St. Petersburg University

Graduate School of Management

[Master in International Business Program /

Master in Information Technologies and Innovation Management /

Master in Corporate Finance]

The role of knowledge and technology in internationalization of Chinese companies in Russia

Master's Thesis by the 2nd year student

Concentration —International Business

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St. Petersburg
[2016]

АННОТАЦИЯ

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Название магистерской диссертации	Роль знаний и технологий в Интернационализации Китайских компаний в России
Факультет	Высшая Школа Менеджмента
Направление подготовки	Международный бизнес
Год	2016
Научный руководитель	Андрей Панибратов
Описание цели, задач и основных результатов	В контексте управления знаниями и стратегиями абсорбирующего потенциала с точки зрения объяснения, как знания и технологии управляют международными стратегическими решениями и действиями китайских транснациональных компаний на российском рынке. Эта работа предлагает качественный ретроспективный динамический и поперечную анализ китайских транснациональных компаний из области автомобильной промышленности и высокотехнологичных производств, задействованных на российском рынке. Изучив большой объем источников, мы также заполнили методологический пробел, касающийся неоднозначности определенной теоретической области в том, как компании из стран с формирующимся рынком организуют и усваивают знания и технологии в качестве нематериальных активов, чтобы повторно внедрять свою бизнес-модель на другом развивающемся рынке. Для того, чтобы заполнить этот исследовательский пробел, мы провели подтверждающий факторный анализ 5 репрезентативных китайских автомобилестроительных компаний и 5 успешных

	высокотехнологичных китайских компаний, выявив ограничения в их бизнес-моделях на другом развивающемся рынке. Для того, чтобы заполнить этот исследовательский пробел, мы провели подтверждающий факторный анализ 5 репрезентативных китайских автомобилестроительных компаний и 5 успешных высокотехнологичных китайских компаний, выявив ограничения в их управлении знаниями и форме абсорбирующей способности. Благодаря особой культуре понимания китайских фирм и особой экономической ситуации, сложившейся по причине украинского кризиса, мы разработали интегральную модель, включающую роль государства и китайской культуры *(гуанси)* в этой бизнес-среде. Следовательно, на основании наших исследований, мы пришли к пониманию, что поглощающая способность, управление знаниями, участие правительственных и применение модели Упсала являются четырьмя необходимыми элементами, необходимыми для повышения конкурентных преимуществ предприятий из Китая на российском рынке, кроме того, мы также применили альтернативный управленческий подтекст для китайских компаний, позволяющий установить будущий процесс интернационализации в России.
Ключевые слова	Интернационализация, Китайская транснациональная компания, Россия, знание, технология

ABSTRACT

Master Student's Name	Lai Tianrong
Master Thesis Title	The role of knowledge and technology in internationalization of Chinese companies in Russia
Faculty	Graduate School of Management
Main field of study	International Business
Year	2016
Academic Advisor's Name	Andrei Panibratov
Description of the goal, tasks and main results	This paper aims at exploring the role of knowledge and technology in internationalization of Chinese firms in Russia. The goal of the thesis is to investigate how knowledge management and absorptive capacity direct the strategy of Chinese multinational companies in the Russian market. This paper constructed a qualitative backward-looking longitudinal and transverse analysis in Chinese multinational companies from automotive and high-tech industries, who are doing business in the Russian market. Based on abundant prior literature, we also filled the methodological gap about the ambiguity of certain theoretical domain in how companies from emerging market manage and absorb knowledge and technology as intangible assets to re-conceptualize their business model in another emerging market. In order to complete this research gap, we conduct a confirmatory factor analysis on 5 representative Chinese automotive companies and 5 well-performed high-tech Chinese companies to revealed the constraints in their knowledge management and absorptive capacity from. Owning to the special cultural knowledge of Chinese firms and special economic situation since Ukraine crisis, we developed an integrative model, involving the governmental role. Consequently, based on our findings, we found developing absorptive capacity, relying on governmental involvement and following the Uppsala

	model are three indispensable pillars to keep enhancing competitive advantages for the enterprise from China in the Russian market.
Keywords	Internationalization, Chinese multinational company, knowledge, technology, Russia

ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ

Я, Лай Тяньжун, студент второго курса магистратуры направления «Менеджмент», заявляю, что в моей магистерской диссертации на тему «Роль знаний и технологий в интернационализации Китайских компаний в России», представленной в службу обеспечения программ магистратуры для последующей передачи в государственную аттестационную комиссию для публичной защиты, не содержится элементов плагиата.

Все прямые заимствования из печатных и электронных источников, а также из защищенных ранее выпускных квалификационных работ, кандидатских и докторских диссертаций имеют соответствующие ссылки.

Мне известно содержание п. 9.7.1 Правил обучения по основным образовательным программам высшего и среднего профессионального образования в СПбГУ о том, что «ВКР выполняется индивидуально каждым студентом под руководством назначенного ему научного руководителя», и п. 51 Устава федерального государственного бюджетного образовательного учреждения высшего профессионального образования «Санкт-Петербургский государственный университет» о том, что «студент подлежит отчислению из Санкт-Петербургского университета за представление курсовой или выпускной квалификационной работы, выполненной другим лицом (лицами)».

_____ (Подпись студента)

23.05.2016 (Дата)

STATEMENT ABOUT THE INDEPENDENT CHARACTER OF THE MASTER THESIS

I, Tianrong Lai, (second) year master student, MIB program «Management», state that my master thesis on the topic «The role of knowledge and technology in in internationalization of Chinese companies in Russia», which is presented to the Master Office to be submitted to the Official Defense Committee for the public defense, does not contain any elements of plagiarism.

All direct borrowings from printed and electronic sources, as well as from master theses, PhD and doctorate theses which were defended earlier, have appropriate references.

I am aware that according to paragraph 9.7.1. of Guidelines for instruction in major curriculum programs of higher and secondary professional education at St.Petersburg University «A master thesis must be completed by each of the degree candidates individually under the supervision of his or her advisor», and according to paragraph 51 of Charter of the Federal State Institution of Higher Professional Education Saint-Petersburg State University «a student can be expelled from St. Petersburg University for submitting of the course or graduation qualification work developed by other person (persons)».

_____ (Student's signature)

23.05.2016 (Date)

Acknowledgements

I would like to express my sincere thanks to Prof. Andrei Panibratov, who gives me inspiration and suggestions for accomplishing my master thesis.

I also pay my deep sense of gratitude to all those Chinese companies, that provided me a lot of first hand information and sources I needed for my thesis. I express my good wishes to Chinese business in Russia.

I also feel to acknowledge my great indebtedness and gratitude to my parents and my sincere friends in Russia, whose support and inspiration are indispensable for my achievement in Graduate School of Management.

Lastly, a deep thank you to Graduate School of Management, Saint – Petersburg State University, the knowledge I learned and the people I met here are the most precious treasure in my life.

Tianrong LAI

Table of content

1. Introduction

1.1 Background

As human civilization enters a brand-new age, it is uncontested that this whole new knowledge and technology era is a chief evolutionary accelerator of human production and the traditional production management, which requires all the industries to keep enhancing their effective management skills with huge base of knowledge and technology ceaselessly in terms of improving their own productive, technical and innovative ability as determinants of company's further performance. This is the only way to survive in this rapidly changing information age. Thanks to abundant broadcast of antecedent theories and studies, the knowledge management and absorptive capacity are two well-known scientific tools to test companies' ability to handle knowledge and technology for improving their organizational performance. Increasing number of Chinese companies have already started analyzing the basic tools and model of knowledge management and absorptive capacity, but they are still remaining on the western theoretical level, the utilization of tools and theories is urgently required in reality, especially for Chinese companies, since Chinese scholars on this domain are still not mature yet. With the gradual extension of their business in the international market, more and more drawbacks were explored in their process of internationalization, while they lack of empirical internationalization experience and practical experiment based on knowledge and technology based theories in a more complex business foreign environment.

