customers of customers.

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Figure 2.2 Supply chain structure and operation (LI and Xu, 2005)

![Supply chain structure and operation](image-url)
Li and Xu (2005) consider that supply chain cost includes three categories; they are total operation cost of the supply chain, total management cost of the supply chain and recessive cost.

Some world famous companies from the USA, such as FedEx and UPS, become a partner with automobile manufacturers to help them to solve the problems in the field of the supply chain. According to Keller (1997), automobile companies have to reduce their total costs, including selective cost savings, rather than shifting the burden to suppliers, dealers and workers.

According to Xia and Tang (2011), a triple-C (cease-control-combine) was a good approach to remedy supply chain management in the automobile industry when the USA was facing economic downturn, since supplier chain management plays a key role in saving money in the automobile industry and control of inventory waste.

Figure 2.3 Supply Chain Cost (Xia and Tang, 2011)
2.3 Conceptual Framework

According to the literature review, we hypothesized some factors which can help automobile companies reduce costs in the Chinese market.

Production cost

According to Apergis and Rezitis (2004), there are all kinds of expenses in the cost structure in a company, these items containing labor costs, material costs, equipment costs, information costs, technology costs, resource costs, financial costs and management. Generally, every company has a difference in the proportions of the total cost. Among these costs, production costs occupied a high proportion position in the total costs. From the perspective of Wang (2007), the greater proportion of one
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

cost item it is, the more attention should be paid to the item.

**Entry strategies**

There are several strategies available to enter a new market. However, considering the special policy environment in the Chinese market, this dissertation just mentioned joint venture and agents. These strategies are hypothesized that they could help companies reduce entry costs, because joint venture is very common in the Chinese auto market, according to the China Development Research Center of the State Council's Report of Chinese Automobile Industry development (2011). This phenomenon that almost all overseas automobile brands enter the Chinese automobile market through joint venture or agents, it is necessary to consider whether it has a positive effect on cost reduction or not. Some previous researchers (Isbel & Robin, 2008) mentioned that entry strategies can help companies reduce costs, while they did not mention the automobile industry. Therefore we put entry strategies in our framework and try to verify whether there is a relationship between entry strategies and costs reduction.

According to the China News (2012), comparing with the labor in the east north of Asia, the labor in China increased 10% ~20%. Additionally, the cost of raw materials increased by approximately 30% in China as well. Facing the increasing phenomenon of labor costs and material costs, it is necessary for managers and researchers to take them into consideration. In the field of production sectors, labor and materials costs are dominant, they should be considered at first when companies want to reduce costs (Watts, 1902). Some previous scholars (McCally, 1998; Rebort, 1960) considered that the production sector is one of the important and direct methods to reduce costs. Therefore we hypothesized those factors could reduce costs and put them in our framework.
**Logistic management**

Basically, the concept of cost reduction in logistics derives from a Japanese professor, Nishizawa Syuu (1970). In his opinion, the market share that the enterprise has occupied is limited; when it couldn’t be extended, the enterprise has to seek a new spot of profit to maintain the competitiveness in the market. The professor suggested reducing the high percentage of logistics costs, in order to seek the new profit spot and increase an enterprises’ profit. In addition, the automobile industry in the Chinese market becomes more competitive. According to Lee and Billington (1992), cost can be categorized into implicit costs and explicit costs. From Xia and Tang’s perspective (2011), the explicit costs in the logistics includes inventory costs, transportation costs, order costs.

![Figure2.4 The framework of cost factors](image)

As we have mentioned in our delimitation section, our study is concentrated on entry costs, production costs and logistic costs. Firstly, due to the special policies from the
Chinese government, entry costs have to be considered, whether a suitable method can reduce entry costs. Secondly, production costs play a key role in the automobile industry. The lower production costs they operate, the more competitiveness and profit they obtain. Therefore, how to reduce production costs in the Chinese automobile industry should be considered. Thirdly, there is a increasing phenomenon that managers and researchers pay attention on cost reduction in the recent decade. We want to identify how the methods have been implemented to reduce logistic costs.
3. Methodology

In this chapter, the method section will offer abundant information about the research approach and strategy. A deductive and qualitative approach is chosen to carry out the research problems and reach the purpose of this thesis. A semi-structured interview will be used as a tool to collect the data. The process of data collection will be presented as well as the measurement to control the quality of the research.

The definition of ‘scientific method’ is the process by which scientists, collectively and over time, endeavors to construct an accurate (that is, reliable, consistent and non-arbitrary) representation of the world (Yin 1994). Qualitative and quantitative research will be employed. The methods mainly consist of the case study and an in-depth interview.

3.1 Case Study

3.1.1 Case study as the scientific method

The Case study method is a main research method of social science. The Case study method is to further research and comprehensively investigate complex and specific phenomenon in the real world (Rosenbloom R.S.2000). In addition, it is a kind of empirical research method. The biggest difference between case study and experiment is that the case study method takes no control of the background under study and it also does not interfere with the process of phenomenon changes. In addition, a case study illustrates problems through one or several cases which were previously chosen, and then with analysis of the logic, in relation to the event based on the collected data. Therefore, the conclusion from a case study does not rely on a sampling principle.
According to Robert Yin and other opinions on case research from senior scholars, the question such as “what’s the matter” and “why” is able to appear in the case study. As empirical research, case study gains knowledge by collecting objective materials and the way of concluding or explaining. Thus, the results of the study mainly depend on the ability of the researchers themselves (Robert Yin 2009).

### 3.1.2 Comparative case study

A single case analysis method refers to a typical case for in-depth study, such as research to management of Shanghai Volkswagen Automotive Co. Ltd (SVW) or a study of the success of GAC Toyota Motor Co., Ltd.

Comparative case study refers to a series of variable studies that are set up to study similar problems in a number of organizations through repeating the comparison and finally draw conclusions of certain universality.

The comparative case analysis method is used in many similar objects can be chosen to study the more mature rather than innovative research (Afuah, A 2000). I can from the many candidates identify suitable cases and each case can be for the specific purpose of the study, which means I have to choose the right case to explain or prove the case of the research proposition. In many cases, I pay special attention to the consistency of the data and information collection to avoid data problems which lead to unreliable conclusions even if there are no methods to draw the correct conclusions. Multiple case studies adjust the number of cases according to the progress of the study and appropriate research topics (Johnston, W. J. 1999). Therefore, according to my research, two cases are chosen. My aim is to draw more reliable and more instructive conclusions than have been reached previously.

### 3.1.3 The steps of the case study method
The steps of the case study method are looked at as a corporate strategic plan guiding researchers to study. According to Yin, the case study is divided into five steps including the study design, data collection and preparation, data collection, analyzing data and writing research reports. These steps can be used in almost any empirical study (Yin, R. K. 1994). Eisenhard’s the steps of the case study method are specific with case studies the characteristics, such as theoretical sampling. However, Eisenhard’s steps are too complicated and emphasize the importance of the case study background.

