A Research on the Process of Knowledge Transfer

A Case Study of Automobile Industry in China

Michal Dzwolak
840202-R292

Jie Shao
890624-T198

Examiner: Bernd Hofmaier

Supervisor: Joakim Tell

Halmstad University

Master's Thesis
M.Sc. Management of Innovation & Business Development
School of Business and Engineering
Sweden 2012
ACKNOWLEDGMENT

Now, when we have finished our thesis, we realize how much effort was needed to achieve the final result. With a clear conscience, we can say that it was worth it to spend every minute working on the thesis. Writing a master thesis is like a long journey where everything can change in a moment. During this journey we had a lot of fun, but also many moments of doubt and uncertainty.

Fortunately, we were not alone during our journey. That is why we would like to thank all people who helped us with this complicated process of thesis creation. Firstly, we would like to thank Joakim Tell, our supervisor who provided all valuable ideas during seminars and meetings. Moreover, we would like to thank Bernd Hofmaier, our examiner who gave the short and surprising questions that inspired us to be more rigorous when doing the research. Finally, we would like to thank our fellow students for all comments and discussions.

We would also like to thank our friends in China for the valuable information you provided. These allowed the paper to be complete and valuable. Without your help, the thesis would not be interesting and complete to the extend as it is now.

We would like to thank our families. It is your moral support that allowed us to complete the thesis and to finish the studies in Sweden. We hope that when you read this paper, you will be proud of your sons' hard work and its results.

Thank you all

Halmstad, Sweden 2012

Michal Dzwolak

Jie Shao
ABSTRACT

Before 1950, the Chinese automobile industry did not exist, let alone manufacturing passenger cars. Currently, the Chinese automobile market has become the largest market in the world. Chinese companies have launched their own brand of passenger cars to compete with other international companies in the world only in 30 years.

In our research, we analysed the development of the Chinese automobile industry from the perspective of knowledge transfer. This study employed qualitative method to conduct the research and a Chinese automobile company was taken as an example. To analyse the process of knowledge transfer, we created an analytical model which is based on previous research. The primary data to test the model comes from three interviews, which were conducted with employees working as manager and engineer in the Chinese automobile industry. The secondary data was collected to complement the primary data. All data were used to present a holistic view of the process researched.

Our results show that the rapid growth began with the attention of the Chinese government who set the Chinese automobile industry as the "pillar industry" of the Chinese economy. Then, the rapid development of the Chinese automobile industry greatly depends on the process of cross-border knowledge transfer, which is significantly influenced by the Chinese government.

Our main contribution is that the process of knowledge transfer can work well within an environment controlled by the government, in spite of lacking the enablers examined in previous studies (e.g. trust). Another contribution is the analytical model we created to analyse the whole process of knowledge transfer.

Based on the analytical model, we tested each component of the model. The result of our discussion leads to the division of the process of knowledge transfer in the Chinese automobile industry into four stages: Introduction and Learning, Joint Development, Independent Development and Launch own Brand. Furthermore, this research identifies the key factors in each stage of this process. To each stage, different key factors were assigned, namely Government, Commitment, Demand condition, R&D capability and Market competition.

Key words: Knowledge Transfer, Absorptive Capacity, Chinese automobile industry, SAIC, Government, Stages, Development, International Joint Venture
List of Figures

Figure 1: Analytical Model of Knowledge Transfer ........................................ 14
Figure 2: Stage I ............................................................................................. 39
Figure 3: Stage II ........................................................................................ 43
Figure 4: Stage III ......................................................................................... 48
Figure 5: Stage IV ......................................................................................... 51
Figure 6: Development of Santana Parts Localization ................................ 62
Figure 7: Market Shares of Santana Cars in 1998 ....................................... 62
Figure 8: The Joint Venture of Shanghai Auto industry Corporation ............ 63
Figure 9: Foreign and Local Brand Sale 2008-2010 .................................... 63
Figure 10: 2008 China Auto Market Shares ............................................... 64
Figure 11: 2009 China Auto Market Shares ................................................ 64
Figure 12: 2010 China Auto Market Shares ................................................ 65
Figure 13: “Red Flag” limousine ................................................................. 66
Figure 14: Santana (Shanghai Volkswagen, 2012) ...................................... 66
Figure 15: Santana2000 (Shanghai Volkswagen, 2012) .............................. 67
Figure 16: Passat (Shanghai Volkswagen, 2012) ........................................ 67
Figure 17: Lavida (Shanghai Volkswagen, 2012) ......................................... 68
Figure 18: Roewe 750 (Roewe, 2012) .......................................................... 68

List of Tables

Table 1: Summary of the Knowledge of the MNCs ........................................ 8
Table 2: Summary of the Function of the IJVs ............................................. 9
Table 3: Summary of the Enablers Section .................................................. 11
Table 4: Summary of the Dimensions of Absorptive Capacity ..................... 13
Table 5: Six Parts of Theoretical Framework in Interview Guide ................. 18
Table 6: The Number of Technology Import in Chinese automobile industry .. 25
Table 7: The Quality of Technology Import (From 1993 to 2003) ................. 26
**Acronyms and Abbreviations**

ACAP- Absorptive Capacity  
AGMA- American Gear Manufacturers Association  
CAD- Computer Aided Design  
CAS- Chinese Academy of Science  
DIN- Deutsch Industrial Norman  
IJV- International Joint Venture  
MNC- Multinational Corporation  
PATAc- Pan Asia Technical Automotive Center  
PMV- Passenger Motor Vehicles  
R&D- Research and Development  
RMB- Renminbi  
SAIC- Shanghai Auto Industry Corporation  
SAWG- Shanghai Automobile Gear Works  
S&T- Science and Technology Structure  
SVW- Shanghai Volkswagen  
SGM- Shanghai General Motors  
WTO- World Trade Organization
Contents

ACKNOWLEDGMENT ............................................................................................................. I
ABSTRACT ............................................................................................................................. II
List of Figures ......................................................................................................................... III
List of Tables .......................................................................................................................... III
ACRONYMS AND ABBREVIATIONS .................................................................................... IV

1. Introduction ........................................................................................................................ 1
   1.1 Background ................................................................................................................... 1
   1.2 Problem Discussion ..................................................................................................... 3
   1.3 Purpose & Research Questions .................................................................................... 4
   1.4 Limitations ................................................................................................................... 5

2. Literature Review ............................................................................................................... 6
   2.1 Knowledge Transfer Framework ................................................................................ 6
   2.2 Theoretical Framework of References ...................................................................... 7
      2.2.1 The Role of Knowledge to the Multinational Corporations ......................... 7
      2.2.2 International Joint Ventures ............................................................................. 8
         I. The Function of International Joint Ventures ......................................................... 8
      2.2.3 Enablers ............................................................................................................... 9
         I. Commitment .......................................................................................................... 9
         II. Equity Ownership ................................................................................................. 10
         III. Trust ................................................................................................................... 10
      2.2.4 Absorptive Capacity (ACAP) of the Local Companies .......................................... 11
      2.2.5 Domestic Environment ..................................................................................... 13
   2.3 Analytical Model of Knowledge Transfer ................................................................. 14

3. Methodology ..................................................................................................................... 15
   3.1 Research Approach .................................................................................................... 15
   3.2 Research Process ....................................................................................................... 15
   3.3 Sampling .................................................................................................................... 16
      3.3.1 Company Criteria ............................................................................................... 16
      3.3.2 Interviewee Criteria ........................................................................................... 17
   3.4 Data Collection ......................................................................................................... 18
      3.4.1 Primary Data ....................................................................................................... 18
      3.4.2 Secondary Data .................................................................................................. 19
   3.5 Data Analysis ............................................................................................................. 19
   3.6 Research Criteria ....................................................................................................... 20

4. Empirical Data .................................................................................................................. 21
   4.1 The History of the Chinese Automobile Industry ..................................................... 21
   4.2 Knowledge Transfer in the Chinese automobile industry ......................................... 23
      4.2.1 The Knowledge of MNCs ............................................................................... 24
      4.2.2 The IJVs in Knowledge Transfer ..................................................................... 26
      4.2.3 The Enablers in Knowledge Transfer .............................................................. 28
      4.2.4 The Local Corporation in Knowledge Transfer ................................................. 30
      4.2.5 Government in Knowledge Transfer ............................................................... 33
1. Introduction

The introduction chapter is divided into four parts (Background, Problem Discussion, Purpose & Research Questions and Limitation). The first part briefly presents the history of Chinese automobile industry. It describes how the Chinese government began the transformation of the Chinese automobile industry. The second part focuses on the problem discussion where it explains the importance and the need for our research. Moreover, the purpose of this research will be given. All of these sections will lead to our main research question and the sub-questions. Lastly, the limitation part explains the specific conditions of our research.

1.1 Background

The rising demand for vehicles in China makes China's automobile market become one of the biggest and the most rapidly growing markets in the world. As a consequence of this situation, many big vehicle manufacturers have decided to form joint ventures with local Chinese companies. To be present at one of the largest markets in the world, multinational companies have decided to establish new assembly plants and to launch new car models (Qiu, Turner & Smyrk, 2004).

One of the reasons for this rapid growth was the decision of the Chinese government to set the automobile industry as one of the “pillar industries” for the Chinese economy. In 1987, the Chinese government shifted emphasis from the production of the medium trucks to the heavy and the light trucks and the Passenger Motor Vehicles (PMV) production (Qiu, Turner & Smyrk, 2004). The implication of this decision was immediate. The number of automobiles in use increased from 150,000 in 1987 to 1.4 million in 1993.

After the rapid growth of automobile industry, Chinese government declared to the public the next stage about the development of automobile industry. Chinese authorities announced a plan to triple the production capacity of automobiles in the period of 1994 – 2009. The goal of this plan was to shift the Chinese automobile industry from the domestically oriented and the insular industry into the global player (Qiu, Turner & Smyrk, 2004). Thus, the goal assumes that the capability of the passenger car industry should be consolidated over the next decade. More precisely, the capability will be integrated into three or four main state owned enterprises. These enterprises will have international competitiveness in the automobile industry and they have the long-term objectives to independently design and completely manufacture the automobiles without using any foreign imported parts and components.

Generally speaking, China has a typical government-intervened economic system. The
Chinese government created the law regulations to protect and promote their "pillar industries". The Chinese automotive industry is highly controlled by the government (Luo, 2006). The law regulations are concerned with the barriers of entry for the foreign companies, joint venture regulations, the share of knowledge, localization of subsidiaries, the local content rules and the limitations of entry. On the one hand, the governmental regulations are created to protect home market and increase the efficiency of industrial development. On the other hand, the regulations focused on the development of state owned automobile enterprises (Wade, 1990). For example, SAIC (Shanghai Auto Industry Corporation) is a successful state owned enterprise in the Chinese automobile market.

Moreover, the Chinese automobile companies can be categorized into three types: state owned enterprises (owned by central government and central governmental ministries), regional companies (owned by regional governments) and independent companies. The law significantly influenced these companies’ development in China. Those companies which are controlled by the government can count on loans or other financial support. Moreover, these companies are allowed to form joint venture with foreign companies. Only the state owned enterprises are able to cooperate with the strongest international automobile companies. Other companies cannot cooperate or find a partner due to the market entry limitation (Luo, 2006; Wade, 1990). Obviously, companies receiving government support have bigger bargaining power in the domestic market. Independent companies cannot compete with it. Government regulations promoted the state owned company to be an oligopoly in the Chinese market, which leads to the collapse of independent investment (Luo, 2006, Wade, 1990). The goal of the Chinese government is also to encourage the international companies to form the joint ventures with the local Chinese companies in the meantime that to protect its own market and enterprises. Through setting up joint ventures, the international companies receive the access to the Chinese automobile market. However, actually they are also under the tight control of the Chinese government.

The tight government control does not discourage international investors to enter into the Chinese automobile market. The first foreign manufacturer which entered the Chinese automobile market was German Volkswagen. The cooperation between Volkswagen and the Chinese companies became quite successful, what led to the result of a joint venture occupying approximately 52% of the market shares of the domestic PMV market in 1990s. Later on, international companies like General Motors, Nissan, Toyota, Honda, Ford and Citroen also established joint ventures with the local companies and entered the Chinese automobile market (Qiu, Turner & Smyrk, 2004).

In terms of joint ventures, the Chinese automobile companies started to capture the knowledge through the cooperation with their foreign partners. Initially, the foreign companies began to transfer knowledge only about the manufacturing process. Afterwards, the foreign companies started to transfer more explicit knowledge related
to other areas. The reason for this change is due to the new role of the local Chinese companies, which shifted from the manufacturers to the real partners. This change made the foreign companies begin to collaborate with the local Chinese companies to develop new products, which serve for the Chinese automobile market. Moreover, in order to increase the degree of knowledge transfer between the partners, the Chinese government also introduced many industrial regulations. These regulations concern the investments on R&D and the establishment of technology centers or cooperation, which are in order to increase R&D development of the local companies (Zheng, Anand & Mitchell, 2005). Through the cooperation with the international companies and the foreign capital investments, China's automobile market has become in 2009 the largest market in the world. With the 13.79 million automobile production, China has overtaken USA and has become the world's largest automobile producer and consumer (People's daily online, 2009).

1.2 Problem Discussion

As we have mentioned before, the Chinese automobile industry grew rapidly during the last several decades, and has caught up with other developed countries' auto industries in approximately 30 years. There might be two main reasons that have accelerated the speed of industrial development. Firstly, the cross-border knowledge transfers from foreign companies to the local companies, which exerts a great impact on the development of the Chinese automobile industry (Aervitz, 2007). Secondly, it depends on the strong support and the attention of the Chinese government (Qiu, Turner & Smyrk, 2004).

First of all, the rapid development of the Chinese automobile industry has become an important research area among both academics and practitioners. The key process in this rapid development is knowledge transfer. In recent years, researchers have empirically investigated the process of knowledge transfer in a variety of interactions between the partners and the cross-border transfer (Nordtvedt, Kedia, Datta & Rasheed, 2008). Many of the researchers focused on the process of knowledge transfer which is from the Multinational corporations (MNCs) directly to the local firms or from the foreign parents to the international joint ventures (IJVs) (Lyles, Krogh & Aadne, 2003; Pak & Park, 2004; Park, 2010). However, previous studies did not explain the whole process of knowledge transfer. In fact, the process of cross-border knowledge transfer indicates that the knowledge is transferred from the sources of knowledge through the IJV (International Joint Ventures) eventually to the receivers. Therefore, the activities of each component should be considered during the development of this process.