In the recent years, the world is surprised by the booming economic growth in China. Thanks to the "Open Door" policy of 1979, Chinese industry has leaped forward with a tremendous advance, which eventually brought a good deal of inward foreign direct investment (IFDI) to China. Shortly after China carried out the "Go Out" policy, Chinese companies were stimulated to expand business globally. In another side; Chinese domestic market also attracted more and more inward FDI. The subsequent "Go out" motivates Chinese industries to pay attention to guarantee product's quality, improve self-dependent innovation, reform internal structure and learn experiences from other international enterprises, in order to meet the international norm to satisfy their clients. After years of efforts, so many Chinese companies gained continuous advantage and competency to stand out from the crowed among the international competitors, competing with other international dominant industry among

international market. Besides, Chinese government is actively encouraging Chinese firms to go out, and creating an innovative atmosphere with preferential support to improve the self-independent innovation capability of Chinese firms, for instance, the eleventh five-year plan (2006-2010) and subsidies support time to time. Particularly, it is worth mentioning the extending movement of Chinese companies in the Russian market. Most of Chinese MNCs settled Russian market as their initial battleground for internationalization, every prospect was supposed to be promising, until economic transaction happened in Russia, so many industries and investment projects were retreated from the Russian market. So far, Since the crises happened between Ukraine and Russian, the geopolitical conflict between Russia and Western countries still didn't find a balance point, in 2015 Russian economy faces the risk of shrinking, just under this circumstances, how to survive in this future – unpredictable market by enhancing its own competitive advantage became important than ever. Meanwhile, this economic sanction period also gives opportunities to tie Russia with its old friendly partner – China. Furthermore, in 2015，Chinese government carried out policy cooperated with other countries based on new strategy of economic development, which was named "the Silk Road Economic Belt and the 21st-Century Maritime Silk Road". Besides, with the help of APEC, Russia and China take concrete steps toward a seamless regional economy, China and Russia have established a strategic partnership for win-win cooperation and common prosperity. Even Russia is facing huge political and economic threaten from Europe and America, Chinese multinational companies still try to find opportunities in "crisis" to invest or do business in Russia with preferential and root their brand deeply with the help of exchange rate and some preferential policy.

From the recent literature we acknowledge that for multinational companies (MNCs), the main benefit of foreign direct investment (FDI) is transferring knowledge and technology to local firms in the host countries. Especially for the developing country, such as China, that is lagging behind the majority technology frontier (Pack and Saggi 1997). It is believed that FDI is a premier conduit for transferring advanced technology and knowledge to host countries globally. (Lim 2001)

However, so many Chinese companies just started internationalization process in a beginning phase, they are lack of experience and systemic instruction to tell them how to leverage and integrate knowledge and technology to prosper their business in a global

environment, which could be a fatal weakness for them.

Thus, this paper will conduct a qualitative case study to discover the defective and terrific performance of knowledge management and absorptive capability of Chinese firms from automotive and high-tech industries in the contest of business role of knowledge and technology, and how knowledge and technology can direct to internationalization strategic of Chinese firms especially in Russian market. Consequently, we will summarize the similarity and difference of internationalization strategies that Chinese firms perform.

1.2 Research problem

Based on sufficient priori literature, it is uncontested that knowledge and technology are unprecedented important assests to enhance companies' competitive position and organizational performance in the current knowledge economy. For our research problems, we will firstly clarify the demarcation of knowledge and technology in the context of internationalization strategy. Then we will fill the methodological gap about the ambiguity of certain theoretical domain in how companies from emerging market (China) to manage and absorb knowledge and technology as intangible resource (Skrzypek 2004) to re-conceptualize their business model in another emerging market (Russia). Thus, it is quite crucial to investigate the current applications and constraints of their knowledge management and absorptive capacity of Chinese firms, who are extending their business in Russia.

In order to be credible, we chose the companies from automotive and high-tech industries, who are supposed to have high involvements in knowledge and technology, and then we visualize the specificities of knowledge and technology in the context of knowledge management and absorptive capacity in the internationalization process of selected Chinese companies in Russia.

We also propose that governmental involvement is an influential factor in Chinese companies' internationalization process in Russia, especially under the promising background of Sino – Russian cooperative partnership.

Lastly, combining with selected company's performance in Russia with their application in AC, KM and involvement of government, we conduct a comparative analysis between two industries, in terms of finding theoretical implication and managerial implication in how enterprise from China expands their business in dynamic Russian market.

1.3 Purpose

This paper aims at filling the research gap how enterprise from a developing country expands their internationalization in another high-risk developing country. We adopt a qualitative methodology to conduct a comparative analysis between the automotive and high-tech industry based on investigations and questionnaires, in terms of finding out good and defective applications of knowledge and technology in the context of knowledge management and absorptive capacity. Then, managerial and theoretical implications will be provided for Chinese companies' future development and the expectations for the upcoming study.

The initial goal of this research is to provide insights and interpretation regarding the knowledge and technology performance of companies from emerging market - China within the Russian competition. Before achieving this goal, we establish related literature, then we go through three steps: 1) Inspecting the current economic and geopolitical environment in Russia, identifying the influence of governmental role in Chinese companies' expansion business in Russia; 2) Identifying trajectories of how Chinese firms in Russian acquire, integrate and manage knowledge and technology in Russian market and international market, investigating the impact and application of knowledge and technology acquired from international markets as well as revealing the existing gap and limitation among Chinese Multinational Companies; 3) Put forward managerial implication and theoretical implication.

1.4 Research questions

1) How do the knowledge and technology direct the strategic actions of Chinese firms in Russia?
2) How does the governmental role involve in the internationalization process of Chinese firms in Russia?

2. Literature review

2.1 Definition of Knowledge

The concept of knowledge began to be rooted from 1950s in the education of the workforce, foreign researchers have earlier pointed out the concept of "knowledge-based economy", "knowledge-oriented workers". Nonaka Ikujiro (1991), who wrote a well-known paper

“Knowledge-innovation oriented enterprise”, claiming that in an uncertainty economic environment, knowledge is the only fountain to gain competitive advantage of enterprise. The definition of knowledge is very broad, but according to the study of Pascarella (1997), knowledge definitely drives the bottom line, 99 percent of the work that people does be knowledge based (Wab, 1999), though it is invisible. Business dictionary explains that the definition of knowledge is a special human faculty resulting from interpreted information, an understanding that germinates from a combination of data, information, experience, and individual interpretation. Nonaka (1991) also put forward another authorized definition of knowledge: Justified true belief that it increases an entity’s capacity for effective action.

Since internationalization process has led to a tremendous integration of the world economy, knowledge is progressively recognized as a new imperative strategy for organizations (Ravi and Selvi 2013), while business operators were required to work like knowledge – based organizations in the dynamic knowledge-based economy (Drucker 1993; Holsapple and Singh 2000). Nevertheless, the companies will not get the best financial performance, if they ignore the importance of knowledge itself (Darroch 2005). International knowledge spillovers, as Eaton and Kortum (1996) illustrate that, are essential factors in accounting for the growth of advanced economies. Knowledge management has become the basic framework of a successful business (Davenport and Grover 2001). As Wong and Aspinwal (2004) suggest, harnessing and leveraging knowledge properly can propel organizations to be become more adaptive, innovative, intelligent and sustainable. Therefore, a multinational company’s success often relies on its ability to ensure the efficient and effective utilization of knowledge from the Human resource, organizational management, and business environment and technology adoption (Díaz 2013). Massey, Montoya-Weiss and O’ Driscoll (2002) also explicated that whilst successful new product development is the application of knowledge innovation. Knowledge dissemination prompts innovation by disseminating the company’s knowledge resources. Thus, knowledge will be our premier object of our study.