It is important to describe the enterprise historical background and analysis for strategic management research, because to a large extent, whether it is the strategy of some companies to shape their own external environment, or the strategy of some companies to adapt to its external environment, which are related to the historical background closely (Westgren, R 1998). In our paper, based on existing literature, combined with the characteristics of the research, the following steps are given.

**Figure 3.1 Steps of case study**

- **Study problems**
  Determining the research issues is key step in case study. When the issues of research are decided, the data collection work is done by the thinking of the researchers. Because of limitations of the cost and time, research issues should not be too big, but they should be as specific as possible (G. Thomas, 2011). The case study is not
suitable for all research questions, but more suitable for the research questions of how and why. The case study approach is applicable to management problems. First of all, the researchers have no control for the management of the enterprise, which is the study one of the reasons there is no experimental studies, some specific issues of studies for the case study (Bent Flyvbjerg, 2006). In this study, the issues of the case studies are decided.

What kinds of factors can help automobile enterprises to achieve cost reduction in the Chinese automobile market? What kinds of methods have been taken to reduce costs in Shanghai Volkswagen Automotive Co. Ltd (SVW) and GAC Toyota Motor Co. Ltd.?

- **Theoretical sampling**
  Theoretical sampling is used for statistical analysis methods, to test hypotheses and the choice of the sample should be random so as to make the sample distribution closer to the overall distribution and to more effectively test that the hypothesis is supported (Douglas, J.D, 1976). Although the studies are limited by various constraints, which is often used through convenience sampling, it should not be the deliberate choice. In comparison, the sampling of case studies should be distinctive (Malinowski, Bronisaw, 1929). In this paper, based on the above theory, the basic situations of the two cases are similar through comparing successful aspects and unsuccessful aspects.

- **Collecting case information**
  Due to the fact that case study adopts analytical summary but not statistical summary, the validity of case study depends more on information analysis under the guidance of theory (Evans-Pritchard, E. E. 1940). In the case of analyzing materials, we can build two competitive theoretical assumptions, analyzing different support degree of materials based on two kinds of theory, or compare pattern getting from case
materials analysis with theoretical hypotheses (Eisenhardt, K. M 1980). Those theoretical assumptions or paradigm are supported from study materials and represent the results of study. Therefore, the theory is the purpose of the research and it guides to analyze the case materials. Through the matching of paradigm, we can also test the theory is gotten from case study or the validity of conclusion.

Researchers are required to have allegation in case study. The allegation of researchers can come from the existing theories or assumptions, while empirical case study calls for researchers to put forward a specific allegation. As a way to develop methods, empirical case study puts forward an allegation. In addition, it also puts forward a rival allegation and then using data and evidence to argue those allegations. This method is helpful to improve the effectiveness of a case study (Tripsas, M., Gavetti G. 2000). The allegation of research can be a proposition, assumption and paradigm.

According to the three steps collected by Robert Yin, the first step is to use more evidence sources. Although using evidence has become a way to improve the validity of case study, case study gives a greater chance to use more evidence, compared with experiment and questionnaire (Prahalad, C.K., and Bettis RA.1986). Case study includes interview of the key figures’ observations and records of the task process, or it can make people answer the questions in a study process. Using more evidence data includes many material sources, many collecting forms and theoretical perspectives. Because case study is a direct research to make comparison in real situations, this kind of method to collect data is more diversified than experiment and simple questionnaire, which is the strength of the case study.

The second step is to record and collect material and then build a database of case study. The base of case study includes notes of case study and analysis result of interview, observation or file. The data collected from a case study should be
classified and coded carefully, which is helpful to abstract and analyze material for the researchers and relevant personnel.

The third step is to set up an evidence chain through material collected from the case study. A case study is to research problems and draw a conclusion based on the positive evidence. It is very reasonable that some case researches compare evidence from a case study with evidence from criminal law (Raff D.M.G. 2000). The evidence from a case study is different from evidence from criminal law, because it emphasizes scene and primitiveness. The case researchers have to show clearly the source and procedures of evidence, plus place and time when they cite evidence. The case material should link research questions to the conclusion, logically.

The common uses and functions of secondary data are to provide the necessary background, to understand the problem situation, to provide information that is useful to gather primary data, to serve as a check for the evaluation of primary data and to provide an insight into the sample selection (Stevens, Wrenn, Sherwood and Ruddick, 2005). Also important is that the secondary data should be gathered first because it is generally quicker and cheaper, before moving on to primary data gathering.

The sources of secondary data which are used in this study are mainly found through the university’s library and website. Certain type of literature can be found and will be used from management, accounting, cost management, etc. The university website also provides articles through journal collections. The chosen company website presents information about the company, its history, its goals, its conception and vision, its strategy, its organization, its finance and its annual report and so forth.

- **Analyzing data**

The analysis of case data is divided into analysis within case and analysis between cases. The analysis process can be followed step by step, which can also conduct a
preliminary analysis of each case, the final pooled analysis. For the multi-case analysis: preliminary theoretical interpretation to the next case in order to constantly improve the initial theory, which can be viewed as preliminary theory test (Robert K. Yin.2009). The analysis process is often cyclical, until a more perfect theory or proposition to make judgments, and then the comparison of the results.

- **Comparing results of cases**

Comparing the study results of management is a multi-angle research based on some theories of other disciplines. In addition to the different perspectives, the findings in the specific areas of strategic management are combined with the inductive nature of the case study method, which require findings with existing theory (Bent Flyvbjerg,2006). The nature of inductive research methods are different interpretations of the same phenomenon, which require that the research results with the existing theoretical methods. The case study’s findings include the concept of discovery, and compare content with case studies using the concepts and theory and previous concepts and theories. The concepts and theoretical researchers are extended and are limited and show theoretical contributions.

### 3.2 In-depth Interview Design

In-depth, qualitative interviews are excellent tools to use in understanding the customers. An in-depth interview is an open-ended, discovery-oriented method of information capture. The goal of the interview is to deeply explore the respondent's point of view, feelings and perspectives (Douglas, 1985). In this sense, in-depth interviews yield information. Holstein & Gubrium(1995) said the key characteristics is in-depth interviews. In essence, in-depth interviews involve not only asking questions, but the systematic recording and documenting of responses, coupled with intense probing for deeper meaning and understanding of the responses. Thus, in-depth interviewing often requires repeated interview sessions with the target
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

audience under study. Unlike focus group interviews, in-depth interviews occur with one individual at a time to provide a more involving experience, which can avoid the shortcomings of in-depth interviewing.

Two companies which are outstanding in the Chinese automobile industry will be interviewed. Shanghai Volkswagen Automotive Co. Ltd (SVW), which was dominant in the Chinese automobile market since 2004 (SVW, 2012) and GAC Toyota Motor Co., Ltd (GAC Toyota) which was a new joint venture in the Chinese automobile market. However, they have advanced management and huge potential in the Chinese market. Additionally, Toyota shared 12.7% in the global automobile market (Toyota, 2012).