Furthermore, there are various theoretical indicators applied in the researchers to examine the issues related to the process of knowledge transfer such as absorptive capacity, specific knowledge and social interactions (Pedersen, Petersen & Sharma, 2003; Bollinger & Smith, 2001; Civi, 2000; Parkhe, 1991; Park, 2010). Especially, the
absorptive capacity of receivers is a crucial component in the whole process (Cohen & Levinthal, 1990; Zahra & George 2002). Due to restrictions in the study object and study time, previous studies have focused only on the western economies. There is little research about the absorptive capacity of Chinese companies and how absorptive capacity has developed over time.

Moreover, previously researches focused on internal factors of knowledge transfer and the process, but there are also some factors existing in the external environment. For instance, in the western economies, the knowledge is transferred only between the cooperators. However, if researchers focus on China’s case, the influence of the external environment on knowledge transfer should be considered. In that case an unique factor occurs: the Chinese government. There are few researches focusing on the process of knowledge transfer in the Chinese automobile industry (Aervitz, 2007; Zhao, 2005). Especially, the process is proceeding in the external environment controlled by the Chinese government.

Therefore, it is necessary for this research to analyse the Chinese automobile industry from the perspective of knowledge transfer. This research will discuss about how each component developed in the process over time (e.g. how the absorptive capacity of local Chinese companies developed). Moreover, what the key factors were in this process due to the influence of the Chinese government.

1.3 Purpose & Research Questions

The main purpose of this thesis is to analyse the process of knowledge transfer in the Chinese automobile industry. Especially, the whole process is examined in the external environment which is controlled by the government. This paper will explain how the Chinese government influences the process. It will describe in detail how each component developed over time and which factor become a key in this process. Finally, this research is to give a logical explanation of the development process of the Chinese automobile industry.

Our research purpose and problem discussion lead to our main research question as follows:

**How does the process of knowledge transfer develop in the external environment controlled by the government - In the case of the Chinese automobile industry?**

Moreover, we also consider these two relevant sub-questions :

- Whether the knowledge transfer in the Chinese automobile industry can be divided into stages and how?
• What are the key factors in each stage of the process of knowledge transfer in the Chinese automobile industry?

To fulfill the purpose and answer the research questions, we will divide the process of knowledge transfer into several stages, which is based on our analytical model and discussion. Our assumption is that these stages are supposed to be the outcome of the development process and the outcome of each stage also could be the premise of the next stage.

We hope that our contribution will add knowledge to the field of knowledge transfer in academics. The unique characteristic of this study is that we focus on the knowledge transfer which is proceeding in the external environment controlled by the government.

1.4 Limitations

This thesis presents the process of knowledge transfer in the Chinese automobile industry, but especially focusing on the passenger cars field. Among many we chose only factors which significantly influence the development of the Chinese automobile industry. In previous studies, there were many different factors influencing the knowledge transfer during cooperation in the IJVs. However, due to the focus of this research, those factors cannot be integrated into our analytical model. This thesis is conducted by the qualitative research method to interpret the social world and to understand phenomena (Bryman & Bell, 2007). Some factors like trust and cultural awareness that were found during our research are more appropriately measured in quantitative research method. Thus, our field of interest and limitations concern data collection, which prevent us from adding all those factors. Moreover, this thesis is only based on the case of SAIC. The results cannot be considered as relevant knowledge for different companies in the Chinese automobile industry.
2. Literature Review

To understand the process of knowledge transfer, we have read and analysed relevant literature in this field. This chapter contains a knowledge transfer framework. The knowledge from the previous research will be the basis for our analytical model, which will be presented in further chapter of the thesis.

2.1 Knowledge Transfer Framework

The process of knowledge transfer in this paper specifically focuses on the knowledge transferred from MNCs (Multinational Corporations) through IJVs eventually to the local companies. Previous literature has focused on the knowledge transfer which is one of the most important processes in the IJVs, but they ignored the change of the influences and the activities of each component during the process.

The beneficial result of the knowledge transfer is that the MNCs through sharing the advanced knowledge receive the decent profits from the cooperation with the local companies. Moreover, the MNCs that enter into the new market through taking IJV receive the local market knowledge from their local partners. At the same time, the domestic companies receive the knowledge about new technologies from their foreign partners such as the knowledge about manufacture process, equipment, managerial skills and etc. (Hitt et al., 2000).

Furthermore, it is effective that IJVs provide a specific platform to serve the knowledge transfer during the cooperation between the foreign and the local partners (Hitt et al., 2000). Specifically, the effectiveness in the cross-border transfer of organizational knowledge is a critical factor for the multinational and the global organizations. The new organizational knowledge provides the effective development of the organizational design and the new possibilities for competitive advantage (Almeida, Grant, & Song, 1998). To increase the effectiveness of cross–border transfer of organizational knowledge, the MNCs can use the following instruments: licensing agreements and patent-related intellectual propriety rights. Moreover, one of the key factors to increase the effectiveness is the absorptive capacity of the recipient organization that appropriately utilizes this acquired knowledge (Shenkar & Li, 1999). Eventually, the organizations acquire knowledge that is transferred from entities outside organizational boundaries to increase their stock of knowledge by learning in the process of knowledge transfer. (Argote and Ingram, 2000).

On the one hand, the outcome of knowledge transfer should be concerned to measure the effectiveness of the whole process (Tsang et al., 2004). It is noticed that the outcome of the knowledge transfer is very important to the companies and the outcome is influenced by the whole process of knowledge transfer as well. Tsang et al. (2004) note that the knowledge transfer has a key effect on the companies’ outcome,
including competency-based/human resource development, performance in joint ventures etc. Moreover, the outcomes might influence the further knowledge transfer during the cooperation between the foreign and the local partners.

On the other hand, according to Perez-Nordtvedt et al.(2008), there are four underlying dimensions in the process of knowledge transfer such as comprehension, usefulness, speed and economy. These dimensions also can be utilized to measure the effectiveness of knowledge transfer. Firstly, comprehension dimension is defined as the extent to which the new knowledge transferred is fully understood by the recipient (Zahra et al.,2000). Secondly, the usefulness dimension is defined as the extent to which knowledge was relevant for organizational success (Lord and Ranft, 2000). Thirdly, speed dimension describes how rapidly a recipient acquires new knowledge and skills (Zahra et al.,2000). Lastly, according to Hansen et al.(2005), the economy dimension explains dependence between knowledge transfer, costs and resources associated with the transfer.

2.2 Theoretical Framework of References

To analyse the Chinese automobile industry, we have created the model of knowledge transfer presented below. Moreover, we also think about the other factors that are not mentioned in the previous research, but might be crucial to the case in China, for example, the external environment. This section contains our model which will be used to analyse the case, and we will go further and describe in detail each part of the model.

2.2.1 The Role of Knowledge to the Multinational Corporations

Bollinger and Smith (2001) define knowledge as understanding, awareness, or familiarity acquired through study, investigation, observation, or experience over the course of time. From the individual's perspective, knowledge is an individual's interpretation of the new information based on personal experiences, skills, and competencies. From the organization's perspective, knowledge is defined as what people know about customers, products, processes, mistakes, and successes (Grayson & O'Dell, 1998). It can be stored in databases or through sharing of experiences and best practices, or through other sources both internal and external to the organization.

The above definitions of knowledge give us the basic understanding of the role of knowledge to each individual and organization. Furthermore, the role of MNCs' knowledge can be concluded based on definition. Knowledge is often called the intellectual capital of an enterprise and it is increasingly becoming a critical factor affecting a multinational corporation's ability to remain competitive in the new global marketplace (Bollinger & Smith, 2001; Civi, 2000).
Specifically, the knowledge of MNC is beyond brand name and the physical assets, which cross-broadly gains the knowledge from years of experience in such areas as manufacturing, engineering and local marketing knowledge. This cumulative experience, together with information gathered from outside sources, the subsidiaries and the joint ventures in the different local markets, constitutes one of the firm's critical resources (Civi, 2000). The role of knowledge as a critical corporation's resource that leads to the development of capabilities and competitive advantage is being increasingly recognized in the management literature (Bhagat et al., 2002; Teece et al., 1997 cited in Bollinger & Smith, 2001, p.8).

<table>
<thead>
<tr>
<th>The Knowledge of the MNCs</th>
<th>Types</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Experience</td>
</tr>
<tr>
<td></td>
<td>• Skills</td>
</tr>
<tr>
<td></td>
<td>• Products</td>
</tr>
<tr>
<td></td>
<td>• Processes</td>
</tr>
<tr>
<td></td>
<td>• Physical assets</td>
</tr>
</tbody>
</table>

Table 1. Summary of the Knowledge of the MNCs

2.2.2 International Joint Ventures

"Establishing a joint venture with a foreign company has long been a favoured mode for entering a new market." (Hill & Jones, 1998, p.263).

IJVs are increasingly adopted by many MNCs in their internationalization. This section describes the function of IJV in multinational corporation's global strategy and discusses IJV’s knowledge acquisition from their foreign partners.

1. The Function of International Joint Ventures

The IIJV founded upon cooperation between the MNCs and the local firms, emerged rapidly as a new trend of globalization from the end of the 1980s (Park, 2010). The MNCs trying to enter a new market are exposed to uncertainties due to the lack of knowledge of the host market and the high cost and the risk of new subsidiaries (Park, 2010; Hill & Jones, 1998). Consequently, IJVs are formed to enjoy the economies of scale, to reduce share risks, to gain global competitiveness and to share and exchange new skills and knowledge. Moreover, MNCs arrange collaborative relationships with the local partners as the most convenient solutions for overcoming foreignness (Pak & Park, 2004). The foreign corporations through taking IJVs overcome the liability of foreignness by utilizing the partner's networks, market knowledge and other supporting resources (Reuer & Leiblien, 2000 cited in Lyles, Krogh & Aadne, 2003, p.112).
<table>
<thead>
<tr>
<th>International Joint Ventures (IJVs)</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Platform for the cooperation</td>
</tr>
<tr>
<td></td>
<td>• New market entry method</td>
</tr>
<tr>
<td></td>
<td>• Enjoy economies of scale</td>
</tr>
<tr>
<td></td>
<td>• Reduce of share risks</td>
</tr>
<tr>
<td></td>
<td>• Gain global competitiveness</td>
</tr>
<tr>
<td></td>
<td>• Share skills and knowledge</td>
</tr>
<tr>
<td></td>
<td>• Solution for overcoming foreignness</td>
</tr>
</tbody>
</table>

Table 2: Summary of the Function of the IJVs

2.2.3 Enablers

This section presents the enablers that facilitate the acquisition of knowledge and several types of enablers influence the effectiveness of knowledge transferred from the foreign parents to the IJVs in our analytical model of this paper.

The foreign parent's enablers are the conditions that facilitate the transfer of the foreign parents' knowledge and technology. Essentially, all of the IJVs require some knowledge transfer from the foreign parent, either in managerial or technological activities (Lyles, Krogh & Aadne, 2003). However, the effectiveness of enablers depends to a great extent on the foreign parent's willingness and ability to act as a teacher and its support for transferring knowledge (Hennart, Roehl & Zietlow, 1999 as cited in Lyles, Krogh & Aadne, 2003, p. 113). There are two enablers that are considered in this paper, and we explain them in detail as follows: commitment and equity ownership.

I. Commitment

This type of commitment is part of the foreign partner's desire to provide collaborative support to IJVs, such as technology, management, and expertise (Park, 2010; Lyles, Krogh & Aadne, 2003). The commitment can be manifested in training programs. The extensive training opportunities provided by foreign parents are catalyst in knowledge acquisition, which expedites the process of knowledge transfer (Park, 2010; Lyles, Krogh & Aadne, 2003). It is always difficult for the IJVs to apply new knowledge without sufficient guidance from their parent firms (Lyles & Salk, 2007). Therefore, this factor is the main prerequisite to facilitate acquisition of new knowledge in the process of knowledge transfer (Swierczek & Dhakal, 2004 cited in Park, 2010, p.65). From this point of view, the training opportunities given by the foreign parents also increase the absorptive capacity of the local companies, we will explain the definition of absorptive capacity in the later section.
II. Equity Ownership

Makhija and Ganesh (1997) as cited in Pak and Park (2004) argued that "appropriate controls are essential for learning to take place", since controls help to manage the dynamic processes of IJVs (e.g., bargaining power and differing need-configurations of partners). Control is defined as "the ability to influence systems, methods, and decisions" entails allocating resources, coordinating activities and achieving strategic objectives (Anderson & Gatigono, 1986 cited in Pak and Park, 2004, p. 419; Lyles, Krogh & Aadne, 2003). Moreover, Lyles, Krogh and Aadne (2003) define the control based on the foreign parent's equity position or ownership and the influence on decision making in the IJVs.

Equity ownership enables the partners to interact and communicate with each other easily, as well as making it possible for them to access readily and monitor each other's various abilities and technologies (Park, 2010). It is easier to acquire new knowledge from the partners than if the relationship is based on a simple contract (Nickell, 1996).

Dasgupta and Teng (1998) assert that a 50/50 position is the best in situations of contractual incompleteness, which is a typical characteristic in IJVs. In fact, it is very difficult for the local companies to acquire new knowledge without the possibility to control completely (Hamel, 1991). To sum up, equity ownership grants controlling authority in a decision-making process for the management of assets and resources that promotes the process of knowledge transfer from one firm to another in the IJVs, which cannot be precisely stated in official contracts or laws (Lyles, Krogh & Aadne, 2003).

However, in some cases, even if the foreign partner's ownership holding was less than 50%, it also grasps much greater bargaining power than its local partners in negotiation due to its advantageous position deriving from the proprietary assets (Buckley, Clegg & Tan, 2006). It is because the foreign partner could exercise influence by withholding the knowledge transfer, changing technical criteria and withdrawing the expatriates. Therefore, this kind of situation is another explanation that the equity ownership might not have great influence on the knowledge transfer between the co-operators. In our research, we should consider both situations of equity ownership.