2.2 Types of knowledge

Understanding different forms of knowledge is a initial step for starting our study, since sometimes the definitions and theories of knowledge tend to be embedded in vague and it is therefore difficult to be observed as an empirical phenomenon (Visser 2002).

There are 2 types of knowledge, namely tacit and explicit knowledge. Early in the 1960s, Michael Polyani initially mentioned the distinction between tacit and explicit knowledge, while explicit knowledge refers to codify knowledge, and the tacit knowledge refers to non-codified and usually personal/experience-based knowledge. Soon afterwards, explicit knowledge became formal and systematic, which was designed by central planks of Nonaka and Tekeuchi's book named "The knowledge-Creating Company".

According to the explanation of Brown & Duguid (1998), explicit knowledge could be easily identified, stored, retrieved (Wellman 2009). From a managerial perspective, the greatest challenge with the explicit knowledge is analogous to information. It could be discovered in databases, notes, documents, memos, etc (Betha et al 2008). It is a crucial knowledge for companies before they enter a new market for handling the potential advantages and risks. This kind of knowledge is also an exclusive driven initiative of technology development.

Tacit knowledge refers to be intuitive, which often contexts dependent and personal in nature. It also regarded as being the most valuable source of knowledge, and lead to breakthroughs in the organization (Wellman 2009). Gamble & Blackwell (2001) point out that tacit knowledge improves the capability for innovation and sustained competitiveness of a company. Tacit knowledge could be set out in the minds of human stakeholders. It includes cultural beliefs, values, attitudes, mental models, skills, capabilities as well as expertise. (Botha et al 2008)

Using tacit knowledge is a primary factor in attracting and maintaining a talented, loyal, productive workforce. (Smith 2000) Wagner and Sternberg (1987) believe that the ability to acquire and manage tacit knowledge is hallmarks of managerial success.

There is a different type of knowledge-embedded knowledge, which refers to lock in process, products culture, routine, artifacts or structure. (Horvath 2000; Gamble and Blackwell 2001) Embedded knowledge could be found in rules, process, manuals, organizational culture, codes of conduct, ethics, products, etc.

2.3 Knowledge creation process

Thanks to the explicit – tacit knowledge dimension contribution of Nonaka (1991), we visualize the difference between explicit and tacit knowledge. However, understanding the basic conversion and interplay of tacit and explicit knowledge is critical to help us understand

organizational learning process. In 1995, Nonaka and Takeuchi demonstrated a cyclical creation process of knowledge, designated as SECI model (socialization, externalization, internalization, combination). In this knowledge conversion process, SECI model mentions four modes: socialization, externalization, internalization and combination. And these four crucial modes are creating knowledge within a continuous cycle. This model is based upon a double spiral movement between tacit and explicit knowledge.

SECI model	To tacit knowledge	To explicit knowledge
From tacit knowledge	Socialization	Externalization
From explicit knowledge	Internalization	Combination

Table 1: knowledge conversion process (Nonaka and Takeuchi 1995)

As the figure shows above, Socialization, externalization, internalization and combination are implicating interactive movement of conversion between two types of knowledge.

For instance, turning tacit knowledge into tacit knowledge calls for socialization by sharing experience from one person into another person within organization; Externalization is a creative process of producing tacit knowledge into explicit knowledge as a part of concept, such as designing a new product concept or evolving a new process of production into reality. Furthermore, articulated explicit knowledge could be refined and developed further; Combination is a complex process of building existing and new explicit knowledge into a systemic knowledge. The most common example of the combination is creating concept with existing knowledge to produce a tangible new model; Internalization is a process of transferring explicit knowledge into tacit knowledge. A quintessential example, which can account for this process, is learning by doing or using in practice.

Nonaka and Takeuchi (1995) also emphasize how organizational knowledge is established through this knowledge spiral diagram. Following this model, we will investigate how Chinese multinational firms are capturing, evaluating, cleansing, storing, providing and using knowledge.

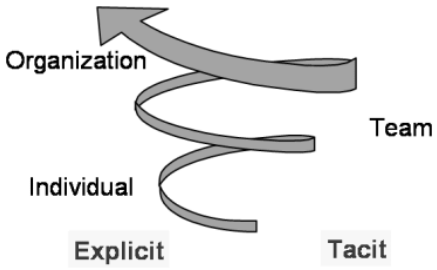

Table 2: Knowledge spiral diagram

Based on this knowledge spiral diagram, organizational knowledge is created initially from an individual level with understanding, which is also a part of internalization process. It moves towards through socialization, when individual communicates or share personal experience or knowledge with another member or team colleagues. Then the process of combination will help this idea become more widespread through the diffusion of explicit knowledge. Apparently, this knowledge moves up and spreads wider and wider through this virtuous spiral diagram. As we mentioned before, knowledge is becoming competitive advantage of a company, then as a consequence, if this knowledge spiral diagram works efficiently within company, this could lead to a significant positive influence on growth of company, and enable company exploit more opportunities in existing or new potential market or product direction.

2.4 Technology

As Marxism and Xiaoping say that technology and science constitute a primary productive force. With the background of knowledge –based society, technology plays a significant role in acquiring competitive advantages of an enterprise. Technology also has several definitions and explanations in the business management literature. One of the most popular literature and the track of technology's definition that we are going to focus on is referred by Grosse (1996) into three main forms: Product Technology, Process Technology and Management Technology, Technology can be considered as a purposeful application of information in the production, design or utilization of goods and services among organization, its format can be intangible or tangible. Following the previous three forms of technology, product technology is a knowledge utilized to produce products, which could specify the information of products' specific characteristics and uses. Process technology is another knowledge used to maintain the inputs and to operate machinery. The last Management technology is also a format of knowledge,

which is used in operating business, such as managerial skills or configuration that enable a firm to work effectively by using its different kind of resources. Thus, analyzing knowledge above is also a stepping-stone for observing the role of technology, because knowledge is a foundation for breakthrough of technologies. (Thurow 1999) Technology knowledge is also being a distinctive part of knowledge, together with marketing and international knowledge, which could have essential implications for growth of the company. (Sullivan and Marvel 2011; Voudouris et al. 2011; Weerawardema, Sullivan Mort, liesch and Knight 2007) Additionally, this growth could be primarily associated with developing new product diversification, entering into new market, or with combining both these alternatives. In the knowledge management, all the knowledge databases should be well handled, accurate, current and easy to be sought in terms of performance evaluation. And technology can support knowledge management to become increasingly effective, as we mentioned before about the function of management technology. Based on premised knowledge creation diagram, technology is one of the key accelerators the thorough knowledge creation process. Depending on the knowledge management process model created by Botha et al (2008), we can also explore the function of technology in the model below.