Video-interview will be available via QQ (software name). Two interviewees are from the top management of Shanghai Volkswagen and GAC Toyota. Xianchen Xu is the manager of GAC Toyota, and Xinguo Wang is the manager of Shanghai Volkswagen. During the video-interviews, the topic of cost reduction is asked and discussed from the field of logistic management, entry strategies, labor and materials, etc.

The framework of cost factors will guide us to collect empirical data. According to our empirical data and interviews, we will prove whether those factors have a relationship with cost reduction, and how can those factors help automobile companies to reduce costs. Finally it will be improved in the part of conclusion, which base on the part of analysis.

Primary data are data generated from a research project for a specific purpose or collected from a specific population sample (Stevens, Wrenn, Sherwood and Ruddick, 2005). The primary methods of collecting primary data are communication and observation. Communication includes various direct approaches of asking questions to respondents. In this study, an interview is chosen in order to collect data because this method is useful for a researcher to focus on a particular topic and gain information from individuals (Hesse-Biber and Leavy, P2005). It is a kind of conversation between an interviewer and interviewee in which the degree of division
and hierarchy is regularly low. Semi-structured interviews are employed because they are useful for asking a set of questions to guide the conversation. Moreover, semi-structured interviews allow interviewees freedom to talk about what is of interest or importance to them (Hesse-Biber and Leavy, 2005). This can lead to a new and unexpected direction for a researcher to develop and explore new topics.
4 Empirical data

4.1 Shanghai Volkswagen Automotive Co. Ltd

Shanghai Volkswagen Automotive Co. Ltd (Shanghai Volkswagen) is a joint venture company between the Volkswagen Group (Germany) and Shanghai Automotive Industry Corporation (SAIC) established in 1984. The investment ratio of Shanghai Volkswagen is SAIC (50%), Volkswagen Group (40%), Volkswagen (China) investment Co., Ltd (10%). The contract is valid until 2030. The registered capital of Shanghai Volkswagen is 18.25 billion dollars.

Shanghai Volkswagen was the first joint venture automobile company in China, which has been developed in China for 27 years and accumulative sales of automobiles have broken through 6 million.

The headquarters of Shanghai Volkswagen is located in Anting international Auto City, northwest of Shanghai city, in China, which covers an area of 3.33 million square meters. Shanghai Volkswagen is one of the largest modern automobile production bases in China, with the annual production capacity of over 450,000. The main brand of Shanghai Volkswagen is Volkswagen and Skoda. The main auto model includes Tiguan, Polo, Passat, and so on.

4.1.1 Production

4.1.1.1 Labor & Material

The main manufacturing factory of Shanghai Volkswagen is located in Shanghai and Jiangsu province, which are the southeast coastal developed areas of China. In April
of 2012, Shanghai Volkswagen decided to set up a new factory in the Urumchi economic and technological development zone. The investment of project is two billion RMB, and plans to be put into operation in 2013. Urumchi is the capital city of Chinese Xinjiang province, which is deprived area in China. According to the data from National Bureau of Statistics of China, in 2011, the per capita disposable income of Xinjiang province is 2,165 dollars, the per capita disposable of Jiangsu province is 3,641 dollars, and the per capita disposable income of Shanghai is 5,053 dollars. Therefore, the labor costs of Xinjiang province are lower than southeast coastal developed areas of China. Additionally, investing and building factories in Xinjiang Province could get 15% tax relief.

Figure 4.1: Comparison Per capita disposable income among Xinjiang, Shanghai and Jiangsu

At the process of interview, the interviewee agreed that cheap labor can help a company to reduce costs, and mentioned "...cheap labor and a huge automobile market is the main reason for overseas automobile manufacturers to enter China..."
The average salary of Shanghai Volkswagen is 12,364 dollars every year, the average salary of Volkswagen U.S is 52,000 dollars. Comparing the average salary between Shanghai Volkswagen and Volkswagen U.S, the labor costs of Shanghai Volkswagen is only 23.7% of Volkswagen U.S.

4.1.2 Entry strategies

4.1.2.1 Joint venture

The vice president of SAIC of GenLin, Zhu said: "......in the domestic automobile manufacturing industry, almost all of automobile multinationals have implemented the strategy of joint venture. Multinational companies transfer their production capacity to China; they share the huge potential of China's auto market and provide some technical supports for the local auto companies at the same time......"

However, in our interview, the interviewee did not share the idea about joint venture which can help a company to reduce costs.

Xinguo, W: "...Joint venture is not obvious to help us to cut costs, although we introduced one or two mature production lines from our overseas partner, but it's not free..."

In China, the joint venture can get a lot of favorable government policies. Shanghai Volkswagen belongs to the manufacturing joint venture. Therefore, according to national policy, Shanghai Volkswagen can get 15% income tax relief. At the same time, Shanghai Volkswagen is not exempt from paying local taxes. The interviewee from Shanghai Volkswagen mentioned "...local brands can get the same benefits from other government policies..."
4.1.3 Logistic Management

4.1.3.1 The third-party logistics company

Xinguo: "...that the demand for cars is always increasing, however, we found that we had a problem to manufacture cars effectively, especially in the field of logistics. The suppliers used to deliver goods late, in the wrong way or wrong quantity. These factors influence our manufacture directly and obviously. Additionally, we noticed that sometimes it is our responsibility, sometimes is our suppliers’ duty..."

In order to solve these problems, SVW employs a third party logistic company to manage their logistics and supply chain because their core competency is car manufacture and development rather than effective logistics. Therefore, SVW has outsourced the field of logistics to another company, which has positive effects on cost reduction and focuses on our core competency. Therefore, SVW employed ANJI-TNT as their business partner. Xinguo: "...we not only focus on core business with limited labor and investment but also concentrate on cost reducing with maintaining high quality. We found that logistics is a quite vital area we should take action to improve it so that we employ a third party logistics company to do that..."

Table 4.1 Comparing before outsourcing and after situation

<table>
<thead>
<tr>
<th>Time</th>
<th>Number of labor</th>
<th>Number of warehouse</th>
<th>Number of vehicles</th>
<th>Total cost per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>78</td>
<td>10</td>
<td>37</td>
<td>3,628,967</td>
</tr>
<tr>
<td>after</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3,193,490</td>
</tr>
</tbody>
</table>

Xinguo introduced that ANJI-TNT takes responsibility of planning and control of the distribution logistic network from the raw material suppliers to warehouses and manufacturing to customers. SVW will benefit from the third party since they can
help SVW to control part of the material and reduce the delivery time and keep inventory to a low level. Furthermore, SVW requires their third party logistics company to transport goods at the right time and to the right places. The on-time delivery rate has exceeded ANJI-TNT’s target of 99.2 per cent. The rule is critical that ANJI-TNT will pay ¥19,000 penalty for any mistakes.