III. Trust

Trust between the partners has a large impact on the success of cooperative relationships and learning organization's level of knowledge acquisition (Land, Salk & Lyles, 2001; Park, 2010). Lack of trust often caused a serious breakdown in the value creation process; a suspicious attitude towards local partners could be
detrimental for knowledge acquisition and performance (Lyles, Krogh & Aadne, 2003, p.114).

Previous studies asserted that "trust between parents" is the main catalyst in speeding up knowledge acquisition from knowledge transfer and the foreign parents actively transferring knowledge to support local parents learning when a trusting relationship exists between two partners (Lane et al, 2001 cited in Park, 2010, p.61; Andaleeb,1996; Morgan & Hunt, 1994). There are three main reasons. Firstly, trust alleviates possibilities of opportunistic behaviors. Secondly, it reduces potential conflict between the firms. Thirdly, trust allows the firms to participate actively in sharing and exchanging information by voluntarily removing various safe guards placed to protect themselves (Park, 2010).

<table>
<thead>
<tr>
<th>Enablers</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commitment</td>
<td>• The extensive training opportunities provided by the foreign parents are the catalyst in knowledge acquisition, which expedites the process of knowledge transfer</td>
</tr>
</tbody>
</table>
| Equity ownership | • The best environment for cooperation  
                        • Provides equal power in the decision making process  
                        • Powerless in the cooperation due to the distance of knowledge level |
| Trust        | • Alleviates possibilities of opportunistic behaviors  
                        • Reduces potential conflict between the firms  
                        • To share and exchange information by voluntarily removing various safe guards |

Table 3. Summary of the Enablers Section

2.2.4 Absorptive Capacity (ACAP) of the Local Companies

*In order for *IJVs* to acquire knowledge from the parent firms, the former must have sufficient absorptive capacity to speed up organizational learning* (Park, 2010, p.57).

In this section we have outlined the main factors that influence absorptive capacity. The knowledge such as: managerial knowledge, technological expertise and organizational administration is difficult to transfer from one firm to another due to its sticky characteristics is considered. Thus, the possession of absorptive capacity is increasingly important (Park, 2010). Moreover, absorptive capacity influences the effectiveness of knowledge learning (Sen & Egelhof, 2000 cited in Lyles, Krogh & Aadne, 2003, p. 116). Based on cognitive psychology, Cohen and Levinthal as cited in Lyles, Krogh and Aadne (2003) propose that the more an organization learns about a specific knowledge and the greater the efforts made, the more it can acquire new,
related knowledge. According to Zahra and George (2002), absorptive capacity has four dimensions that appear in the organization during the learning process. Four dimensions are described by Zahra and George (2002) as follows:

**Acquisition** – refers to a firm’s capability to identify and acquire externally generated knowledge that is critical to its operations (Zahra & George, 2002, p. 189). The factors that influence acquisition are: intensity, speed, prior knowledge, investments and directions. Intensity and speed influence the quality of the acquisition. Zahra and George (2002) explain that the greater the effort, the more quickly the firm will build the requisite capabilities. Directions influence the firms’ paths that the firms should follow in order to obtain the external knowledge (Zahra & George, 2002).

**Assimilation** – refers to the firm’s routines and processes that allow it to analyze, process, interpret and understand the information obtained from external sources (Zahra & George, 2002, p. 189). Most of the ideas from external environment can be easily overlooked, because the firms do not have the capacity to understand them. The reason for this situation is that the external knowledge differs from the knowledge that is used inside the firm. Usually, the external knowledge has a specific context which makes the new knowledge more difficult to understand or replace (Zahra & George, 2002). Comprehension is especially difficult when the value of knowledge depends on the existence of complementary assets that may not be available to the recipient firm (Zahra & George, 2002).

**Transformation** – denotes a firm’s capability to develop and refine the routines that facilitate combining existing knowledge and the newly acquired and assimilated knowledge (Zahra & George, 2002, p.190). Transformation provides the chances of implementing the new knowledge to the reality, and it gives the new perspectives to solve the problems or pursue the new opportunities. Moreover, transformation also enables the firms to think about deleting the part of previous knowledge that is not relevant to the current work after acquiring external knowledge (Zahra & George, 2002).

**Exploitation** – as an organizational capability is based on the routines that allow firms to refine, extend, and leverage existing competencies or to create new ones by incorporating acquired and transformed knowledge into its operations (Zahra & George, 2002, p.190). The highest effort should be spent on creating the routines that increase the efficiency of exploiting the new knowledge. Zahra and George (2002) argue that routines provides structural, systematic and procedural mechanisms that allow firms to sustain the exploitation of knowledge over extended periods of time. Exploitation promotes the incorporation of new knowledge to the firms' operations, which will provide new outcomes for the firms. The new outcomes from the incorporation of new knowledge could be expressed in new products, new systems or new processes. The exploitation of new knowledge enhances the companies' competitiveness in the market and it also could sustain the companies' competitive
advantage from the long-term perspective.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition</td>
<td>It is a firm’s capability to identify and to acquire externally generated knowledge that is critical to its operations.</td>
</tr>
<tr>
<td>Assimilation</td>
<td>It refers to the firm’s routines and processes that allow it to analyze, process, interpret and understand the information that obtained from the external sources.</td>
</tr>
<tr>
<td>Transformation</td>
<td>It is the capability to develop and to refine the routines that facilitate the combination of the existing knowledge and the newly acquired and assimilated knowledge.</td>
</tr>
<tr>
<td>Exploitation</td>
<td>It is an organization’s capability based on the routines, which allows firms to refine, extend, and leverage existing competencies or to create new ones by incorporating acquired and transformed knowledge into its operations.</td>
</tr>
</tbody>
</table>

Table 4: Summary of the Dimensions of Absorptive Capacity (Zahra & George, 2002)

2.2.5 Domestic Environment

This section based on Porter's Diamond of the national competitive advantage model describes the environmental factors influencing knowledge transfer. To be specific, we will discuss the external environment in our model, which only has influence on the IJVs and the local corporations. It is because only both of them are located in the host country, which belong to the domestic environment. For our research, we only use two factors, which are demand conditions and government.

Transferring knowledge from outside to inside, the firms utilize this obtained knowledge to enhance innovation capability, while also to increase their competitive advantage (Cavusgil, Calantone & Zhao, 2003; Porter, 1990). Companies gain advantage against the world's best competitors because of pressure and challenge. They benefit from having strong domestic rivals, aggressive home-based suppliers and local customers (Porter, 1990, p.73).

Demand conditions. The nature of home demand for an industry's products and services requires consideration of both the quantity and quality of the demand (Porter, 1990). Especially, the characteristics of the domestic market is more important than the size of the market by which we mean sophisticated and demanding buyers, the pressure of lead users and national standards, tastes.

Government. A government's policies can influence the whole process of knowledge
transfer, which is an invisible hand controlling the whole industry. Successful government policies work as a “catalyst” in those industries where the policies support the development of industry and accelerate the speed of knowledge transfer (Porter, 1990).

2.3 Analytical Model of Knowledge Transfer

This analytical model based on previous research, which is designed for the Chinese market. This model presents the directions of knowledge transfer between the partners during cooperation within the IJVs, which contains the factors that influence the IJVs (domestic environment, enablers and the local corporations). The arrows that we use to create this model present the directions of knowledge, which illustrate the directions of knowledge transferred between the partners. Bilateral arrows present that each partner does not only transfer the knowledge into the IJVs, but they also receive new knowledge from the IJVs and their cooperators. Moreover, the word "enablers" we picked up from Lyles, Krogh and Aadne's (2003) model, which are the specific factors existing in the IJVs in our model. Furthermore, domestic environment influences only the IJVs and the local corporations. Neither of factors has a direct influence on the MNCs. The reason for this is that the domestic environment and the enablers only influence the units that are localized in the Chinese domestic market. Lastly, the local corporations contains the absorptive capacity of knowledge, which will be analysed and discuss in detail.
3. Methodology

3.1 Research Approach

Generally, there are two kinds of methods that can be used in scientific research: qualitative and quantitative research (Bryman & Bell, 2007). Qualitative research can be constructed as a research strategy that usually emphasizes words, analysis of data and emphasizes the relationship between theory and research.

In this research, the empirical base of study is the Chinese automobile industry. Our aims of research are to analyse the process of knowledge transfer in the Chinese automobile industry, to identify the key factors in each stage of the knowledge transfer in this industry on the basis of previous research and to interpret the reality of the Chinese automobile industry into different stages. Thus, the qualitative method was chosen in order to get a deep understanding of the knowledge transfer process in the Chinese auto industry under the control of the Chinese government.

3.2 Research Process

The research process guides us through the research purpose to answer our research questions. It ensures that the literature review is relevant to the field of study on knowledge transfer and the empirical finding is consistent with our theoretical framework. Finally, it will lead to the conclusions and our modification of the theoretical framework. The research process includes the several following steps:

1. According to our research purpose, we come up with our research questions focusing on understanding the development process of the Chinese automobile industry. Moreover, the research is conducted with a qualitative approach as a suitable approach due to the research purpose.

2. To carry out the research, an extensive review of previous researches on knowledge transfer was done. Then, we created our own analytical framework based on the previous literature. The analytical framework combines every part of the knowledge transfer in the previous researches, such as the source of knowledge, the intermediate and the receiver of knowledge and we also took into account other factors that might influence the process of knowledge transfer. These other factors might exist in the domestic environment where the knowledge transfer is processing.

3. After establishing the analytical framework, we need to choose appropriate samples of research to examine the practicability of it. Due to our research
focusing on the Chinese automobile industry, the selected samples should be an appropriate representative from the auto industry in China, which also should represent the whole development of the Chinese automobile industry.

(4) The next step is data collection and analysis. We contacted the interviewees and conducted the semi-structured interviews, and we also collected a lot of high quality secondary data to complement the primary data. All the data is classified into each part of our theoretical model. More detail about data collection and analysis will be given later.

(5) Finally, we worked out the different stages during the development of the Chinese automobile industry through data analysis. Moreover, we modified the theoretical model in accordance with empirical finding in each stage. Lastly, the key factors in each stage will be identified by their influences on each stage.

3.3 Sampling

In both quantitative and qualitative research, sampling is one of the important steps for researchers (Bryman & Bell, 2007). The main purpose of this study is to understand the development process in the Chinese automobile industry and to identify the key factors in this process. Therefore, the selected samples of a company should be the representative of the whole development process in this industry in China. Moreover, since the critique of qualitative approach is too subjective and difficult to replicate, the selection of interviewees is based on the principle that the research should reduce the subjective influences on its result (Bryman & Bell, 2007). Thus, the selected interviewees who hold different positions in the company have objective perspectives of knowledge transfer on the issue. More detail about the criteria of company and interviewees will be presented in this section.

3.3.1 Company Criteria

In order to be able to generalize our findings from our sample to the population, the sample must be the representative of the Chinese automobile industry (Bryman & Bell, 2007). Concern with our research questions, therefore the company criteria of selection as follow:

- The company is in the Chinese automobile industry;
- The development of the Chinese automobile industry can be manifested in the growth of company;
- The company has its own R&D capacity and own brand;
- The company has a long-term cooperation with multinational corporations.

Thus, based on the above criteria, the Shanghai Auto Industry Corporation (SAIC) is a
suitable research object to our study. SAIC was founded in 1955 and is based in Shanghai and is one of the first two local Chinese companies cooperating with the MNCs in 1985. For example, SAIC has the long-term strategic partnerships with Volkswagen and General Motors, respectively since 1985 and 1997.

SAIC engages in the R&D, production and sales of vehicles (including passenger and commercial vehicles) and components (including engine, transmission, power train, chassis, interior and exterior trim, electronic and electric parts, etc.) as well as automotive trade in services (including the auto financing business). It has branches in the United States, Europe, Hong Kong, Japan, and Korea. Furthermore, SAIC had launched its own brand- Roewe in recent years (Figure 5, Appendix B), which is a benchmark of the Chinese automobile industry that it has started own brand car's development.

3.3.2 Interviewee Criteria

This study focuses on the process of knowledge transfer which means that knowledge is transferred from the foreign companies to the local corporations in the domestic environment. To understand the rapid development of this process, it is important to investigate on the local corporations, so that all the interviewees will be chosen from the local corporations. Furthermore, the selection of interviewees should also focus on their personal experiences during the development of the Chinese automobile industry and the expertise of technological knowledge that is involved in the process of knowledge transfer. Moreover, the selection of interviewees should not be limited by their positions in the company. Our goal of research is to objectively present the development process in the Chinese automobile industry, which requires the perspectives from different levels of company.

Thus, we intended to select three interviewees who are all engineers, two of them are engineering managers (1st & 2nd interview) and the other one is a R&D engineer (3rd interview). Because one of the researchers has personally worked in SAIC, the access to interviewees is available and reliable. One manager who has more than 10 years' working experience is still working in one subsidiary within SAIC, and the subsidiary has a long-term cooperation with a MNC. Another manager who also has more than 10 years working experience in this industry worked in SAIC, but he has left SAIC to join another auto company in China, so that his perspective on the growth of SAIC is more objective. Lastly, considering the limitation of views in the managerial position, we contacted one engineer who is actively working in the frontier of R&D department within a wholly owned subsidiary of SAIC. All the names and affiliations of interviewees cannot be given due to the confidential agreement with our interviewee.
3.4 Data Collection

In this section, data collection consists of two main parts—primary data and secondary data. Primary data is information that has been collected for a specific purpose from a primary source (Bryman & Bell, 2006). The primary data is collected from three interviews. The secondary data is selected from the company's annual report, articles and internet.

3.4.1 Primary Data

The primary data was collected through three interviews with these selected responders. After choosing the samples of research, we designed the interview guide in the light of the theoretical framework. As we stated above, these interviews are designed as semi-structured interviews, which is one method of qualitative interviewing. We have designed a list of questions covering several specific matters, but the questions may not follow exactly the way outlined on the schedule (Bryman & Bell, 2007).