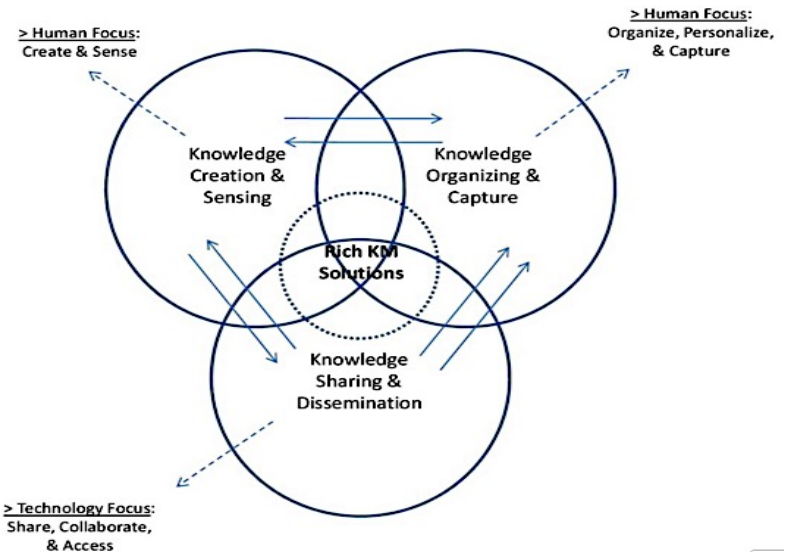

Table 3: The knowledge creation process model (Botha et al, 2008)

This knowledge creation process has three substantial categories, and these categories are interacting with another one, consistent with importance of result and process. In this model, it also includes the creation of new knowledge as special, most of researchers emphasize that technology is the most important in this model, after long time going debate, some others

contend that this knowledge management is also human oriented, organizational culture oriented in terms of effectiveness of knowledge management process.

Firstly, talking about humanity and culture, they are like enablers in this model, because people are the bearers of tacit knowledge, while the tacit knowledge sharing process is a fundamental strategic facet to establish knowledge management. And the willingness and effectiveness of sharing tacit knowledge and workforce mostly depend on human's incentives, which could be stimulated by company's organizational culture, by this term, incentives of human and organizational culture could expedite the entire process of effective knowledge management process. Hence, these two factors will be concluded in our following investigation.

Knowledge management is playing an infrastructural role for organizing and integrating information and contents inside the organization. As Daegeun, Euio and Choonghyo (2011) suggest that the evolution of technology shift knowledge management from a conventional approach to a conversational approach, most approaches of technology facilitate the sharing of conversational knowledge and appropriate to knowledge management are explored as follow：

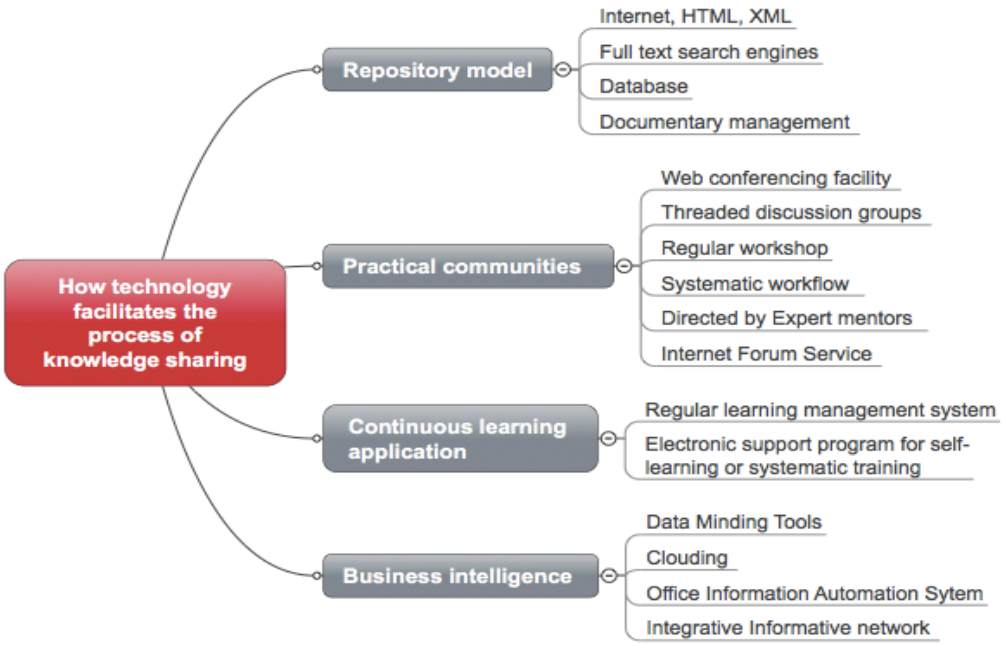

Table 4: Utilization of technology in the process of knowledge sharing

Identifying how to utilize technology in knowledge management can help us exam the applications of knowledge management in Chinese firms. Besides, technological knowledge is a key element for product development and effectiveness of resource integration, especially in technology-based Chinese enterprises. It is true that enterprises from emerging market, such as

China, don't have strong R&D capabilities, but it is still a partial component of the entire global technological system. (Mudambi 2008;) Those firms with higher intensity of technological efforts search for knowledge beyond their own boundaries have much more motivations for new knowledge exploration (George et al 2001; Nieto and Quevedo 2005). Thus, in the following methodology part, we will exam all the operational function of technology inside the Chinese firms.

2.5 Technology spillover

In the recent years, there are abundant literatures about technology spillover, implicating that in spite of increasing exports and promoting employment in the host country, FDI also can benefit firm with knowledge spillovers. (Javorcik 2004) Early in the 1991, Grossman and Helpman (1991) has previously pointed out that technology innovations are critical for enterprises to sustain competitive advantages and productivity growth. In this regard, a horizontal or intra-sector spillover resulted from knowledge and technology used by FDI can be treated as an important driver of economic development and technological improvement in developing countries. But there are still some critical researches demonstrating that spillover transfers through the vertical supply chain from foreign intermediate supplier to domestic producers or from foreign firms to domestic suppliers are the main source of productivity effects (Blalock and Gertler 2008). Javoricik (2004) also suggest that a joint venture or a wholly foreign-owned firm matter the content of spillovers, which also leads to improvement of productivity of firms. Besides, Qiu and Wan (2015) found that an increasing positive effect of technology spillovers on cash holdings is economically significant, and an improved marginal productivity is also notably found in his study. Another spillover study about Chinese firms examines that when MNE employs highly educated workers, knowledge and technology can conditionally spill over to domestic firms in the same industry (Todo, Zhang and Zhou 2009) Theses effects of technology spillover will also be stated in our exploratory findings.

Conclusion

In the 21st century, the global economic and social developments are increasingly showing three important characteristics: the first characteristics is that society is growing on a virtuous circle of development based on knowledge and technology adoption, namely the advent of an era

of intellectual economy; Secondly, which is an symbol of international environment of globalization and integration of economy; Lastly, they are showing a sustainable economic growth pattern in the groble environment. All these changes and trends have direct relationship with science, knowledge, technology and innovation. The subjects of knowledge and technology development involve enterprises, research institutes, government, international organizations, intermediary service institutions, social public, talents, capital, intellectual property, culture, innovation atmosphere and some other factors. Undoubtedly, knowledge and technology are playing irreplaceable roles on the growth of an expansion-oriented company from developing countries, in the previous study we select all the possible content and function of knowledge & Technology, according to the identification of Knowledge and technology transfer or management approaches can help us understanding the possible impact of them on the companies, which involves all the performances of Chinese multinational firms in Russian market, such as market share, productivity, financial performance, employment, organizational culture and strategic flexibility. In the following part, we will follow all the factors that we found in our existing literatures to identify new evidence from Chinese Multinational Enterprise with the internationalization background in Russia.