4.1.3.2 Information system

A management information system plays a key role for the third party logistic company in obtaining core competency in the automobile industry. Before 2001, SVW ran their logistics by the department of transportation themselves without an advanced united transportation management system, ERP (Enterprise Resources Planning). The previous ERP system could not satisfy the increasing demands of warehouse management. Faced with this phenomenon, SVW requires ANJI-TNT to equip two information management systems: TMS (Transportation Management System) and WMS (Warehouse Management System).

4.1.3.3 Supply chain management

According to figure 2.3 Supply Chain Cost (Xia and Tang, 2011), interview questionnaires are made by the categories and concepts in the figure.

Order cost

Xinguo introduced that there are three costs in the order cost. One is fixed cost, one is operation cost and the other is variable cost. The fixed cost is about the cost of transport vehicle which is fixed since the capacity of transport vehicle is fixed. No matter how small the material is, it also needs a vehicle to deliver it. Actually,
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

Operation cost is included in the fixed cost when SVW has considered the insurance cost and handling cost as well and both of them are fixed.

Although there is a fixed cost in the order cost, SVW take action in the variable cost. Xinguo pointed that they always have a mind to order material economically, by economical order quantity. This approach was used every time SVW ordered their material and has a positive effect on reducing their order cost.

**Inventory cost**

SVW employs several warehouses in Shanghai, and there are four distribution centers in Shanghai as well. Facing a huge amount of fees, SVW takes action to reduce part of their costs. They categorize their materials into three categorizations. The first class is the raw materials, which are high frequency used for manufacture. The second class is these raw materials are less frequency needed. The last class is these raw materials which are not used often. According to varying demand, SVW maintains their raw materials’ to a certain amount in the warehouses. Additionally, SVW implement Just-in-time strategy to keep their low inventory. “The lower inventory we have, the more capital we can save.” said by Xinguo.

**Producing**

Inbound logistic is responsible for the third part of logistic company, but the staff in SVW are required to keep the material box safe which is made of plastic and is cheap. However it is broken easily if the handling staff are not careful.

**4.1.4 Others**

In this part, the marketing cost is delivery of cars to customers or dealers. SVW pays more attention to the car which is safe and undamaged to get its destination. However, it is a big problem for SVW to deliver cars from the manufacturer to other places.
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

Although they employed the third part of logistic company which is professional in this field with highly qualified staff to take responsibility, some cost is involved when returning a car which is broken during transportation. Not only is there a fee for the repairs, but also a late delivery fee. Therefore, they focus on delivering cars to the destination safely, which can help to reduce excessive cost.

**Stock-out cost**

As mentioned above, SVW implements the strategy of Just-in-time. Because SVW keeps the low inventory and relies on Just-in-time strategy, it is possible for SVW to face the problem that the raw materials are not enough to put into the product line. SVW avoids this problem since the cost of stock-out is quite high.
4.2 GAC Toyota Motor Co., Ltd.

GAC Toyota Motor Co., Ltd (GAC Toyota) was established in 2004, the shares of GAC Group Co., Ltd and Toyota Motor Corporation at 50:50 joint investment construction and operation of enterprises, there is a joint venture period of 30 years, and registered capital of $362.66 million.

GAC Toyota Motor Co., Ltd is located in the Nansha District of Guangzhou covering an area of 1.87 million square meters. The main auto products of GAC Toyota are Camry, Highlander, EZ and Yaris, with the annual production capacity of over 360,000.

4.2.1 Production

4.2.1.1 Labor & Material

GAC Toyota pays more attention to reducing material and labor. Stamping is one of the important steps of the production process, because 60% - 70% parts in the automobile are produced by the stamping process. GAC Toyota's stamping plant has introduced the most advanced stamping line around world and the world advanced stamping line has increased labor productivity by more than 20% to reduce costs directly.

In the process of interview with the representative from GAC Toyota, the interviewee agreed that materials and labor can help a company to reduce costs directly, and the interviewee provided an example about reduction costs in material.

Xiancheng: "...for example the production of an auto's shell, we set up a cutting center with the shell plate supplier, it is an independent enterprise, and does not
belong to our company. We purchase the shell plate which has already been cut as required from them. We just need to weld, without cutting, so we do not have any odd bits, and we don't need the labor and equipment to do the cutting, which reduces production costs by 16% for every automobile shell..."

GAC Toyota adopted labor localization strategy, and most of the labor come from Guangdong province. According to the interview with workers from the front-line, the average salary of ordinary workers who are working in the front-line is $4,381 per year. However, the salary of the same position in U.S Toyota is $41,000 per year. Compared with labor costs in the U.S, the costs of labor in GAC Toyota is almost one-ten to U.S Toyota through comparing the salaries between GAC Toyota and U.S Toyota.

4.2.2 Entry strategies

4.2.2.1 Joint venture

GAC Toyota is a joint venture with Toyota Group, GAC Group (China) and Toyota Group (Japan) holds 50% shares each. According to the interview with the top management of GAC Toyota, he does not consider that entry strategies can help a company to reduce costs directly.

Xiancheng: "...at the first, the model of joint venture is the most common in the Chinese automobile manufacturing industry, but the production and sales of local enterprise (own brand) has accounted for one-third. At the second, although there is the part of technology transfer in the model of joint venture, it does not mean that the Toyota Group will give us the scientific technology for free, therefore, there is no direct relationship between joint venture and reduction of costs. Finally, no matter
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

joint venture or own brand auto manufacturers, China or the world, automobile manufacturers will not invest in the automobile circulation enterprises; it means that automobile manufacturers will not pay a penny for the large auto sales network. Therefore, agents can’t help us to reduce costs too."

At the same time, Xiancheng mentioned,"...on the overall, there is no obvious difference between joint venture and own brand in the policy of government. Therefore, joint venture and own brand enjoy the same preferential policies of government..."

4.2.3 Logistic management

4.2.3.1 The third-party logistics company

In October, 2007, Tong Fang Global (Tianjin) Logistics (TFGL) was established to be a partner with GAC Toyota in China. Toyota cooperates with TFGL in the field of supply chain management and outbound logistics, including raw materials, automobile and components. It is not easy for TFGL to cooperate with GAC Toyota since there are quite rigorous requirements, which have to be followed.

- The first rule, the most important one for GAC Toyota is to avoid the factor of logistics that influences a company’s manufacture and sales.

- Having a long-term cooperation and cultivating TFGL sustainably.

- Mastering the demand of logistics, package style, distribution of supplier and approximate logistic cost.
4.2.3.2 Information system

There is an old saying in Toyota Motor that “in order to reach the ambitions of responsibility for employee, society and product and obtain the target of avoiding wastage, a reasonable manufacturing method is pursued via Just-in-time and automation, based on improvements continually” which is to improve and change any unnecessary process in the manufacture. Namely, this rule eliminates the unnecessary process and waste drastically, GAC Toyota Motor can benefit from the cost reduction.