<table>
<thead>
<tr>
<th>Themes:</th>
<th>The number of questions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Knowledge of MNCs</td>
<td>3</td>
</tr>
<tr>
<td>International joint venture</td>
<td>2</td>
</tr>
<tr>
<td>Enablers</td>
<td>4</td>
</tr>
<tr>
<td>Absorptive capacity</td>
<td>5</td>
</tr>
<tr>
<td>Domestic environment</td>
<td>3</td>
</tr>
<tr>
<td>Overall questions</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 5: Six Parts of Theoretical Framework in Interview Guide

Following the interview guide, the interviews started with warm-up questions and asked for the basic information of the interviewees such as working years, position and company. After that, we stated our research problem and explained our research purpose to them. Then, the interviews were conducted by asking 19 open questions which covered different parts of our theoretical framework (table 6). We were unable to ask all of these questions in each interview because the interviewees' answers sometimes covered several questions. To cope with that, we continued the dialogue with new questions created during the interview. This is also the situation considered in the semi-structured interview. This approach is flexible and leaves room for the unexpected answers (Bryman & Bell, 2006). The interview guide helped us
controlling the process of interview and inspired our interviewees to talk about a lot of relevant matters. All of these data will be abstracted in our empirical data and some key sentences of interviewees will be quoted directly.

Since both the researchers are students in Sweden, all interviews were conducted by Tencent software, which provided a communication platform to interact with respondents. Each interview was conducted in the respondents' primary language — Chinese, which took on average 50-60 minutes and the answers were recorded. Considering the unstable network which influences the clearness of answer and questions, we also used email to confirm the answers obtained.

3.4.2 Secondary Data

According to Bryman and Bell (2007), the secondary data is information that already has been collected for another purpose by persons other than the researcher, on this occasion. However, the secondary data is often of good quality, and it can therefore be useful for another purpose than the primary reason. The secondary data in this paper mainly comes from the company's annual report, internet and articles on this subject.

Firstly, all the theory articles that we searched from ABI/Inform Global database are extracted from the last 10 years' research reports. Moreover, the annual report of one subsidiary within SAIC covering years 1988 to 2010 provides valuable information about the growth of this company. The growth of the company also reflects the longitudinal situation during that time that how the knowledge transfer was processing in the Chinese automobile industry. Lastly, we looked up for more detailed information about the market data of the Chinese automobile industry through the website of China Association of Automobile Manufacturers. These secondary data are good support for our primary data.

3.5 Data Analysis

After sampling, interviews were conducted in a semi-structured interview to collect data. Then, this information acquired from interviews was organized by coding. All interviews were recorded, which has been listened to repeatedly to ensure no valuable information was lost. We summarized interviews and classified the data into several parts based on the theoretical framework. The different stages of the development process in the Chinese automobile industry are realized during the interviews. Moreover, some key factors might also be discovered in the process of summarizing data. In addition, we looked at the secondary data to complement some crucial events interviewees mentioned during the interviews that

1. China Association of Automobile Manufacturers website address: http://www.caam.org.cn/
are related to the government regulations and the market changes. Last but not least, all these data is directly abstracted from the primary data and the secondary data. We did not add any personal opinions during the process of data coding and combining the primary and the secondary data.

3.6 Research Criteria

In qualitative research, many researchers have proposed that it should specify the terms and the ways of establishing and assessing the quality of qualitative research, which provides an alternative to validity and reliability (Bryman & Bell, 2007).

Validity. In this paper, the primary data consists of three interviews that come from levels of the local corporations. According to the company criteria, interviewee criteria, all the sources of data are close to the study field, which strengthens the validity of research (Bryman & Bell, 2007). Moreover, three interviewees give diverse views on the development of the Chinese automobile industry from the perspective of knowledge transfer, which also reduces the subjective influence on the empirical finding. Furthermore, the answers provided by two managers who witnessed the development process in the Chinese automobile industry, increased the evidence of our research. Lastly, the researchers had the opportunity to contact the respondents again through email to acquire further data and confirm their answers (Bryman & Bell, 2007).

Reliability. It is concerned with the questions whether the results of study are repeatable (Bryman & Bell, 2007). In this study, researchers combine the classical theories to come up with the theoretical framework. The interview guide based on the structure of a theoretical framework ensures the data collection is exactly reflecting the theory. Moreover, our interview questions are also based on these classical theories and focused on examining these factors in the process of knowledge transfer in the Chinese domestic environment. Last but not least, these interviews are conducted by the same interviewers, which has been done in this research (Jacobsen, 2002).
4. Empirical Data

This chapter presents the empirical data of Chinese automobile industry for this thesis. It combines the primary data that we collected from three interviews, and the secondary data that we collected from the company's website, internet, and the annual report. This chapter will give the reader a full view of the process of knowledge transfer in the Chinese automobile industry.

The empirical data consists of two main parts. The first part is the overview of the history of the Chinese automobile industry. It briefly describes the whole development process of the automobile industry in China from its foundation to current situation and it also gives some examples of crucial events. The second part follows the structure of our analytical framework. We collected data in accordance with each item of the analytical framework. Some items were found during our data collection. Additionally, more new items mentioned by our interviewees were found in the process of knowledge transfer in China, for example: Cultural awareness. All of them will be described in detail later in this chapter. The secondary complements the contents that interviewees mentioned during the interviews. Please note that all the primary data is not directly quoted, since these data are translated by the authors from Chinese into English.

4.1 The History of the Chinese Automobile Industry

The purpose of this section is to give a short introduction to the development of Chinese automobile industry over the years. It will give a holistic overview of how the Chinese automobile industry developed and what were the important moments that influenced the development of industry.

The development of the auto industry started by the whole economic modernization of China. The economic program of the “Four Modernizations” in China was announced in February 1978. The “Four modernizations” program was divided into three stages. The first stage (1978 – 1984) focused on agriculture. The second stage (1984 – 1992) focused on shifting the economic system from Soviet style toward the market-oriented system. The third period (1992–1997) continued the market-oriented reformation and further industrialization (Harwit, 1992). The goals of the new Chinese strategy are:

- Optimizing the enterprises management;
- Increasing the market progress;
- Deepening the reformation;
- Quickening the growth of economy.

Before the reformation, auto manufacturing industry in China almost did not prosper. China was only focusing on truck, military vehicle and bus, while the attention to passenger car was low (Huanqiu, 2008).
In the time of the Cultural Revolution\(^1\) the production capacity of passengers cars was still low. The passenger cars were only for the Chinese leaders and were produced in low quantities. Moreover, the government regulations imposed limitations on the importation of cars and trucks at that time (Huanqiu, 2008).

It was not until 1958, when China had presented the first passenger car — the “Red Flag” limousine, which was manufactured by Changchun’s Auto Works with the collaboration with the Soviet Union (Figure 13, Appendix B). However, this car was a luxury product at that time and it was only available for the officials in China. By 1960, China produced only 98 cars (Harwit, 1992). By 1980, there were 56 plant sites located in nearly every province in China these plants were focusing on producing various types of trucks and buses (Harwit, 1992). In the meantime, there were 192 factories producing special utility vehicles in China (semi-trailers, cold- storage trucks, etc.) (Harwit, 1992). However, the attention to produce the passenger cars was still quite low.

At the beginning of 1980s, Deng Xiaoping (The second generation of Chinese leaders) directed the orientation of reformation that shifted to the coordination and the cooperation of factories. It was supposed to satisfy the domestic demand for passenger cars. Then, the number of import reached 105, 775 units in 1981 (Harwit, 1992). In this time, the Chinese government had realized that it was necessary to build its own auto industry. The initial strategy for an auto industry in China was to cooperate with the foreign companies who will provide advanced technology, capital investment and management skills (Harwit, 1992). To achieve the goal of establishing its own auto industry, China needed to continuously transfer the technology from the foreign companies (Huanqiu, 2008). To provide the automobile industry with a good condition to the knowledge transfer, the Chinese government created the policies that specifically contributed to technology transfer.

Specifically, these policies were created for the purpose of encouraging the process of knowledge transfer but not leaving the Chinese market wide open for the foreign manufacturers to come and to compete with the domestic companies. The Chinese automobile industry was characterized by the following traits:

- Decentralization of policies
- Heavy reliance on knowledge borrowing from the foreign partners

---

1. The Culture Revolution: The Cultural Revolution had a massive impact on China from 1965 to 1968. The Cultural Revolution is the name given to Mao's attempt to reassert his beliefs in China. Mao had been less than a dynamic leader from the late 1950’s on, and feared others in the party might be taking on a leading role that weakened his power within the party and the country. This probably explains the Cultural Revolution – it was an attempt by Mao to re-impose his authority on the party and therefore the country.
The first trait of the Chinese automobile industry can be seen from the influence of Chinese officials. All of those officials from the local level, the provincial level and the central level have had a great influence on the development of the automobile industry and the cooperation with the foreign companies in China (Harwit, 1992). According to Harwit (1992), the involvement of those officials increases the efficiency of the investment initiatives between Chinese companies and the foreign companies, like Volkswagen. For example, if the foreign companies took joint venture with the local companies, they would have plant in a certain city in China. The mayor of that city has the most power over the cooperation between the two companies and he would influence the effectiveness of knowledge transfer.

Moreover, there were some groups so-called “automotive leading small groups” that are located in Beijing and Shanghai. The groups consisted of the vice mayor of the city, the representatives of city economics, the planning and international trade committee and the auto corporations (Harwit, 1992). These groups tried to establish the avenues for the local industry development and provide a polygon for coordinating efforts among all governmental bodies (Harwit, 1992). The main goal of the auto industrial groups was to link the suppliers to the car manufacturers under their jurisdiction (Harwit, 1992).

The second trait is concerned with knowledge transfer in the Chinese market. According to Harwit (1992), in years 1980-1990 almost all the cars in China were produced by IJVs. The foreign partners of the IJVs have intellectual property protections on the patents and the information like trade secrets, special manufacturing techniques, design processes or systems engineering (Chinese Academy of Engineering and National Research Council, 2003). These intellectual property protections do not allow Chinese companies to develop a world-class car by themselves. As a member of WTO (World Trade Organization), China has to follow the rules with regard to intellectual property rights.

After the successful entry of Volkswagen, the foreign companies like General Motors increasingly entered the Chinese market in 1990s. The foreign companies perceived the Chinese market as a large potential market to sell their products and to manufacture the products with low labors costs. The Chinese market was totally occupied by the foreign companies at that time. In 2001, almost 97% of the market shares was in the possession of foreign companies (Qiu, Turner, Smyrk, 2004).

4.2 Knowledge Transfer in the Chinese automobile industry

The data in this part is structured as our analytical framework. The primary data about the Chinese automobile industry is collected during the interviews. Moreover, the empirical data also are complemented by the good quality secondary data. Five main themes as followed:
• The Knowledge of MNCs
• The IJVs in Knowledge Transfer;
• The Enablers in Knowledge Transfer;
• The Local Corporation in Knowledge Transfer;
• Government in Knowledge Transfer (Domestic environment).

* The structure of data follows the analytical model Figure 1.

4.2.1 The Knowledge of MNCs

At the early period of the Chinese economic reform and opening (1978), the overall technical level of Chinese automobile industry was about 20-25 years behind the international level (Feng, 2003). The technology and skills of components manufacturing were particularly weak and the technical force of passenger cars were almost non-existent. After nearly two decades, the technical level of the Chinese automobile industry has been significantly improved through independent development and introducing advanced foreign technology (Feng, 2003).

In the last ten years, Chinese automobile industry developed quite quick through the direct utility of foreign capital. It was reported that the Chinese automobile industry has imported more than 300 foreign technological items, including 26 items of vehicle, 25 items of engine, transmission, body and other main assembly components, 135 items of parts and components, 79 items of process and R&D (Table 6). The knowledge transfer involved almost all styles of vehicle except the medium truck. Meanwhile, there were more than 300 key enterprises in the automobile industry in China, and they conducted technical reformation of the foreign technology by themselves (Feng, 2003).

So far, Chinese automobile industry has basically met the level of independent development ability in parts and components manufacturing and vehicle manufacturing.

Knowledge transferred from the foreign companies helps Chinese automobile industry rapidly developed in a quite short period indeed, but this transfer is only on quite small scale of technology. All the knowledge they give only focuses on manufacturing instructions and technological support for production, which makes Chinese engineers only know how to do but do not know why it should be done and what should be done (3rd Interview).

2. China economic reform and opening: After the death of Mao Zedong, an alteration in the economic system was introduced. Just as abolishing the people's communes, readmittance of family-oriented agriculture, and limited introduction of prices and markets initially outlined China's economic course to supplement the planned economy by stimulating production via natural market regulation, so now we hear about a socialist market economy with Chinese features.
<table>
<thead>
<tr>
<th>Import items</th>
<th>Numbers</th>
<th>Percentage of total(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle</td>
<td>26</td>
<td>8.04%</td>
</tr>
<tr>
<td>Engine, Transmission, Body</td>
<td>25</td>
<td>7.74%</td>
</tr>
<tr>
<td>Parts and Components</td>
<td>153</td>
<td>47.4%</td>
</tr>
<tr>
<td>Process and R&amp;D</td>
<td>79</td>
<td>24.5%</td>
</tr>
<tr>
<td>Other</td>
<td>40</td>
<td>12.4%</td>
</tr>
<tr>
<td>Total</td>
<td>323</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 6: The Number of Technology Import in Chinese automobile industry (From 1993 to 2003).

This incomplete knowledge transfer results in the asymmetry of technological ability (3rd Interview).

The R&D engineer of SAIC (3rd interview) claimed that the local Chinese companies were unable to produce the whole products by themselves due to lack of knowledge about core technology in the products. Shanghai Automobile Gear Works (SAGW), one of the subsidiaries within SAIC, had a project of automatic transmission which cooperated with its German partner. The German companies deliberately shared their knowledge relating to the machining and manufacturing processes with the Chinese engineers. However, the knowledge of electric control and oil hydraulic control were not given to their Chinese partner at all. These parts are the critical parts of core technology in the whole product, and they are integrally packaged and directly imported from the foreign companies to the manufacturing factories in China. The Chinese engineers just needed to assemble every component and they were prevented from having involvement with the key parts of products and high tech knowledge.

Furthermore, the quality of technology introduced from abroad also has a great influence on the knowledge transfer (Feng, 2003).

*The Chinese automobile industry is still undeveloped compared with advanced foreign industry, and the foreign companies' core technologies are not available to the Chinese companies* (2nd interview).

It is categorized that the technical detail about advanced foreign technology was imported to the Chinese automobile industry (Table 7). Most of the technology that only reaches the technical level of 1980s is outdated.
The quality of technology | Percentage(%)  
--- | ---  
The level of technology in 1980s | 30%  
Replacements in 1980s | 30%  
Out of date in 1980s | 40%  

Table 7: The Quality of Technology Import (From 1993 to 2003).  