3. Industry overview

3.1 Current situation of Chinese multinational firms in Russia

Russia's economy is quite large, and its market is not very diversified due to its single resource-based economy. After collapse of the Soviet Union, Russia started to restructure its market economy and passively attract foreign investment. China is playing a notable powerful role in Russia's trade economy. But Russian market is very complicated and the geopolitical issues also impacts business environment. Therefore, analyzing Russian investment environment will help us have a better understating of Chines firms' performance, in which the action of knowledge and technology is involved. Besides, understanding the local market knowledge also follows the idea of Uppsala model that acknowledging sufficient market knowledge will direct the final business decision of firms during the internationalization process.

3.1.1 Overview of index of foreign trade of Russian Federation with foreign countries from 2000-2014 (only import)

In the previous literature, we have emphasized on the function and characteristic of knowledge and technology, which will contribute to a better economic growth of firms. Reviewing the tendency of import from China to Russia in recent years will contribute to a better understanding of the performance of Chinese firms' technology and technology. The index below shows the import trading volume in million dollars of Russian Federation with foreign countries, which will dedicate a clear import tendency in Russian.

According to the following index of dynamic import trading volume in Russia, we can find that Chinese's foreign trade in Russia is one of the pioneers. It mainly thanks to the verified short psychic distance and growing friendly cooperation between Russia and China, especially from the 2000-2013. But after the Ukraine crises, almost all the indicators from 2013-2014 are facing a decreasing trend in importing to Russia, because of the economic transaction and currency depreciation in Russia.

Chinese import volume was growing with tremendous progress from 2000-2013, which is also the biggest one, but in the 2014 year, the import trading volume also shows a drawdown, likewise, the drop-down tendency are also found in other countries import figures. Another latest statistical data from Federal State Statistic Service official website pointed out a gross decrease of import trade volume in 2015 mainly blames on negative economic background in Russia. The entire Russian market is facing a "coldest winter".

	2000	2005	2009	2010	2011	2012	2013	2014
	IMPORT (Unit in Million Dollars)							
In total	22276	79712	145530[1)]	197184	260920	272278	276380	253948
Austria	419	1211	2060	2463	3120	3393	3846	3438
Belgium	481	1476	2538	3265	4122	4491	4034	3573
Bulgaria	116	241	425	540	689	694	702	652
Hungary	404	1100	2631	3141	3333	3103	3007	2739
Germany	3898	13272	21229	26699	37683	38305	37917	32963
Greece	125	188	342	423	586	634	611	498
Denmark	346	921	1373	1703	2053	2043	2178	1605
Ireland	106	290	669	998	1237	1366	1372	1302
Spain	313	1227	2274	3042	4306	4913	4915	4344
Italy	1212	4416	7891	10043	13402	13432	14554	12723
Cyprus	35,5	47,5	22,8	27,0	37,9	32,7	42,7	43,6
Netherlands	740	1941	3589	4442	5925	5978	5837	5248
Poland	716	2747	4214	5826	6651	7474	8326	7075
Romania	79,4	255	876	1345	1725	1736	2047	2210
Slovakia	105	503	1810	2492	2958	3715	3534	2864
UK	861	2776	3544	4576	7180	8192	8106	7810
Finland	958	3100	3955	4584	5672	5004	5396	4571
France	1187	3673	8431	10043	13276	13804	13012	10743
Czech Republic	367	989	2319	2918	4504	5354	5318	4898
Sweden	465	1861	2039	2854	4038	3941	3917	3240
Australia	172	244	591	769	1013	899	815	673
Algeria	7,0	2,0	6,8	27,4	2,6	3,7	4,8	10,0
Argentina	86,1	621	1146	914	1067	1264	1100	1117
Afghanistan	5,4	3,9	15,3	22,0	11,2	11,3	14,3	12,9
Brazil	388	2346	3478	4067	4389	3359	3493	3969
Vietnam	36,8	174	691	1111	1722	2273	2597	2296
Hongkong	*3,3*	*18,6*	*37,8*	*61,8*	*82,6*	*88,8*	*172*	*205*
Georgia	-	-	4,6	38,0	38,7	39,1	150	268
Egypt	4,9	77,4	209	271	483	343	442	540
Israel	109	332	637	825	1093	1286	1493	1141
India	557	784	1525	2143	2787	3041	3091	3172
Islamic Republic of Iran	53,6	125	213	272	351	428	433	355
Canada	193	517	1208	1485	1829	2465	1796	1500
China	*949*	*7265*	*22795*	*38964*	*48202*	*51634*	*53173*	*50884*
Democratic People's Republic	7,7	6,9	7,8	16,4	14,5	10,2	9,3	10,2
Cuba	304	61,4	69,4	54,3	49,6	49,6	27,6	61,8
Morocco	59,2	144	358	374	508	541	566	608
Mexico	42,2	86,8	260	480	838	1094	1048	783
Mongolia	40,4	22,4	62,8	79,1	89,1	64,3	40,9	40,4
Nigeria	2,3	1,9	5,0	4,1	24,7	25,3	31,2	16,5
New Zealand	26,6	63,7	124	151	218	212	238	241
Norway	154	750	1120	1416	1904	1791	1754	1151
United Arab Emirates	23,0	90,1	27,1	35,9	114	262	423	260
Pakistan	6,2	47,1	147	240	349	332	350	311
Panama	46,3	3,6	6,1	2,6	11,3	4,2	960	6,6
The Republic of Korea	359	4005	4866	7287	11582	10955	10305	9024
Singapore	43,5	317	693	332	386	414	553	604
Syria	11,2	26,0	38,7	42,5	48,9	30,7	16,2	7,1
USA	2694	4563	9170	11097	14584	15317	16502	18497
Thailand	89,8	452	934	1370	1981	1971	2084	2232
Taiwan(China)	*88,8*	*492*	*920*	*1533*	*2038*	*2004*	*1915*	*1679*
Turkey	349	1732	3216	4867	6360	6859	7273	6651
Switzerland	271	875	1962	2415	2968	2997	2984	3258
Japan	572	5834	7252	10260	15017	15649	13561	10922

Figure 1: Index of foreign trade of Russian Federation with foreign countries from 2000-2014
Source: Federal State Statistics Service[1]

[1] http://www.gks.ru/bgd/free/b04_03/IssWWW.exe/Stg/d06/8.htm

Indicator	2012	2013	2014	2015	2016 forecast
GDP	3.40%	1.30%	0.60%	-4.10%	0.70%
Inflation rate	6.60%	6.50%	11.40%	16.00%	6.40%
Exchange Rate RUB/USD	31.1	31.9	38.6	61	61
Exchange Rate RUB/EUR	39.9	42.4	60	67	68
Average Brent oil price	98	99	96	59	55
Net capitial inflow/outflow	-54	-62	-154	-72	-56

Figure 2: Key economic indicator in Russia

Source: Central Bank of Russia Federation, Ministry of Economic Development of Russian Federation, Ministry of Finance of the Russian Federation, Blooming, PwC analysis

With this negative macroeconomic background of Russian economic slowdown, rising inflation, geopolitical uncertainty, a strong ruble depreciation against other currencies, falling oil prices, capital outflows, the decline in real disposable income and consumer confidence (see figure 2), the economy of Russia and its currency situation still didn't recover in 2015. Some specialists said that Russia has turned into a catastrophe, but it won't be awful as before, it is still possible to recover. Nevertheless, Russia's macro-environment is still expected to improve considerably in 2016.

Although the whole situation is beating a retreat, some Chinese competitive high-tech multinational companies are specially raising their FDI in this risky time, some Chinese industries even boldly started to invest more money to construct local factories in Russia, besides, according to the latest report from PWC, the number of M&A success project of Chinese enterprise in 2013 was 5, in 2014 was 1, and in 2015 it increased to 6, this figure also reflected the knowledge and technology spillover is increasing from China to Russia. The main reason why Chinese firms are finding opportunities through risks in Russia is mainly relying on the sustainable relationship and notable preferential benefit from exchange rate between two countries, besides, although the unstable political and economic factors still notably impact on the entire international trade atmosphere, Chinese Multinational Companies are supposed to enjoy lesser competition in general, while other companies from developed countries are

dropping out from Russian market. In this paper, we will also find out whether Chinese companies are doing well during this special time, from the angels of knowledge management and absorptive capacity, then we will find how knowledge and technology direct in their performance.