GAC Toyota Motor Co., Ltd adopted the classic lean programming of the Toyota group, which is the latest factory worldwide and can be represented as the highest level factory of the Toyota Group. Additionally, GAC Toyota is one of the most successful implementation companies in the lean programming in China. The successful implementation of lean programming in the manufacturing process not only reduces the inventory costs of GAC Toyota, but also improves the production efficiency of GAC Toyota.

4.2.3.3 Supply chain management

GAC Toyota asks the original suppliers to engage in joint management, which is a particular trait for GAC Toyota and is the base rock of cost reduction for GAC Toyota.

Xiancheng introduced that all their suppliers are chosen by bids, which is quite vital for GAC Toyota. GAC Toyota has to balance the quality and price from the different suppliers. In addition, GAC Toyota will not make a long-term cooperation with suppliers, which has a positive effect on choosing a better supplier. Furthermore, GAC Toyota will make some adjustments and improvement regularly via historical
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

experience.

4.2.4 Others

Toyota asks TFGL to have a good blueprint for future and current phenomenon since the previous blueprint plays a vital role in cost reduction of logistics, especially a new route or change of logistic strategies. Xiancheng introduced three examples.

One is that TFGL will change or improve the transportation routes of raw materials and products so as to get the best route to arrive at the destination in time.

Second is that TFGL utilizes water transportation to help GAC Toyota reduce costs, since the fee for road transportation is 30 per cent more expensive than water transportation. Currently, 60 per cent of carryings is water transportation. According to the interview, more than 100 million Chinese Yuan was saved in the field of logistics.

Table 4.2 Carryings and cost of logistic

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Road transportation</th>
<th>Water transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carryings</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td>Cost</td>
<td>43.48%</td>
<td>56.52%</td>
</tr>
</tbody>
</table>

The third one is that the distance between manufacturer and items for export and the coastline is approximately 50 kilometers. The short distance has a positive effect on inventory cost.

There is no warehouse in the logistics of Toyota. However, it is necessary for GAC Toyota to set some fields, like a temporary stockyard, where raw materials and
components are stored for only a few hours. After only a few minutes, those materials and components will be put into manufacture. According to the Just-in-time system, many components will not be produced until the demand of the next manufacturing process happens.

“Zero inventories" as a concept of logistics management does not mean that the actual inventory is zero, while the exact meaning is ‘no excess’ inventory. There is a warehouse called TEDA which occupies over 5600 square meters and its daily operation capacity is more than 500 cubes. Xiancheng introduced that both raw materials and components are delivered constantly. Moreover, there are only few raw materials which will be kept for four hours. However, in order to avoid stock-out, due to bad weather and traffic jams in winter, the warehouse keeps the inventory for one or two days.

Interviewee provided some other factors to help company reduce costs.

Xiancheng: "...From the perspective of Macro-environment, cost-cutting can be implemented via controlling wages, increasing labor productivity, avoiding waste of materials, improving equipment utilization, saving operating and management costs and etc..."
5 Analysis

This chapter will present the analysis of the empirical data, comparing the empirical data and literature review to verify the correctness of the hypothetical framework. The analysis is divided into three parts according to our hypothetical framework: entry strategies, production and logistics management.

5.1 Production

In the part entitled literature review, we mentioned that many previous scholars considered that some factors of production sectors can help companies reduce costs directly. The empirical data proved that production sectors can help companies reduce costs directly.

The interviewees from Shanghai Volkswagen mentioned that cheap labor is one of the main reasons for overseas automobile enterprise entering the Chinese auto market. The interviewees from GAC Toyota agreed with the view about labor and materials, which can reduce costs directly.

Shanghai Volkswagen and GAC Toyota have performed some strategies and measures about production sectors to help the company reduce costs. The empirical data mentioned that Shanghai Volkswagen invested and planned to set up a manufacturing factory in Urumchi, which is the capital of Xinjiang province. The most important reason is that the labor cost in Xinjiang province is cheaper than Shanghai or Jiangsu province. Therefore, Shanghai Volkswagen set up their manufacturing factory, which follows the cheaper labor, because the cheaper labor can help Shanghai Volkswagen reduce production costs directly.
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

On the other hand, cheap labor cost is one of the main reasons for overseas automobile transferring manufacturing factories to China, because the labor costs in China can reduce production costs. The empirical data mentioned that the labor costs of Shanghai Volkswagen is only 23.7% of Volkswagen U.S, and the labor cost of GAC Toyota is only 10.68% of Toyota U.S. which means that the cost of local production and sales in China is lower than the production in Europe or the U.S in the market. Therefore, those comparisons and data prove that production is following cheaper labor and is an effective strategy for automobile enterprise to reduce production costs directly.

Materials are another important factor for automobile companies to reduce costs of manufacturing sectors. The empirical data mentioned that GAC Toyota has performed some measures to reduce materials costs, for example GAC Toyota improved their stamping plant and the world advanced stamping line increased labor productivity and reduced costs at the same time, which can be considered that improving production equipment can help automobile companies reduce production costs.

The interviewees from GAC Toyota provided an example about how GAC Toyota reduces costs by materials, and they set up a joint venture with a materials supplier, and import has processed materials directly, which not only helps GAC Toyota save the costs of cutting labor and equipment, but also does not need to face the waste of odd bits. This measure can help GAC Toyota reduce by 16% production costs directly per car.

5.2 Entry strategies

In the Literature Review, we provided some previous scholars (Isbel & Robin, 2008, Ross 2004, Jones 2003) who considered that entry strategies can help companies
reduce entry costs, and joint venture and agents are very common in the Chinese automobile market. Therefore, entry strategies appeared in our hypothetically conceptual framework, but the result of the interview is contrary to our expectations.

The vice president of SAIC of GenLin, Z mentioned that joint venture is one of the most common modes of cooperation in the Chinese automobile market; overseas automobile companies shared the huge potential of China's auto market and provided some technical support for the local auto companies at the same time. The interviewees from Shanghai Volkswagen and GAC Toyota expressed that entry strategies cannot help companies reduce costs, because foreign joint venture partners do not provide free technical support, and local joint venture partners need to spend an amount of funds introducing advanced technology or production lines. Therefore, joint venture cannot help companies reduce the costs of technology development.

On the other hand, joint venture does not get special benefits from government policies. The interviewee from GAC Toyota mentioned that there is no large difference between joint venture and own brand in the policy of government and the interviewee from Shanghai Volkswagen expressed that local enterprise can get the same benefits with joint venture from other channels or policies. Therefore, joint venture cannot bring more benefits from government policies to companies.