### 4.2.2 The IJVs in Knowledge Transfer

The development of the Chinese automobile industry to a great extent depends on the foreign capacity (Feng, 2003). The foreign company who wants to enter Chinese market must not only bring investment, but also share technological innovation and development through joint venture arrangements with a domestic company, which is the industrial policy in China (Aervitz, 2007). In the case of SAIC, its two main cooperation companies are General Motors (U.S) and Volkswagen (Germany) and they are two most successful examples of the knowledge transfer via joint venture in China.

Volkswagen was one of the earliest western companies which entered the Chinese market in 1985 (Shanghai Volkswagen, 2012). Shanghai Volkswagen (SVW) started its production in 1985 with a single product, Santana, that was an out-dated model. Santana was introduced into the Chinese market by the foreign partners (Figure 14, Appendix B). At that time the Chinese automobile industry did not have any prior knowledge. Moreover, local Chinese companies did not even have the ability to manufacture the parts and components for a vehicle, let alone have its own R&D ability of developing a car (Feng, 2003).

*When SVW started to manufacture Santana in 1985, the whole production system was directly imported from Germany* (3nd interview).

*From the local companies’ perspective, the joint venture means that our country purchases the foreign companies’ products, because all the data and knowledge we can learn from their products, in return we provide the access of market* (2nd interview).

Furthermore, the main responsibility of the IJVs is to accumulate and acquire new knowledge from the foreign partners (Zhao, 2005).

*SVW devoted to accumulate the advanced expertise and experiences from its*
foreign parent, started team building, to localize component production and to build up foundation for the further independent R&D (1st interview).

Even if the products, such as Santana, were outdated, SVW still enjoyed a relatively secure market dominance and above-normal return without re-introducing any new vehicles models until the mid-1990s due to the huge demand of the local market and lack of competitors (Zhao, 2005). Its local contents production increased from 0% in 1985 to over 90% in 1997 (Figure 6, Appendix A).

On the other hand, from the beginning of cooperation with Volkswagen in 1985, both Chinese and German parent companies had a clear mind about the importance of training the local engineering and technical force (Zhao, 2005). The establishment of a training center was led by a German partner who was in charge of developing and supervising training programs. The training center was developed with German investment of 1.63 million German Marks and Chinese investment of 2 million RMB at that time. The training program dealt with product, manufacturing, R&D, etc., and it provided the classes including CAD (Computer Aided Design), exterior modeling, manufacturing technologies, automotive control, automotive electronics, engineering analysis, and network information systems (Zhao, 2005). However, our interviewees had another views on these training courses that they increase the production capability of the local companies, but they do not "truly" cultivate the local employees.

_The training contents given by the foreign partners specifically focuses on the key point that solves the practical problems when they happen in real life, while the foreign partners never tell the reasons and the theories of those technical problems_ (3rd interview).

_This kind of training courses are not to transfer knowledge of know-how but to train engineer to be a robot following the instructions_ (2nd interview).

In the mid-1990s, since multinational auto companies increasingly entered the Chinese market through joint venture, the local market competition heated up (Aervitz, 2007). General Motors entered the Chinese market in 1997 through joint venture with SAIC establishing Shanghai General Motor (SGM). After that, SVW launched a modified version of Santana - Santana 2000 in 1997 (Figure 15, Appendix B). In the project of new product, the Chinese engineers in SVW did not participate in R&D of new products, but contributed heavily in the exterior styling design of this car model (Zhao, 2005).

_Due to the low cost of labour, the foreign companies established the factories in China in order to make profits, and they will not share the core technology with the Chinese partners_ (1st interview).
As China entered the WTO in 2001, many MNCs have gradually realized the high competition and challenges in the Chinese market. SVW started a joint development of the Chinese version of the Passat which is a popular compact car initially developed in Germany (Figure 16, Appendix B). The major design work and technical validation was done in Germany by the German engineers, and the Chinese engineers from SVW started to participate in the design proposal stage (Zhao, 2005).

In 2004, the first independent developed product of SVW - Lavida was launched on to the Chinese market (Shanghai Volkswagen, 2012). It is a combination of German technology and Chinese traditional elements, which are wholly designed by Chinese engineers and consulted by German company (Shanghai Volkswagen, 2008; Figure 17; Appendix B).

General Motors entered the Chinese market through joint venture with SAIC in 1997 (Zhao, 2005). After accumulating the experiences and expertise, the Chinese government added new items into the cooperation with the multinational enterprises. In the case of SGM (Shanghai General Motors), SAIC brought the knowledge of the local market and the ability and the convenience of working with the government (Zhao, 2005; Aervitz, 2007). General Motors brought investment and shared advanced technology and technological new car model. SGM produces Cadillac, Chevrolet, and Buick models in China. Moreover, General Motors committed to cultivation of its local Chinese employees of managerial and professional skills and General Motors ensures its operations in China are globally integrated to secure the highest quality, services and products for Chinese market (Zhao, 2005). In the light of these principles, General Motors not only set up two manufacturing joint ventures, but also built a R&D joint venture - Pan Asia Technical Automotive Center (PATAC).

4.2.3 The Enablers in Knowledge Transfer

The enablers are the factors that influence the effectiveness of knowledge transfer. In the case of SAIC, not only the enablers that we mentioned in our analytical model are found in its cooperation with the foreign partners, but there are also some other factors existing in the cooperation between the IJVs during our interviews such as cultural awareness.

Commitment
IJVs require some knowledge transferred from the foreign parent, either in managerial or technological activities (Lyles, Krogh & Aadne, 2003). Commitment is the enabler that inspires the foreign partner to transfer such knowledge to its local partner, which can be manifested in the way of training (Park, 2010). Volkswagen and SAIC have established their cooperation training center. The training center sent several elite Chinese engineers to German Volkswagen for 3-years' overseas training in 1998, and these engineers participated in independent development of new product - Lavida in 2004 (Shanghai Volkswagen, 2008; Figure 17, Appendix B). By 1998, 1,060 Chinese personnel from Shanghai Volkswagen had received technical training from the
training center. SVW’s overall long-term training program includes many areas of industry such as professional training, general training, project-focused training, on-job training, qualifying exams, leadership training and overseas training (Zhao, 2005).

**Equity ownership**
In Shanghai Volkswagen, the equity was shared by Chinese and German partners, each of the four members of SVW’s executive committee had the power to handicap the operation and decision of the whole company by voting and proposing motions (Buckley, Clegg & Tan, 2006). It is because of the equity ownership (50/50) in the joint venture, which is the industrial policy that the foreign companies cannot hold more than 50% stock shares of a joint venture in China (Figure 8, appendix A).

**Trust**
During the interviews, when it comes to the problems in the cooperation with the foreign companies, our interviewees mentioned that they feel little trust in the cooperation. In previous researches, the researchers regard trust as the main catalyst in speeding up knowledge acquisition from knowledge transfer and trust always is established from a situation where equal power is shared between parent company (Lane et al, 2001 cited in Park, 2010, p.61; Andaleeb, 1996; Morgan & Hunt, 1994). However, our interviewees mentioned that:

- The foreign engineers did not tell anything so that we have to learn and accumulate the knowledge by ourselves. We acquire the information through internet and any other ways. Although they are not willing to provide the knowledge to you, we can still take our time to learn it (2nd interview).

- The foreign partners are not willing to share their core technology which is unavailable to Chinese engineers during the cooperation (3rd interview).

**Other factors**

**Culture awareness**
With the further study, cultural awareness is discovered, which should also be considered in the knowledge transfer. Cultural awareness is totally different from previous researches about the influence of culture on the knowledge transfer. In previous research, researchers have regarded culture as the common goal and value between the co-operators, which plays a critical role in determining the IJV’s extent of knowledge acquisition (Palanisamy, 2007; Park, 2010).

However, due to the particular characteristics of the automobile industry, our interviewees mentioned that the business operation system is quite similar so that there is no big differences in the cooperation (2nd interview; 3rd interview). By contrast, the requirements of products are diverse from different regions, which probably depends on the different culture. For example, fully concerned with the
practical and psychological need of the local consumers, *Lavida* adopts a relatively slender body, length 4.61 m, 1.74 m wide, close to the standards of a mid-size car. Side doors occupy a large proportion of the side body, especially the back door of length greater than the front door, which is a "luxury cars" features (Da, 2011; Figure 17, appendix B). That is to meet the taste of the local consumers who like to purchase a car that is spacious and looks like a luxury car in China.

4.2.4 The Local Corporation in Knowledge Transfer

The local companies' absorptive capacity is the most important part in the whole process of knowledge transfer. It is a comprehensive work that consists of acquisition, assimilation, transformation and exploitation. Every step should be consistent with the previous and the next one and then knowledge will be continuously transferred from knowledge sources to the local companies.

**Acquisition**

From 1980 to 1990, it was the start-up period of China's economic reform and opening policy that economics developed rapidly with increasingly high demand for passenger cars. At the times, China only had its truck industry, due to industrial development requiring the commercial vehicles, while the foreign passenger cars flooded into the Chinese market (Huanqiu, 2008). China imported 640,000 cars at the cost of 26.6 billion Chinese Renminbi (RMB) from 1984 to 1987. Furthermore, in order to rapidly increase the production capacity and technical level of the auto industry, the Chinese automobile industry embarked on cooperation with the foreign auto companies to import and digest foreign advanced technology (Huanqiu, 2008).

When the Chinese government opened the market to joint venture with foreign investors in the early 1980s, the Chinese automobile industrial R&D capability in passenger car sector was extremely weak. The domestic enterprises in this sector were initially to produce commercial vehicles rather than passenger vehicles, which were characterized by low R&D effort, with R&D spending less than 1% of revenue, far lower than R&D by the multinational enterprises (Huanqiu, 2008). During the cooperation with the foreign partners, our interviewees claimed that local Chinese companies worked as manufacturing factories for the foreign companies, while they accumulated knowledge and learnt the new knowledge by themselves.

*Actually, Chinese local companies acted as OEM factory to configure all components together* (3rd interview).

*The local companies focused on the team building and accumulation of knowledge to understand further knowledge and independent R&D in near future* (1st interview).

After around 20 years' operation, the Chinese automobile industry now has grasped a lot of knowledge and experience in the manufacturing field, while the capability of
research and design fields are still weak.

To a great extent, the previous more than 20 years' cooperation of joint venture makes us manufacture good cars, but it does not mean that we can develop and design good cars (2nd interview).

Chinese local companies have own R&D capability to certain extent now, but the R&D capabilities can not keep up with the rapid development of auto industry and meet consumer's needs (3rd interview).

One of our interviewees (3nd interview) claimed that the Chinese own R&D has the ability to make manual transmissions, but it is only for 5-speeds, but the market need now is automatic 8-speeds. In terms of interests, Chinese own R&D capabilities have been outdated by the foreign advanced technology. The knowledge provided by the foreign companies at least makes the local companies manufacture good products. Thus, local Chinese companies probably will give up to certain extent R&D capability and they are willing to act purely as manufacturing factories, which is not good to cultivate local Chinese R&D capacity.

Assimilation
In the next step of absorptive capacity is assimilation. Compared with the training program given by the foreign partners, the Chinese own training program which is consistent to the Chinese education style - "Examination-oriented education" is related to a large area of subjects, while it is hardly connected to practical work (3rd interview). Essentially, Chinese engineers learn that knowledge through practical application in their daily work.

The high quality Chinese engineers can learn and figure it out by themselves, they probably could discover true knowledge from the drafts and manufacturing instructions (2nd interview).

If Chinese engineers are confronted with new problems during their work, they usually have to ask for assistance from the foreign partners. There is plenty of knowledge and information transferred in this communication process (3rd interview).

Furthermore, the local companies started to focus on accumulating and assimilating knowledge inside the company. For example, it is essential that the local companies should establish a specific position serving for the management of knowledge acquisition. In Shanghai Automobile Gear Works (SAGW), one subsidiary within SAIC, has established a specific position which is responsible for technology management. The position is to interpret this knowledge acquired from the foreign partners, to categorize this knowledge and to record this knowledge (3rd interview).

It is a good method for the local companies learning by themselves, when Chinese
engineers are confronted with similar problem during their work, they can look up for prior knowledge record from these previous documents (3rd interview).

Moreover, the Chinese engineers in SAIC have formed a good habit in that they collect these standards or drafts from the foreign partners. Even if they are not able to understand them immediately, they will keep the knowledge and gradually absorb it through the practical application. Furthermore, SAIC concentrates on improving existing products in order to add value and competence to its products. The assimilation of knowledge transfer in the Chinese automobile industry was conducted in the way of absorbing and improving at same time.

*It is crucial for company to consolidate its own technical strength, and to form their own characteristic of research and development* (1st interview).

**Transformation**
To transform the acquired knowledge, the Chinese engineers who have understood it started the manufacture localization. Shanghai Volkswagen was able to produce more than 90% components of Santana at the end of 1997 (Figure 6, Appendix A). SAIC interpreted the knowledge into what local Chinese companies can absorb and manufacture by themselves. The manufacture localization is not only processing on the parts and components, but also for the manufacture standard and other auxiliary equipment. For example, firstly, the engineers of SAGW started the standard's localization that interpreted from German DIN (Deutsch Industrial Norman) or American AGMA (American Gear Manufacturers Association) to the Chinese corporation's standard. Furthermore, they also have started a lot of localization of other equipment such as checking-fixture, machining.

**Exploitation**
The ultimate goal of Chinese automotive companies is to form their own R&D capability with its own characteristics, and to have independent development ability to produce cars with a local Chinese brand (1st interview).

*SAIC has started to organize and adjusted its whole R&D system in vehicles and components, which enables the company to established the platforms to accelerate the development of independent research and development* (1st interview).

Furthermore, SAIC has plenty of market knowledge and fully understand the needs of the local consumers. They help the company launch new products that are more in line with customers' demand. In the last few years, SAIC has established a wholly owned subsidiary that Passenger Vehicle Company, to undertake R&D, manufacturing and sales of SAIC-brand cars—Roewe (Figure 18, Appendix B). From the beginning, the passenger car company relies on the technology and knowledge that includes manufacturing, purchasing, marketing and management advantages accumulated by SAIC for 20 years to build an international Chinese car brand (SAIC Motor, 2012).
4.2.5 Government in Knowledge Transfer

The law regulations of the Chinese government are concerned with three aspects. Firstly, it is to encourage the MNCs to enter into the Chinese market. Secondly, it is to increase the technology progress in the whole of China. These regulations support all the industries including the auto industry. Lastly, the regulations concern joint ventures between the local and the foreign companies. All of those regulations are the roots of the success of the Chinese automotive market.