3.1.2 Common barriers of FDI from China to Russian

Russian market is very difficult to handle, additionally, some Chinese enterprise didn't pay attention on Russian local culture, the feasibility of Russia's investment environment, Russian's customer consumption habit, latest policy regulation and some other knowledge, which are very crucial for the first step of internationalization. A lot of Chinese medias have pointed out that most of Chinese firms encountered a lot of difficulties in the first phase of doing business in Russia, because they are lack of local market knowledge in Russia. According to the latest report in 2015 made by EY, namely "the investment of Chinese in Russia", only 6% Chinese respondents from 142 interviewees announced that they are sophisticated with Russian market knowledge, Russian regulation and law.

Identifying the potential and existing problems of making an investment in Russia is one of the market knowledge that a company should know. Besides, the labor force in Russia is deficient and still decreasing, which created another obstacle to foreign trade. Moreover, concerning about attracting foreign investors, Russian government has already created a lot of policies, which are in favor of foreign investors. But in fact, these policies only resulted in limited contribution for Chinese companies. Some Russian judicial system's judgment cannot avoid uncertainties, bribery and bureaucracy still commonly happen in some managerial organization, which damage the trust of foreign investor to legal protection in Russia. Lastly, the instability of macro-economic situation in Russia also brings a lot of unpredictable risks for the investor.

Quoting from the recent report made by E&Y, the most confusing and difficult obstacles for Chinese investment issues in Russia were summed up as follows:

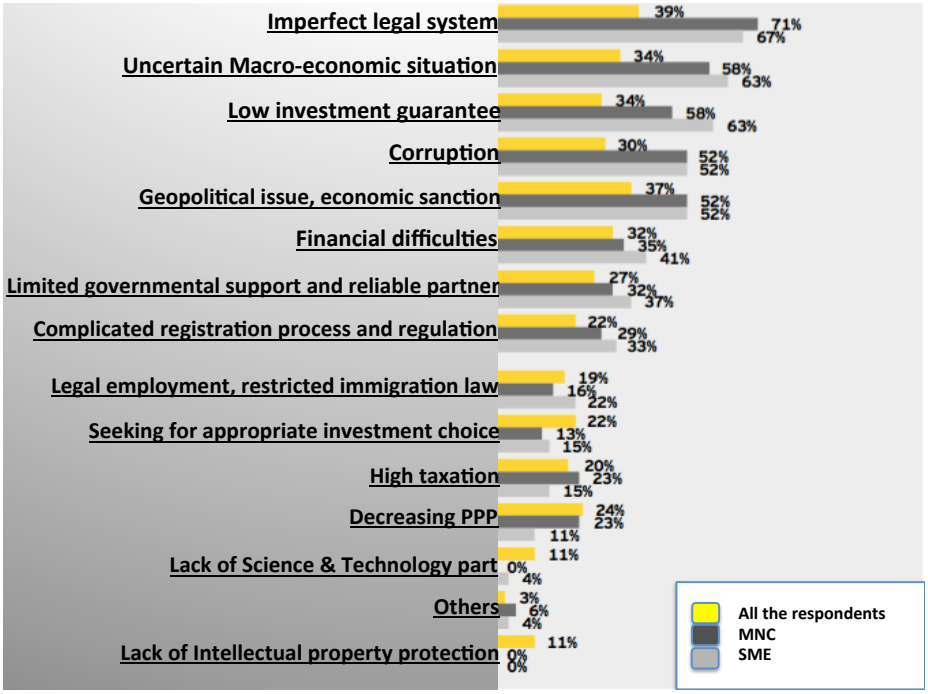

Figure 3: the most difficult obstacles for Chines companies to make investment in Russia

Source: EY, Report: From the perspectives of Chinese: Chinese investment in Russia [2]

The figures of this table were initially summarized by answers from 142 respondents, including Chinese individuals, MNCs and SMEs. Obviously, the imperfect legal system and uncertain economic environment impede Chinese business's development in Russia mostly. Notably, although Sino-Russian cooperation is roaring on the "New Economic Belt", but the limited governmental support is still announced as a considerable hard part for Chinese companies (see figure 3). In anther hand, the intellectual property right problems were almost not impeditive for Chinese, Russian science & technology parks are booming for improving Russian high-tech industry, the low barriers for high-tech domain explains that Russia is favorably receives cooperation in high-tech industry. While those low innovative SMEs would face more possibilities facing these resistance.

3.2 Continuous overview of cooperation framework between Russian and Chinese government

In fact, the original relationship was early founded in 1992 by statement of the fundamental relationship between China and Russia, announcing each other as a friendly country, which

[2] http://www.ey.com/Publication/vwLUAssets/EY-chinese-investment-in-russia/$FILE/EY-chinese-investment-in-russia.pdf

realizes a smooth transition of Sino - Russian relationship. Then, in the 1994 year, president of China Zeming Jiang visited Russia, each side signed the second joint statement of Sino- Russian, announcing that the two countries set up a constructive partnership of good-neighbor, mutually beneficial cooperation. In 1996, Russian president Yeltsin visited back to China again, establishing and developing China-Russia strategic partnership of coordination between the two countries along with Chinese president, they also held talk on bilateral cooperation in various fields. Both sides agreed that the decision they made meets the mutual benefit of both sides, it is also good for regional and world peace and stability, in the same year in April, two presidents sighed the third "Sino-Russia joint statement", officially stating that both sides establish a strategic partnership relationship based on principle of trust and equal and face the challenging together in 21 century.

In 2005, Chinese President Jintao Hu and Russian President Vladimir Putin sent each other congratulatory New Year message, the "Year of Russia" was officially launched in China, which includes totally more than 250 activities, covering numbers of areas, which includes the areas of industrial development cooperation, they initiated a lot of activities of project promotion, business conference, knowledge and technology exchange activities between two countries.

A virtuous business environment with supportive governmental policy is a precondition for attracting foreign investment and consolidates the stable cooperative partnership between the two countries.

In the subsequent years, presidents or leaders of both countries continuously visited each other, and they declared that they would strengthen the deeper understating, trust and friendship between two counties and continue this tendency in the future. It is estimated that currently Sino-Russian cooperation is still firmly working and supporting each other. Especially, in this special time, China as an "old brother" still keeps intensifying efforts on cooperation and business building in the Russian market. Since Chinese Multinational companies have just started their beginning phase of internationalization in Russia, we will specially list out the cooperation details and government role and their contribution in business of selected companies. The reason we must have an overview about recent governmental relationship between two countries is incumbent of governments involves an essential part of market knowledge, which will direct the all the decision and knowledge and technology development benefited from this factor. Subsequently, China and Russia sighed a joint statement about deepening the

comprehensive strategic partnership and advocating win-win cooperation to tie Sino-Russian relationship more tightly. Besides, the announcement of "The New Silk Road Economic Belt", which is initially established by China, have optimized the business and cooperation between two countries at highest level. Two countries also put forward numerous supports for their own country's industry.

As Damanpour (1991) noted, governmental support is an enabler for technological innovation, but the governmental roles through effective regulation can play different roles in adoption of innovation. Thus, we will also deeply analyze the role of government in enhancing competitive advantages of Chinese companies in Russia by leveraging the role of knowledge and technology.