In China, Agents are a very common model for automobile sales, but agents cannot help automobile companies to reduce costs too, because the interviewee from GAC Toyota expressed that automobile manufacturers do not invest funds to build a sales network, which means that automobile sales agents do not have a relationship with automobile manufacturers and agents are not helpful to automobile companies to reduce costs.
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

In summary, entry strategies cannot help automobile companies to reduce entry costs directly. Previous scholars' views may be applicable to other industries, rather than the automobile industry in China.
5.3 Logistic management

Table 5.1 Logistic management of two companies

<table>
<thead>
<tr>
<th></th>
<th>SVW</th>
<th>GAC Toyota</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logistic management</td>
<td>Reduce delivery time and cost</td>
<td>Improve delivery route</td>
</tr>
<tr>
<td></td>
<td>Best route</td>
<td>Water transportation</td>
</tr>
<tr>
<td></td>
<td>Delivery safely and undamaged</td>
<td>No concept of warehouse</td>
</tr>
</tbody>
</table>

According to the interview with GAC Toyota and SVW, it is easy to find that both of the two companies focus on improving delivery routes and getting the best route. According to Newing (2008), the best delivery routes between suppliers and manufacturer have a positive effect on reducing logistics costs. However, there is a little difference between the two companies. SVW concentrates on reducing delivery time and cost, but GAC Toyota focuses on improving the delivery route. Because those two companies have a different culture and vision, Toyota requires their materials to arrive just in time. Additionally, from the interview it is shown that GAC Toyota prefers water transportation rather than road transportation due to its low expenses and high carrying capacity. Considering the action of water transportation, the factory was set up near the dock. According to the interview, the distance from factory to coastline is approximately 50 kilometers. Both ways improve route and water transportation and GAC Toyota reduces 30 per cent cost than if it takes road transportation.

Moreover, one of the reasons why GAC Toyota improves the delivery route regularly is to reduce the recessive cost of stock-out cost. According to the interview, GAC Toyota pays attention to the logistics since the company aims to avoid the factor that the field of logistics influences the company’s manufacture and sales. It is quite important for manufacturing that there are enough raw materials to produce. If a link
in the process is suspended, the following links have to wait for the link to be finished.

Recessive cost in the logistics also attracts SVW attention. SVW pays attention to delivering autos to the destination safely and undamaged. If an accident happens, the company also loses some cost on returning the broken car during the transportation. Not only the fee to repair the car but also the fee for late delivery needs to be paid. Therefore, they focus on delivering cars to the destination safely which can help them reduce recessive cost.

### 5.3.1 The third-party logistics company

Table 5.2 the third party of logistic company

<table>
<thead>
<tr>
<th></th>
<th>SVW</th>
<th>GAC Toyota</th>
</tr>
</thead>
<tbody>
<tr>
<td>3PL</td>
<td>Manage logistic</td>
<td>Manage supply chain</td>
</tr>
<tr>
<td></td>
<td>Manage logistic</td>
<td>Long-term cooperation and cultivate sustainably</td>
</tr>
<tr>
<td></td>
<td>Focus on core competency</td>
<td>Master the demand of logistic and every package</td>
</tr>
<tr>
<td></td>
<td>Reduce department</td>
<td></td>
</tr>
</tbody>
</table>

According to the empirical data, these two companies we have interviewed have implemented the strategy of outsourcing. However, these two companies have different views of outsourcing logistic.

SVW outsourced the logistic part to the third part, which help them allocate their company’s resource reasonably. The dominant reason they did is to reduce the cost of the logistic operation. According to Minahan (1997), SVW can get cost advantage and
get expertise service from outsourcing logistics. Furthermore, it can be seen there is a huge cost saved via outsourcing from the table through comparing before outsourcing logistics and after, although the results show that the total cost was reduced, and other fees increased. Namely, the capitals were used to pay on logistics transferred to another field. Therefore, the cost was saved by outsourcing logistics, which is to reduce the department, a part of labors and some facility and equipment in the company.

GAC Toyota outsourced the logistic part to TFGL, who has a long-term cooperation, which helps them avoid the factor that influences company’s manufacture and sales. Additionally, the requirements to TFGL are especially taught since GAC Toyota’s core competence is to control logistics and get the benefit from it. According to the interview, GAC Toyota has an aim to cultivate TFGL. Cooke (1998) argued that the third-party logistics provider can invest in warehouses and equipment. TFGL, as a partner with GAC Toyota, establishes warehouses and purchased vehicles and equipment. These capitals belong to TGFL instead of GAC Toyota, and therefore the fees of logistics transferred from internal GAC Toyota to TFGL. However, the results show that the cost was reduced.

We should pay attention to another matter that influences the cost. Looking back to TFGL, the company was established by fund of Toyota Japan and GAC Toyota. ANJI-TNT was established by TNT who has already had a long-term relationship with VW. These two companies choose their own branch company or good relationship company as their partner.
5.3.2 Information system

Table 5.3 information system of two companies

<table>
<thead>
<tr>
<th></th>
<th>SVW</th>
<th>GAC Toyota</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information system</td>
<td>ERP with TMS &amp;WMS</td>
<td>Just-in-time system</td>
</tr>
</tbody>
</table>

According to the interview, the information system of SVW was equipped with ERP, TMS (Transportation Management System) and WMS (Warehouse management System). The function of TMS is to manage components, package, suppliers, loading and unloading places, routes and vehicles. Therefore, SVW can get the best approach to transport the raw materials from suppliers at an economical cost. The function of WMS is to provide information of several warehouses, including monitoring of inventory. The most important thing is that WMS provides correct information of the raw materials via scanning bar codes. SVW can obtain benefit from it since it is possible to reduce the error rate and labor to check the amount. Eliminating error rate is to reduce the recessive cost.

Toyota is famous and successful because of its Just-in-time system. Its core concept is that the amount of manufactured product only meets the demand of order. In this approach, Toyota can reduce the inventory cost to minimum via management and control of process. According to Bartholomew (1984), he pointed that the philosophy of Just-in-time is to just take immediate action to meet the demand and requirement, in order to control the inventory in the low level. According to the interview of GAC Toyota, improvements were regularly made to eliminate the unnecessary process, like ineffective labor and waste in the manufacture. Brierley, Cowton & Drury (2007) claimed that cost reduction can be achieved through several approaches. However,
they can be inducted to methods of reduction, elimination in the form of nonessential 
and non-value adding activities, modification of manufacturing activity.

Although information systems will increase the direct traceability of costs, it 
eliminates more facility of the warehouses and materials handling cost (Foster and 
Horngren, 1987). The fee of establishment of an information system is quite 
expensive and increases costs in a short term, however, the company will benefit from 
it in the long term. Because the information system, like Just-in-time system, has a 
positive effect on cost reduction, there is an increasing phenomenon for the 
automobile companies, like General Motor, Ford and Chrysler, paying attention to the 
information system.
5.3.3 Supply chain management

Table 5.4 Supply chain management of two companies

<table>
<thead>
<tr>
<th></th>
<th>SVW</th>
<th>GAC Toyota</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every order quantity economical</td>
<td>Supplier choice</td>
<td></td>
</tr>
<tr>
<td>Categorize materials into 3 classes</td>
<td>Zero inventory</td>
<td></td>
</tr>
<tr>
<td>Supply chain management</td>
<td>Produce material until 3 hours before the demand of next process happens.</td>
<td></td>
</tr>
<tr>
<td>Material box</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keep low inventory</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to the interviews with two companies, there are different examples given to show how can they manage the supply chain to reduce costs. SVW concentrate on recessive cost and their strategy is less risk than GAC Toyota since they have different approach to manage inventory.