I. Regulations Concern Encourage the MNCs to Enter China.

As one of the "pillar industries" in the Chinese economy, the government applied the preferential treatments which provide the financial and the legal support or help the companies deal with the international competition by creating good conditions such as trading barriers (Luo, 2006). The special treatment works under the condition that the automotive companies should cooperate with their foreign partners. One of the main goals for the government is to create an attractive environment for investments by the international companies (Luo, 2006).

II. Regulations Concern Technology Progress

To provide the technological progress, the Chinese government created the Science and Technology Structure (S&T). S&T is responsible for civilian and engineering research, which consists of a large number of organizations. Each organization has its own specific responsibility to increase the technology progress. For example, the Chinese Academy of Science(CAS), established over 500 commercial enterprises in the high-tech sector as the parts of a government program. Moreover, the government program also includes the universities' research centers that could provide research which can be applied to the industries. Furthermore, to increase the new technology implications in the industry and more efficient cooperation between the academic community and the business, the Chinese government created the policies that provide fund for the research which is relevant and can be implemented. Lastly, the state owned enterprises have the significant roles in technology development. By 1993, more than half of the state owned enterprises created the technical development centers, founded for the purpose of improving production efficiency as well as increasing product quality and marketability (Aervitz, 2007).

III. Regulations Concern Joint Ventures.

The government regulations influenced the cooperation with the foreign companies. If a company decides to enter the Chinese market and cooperate with the state owned companies, it is allowed to establish a subsidiary on the special economic zones. With the joint venture, the foreign company has an easier way to cooperate with the
Chinese bureaucracy, which results in a more efficient negotiation with the government (Luo, 2006, Wade, 1990).

Moreover, the law regulations concern the equal ownership of the joint ventures. If the foreign company wants to gain access to the Chinese market, it can possess only 50% of the joint venture (Buckley, Clegg & Tan, 2006). Furthermore, the foreign companies are obligated not only to bring the investments, but also to share the technological innovation and development with their local partners. The main requirements for the foreign partners are to provide: technology, equipment, expertise, financial investments. Besides, the foreign partners also will provide the experience in the international market, reputation, management skills and logistic organization expertise during the cooperation. The Chinese counterparts are obligated to provide the buildings, the rights to use land, labour, the knowledge of the Chinese market and the distribution channels and the expertise in dealing with high officials, bureaucracy and the local authorities (Faure, 2000).

In addition, the Chinese government emphasizes the importance of foreign advanced technology. There are three legal documents concerning the technology transfer from the foreign companies to local Chinese companies. The first one is *Detailed Rules for Implementation of Regulations on Administration of Technology Import Contracts* which outlines the terms that the foreign firms should have agreement with their Chinese partners in terms of joint venture. The second one is *Provisional Regulations on Guiding the Direction of Foreign Investment* that denotes in which sectors the foreign investments are permissible. The Third one is a *Catalogue for Guiding Foreign Investments in Industries* which supports the previous regulation. All the regulations are issued by China’s State Council and are implemented and enforced by the Ministry of Foreign Trade and Economic Cooperation. (Aervitz, 2007).

### 4.3 Summary of Empirical Data

All the collected data presents plenty of stories that happened in the development process of the Chinese automobile industry. Before the joint venture with the foreign companies, China did not have a such passenger car industry but only the commercial car and the truck industry. At the beginning of cooperation, the Chinese automobile industry eagerly required such knowledge of automobiles from the foreign companies. In the meantime, it is essential that the attention of the Chinese government to this industry establishes a lot of state-owned companies in this industry, but also inspires the foreign companies to exploit Chinese market. Moreover, the huge demand of the Chinese auto market resulted from the Chinese economic reform and opening policy, which also stimulated the foreign companies to enter into the market.

At first, the MNCs only provided the knowledge about the manufacture and the process. The only thing for the local companies was to acquire the new knowledge
and start to understand by themselves or ask for the help from the foreign companies. Afterwards, the local companies have deeply understood this knowledge and started to jointly develop the specific products for the Chinese automobile market with their foreign partners. Then, the higher competition of the Chinese automobile market inspires the foreign companies to think about increasing the local companies’ R&D capacity. The cooperation began, in that Chinese engineers started to lead and to develop the new products by themselves and the foreign companies worked as the consultant of R&D and the supervisor of a project. Finally, the local companies who have accumulated a lot of experience and expertise started to exploit new fields that established the wholly own subsidiary to launch their own brand.
5. Discussion

The discussion chapter contains our opinions about the development of the Chinese automobile industry. In this chapter, we explain how we divide the process of knowledge transfer into each stage. The discussion is based on our analytical model. Each stage will be discussed based on model, data which we collected and the theories of knowledge transfer. This chapter will give the readers a holistic view of the process of knowledge transfer in the Chinese automobile industry, which will contribute to answer our research questions.

The learning process of China's automotive industry comes in a long way, which is still proceeding now. It is fruitful that Chinese companies have launched their own brand. In our opinion, this process can be divided into four stages. The reasons for that are the different roles of Chinese companies in each stage. During each stage, Chinese companies have different roles to play so that the knowledge provided by the MNCs should be relevant to these roles and change over time. Due to the significant distance of knowledge and experience between the foreign companies and the local companies, it is important that the knowledge transferred to Chinese companies is supposed to be relevant to the skills that Chinese companies possess, currently.

Moreover, we discover that there are different factors influencing each stage during the learning process. Each of these factors has a specific contribution to the development of the Chinese automobile industry. Each stage of knowledge transfer in the development of the Chinese automobile industry can be visualized by the different models of car. For instance, the symbol of the first stage is the Sanatana model, which was totally designed by Volkswagen and was manufactured by Chinese companies. The symbol of the second stage is Santana 2000 model. It was modified based on the German model, but it was the beginning of local Chinese design. Furthermore, Lavida which was totally designed and manufactured by local Chinese R&D capacity with the consultancy of the MNCs is the symbol of the third stage. Lastly, the symbol of the fourth stage is Roewe. Roewe is not a model of a car but a Chinese brand of cars (Figure18; Appendix B).

In the stage of Introduction and Learning, Chinese companies started from manufacturing capacity for the MNCs. In this stage, the foreign partners transferred the relevant knowledge to the IJVs to increase the knowledge and skills of manufacturing cars. The second stage is named Joint Development. In this, Chinese companies started to gain more complicated knowledge. Moreover, the foreign partners of the IJVs collaborate to increase the technological progress of Chinese partners. The third stage that is called Independent Development began when Chinese companies started to develop their own model under the MNC's brand. The last stage that is called Launch Own Brand began, when Chinese companies started to launch their own brand.
In short, Chinese companies gained specific knowledge in each stage, which gave them the access to the next stage of the development. In this case, it is understandable that the foreign partners should not share the whole knowledge with Chinese local companies immediately after accessing the Chinese market. Chinese companies had not been ready for the advanced knowledge. In particular, we cannot neglect the role of the Chinese government in this process. The Chinese government's regulations have had a positive influence on each stage of this process, and they are the key factors in some stages. The Chinese government fulfilled a unique role by providing preferential policies that made China become a potential market for the international companies to come in and provide attractive conditions for the foreign companies to started to share their knowledge.

5.1 Stage I. Introduction and Learning

*The Knowledge of MNCs*

Specifically, the knowledge of MNC is beyond the brand name and the physical assets, which cross-broadly gains the knowledge from years of experience in such departments as manufacturing, engineering and local marketing knowledge (Civi, 2000). In first stage of the process of knowledge transfer, the foreign companies were obligated to establish modern subsidiaries with the high technology equipment. Moreover, the foreign partners started to transfer the knowledge about manufacture. The knowledge was only in the form of instructions without explanation "how it works". The foreign companies also provided the technological equipment and advanced technological items, while the organizational knowledge that they provided was only relevant to the manufacture process (Grayson & O'Dell, 1998). After accessing to the Chinese market, the foreign companies introduced the car model (*Santana*) that would be manufactured and provided for the Chinese market. To increase the production capability of their Chinese partner, the foreign companies arranged training programs for the employees. The training programs were given in the new training center established by Volkswagen.

*International Joint Venture*

From the beginning of the process of knowledge transfer, the IJVs become a platform for cooperation between the local and the foreign partners (Park, 2010). IJVs provided the transfer of knowledge between the parent companies. The foreign companies received the knowledge about the Chinese market, in return they gave the knowledge about manufacture. The IJVs were responsible only for manufacturing the *Santana* model which became a successful product in the Chinese market. The IJVs did not intend to develop the products or processes. All the production processes were transferred directly from Germany. Because Chinese partners lacked the prior knowledge of automobiles, it was too early to import new knowledge.
Local Corporation (Absorptive Capacity)

Through cooperation with the foreign companies, the local corporations started to acquire new knowledge. At this stage, the local companies were responsible for manufacturing the Santana model. Despite the lack of explanation and explicit knowledge transfer, the learning process of Chinese companies started. Chinese companies began to build teams of engineers and to accumulate knowledge which was unreachable in the past. Through cooperating with the foreign partners, the absorptive capacity of Chinese companies increased at least in the acquisition dimension. SAIC started to acquire externally generated knowledge which was critical to its operations (Zahra & George, 2002). Chinese companies did not need to identify the external knowledge, because all of the knowledge which has been provided by their foreign partner was relevant to the manufacture. Moreover, other factors that influence the quality of acquisition knowledge like investments and the right direction of acquiring knowledge were provided by their foreign partners (Zahra & George, 2002). The foreign partners will guide local Chinese companies to learn the relevant knowledge to avoid missing the important knowledge of manufacture. For example, the training programs given by the foreign companies are specific for the relevant areas.

Knowledge Transfer Enablers

Knowledge sharing commitment. To increase the production capacity of the local partners, Volkswagen started its training programs. It is the manifestation of commitment that the foreign partners provide collaborative support to its local partners (Park, 2010; Lyles, Krogh & Aadne, 2003). Training concerns the knowledge that completely focuses on the manufacture process. The outcome of training was only to increase the production capability.

Equity ownership. Equity ownership was one of the regulations provided by the Chinese government. According to Lyles, Krogh & Aadne (2003), equity ownership grants controlling authority in a decision-making process for the management of assets and resources that promotes the process of knowledge transfer from one firm to another firm in the IJVs, which cannot be precisely stated in official contracts or laws. Despite the regulation of equity ownership provided equal power in the decision making situations, the foreign companies would still have a bigger bargaining power and advantage over local companies because of the technology level, because the local companies did not have the ability to work independently at that time.

Domestic environment

Government. Government policies concern the rules that influence the cooperation between partners. To enter into the Chinese market, the foreign companies are required to be cooperating in the form of IJVs. Moreover, each partner can be an equal owner of the IJVs. Another regulation concerns the technology transfer to the
IJVs. The foreign companies were responsible to establish the subsidiary with high-tech equipment.

Demand condition. After accessing the Chinese market, Volkswagen launched Santana model which was very successful at the beginning of the 1990s. Even if the products, Santana, were outdated, Shanghai Volkswagen (SVW) still enjoyed a relatively secure market dominance and above-normal return without re-introducing any new vehicles model until the mid-1990s, due to the huge demand of the local market and lack of competitors (Zhao, 2005).

**Modification Model of Stage I**

![Diagram of Stage I](image)

*Figure 2: Stage I*

Stage I is the beginning of transferring knowledge for Chinese companies. In this stage, the foreign companies started to transfer the knowledge that is relevant for manufacture. For the foreign companies, Chinese partners were only manufacturers with low cost of labour. Despite only working as the manufacturer, Chinese companies began to acquire knowledge and increase their knowledge capacity. This was the first opportunity for the Shanghai Auto Industry Corporation (SAIC) to cooperate with such an experienced partner. This cooperation resulted in new technologies or new equipment being transferred to the IJVs. These training programs provided by the foreign companies increased the accumulation of new knowledge. Furthermore, the Chinese government has a consistent influence on this cooperation at all times. By the regulations concerning the cooperation between the local and foreign companies, the government created a good platform for the knowledge transfer. Moreover, all the regulations that were created in the period of "Four Modernization" contributed to the beginning of knowledge transfer.
Key Factors in Stage I

Government. Government policies were the key factor for the beginning of the knowledge transfer in the industry. Because of the "Four Modernization" program, China opened its domestic market for international investments. Moreover, the regulations were concerned with the cooperation between the partners, which was created for the foundation of knowledge transfer. The regulations concerned equity ownership and cooperation in the form of IJV for the foreign companies, which increased the possibility for the knowledge transfer and to create a good environment for the knowledge transfer.

5.2 Stage II. Joint Development

The Knowledge of MNCs

In the stage II of knowledge transfer, the foreign companies provided more manufacturing instructions that are more explicit. Because of the higher competition in the Chinese market, the MNCs who increased the quality and introduced new products tried to consolidate their market place. That is why the foreign companies introduced the new car model (Santana 2000), which was provided to the Chinese market (Figure 15, Appendix B). Moreover, to increase the quality of the local partners' cooperation, the foreign companies began to focus on the development of the local companies' R&D capability.

In this stage, the foreign companies also shared their managerial skills to increase the efficiency of production. Furthermore, more foreign companies (General Motors) increasingly entered the Chinese market, which resulted in the increasing competition in the market at that time. After the successful entry of Volkswagen, the eyes of MNCs have turned to the Chinese market and recognized it as an opportunity for profits. After Volkswagen, the second foreign company which entered the Chinese market and cooperated with the SAIC was General Motors (GM). It not only brought investment but also shared the advanced technology and technological new car models. Shanghai General Motor (SGM) produces Cadillac, Chevrolet, and Buick models in China. Moreover, GM committed to cultivate its local Chinese employees' managerial and professional skills and GM ensured its operations in China were globally integrated to secure the highest quality, services and products for the Chinese market (Zhao, 2005). Lastly, GM created a R&D joint venture - Pan Asia Technical Automotive Center (PATAC).