4. Theoretical framework

4.1 Uppsala model (Johanson and Vahlne 1977)

Adhering by our subject involved internationalization, we conduct Uppsala model (Johanson and Vahlne 1997) as one of our theoretical frameworks, in order to help us explore how Chinese MNCs gradually acquires, integrates and uses knowledge to direct their internationalization process and entry modes in Russia. The model is very dynamic, because the authors **(**Johanson and Vahlne 1977**)** believe that the outcome of a decision would make up the input to the next component. This concept consists of two aspects: the state and change aspects, as showing below.

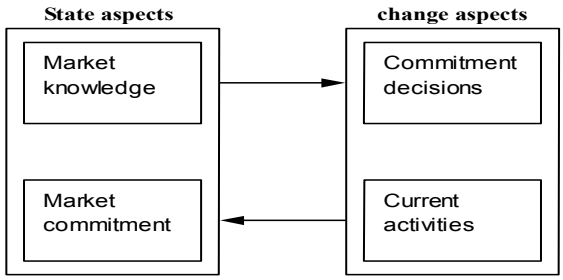

Table 5. Basic Mechanism of Internationalization (State and Change Aspect)

Referring to this model, consideration and decision of market commitment are based on the assumption, which will subsequently impact on the company's perceived value and risk. This model also emphasizes the idea that the knowledge is an essential part in this model, of which

influence reacts on company's performance and values, for example, knowledge tells the potential opportunities and possible and existing challenges, knowledge can be general or specific, but very complex indeed, therefore, Obviously, the market knowledge and market commitment impact on commitment decision and current performance. But the factors inside this model are interactive, the result and experience in the commitment decision and current activities can also change market knowledge and commitment (Aharoni 1966).

4.2 Conceptual framework of interaction between knowledge management and performance of enterprise

According to our immersed context of literature, knowledge of the organization is one contributory wealth for promoting quality and quantity indicators of all the organizations. The knowledge inside the organization grows rapidly with the growth of global expansion, hence, how to manage this large scale of information and knowledge is a challenge for any organization (AdliFariba 2003). The enterprise's knowledge management activities have great impact on enterprise's performance. The theoretical study and practical evidence of Cohen and Levinthal (1990) have proved that effective management can improve the performance of enterprises. They claimed that in order to improve enterprise's competitive advantages and performance and create enterprise's core value, enterprises should initially analyze and utilize intellectual resource, in order to optimize the function of knowledge.

The knowledge management (Gold 2010) also has been studied as a contributory competence, which can directly impact the performance of an enterprise in the business environment. As for the performance of enterprises, it can be divided into managerial performance and operational performance. Enterprise performance can be visualized in profitability, developing competence, strength of financial operation and strategic flexibility. The concept and determination of enterprise's performance reflect organizational science and strategic category.

In the last decades, high-tech enterprises achieved rapid development in China. The latest economic development and new open-up market's energy has drawn great attentions of scholars and enterprises. A lot of enterprises also realized the important determinant of knowledge and technology, but most of them only tried to collect information without systematic integration, they do not know how to integrate the comprehensive acquisition, sorting, application and

innovation together. As result, the knowledge they gain hasn't been effectively utilized in practical appliance to enhance their advantages.

The fountain of knowledge management also can be traced back to the 1950s in the North American business practice. Foreign researchers made a lot of contribution concerning on knowledge management, for instance, famous Japanese researcher- Nonaki Ikujiro (1991), who wrote well-known literature "Knowledge-innovation oriented enterprise", it claims that in an uncertainty economic environment, knowledge is the only fountain to gain competitive advantage of enterprise. But knowledge and technology management started in Chinese firms later than those firms from developed countries, and theoretical background and methods are also not totally same. Overseas researchers' theoretical results mainly came up with vast practical analysis, but the study on knowledge and technology in China started relatively late, which mainly based on the introduction of foreign theory and still on the theoretical level, lack of practical findings. The theory of knowledge management study in China began from 1998. In the middle and later of 1990s, elites in management began to notice increasingly that knowledge is the core factor that enables enterprise survives and develop, and innovative technology is a core competence of a firm. Since this concept gradually spreads into China, the rational study of knowledge management was boomingly attracting attention of Chinese entrepreneurs and scholars. In 2000, a new movement of knowledge concerning management was initiated in China. In 2003, the superintendent of "The Great Wall" research institution of enterprise strategy - Delu Wang pointed out a concept named "Simple Knowledge Management", mainly declaring that in the enterprise, all the enterprise business operation and happened issues are dealing with knowledge creation and knowledge innovation. Secondly, claiming that the knowledge can be reused in additional innovative knowledge creation process. Thus, enterprises should continuously refine their intellectual information and innovative knowledge, reusing the useful knowledge in the innovation. Simple Knowledge Management emphasizes function of following three aspects: organizational analysis, technological information and people. From 2005, a new stone mill was contributed to promote knowledge management and practice by holding knowledge & innovation summit forum. From that on, Chinese started realized the importance of utilizing knowledge and technology, Chinese researcher started to find out more practical analysis based on previous literature, in 2010 year, one famous study about knowledge management (Gold, Malhotra and Segars 2001) demonstrated that enterprises need to enhance

the ability of knowledge management and ability of knowledge conversion in order to improve the competitive advantages of enterprises, whereby knowledge conversion ability contains process of knowledge acquisition, conversion, utilization and protection; besides, organizational structure knowledge including technology, culture and structure. Based on study of Gord Rabchuk, who is probably the earliest person mentioned concept of knowledge management, also along with some other researchers, Yanwen (Guo and Xu 2006) created a Model Study of Modern Tertiary Industry Intellectual Management Ability, which was a great progress of having a deep understanding to utilize knowledge and technology. They redefined the concept of knowledge management ability. They claimed that knowledge management capability (KMC) is that organization effectively combines all the knowledge inside the organization by integrating internal and external knowledge; accordingly, the organization can increase competitive advantages and enhance performance of the enterprise. According to high demand of customers for knowledge and high quality of service from a modern enterprise, they redesigned the knowledge management process in five abilities: Acquisition, innovation, sharing, application and protection. Yangon Zhan, another earliest ancestor scholar of knowledge management in China, emphasizing that knowledge management ability refers to individuals or groups' intellectual advantage and reaction in the knowledge management field. They believe that knowledge management ability needs to reach following includes aspects' level: the content of the technical ability, ability of knowledge application and effective system of knowledge's principal part. Afterwards, more and more Chinese scholars keep finding deeper exploratory understanding based on previous ancestors, and Chinese firms also gradually realized the importance of knowledge management.

But from an overall perspective, the real Chinese enterprise knowledge management ability is still not optimistic, which could be found in their failure business decision in Russia due to the defective knowledge acquisition. But a good sign was found in a growing number of Chinese high-tech companies are enhancing their competitive competency dramatically by leveraging technology and information to promote their knowledge management and stand out from the crow of the whole international market, such as Hair, Huawei, Lenovo, they established a powerful network to integrate all the information effectively, and result in a innovative productivity.