SVW focuses on every trivial detail as well. Mersereau (1994) pointed that cost reduction exists everywhere in business. In other words, productions, processes, manufacture, methods, organization and staff should be considered. Therefore, any capital saving becomes a company’s profit. Every order SVW made is economical. In order to save money and reduce costs, transportation fee, storage fee and delivery time will be computed. In addition, in accordance with different frequency of inventory demand, SVW categorized their inventory into three classes. As Jin and Ying (1997) pointed out, the method of activities based classification can help the enterprise reduce their inventory cost. One of the identified five rules to reduce costs permanently from Jones (1991) is to reduce the time and effort required by activities. Categorization of inventory has a positive effect to reduce inventory costs. Additionally, raw materials and components were delivered in material box which
was made of plastic. The staff of SVW are required to care for these material boxes, and they keep them carefully, and they can be used again and again. Therefore, they can save the handling costs by this approach.

According to our interview, GAC Toyota pays more attention to supply chain management than SVW since they focus on cost reduction via supply chain management. The most important thing for GAC Toyota is ‘zero inventories’. The manufactured models are original from orders and demands are designed to eliminate all waste in the whole supply chain. Xia and Tang (2011) pointed out that remedying supply chain management plays a key role in saving money in the automobile industry. The similar view is shared by Toyota, making improvement unstoppable.

An example was given that the suppliers of GAC Toyota will not produce the raw material until the demand happens three hours beforehand. GAC Toyota can hold inventory as low as possible by this approach. Toyota can not only hold low inventory but also their suppliers could hold low inventory. By this way, the suppliers can obtain the benefit of low inventory from the Toyota’s supply chain management and the suppliers’ manufacturing could be reduced. This perspective is consistent with Keller’s view (1997) that supply chain management has a positive effect on reducing costs in the whole supply chain. Because the total cost of suppliers has been reduced, GAC Toyota can gain the lower price for raw materials. Furthermore, according to the interview with GAC Toyota, they will reselect their suppliers regularly. However, GAC Toyota will also consider the quality and the price and then trade-off. Therefore, the results of short-term cooperation with the suppliers reduces parts of the cost.
5.3.4 Others

Some other factors were provided by the interviewees could help automobile companies reduce costs. For example: control of wages, increase of labor productivity, avoid waste of materials, improve equipment utilization, save operating and management costs and so on.
5.4 summary

Figure 5.1 Framework of cost factors and methods of cost reduction

In order to have a clear picture of the relationship between the factors and the methods of cost reduction, figure 5.1 is expressed here. Obviously, there are two main categories in the figure 5.1 since the entry strategies are not positive to reduce costs directly.

In the first part, logistic management and supply chain management, there are five factors which play key role in it. However, they are not managed by automobile companies themselves. Since the core competency of automobile manufacturers is to develop and manufacture automobiles, they formulate and implement outsourcing logistics to a third party logistics company. By this approach, automobile
manufacturers can not only benefit from reducing investment of labor and equipment but also reduce the logistic cost. Therefore, outsourcing logistics can reduce the labor and equipment in the field of logistics, and the third-party logistics company will charge cheaper than automobile manufacturers since the third-party logistics is professional and has the advantage of economic scale.

Additionally, another important factor reducing costs of logistics is the management information system. Every automobile manufacturer has their own information system which helps them control the inventory and share the demand of raw materials to suppliers. Raw materials will not be produced in advance until the demand is given. Sharing information via an information system, both suppliers and manufacturer can keep low inventory.

Therefore, outsourcing and information systems play two vital roles in cost reduction of supply chain and logistics. Outsourcing is a tool to solve a company’s logistics problem rather than reducing costs directly. Through the strategy of outsourcing, the whole supply chain is provided with logistic services and then every link will reduce costs. Similarly, an information system can help a company monitor and maintain their inventory at a low level. Both outsourcing and an information system cannot reduce costs directly, but they are also important for a company to reduce costs. Additionally, it is suitable for a Chinese automobile company to formulate and implement.

Transportation cost:

Transportation fee is relevant to delivery time and route. In order to reduce transportation fees, it is essential to improve routes and shorten delivery time for the third-party logistics company and automobile manufacturer in the Chinese market.
Order cost:

The quantity can be ordered in an economical approach. Order cost is relevant with the maintenance fee, delivery cost and cycle of demand. According to the different reality of the situation, order costs can be reduced via the method of EOQ.

Inventory cost:

It is the inventory cost that the manager in the company wants to reduce dramatically. One approach is to reduce the inventory cost which is to categorize the raw materials in the warehouse into three classes, managing them with a different role. The information system also plays an important role in reducing inventory costs. Among a variety of information systems, Toyota’s Just-in-time is imitated by other automobile companies because ‘zero inventories’ result is to reduce cost both to the manufacturer and suppliers obviously.

Recessive cost

This kind of cost is unstable, due to uncertain factors. However, recessive cost in automobile manufacturers can be reduced by outsourcing logistics. The qualified staff and professional services could have a positive effect on satisfying the requirements that delivery is achieved safely and without damage from automobile manufacturers. In addition, delivering raw materials at the right time, in the right places and in the right quantity are also helpful to reduce the recessive costs of stock-out cost.

There is an undoubted relationship between production sectors and cost reduction, which has been proved by empirical data and analysis. The production sectors include labor and materials and they can help automobile companies reduce production costs.
directly through some different measures, such as priority of cheaper labor, standardization and improvement of productivity, all of which have been mentioned in figure 5.1.

There is no obvious relationship between entry strategies and costs reduction according to the empirical data and analysis. Joint venture and agents are very common in the Chinese automobile market, but there is no information which can prove joint venture and agents can help automobile enterprises reduce entry costs in the Chinese automobile market. Therefore, entry strategies have been picked out to figure 5.1.
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

6 Conclusion

This chapter will provide the general conclusions from our research study; the hypothetical framework will be improved in the part of conclusion and the implication will be provided for further researches.

6.1 Conclusion and discussion

Based on the present theoretical background in the field, the costs reduction of automobile enterprises in the Chinese automobile market, the problem and purpose of the research is to find the kinds of factors that can help automobile enterprises reach cost reduction. How do those factors affect an automobile enterprises’ costs reduction?