International Joint Venture

In Stage II, the IJVs started to compete in the market. Because of the new companies in the market, IJV started to compete for the local customers. In this stage, more
explicit knowledge was transferred to the IJVs. The foreign companies began their long trainings programs for the elite Chinese engineers. The cooperation between the partners was much closer. The foreign companies started to share more explicit knowledge with the local partners to increase the quality of the products that they provided to the market. Moreover, Volkswagen with the cooperation with SAIC introduced new models of their cars. The new model was, Santana 2000, a modification of the previous model. To create Santana 2000, Chinese engineers did not participate in R&D of the new product, but heavily in the exterior styling design of this car. Furthermore, Volkswagen introduced the new model, Passat which was provided for the Chinese market. General Motors with SAIC introduced Cadillac, Chevrolet, and Buick models in China. Lastly, the cooperation between GM and SAIC was much closer compared to cooperation of Volkswagen and SAIC in previous times, because GM and SAIC have more extensive field of cooperation.

**Local Corporation (Absorptive Capacity)**

The *Stage II* of the learning process resulted in the absorptive capacity of Chinese companies entering new dimensions. In *Stage I*, Chinese companies focused on knowledge acquisition, which was provided by the foreign partners and concerned only manufacture. In *Stage II*, the Chinese started to assimilate this new knowledge. Training programs and more explicit knowledge provided by the foreign partners resulted in that Chinese partner starting to analyze, interpret and more understand external knowledge (Zahra & George, 2002). According to the dimensions of absorptive capacity, the potential threat is that a company will overlook the important external knowledge, because of a lack of the specific context or lack of the capacity to understand them (Zahra & George, 2002). To cope with that, the local corporation has established a specific position which is responsible for managing this knowledge. The position is to interpret this knowledge acquired from the foreign partners, to categorize and record this knowledge.

Furthermore, all the external knowledge was specifically provided and carefully selected by the foreign partners. Transferring knowledge was important, to increase the quality of products and the efficiency of production. The foreign partners were committed to transfer this knowledge and needed to ensure that this new knowledge was understandable. Then, the beginning of the third dimension- transformation of the absorptive capacity appeared in the *Stage II*. Chinese companies added to existing knowledge more explicit knowledge that they gained from the foreign partner. This knowledge concerned not only manufacturing instructions but also the modification of the existing model of cars. It can be asserted that transformation of knowledge develops the foundations of the local R&D and moves it to a higher level.

**Knowledge Transfer Enablers**

*Knowledge sharing commitment.* The *Stage II* is characterized by more explicit training programs provided by foreign companies. During the training programs,
Chinese engineers received more explicit knowledge, which built fundamentals for the future independent R&D. Because of the competition in the market, the foreign companies tried to provide knowledge not only for the simple manufacture. In 1998, 1,060 Chinese personnel from SVW had received technical training from the training center. SVW’s overall long-term training program includes many areas of industry such as professional training, general training, project-focused training, on-job training, qualifying exams, leadership training, leadership training and overseas training (Zhao, 2005). The extensive training opportunities provided by the foreign parents are a catalyst in knowledge transfer, which accelerates the process of knowledge transfer (Park, 2010; Lyles, Krogh & Aadne, 2003).

*Equity ownership.* The foreign companies still have the bigger bargaining power during the negotiation between the cooperations. Because the foreign companies grasp the source of knowledge and advanced technology and the local companies still have not the ability to work independently. However, the bargaining power of the foreign companies is not as big as it was previously. The reason for this is the closer cooperation between partners and competition in the market.

**Domestic Environment**

*Government.* To increase the technology progress and to start the learning process in one of the pillars of the Chinese economy, the government created law regulations that provide good conditions for the international companies to invest in China. Volkswagen who was the first foreign company to the Chinese market which gained special treatment from government. For example, for the foreign companies, the special economic zones were created where the foreign companies who cooperate with the local partners through IJV could count on special tax regulations. The economic zones that were the parts of government’s new strategy attracted the foreign companies to enter into the Chinese market and to invest in China. The increasing number of the foreign companies increased competition in the Chinese market. This higher competition resulted in the foreign companies focusing on increasing the quality of their products and starting to share with the more explicit knowledge with the local companies.

Moreover, the government created the regulations that the new companies in the market were obligated to cooperate with their local partners on R&D development. Furthermore, the government also pays attention to cultivate the domestic R&D capacity. The Chinese government also provides funds for the researches that are relevant and can be implemented in the industry, which inspired the local companies to cooperate with universities and other independent research departments.

Government regulations and market competition increased the commitment between the co-operators. From then on, the IJV’s partners needed to cooperate much closer to be successful in the Chinese market. In this stage, both partners were responsible for the success of the joint venture in the market. The increasing commitment which
resulted from a desire to have good products in the market shared more knowledge in the training programs

**Modification Model of Stage II.**

The **Stage II** is characterized by more explicit knowledge transferring. After the success of Volkswagen, more foreign companies entered the Chinese market. The increasing market competition resulted in increasing commitment between the partners. The foreign companies who have the products with high quality need to cooperate more closely with their Chinese partners. Moreover, the foreign companies started to develop the local companies’ R&D capacity through establishing the cooperation technology centers. The local companies began to develop the foundation for their own R&D.

In this stage, SAIC was not only the manufacturer but much a more serious partner to cooperate with. The Chinese engineers of SAIC contributed to develop the new product (*Santana 2000*). It was obvious how has the role of the local companies has changed compared with the previous stage. The local companies not only acquired new knowledge, but also started to assimilate this knowledge and even began to transform it.

The government still has influence on the cooperation between the partners. At this stage, the regulations concerned the development of the local companies. Moreover, government created the policies concerning the taxation of special zones. The government issued the regulations that encourage the foreign investors to enter the Chinese market. More companies started to compete at the market which resulted in higher commitment between partners.
Key Factors in Stage II

Government. In this stage of the process of knowledge transfer, the government still is a key factor. The regulations that concern encouraging the foreign investments to the Chinese market increase the speed of the learning process. The more new capital was invested into Chinese market, the more new knowledge was transferred to China as well. Evidently, those regulations resulted in increasing competition in the market. Market competition resulted in sharing of more explicit knowledge by the foreign companies. Market competition to some extent also decreased the bargaining power of the foreign companies, which we will discuss in the next paragraph.

Market competition. This factor actually does not exist in the pure process of knowledge transfer, but it is inside the domestic environment where the knowledge transfer is processing. Market competition gives the pressure to the foreign companies to share their knowledge more rapidly and it will also enhance the national competitiveness of the Chinese automobile industry (Porter, 1990). For example, before General Motors entered the Chinese market in 1997, Volkswagen has manufactured Santana for more than 10 years, which can not be imaged in today's market. How come this old and obsolete product, Santana, can be sold well in China? That is because of the low competition inside the Chinese market due to its low power of local companies and no entry of other foreign competitors. After General Motors coming in Chinese market, Volkswagen introduced several new car models and focused on the local R&D development in the next several years. It can also be regarded as the way to increase the bargaining power of the local companies during the cooperation with foreign companies, which is also to keep the balance in the market. Otherwise, the only one company who monopolizes the market never feels the threats and never thinks about the development of its local partners.

Commitment. Commitment is also a key factor between partners in this stage. The increasing commitment distinguishes the commitment which appeared in the cooperation from the previous times. In this stage, the local companies were not only manufacturers but also the partners who contributed to the development of the product (Santana 2000). The increasing commitment is manifested by various types of training programs provided for Chinese engineers. In addition, there were long-term overseas training programs for the elite Chinese engineers. Due to the increasing commitment and more explicit knowledge transferred through trainings programs, the local companies have built the foundations of R&D capacity and got prepared for the independent development in future.
5.3 Stage III. Independent development

The knowledge of MNCs

At this time, the MNCs have also provided a lot of advanced knowledge, but the proportion of manufacturing knowledge has been gradually decreased, because the local companies almost have command of manufacturing knowledge and accumulated a lot of experiences about manufacture. The MNCs have been aware of the importance of the local R&D capacity, due to the market or other factors. To improve the local R&D capacity and continuously increase the local companies' ability of product modification, the knowledge of MNCs focuses on the validation and reliability of design, such as the previous experience of modification and design cars (Bollinger & Smith, 2001). This knowledge came from the training program that many courses are related to various areas in the industry, which is lasting from the Stage II till now. Moreover, it is imperative that the foreign companies leave room for the local companies to design and manufacture by themselves and the foreign companies work as the assistant to build up the local R&D capability and as a consultant in the independent project.

International Joint Venture

IJV’s work is to continuously conduct the follow-up product development that modifies the design of a car to meet the need of the local customer, which is the main task but also to start independent development of R&D. IJV focuses on the development of the local R&D team. On the one hand, the local R&D team adapts the previous products to the local market and adds more value into the products. For example, the knowledge of market is a key point in the product development. IJV increasingly think about improving the products according to the taste of the local customers. From the interviews, we know that the local consumers have their particular taste of products, which is called cultural awareness. Cultural awareness in this research is specific for understanding of both the taste of the local consumer and the behavior of Chinese people. From this perspective, if the foreign companies provide the knowledge that is specific for the local consumers, that knowledge probably is much easier to absorb by the local partners. This specific knowledge might increase the effectiveness of knowledge transfer and it requires the further research in future. We will discuss it in our implication part.

On the other hand, the R&D team exploits and transforms these accumulated experiences and knowledge through a new product (Lavida model) development by themselves. The foreign parent assists the new product development and supervises the stages of the project. The final product will be launched under the foreign brand. Obviously, the new product which is still based on the knowledge of the foreign companies belongs to IJV, but it is the first time to demonstrate the local R&D
capability. It can be regard as a signal of the beginning of local Chinese design, and Chinese people have the ability to develop a car from raw material to the final products, which also will lead to the *Stage IV* of knowledge transfer - *Local Own Brand*.

**Local Corporation (Absorptive Capacity)**

After many years' of cooperation, the local corporations have got a lot of prior knowledge of R&D due to cultivating the high quality engineers and learning by doing. Such knowledge as product development and manufacture were transferred through IJV to the local companies. In this stage, the main task of absorptive capacity is to transform this knowledge into a new version. The local companies tried to absorb this knowledge and transform it into new product, while the exploitation of the new own product is still in planning, because it is impossible to understand this advanced knowledge immediately by the local companies. For example, in SAIC, Chinese engineers always keep these drafts and sketches of components. These drafts and sketches are the advanced knowledge. Sometimes Chinese engineers can not understand them right now, but they keep this knowledge and digest it gradually. According to Zahra and George's (2002) the dimension of assimilation, this habit of Chinese engineers is established in the firm's routines, which allows the local companies to interpret and understand the information that has been obtained from the external sources. Learning is a gradual process that local companies keep all this knowledge and absorb it gradually. When the learning process has reached a certain level and R&D capability has been strong enough, the local company will launch new products in their own brand. As Zahra and George (2002) mentioned, the companies' capability that is based on these routines, allows firms to refine, extend, and leverage existing competencies and to exploit the new knowledge.

However, due to the influence of Chinese traditional education style - Examination-oriented education, it is ineffective in this process that this knowledge is only in the textbooks, which is seldom related to the practical application. On the other hand, it is also difficult to transfer an individual’s knowledge to an organization as well. It also requires a transfer system inside the local companies. However, in the case of SAIC, there is no such intuitional system inside the local company to conduct this process, which will result in the slow speed of knowledge exploitation (3rd interview).

During the process of independent developing products, the local companies have also learnt more about the tastes of local consumers. This knowledge of local market led the local companies to develop and design the cars in a more "Chinalization" way. Meanwhile, it means that the Chinese elements will be considered in the developing of the new own products and adds to the formulation of local R&D capability to form it with local characteristics.
Knowledge Transfer Enablers

Commitment. To catch up with the foreign parent's technology level, the local companies never stop the training program of their employees, and it is one main method to transfer this contemporary theoretical knowledge of automobiles from the organization to the individual of a company. These training programs have also been routine inside companies, which helps employees assimilate this new knowledge (Zahra & George, 2002). The training center sent several elite Chinese engineers to German Volkswagen for 3-years' overseas training in 1998, and these engineers participated in the independent development of a new product (Shanghai Volkswagen, 2008). Commitment is more realized both by the foreign companies and its local counterpart. It is essential that the role of the local companies has shifted from the manufacturer to the real partners. The foreign companies increasingly focus on developing local R&D capability and they will provide further training programs and cultivate more Chinese engineers to be professional in R&D, due to the increase of commitment (Park, 2010; Lyles, Krogh & Aadne, 2003). In the meantime, the local companies share the market knowledge with their partners and Chinese engineers are more active in the product development process.

Equity ownership. In the Stages III, the partner companies still are able to possess 50% ownership of the IJV. The bargaining power during negotiations of the foreign companies decreased one more time compared to the Stage II. In the Stage III, the local partners developed the new model of car only with the supervision from the foreign companies. As we can see, the position of the local partners in the cooperation in each stage became stronger. It is the first time for the local companies to work independently, but the foreign company still has a technology and experience advantage.

Domestic environment

Government. The government's regulations still affect this stage. The foreign companies are obligated to continuously provide the knowledge to the local companies. However, this time the contents of knowledge are shifted from only manufacture to more areas such as the market and R&D. There are several reasons that: (1) the Chinese government continuously provides preferential policies as mentioned in the Stage II to support the development of the Chinese auto industry. (2) the Chinese government continuously inspired the foreign companies to enter the Chinese market and gave good conditions to the joint ventures on the premise of sharing technology and knowledge. It results in higher competition between the joint ventures, so that the foreign companies will increase their speed of input to build up the local R&D capability in order to enhance their local competition and to consolidate their local market shares (Porter, 1990).
Modification Model of Stage III

This stage is crucial to develop the local R&D capacity. On the one hand, the foreign companies start to focus on the development of the local R&D capacity due to the higher competition and its own profits in the local market. With the change of the role of the local partners, it ensured more commitment between the MNCs and the local corporations. Moreover, it inspires the MNCs to transfer more knowledge of R&D to the IJVs, which also enhances the R&D capacity of the local partner. On the other hand, it is essential that local R&D team has the opportunities to practice the knowledge that they have acquired under the supervision by the foreign companies. Moreover, the local R&D team also will consider adding more value to the product according to their knowledge of the market. Such knowledge as the taste of local consumers will be transferred to the MNCs.