In this dissertation, video-interviews have been used with two managers from SVW and GAC Toyota. Although the theories which have been shown in the literature review, in the field of logistics, the explicit cost includes transportation costs, order costs and inventory costs. In addition, the return cost and the stock-out cost are composed to the implicit cost. These five costs can be solved by planning the best route, the method of economic order quantity, the method of activity based classification and Just-in-time. However, it is necessary for those methods of cost reduction to be supported by a management information system, and executing these actions by outsourcing logistics. Therefore, an automobile company can reduce the cost of logistics by two tools-outsourcing and a management information system, and implement different methods to reduce different parts of costs.

The production sectors undoubtedly can help automobile enterprises reduce costs. The
production sectors include labor and materials, which have been mentioned in the part of empirical data and analysis. Based on the section of empirical data, it’s clear to find that the labor costs in China are cheaper than Europe and the U.S; it means that the costs of local production in China are lower than the production in Europe or the U.S and important to China. Therefore, overseas automobile companies and local automobile companies tend set up manufacturing factories in the cheaper labor areas, which can help automobile companies reduce production costs directly. Materials are factors to help automobile companies reduce costs in the production sectors. According to the interview, standardization of materials and improvement of productivity have been provided; the effective implementation of those two measures can help automobile companies reduce production costs directly in the Chinese automobile market.
6.2 Implications

Initially, there are many researches on the theme of cost reduction and cost control. The difference between them should be identified. But cost reduction is more attractive, and the increasing phenomenon of a variety of companies has paid attention to it. However, there is a great gap of reduction costs in the Chinese automobile market. Because the Chinese automobile market has boomed in recent years, previous scholars have not done adequate researches on cost reduction in the Chinese automobile industry.

Additionally, previous scholars considered that joint venture and agents can help companies reduce costs, but the empirical data and analysis in this dissertation has shown that joint venture and agents cannot help obviously automobile enterprises to reduce costs in the Chinese automobile market. Therefore, these strategies are probably applied to other industries rather than the automobile industry. Therefore, they are not suitable to the Chinese automobile industry.

Moreover, the field of logistics is regarded as a new spot of profit, if it is possible to reduce the cost of logistics. This study analyzed the different aspects of cost reduction in different companies in the Chinese automobile industry. Most of these strategies of cost reduction are popular in the European area and the U.S and can be recommended to the automobile company in the Chinese market. Furthermore, this research analyzes the empirical data, a serious of theories and models which have been used to find different approaches to reduce cost. In order to be creative and show with a clear picture, our model is shown in the conclusion.
6.3 Limitations and Further Research

Honestly, there are some limitations in this dissertation.

The first limitation is the small number of interviewed automobile enterprises which could not include or summarize the current situation of reduction costs in the Chinese automobile industry.

Secondly, I have not interviewed and researched the Chinese domestic automobile enterprises, because the scale of the domestic automobile company is quite small. One of the reasons is that the companies deriving from a foreign country are dominant in the Chinese automobile market.

Thirdly, the two authors come from China and the two companies we had interviewed are companies in the Chinese market. It is better and convenient for us to use our mother language to interview. Therefore, it is necessary for the two authors to translate data from interviews into English. Inevitably, there are some language gaps in translation. But the authors try to keep their original meanings.

Finally, the cost system we used is not general, but it has a trait of representativeness. Furthermore, another key point of cost is developed and researched, which also plays a vital role in the automobile company. However, we have not referred to that point.

Although there are some limitations in this research study, I still hope that this study will be helpful and useful for managers in the research field.

In summary, there is still room for further research. Some previous scholars provided that entry strategies can help companies reduce entry costs, but the reason why those views were not appropriate for the Chinese automobile industry. On the other hand, there are many other automobile joint ventures performing different strategies to
reduce costs in the Chinese automobile market (such as BMW, Mercedes-Benz, Ford and so on), and therefore further researchers can focus on those enterprise's strategies or measures in the field of reduction of costs. On the other hand, the Chinese domestic automobile companies are rapidly developing and they explored and developed many new strategies about reduction costs according to their knowledge of the domestic market (such as BYD's brand strategies), which is equally worthwhile for scholars to research further.
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62
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Appendix

Interview guide

● As the top management of automobile company, would you please tell us about what kinds of factors could influence reduction costs in your company?

Production sectors:

● Most researchers consider that labor and materials can help companies reduce costs directly. What do you think about this opinion?

● Would you please tell us what kind of strategies or tools about labor and materials have been implemented in your company?

Entry strategies:

● In Chinese automobile market, joint venture and agents are very common. What do you think about this phenomenon?

● What do you think about the relationship between entry strategies and
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

reduction costs?

- Most scholars considered that entry strategies can help companies reduce entry costs and development costs, how do you think about those views?

- What do you think about that government could provide some beneficial policies to joint venture?

Logistic:

- Most researchers mentioned that Logistic is an important part of reduction costs, what do you think about the relationship between logistic and reduction costs?

- Would you please tell us some strategies about logistic, which have been implemented to reduce costs in your company?

- Would you tell us how about your company to delivery materials and products?

- Do you think about that a best route can help company to reduce transportation cost?

- There are many methods to reduce the inventory cost in the company
nowadays, would you tell us what strategies have you implemented?

- Do you think of stock-out cost is a kind of implicit cost which is a hidden danger for a company and how can you avoid them?

- Would you tell us some informations about outsourcing logistic?

- How do your company treat logistic and outsourcing cost

Suppliers:

- Would you please tell us how reduction costs influence your picking of suppliers?

- What do you think about sharing of information between automobile companies and suppliers?

**Corrections**

I have spent over four hours checking your work and have listed below the most common errors, which I hope will be useful to you.
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

- **Definite/Indefinite article** – omitted or misused. Please see where I have made corrections and use as a guide for further work.

- **Singular/plural confusion** – the final ‘s’ often missing, i.e. ‘logistics and effective information systems.’ See also page 4 – Table of Contents as an example.

- **Contracted words** – particularly the word ‘auto’ – this should always be written in full and pluralised where appropriate. I have corrected some, but not all, you will need to check your text and correct where you have contracted the word.

- **Never begin a sentence with ‘And’ or ‘But’**. These are co-ordinating conjunctions and are used to introduce the second or subsequent part of a sentence.

- **Use of the word ‘manufactures’** when you mean ‘manufacturers’, i.e. the people/companies which make a product.

- **Regular use of someone ‘pointing’** rather than ‘pointing out’ – see my corrections.

- **When using long sentences, please use commas**, otherwise your text can be confusing to read.

- **Confusing Sentences** A lot of your sentences start well, but then decline into something meaningless, as if you have not really completed the thought – you will see that I have often commented: ‘This does not make sense’ or ‘part

73
Cost Reduction in the Automobile Industry—Case Studies of the Chinese Market

sentence’. Inaccurate or poor grammar will destroy any point you are trying to make.

- **Past, present and future tense confusion.** Please try to be consistent when using tenses, stick to one tense throughout your work.

- **Use of ‘And.’** Do not use the word ‘and’ followed by a comma. This is incorrect in formal work. Use one or the other, but not together.