To sum up, the process of knowledge transfer in this stage is more specialize in each period of product development, which displays the overall view of product development to Chinese local companies. It is the most important trigger for the local companies to start self-development and to launch their own brand in Stage IV.

Key Factors in Stage III

Commitment. Commitment is the key factor in the Stage III. As outlined in the Stage II, commitment, which is manifested in the training programs, increased the knowledge capacity of Chinese engineers. Compared with the Stage II, the training programs for Chinese engineers heavily focuses on developing R&D of the local partner. The three years' overseas training programs provided the opportunity for Chinese engineers to use the acquired knowledge from previous stages later on. The elite corps of Chinese engineers who took the training program in Germany will lead
the development of independent projects (*Lavida*). Moreover, the trainings programs allowed Chinese engineers to heavily transform and began to exploit new knowledge. Those activities continuously increased the R&D capacity of local companies.

*R&D capability*. This is the key factor for the *Stage III*, which is an outcome from the commitment. We regarded R&D capability as a key factor for this stage, because this factor contributed to development of the *Lavida* model. The *Stage III* is characterized by the development of R&D of the local companies, and the *Lavida* model is an essence of this development process. As we mentioned before, *Lavida* was mainly developed by Chinese partners, only with the supervision from the foreign partners. This product shows the new step in the development of the Chinese automobile industry. Without competent local R&D capability, this step could not be made, and Chinese companies would still only be the manufacturer and modify the existing models of cars.

### 5.4 Stage IV. Launch Own Brand

**The knowledge of MNCs**

In this stage, it is the main business of the local companies to launch their own brand (*Roewe*). In other words, the local companies are supposed to be the competitors to the MNCs. However, the experience and expertise that the local companies apply to launch their own brand are the outcome of the knowledge from the MNCs. Therefore, the knowledge of MNCs still affects the process of knowledge transfer, but this process now happens only inside the local companies. This knowledge influence on the pattern of transformation and exploitation of knowledge. For example, the local companies will imitate the business pattern of the foreign companies, and then develop their own pattern based on that.

**International Joint Venture**

As the subsidiary of the local companies, the local company probably has learnt the managerial and professional skills through the IJVs. However, the organizational structure of IJVs is almost as same as its local parent, which influences the efficiency of knowledge transfer (3rd interview). The R&D capability inside IJVs can share its own knowledge and experience in an easier way for the local parent to absorb. The knowledge of local R&D has been transformed through self-development and it is more practicable for the local companies. All of this knowledge and experience are the resources for the local companies to exploit new knowledge and to develop independently.
Local Corporation (Absorptive Capacity)

To launch an own brand product, it is totally to exploit its prior knowledge and experience. The most important change of the local companies is organizational restructure, which will establish specific departments for launching an own brand. The local companies focus to develop and to refine the organizational structure that facilitate the combination of the existing knowledge and the experience of IJVs, which is a symbol to transform all this knowledge and prepare to exploit new knowledge by themselves (Zahra & George, 2002). For example, SAIC established its wholly own subsidiary whose specific responsibility is to develop a Chinese car with their own brand. This subsidiary, which utilizes more than 20 years’ experience and knowledge accumulated through taking the IJVs with the foreign companies, starts to exploit the new field of knowledge, to form its own manufacturing process and to design new products with Chinese independent intellectual property. This is the ultimate goal of local companies who are taking the joint venture with the foreign companies to establish a local own brand.

Domestic environment

It still does not have such an explicit policy to support an own brand car in China. Recently, the Chinese government has articulated that the government should increase the proportion of own-brand vehicles in the government's purchase of car (CB, 2012). It shows the attention of government to an own brand car, while it is merely the government's attitude and not the local customers.

The local customers have not made up their mind yet to purchase local brand car due to their low quality and unstable performance. Even if the Chinese government would give the preferential policy to the consumers who buy the local brand cars, it might still unattractive to them. Firstly, although the price of a local brand car is quite cheaper than foreign car, its quality is low and it would add extra fee for its fuel consumption and repair. Moreover, Chinese people consider a car as an important piece of equipment for the whole family and the symbol of their social status, so that they prefer to buy a luxury and a famous brand car. However, the Stage IV is still processing in China to the auto market now. How the Chinese automobile industry will develop in the future can not be asserted right now. The uncertainty of demand conditions, which is the characteristic of the domestic market will always influence the development of the Chinese automobile industry for a long time (Porter, 1990).

To sum up, it takes time for local consumers to adopt a Chinese own brand car. However, it has gradually changed now. We can see in the 2008-2010 market, reports of the Chinese automobile industry that the market shares of local brand car are gradually increasing every year (Figure 10, 11, 12, appendix A). With the increasing of market shares, the financial support of the local consumers might help the local companies develop their own R&D capability, while it perhaps boosts the speed of knowledge transfer inside the local company. The influence of the Demand conditions
on the Chinese auto industry requires further research, which we will discuss in the implication chapter 7 later on.

Modification Model of Stage IV

In this stage, the key part of this model is the local corporations themselves. Launching an own brand is the key step for the local corporations to independently develop without the help of others. The knowledge transfer is processing inside the local corporations. *For the dash lines, these parts have been already acquired by the local corporations. These are the local corporations' knowledge resources as we mentioned above. The local companies have grasped the knowledge of the MNCs, and they have started to imitate and improve it. Moreover, the transformed knowledge of IJVs have been utilized by the local corporations to exploit new knowledge. Furthermore, in this paper, the enablers are the factors that facilitate the acquisition of knowledge from the foreign companies. Therefore, there also are no enablers in the Stage IV. Last but not least, the Stage IV is still in process. This paper focuses on the current situation in the Chinese automobile industry. How the stage will develop in future can be further researched and we will describe it in our implication paragraph.

It is beneficial that the local companies could launch their own products and formulate local R&D capability after cooperation with the foreign companies. However, local Chinese companies and the foreign companies are still not at the same level in the auto industry. The quality of new products of the local companies is not on the same level as the foreign company's products. It is obvious that this is the very beginning of Chinese own brand products that are unable to compete with the foreign company's products. The foreign companies have already several hundred years' experiences and knowledge in the manufacture and designing of cars, while China has merely established its auto industry in 20 years. It will take a long time to catch up with the foreign companies in R&D and the manufacture of cars in the future.
Last but not least, based on the interviews, it is obvious that trust between the two cooperators does not work well in the process so that, theoretically, trust will not speed up the knowledge transfer. Lack of trust, the foreign companies apply the guardian and protection of core technology to the knowledge transfer so that all the core technology are unavailable to the Chinese partners. By contrast, the reality of the process of knowledge transfer works well and rapidly in the Chinese automobile industry. Particularly, the local Chinese companies are able to develop a car totally by themselves within around 20 years' cooperation. The paradox of trust leads us to think more deeply and gives some clues for future research, which we will discuss in the implication chapter.

**Key Factors in Stage IV**

*Demand condition.* Stage IV is processing now. Thus, we can only predict that demand conditions might be the determinant factor at this stage and it has a lasting influence on the further development of a local own brand according to the recent market report (Figure 10, 11, 12, Appendix A). The quality of products and local R&D capability takes time to be cultivated by all the citizens' support. If every citizen purchases a local own brand, this huge market demand urges the local companies to enlarge its manufacturing capability and empower R&D capability. Essentially, market demand augments the intensity of a local company's effort. The local company's production output might be several times bigger than the past output so that it boosts the speed of accumulating manufacturing experience and learning by doing. Moreover, the high intensity effort also has an influence on local R&D capability, which gives more investment to the R&D department for developing new cars to meet the needs of customers.
6. Conclusion

This paper presents the whole process of knowledge transfer through the cooperation between the MNCs and the local corporations. The result of this research is a model of the theory of knowledge transfer, which combines previous research on this matter.

The researchers applied the developed model to analyse the process of knowledge transfer in the case of SAIC as the representative of the Chinese automobile industry. The aim was to answer the research question:

*How does the process of knowledge transfer develop in the external environment controlled by the government? In the case of the Chinese automobile industry*

Our research shows that the development of Chinese automobile industry “started from scratch” and the Chinese companies have launched their own brands of cars only in only 30 years. The development process of the Chinese automobile industry can be divided into four stages, that *Introduction and Learning, Joint Development, Independent Development* and *Launch Own Brand*, which is based on the activities of Chinese companies.

Moreover, there are different key factors in each stage influencing the process of knowledge transfer in the Chinese automobile industry. The following key factors have been highlighted: *Government, Commitment, Demand Condition, R&D Capability* and *Market Competition*. As the study proved, these key factors cannot be used for the whole process because each key factor influences different stage. Furthermore, this study also shows the development of absorptive capacity in the Chinese companies. The different dimensions of absorptive capacity are assigned to the different stages of the process of knowledge transfer.

Our main contribution is that within the environment controlled by the government, the process of knowledge transfer can still work well without the enablers mentioned in the previous (e.g. trust). Government regulations can replace the enablers, which have a significant influence on the speed of knowledge transfer.

Another contribution is our analytical model, which analyses each component of the process. We hope it will facilitate further research within the field of knowledge transfer. By using our analytical model, we have depicted our findings and contributions in discussion part.

In the case of SAIC, IJV was only a manufacturer of the *Santana* model at the beginning of knowledge transfer (*Stage I*). In *Stage II*, its role shifted to a closer cooperator with the foreign company. This cooperation was manifested by collaboration between Chinese and foreign company during the development of *Santana 2000* model. These two previous roles resulted in the Chinese company accumulating a lot of advanced knowledge during the cooperation. The knowledge
that was acquired from each role in the cooperation gives access for the Chinese company to the next one.

Then, in Stage III, the role of IJV has been more independent than before. The third step is to independently develop the new model of Lavida, which is created by the Chinese with only supervision from the foreign company. In Stage IV, after this cooperation with the foreign company, Chinese companies have grasped enough knowledge, to launch their own Brand: Roewe.
7. Implication

Several problems which might stimulate further research raised during our research on the process of knowledge transfer in the Chinese automobile industry. Moreover, we have found some paradoxes while comparing the primary data collected with the results or previous studies. This incoherence defined the area of further consideration in regards to the process of knowledge process:

- **The development of Stage IV.** We have discussed the development process of the Chinese automobile industry and divided the whole process into four stages. *Stage IV* is still processing in China now. How it will develop in the future is quite an interesting topic for further research, especially from the knowledge transfer perspective. To be specific, after Chinese companies have launched their own brand, they have become competitors of the foreign companies. What is the influence of this situation? Perhaps foreign companies will gradually stop the knowledge transfer due to the increasing competitiveness of their competitors. Or, yet another possibility, the foreign companies will pay more attention to the Chinese market, and they will directly invent new product specifically for the Chinese market. It might increasingly speed up the knowledge transfer in China.

- **Demand condition.** In the *Stage IV*, we consider the demand condition might be the key factor, which will influence the development of Chinese automobile industry. As we stated in the discussion part, the influence of demand condition is powerful. Further research might focus on the factors that will influence the demand condition. Moreover, the demand condition also should be considered in the further of knowledge transfer, which is existed in the domestic environment.

- **Trust in knowledge transfer.** Trust was a matter of discussion that we have found during our research. Other researches claimed that trust is crucial in the cooperation between the foreign companies and Chinese companies. However, our interviewees do not feel trust in the cooperation. Although we only have three interviews, what might limit the evidence of this finding, it makes the researcher think more deeply about this issue. The studies about trust should not only be investigated on the surface, but go deeply to investigate different levels inside IJVs. Moreover, if there was lack of trust in the cooperation as our interviewee mentioned, how come that knowledge transfer works well in Chinese automobile industry? This is also another interesting topic for the future researches.
References


2nd interview. (2012). Interview on Knowledge Transfer in Chinese Automotive Industry interviewed by...Jie Shao [Online] Record 1, 13 March 2012, 12:00.


Management Studies. Vol. 45 No.4


Appendix A

Figure 6: Development of Santana Parts Localization


Figure 7: Market Shares of Santana Cars in 1998

Figure 8: The Joint Venture of Shanghai Auto industry Corporation

Shanghai Auto Industry Corporation (SAIC)


Figure 9: Foreign and Local Brand Sale 2008-2010

Figure 10: 2008 China Auto Market Shares

![2008 China Auto Market Shares](image)


Figure 11: 2009 China Auto Market Shares

![2009 China Auto Market Shares](image)

Figure 12: 2010 China Auto Market Shares

2010 China Auto Market Shares

Appendix B

The products mentioned in the text:

Figure 13: “Red Flag” limousine

Figure 14: Santana (Shanghai Volkswagen, 2012)
Figure 15: Santana2000 (Shanghai Volkswagen, 2012)

Figure 16: Passat (Shanghai Volkswagen, 2012)
Figure 17: *Lavida* (Shanghai Volkswagen, 2012)

Figure 18: *Roewe 750* (Roewe, 2012)
Appendix C

Interview Questions

Knowledge

1. Which type of knowledge do foreign partners provide during the cooperation? (e.g. equipment, manufacturing instruction, technological support)

2. What are the influences of this knowledge on knowledge transfer?

3. In your point of view, how can Chinese engineers understand and grasp this advanced knowledge?

Enablers & International joint venture

4. What is the role or function of Chinese company and foreign company during the joint venture?

5. Do you have any experience of working with foreign engineers?

6. What are the difficulties when you work with foreign engineers?

7. What is the influence of this cooperation on the knowledge transfer?

8. What are the changes of strategy of SAIC during further cooperation of foreign companies?

9. Are there any changes of the organizational structure within the company to better utilize the new knowledge?

Absorptive capacity

10. In your view, does the Chinese company have the prior knowledge such as R&D, high quality employee?(it can be divided to before joint venture, during cooperation)

11. What is the process of interpreting and understanding the imported knowledge?
12. How can this knowledge transfer through the whole company? And recodify to company's own knowledge?

13. How do companies use this knowledge and exploit?

14. What are the successful factors influencing the process of knowledge transfer within the company?

**Domestic environment**

15. What is the function of government in the process of knowledge transfer?

16. Are there any policies of government support for local companies or demands for foreign companies?

17. What do you think is the trigger for foreign companies to focus on the Chinese market?

**Overall questions**

18. What are the success factors influencing knowledge transfer in the Chinese motor industry?

19. Are there any specific factors of knowledge transfer in China?