Additionally, knowledge management can be affected by various factors, which can be

divided into three aspects:

The first fundamental indicator for testing enterprises' KM is behavioral ability, which includes knowledge acquisition, knowledge sharing and knowledge application. This indicator can direct the performance of enterprises. (Bothiller and Shearer 2004; Asoh et al. 2007; Mclnerney, C. R. and Koenig, M. E.D 2001)

The second indicator of knowledge management is organizational structure (Yougesh 2007; Fathollahi 2010), which can be initially stimulated by the utilization of information technology, organizational culture and managerial system. The utilization of information technology is indicated as a very effective approach to help companies acquire, integrate knowledge. Some companies use the information technology platform and Internet application skills to guarantee the knowledge management system. Besides, the organizational culture is also the enabler within the organization that can stimulate to staffs share and communicate with other employees. In the meanwhile, enterprise should design a reasonable incentive system, in order to enhance the motivation of sharing of knowledge and information within the organization. Additionally, as we analyze KM in Chinese firms, who are doing business overseas, the factor of Guanxi will be brought forward as a Chinese cultural factor or atmosphere inside the Chinese organization. Sometimes, misusing or neglecting Guanxi can negatively influent on knowledge sharing. In addition, a complex Guanxi could also raise over-competition, and the fairness of this competition is questionable. Refer to this assumption, we will exam in our interview.

The third indicator is the creative ability of company, which can be reflected by teamwork cooperation and innovative incentives. As we know the cooperation of teamwork is a crucial force inside the organization, while innovation incentives are the comprehensive strength of an enterprise. In order to enhance creative ability, some companies will establish some motivation schemes, system or cultural atmosphere to stimulate the enthusiasm of staffs, and to improve the innovation motivation of employees. Relatively, these three indicators of KM are also interactive with each other.

According to the textual summarization, we present a framework to show all the effective appliances in enhancing the performance.

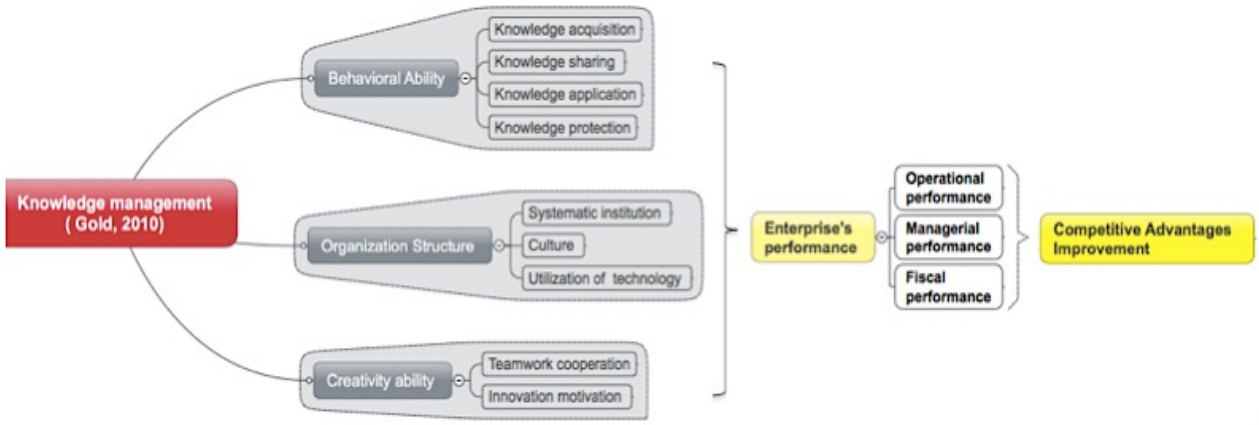

Table 6: the conceptual framework about the relationship between knowledge management and enterprise's performance

4.3 The model of absorptive capacity

The conception of absorptive capacity was initiatively pioneered by Cohen and Levinthal (1990), which is considered as an driving ability in the current innovation - oriented age by means of realizing the value of new information, assimilating it and applying it in the business application, they also indicated that the effect of absorptive ability will be optimum based on prior knowledge. Absorptive capacity can impact positively on innovation performance and competitive advantages in the industrial market (Chen, Lin and Chang 2009). These perspectives lay a good solid fundamental for the subsequent study of dynamics of absorptive ability. Cohen and Levinthal (1990) show that a diverse team can enable individual work more effectively with a broader mind. In the first half of 20th century, Schumpeter has pointed the emergence of technological innovation dominates the economic growth, in the second half of 20 century, scholars started to pay close attention to the impact of absorbing external technical resource on profitable growth. Consequently, absorptive capability is a central driving force for an enterprise to be more competitive (Barney 1991) and a dynamic capability for enabling the innovation process (Murovec and Prodan 2009; Volberda et al., 2010; Zahra and George 2002)

Nowadays, absorptive capability is utilized as an important theoretical instrument of economics for analyzing the influence of innovation. Besides, absorptive capability also requires companies to leverage existing knowledge, digest and diffuse new knowledge, especially, tacit knowledge by unofficial or official interactively communication inside the organization.

Based on previous studies, absorptive capability can result in three kinds of output:

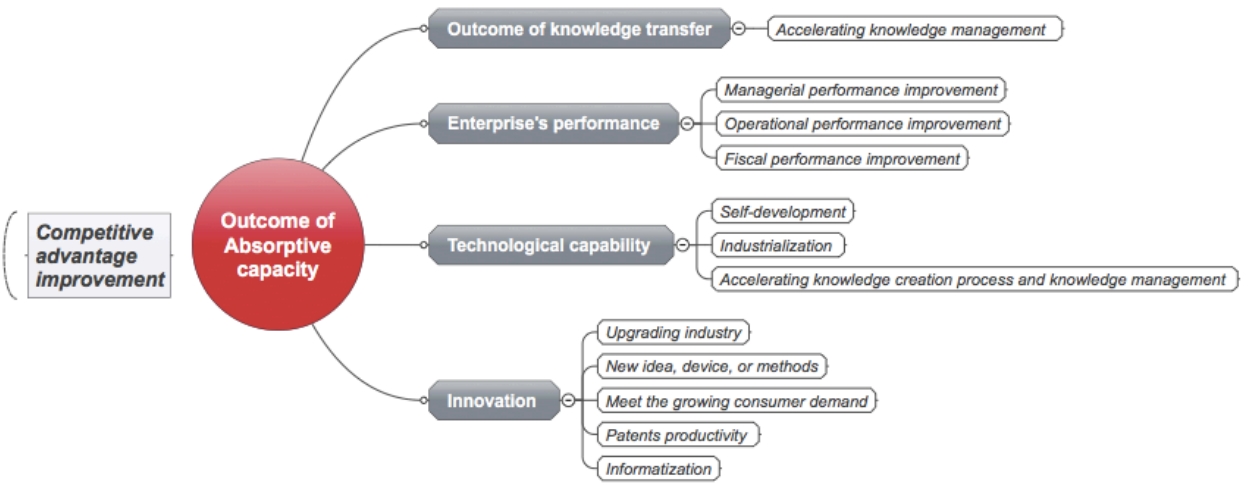

Table 7: The indicators of Absorptive capacity

Based on Cohen and Levinthal's model（1990）, Zahra and George（2002）expand the definition and inside structure of absorptive capacity: absorptive capacity is a set of organizational routines and processes by which firms acquire, assimilate, transforms and exploit knowledge to produce a dynamic organizational capacity. They also specifically subdivide the absorptive capacity into potential absorptive capacity and realized absorptive capacity. In details, the potential absorptive capacity refers to a capability to identify, acquire and assimilate external knowledge that is very indispensable to its operation. And on the other hand, realized absorptive capacity refers to a capability to develop and refine the routines that facilitate combining existing knowledge and newly acquired and assimilated knowledge. It is dependent on transformation and exploitation capability. Seaton and Cordey (1993) also emphasized another technology-related concept for absorptive capacity, that company should have ability to be aware of, identify and take effective advantage of technology. Absorptive capacity also requires companies focusing on firm's innovation efforts. (Nelson and Winter 1982)

Chinese scholars also made great contribution on study of AC, for instance, Xu and Zhang (2008) investigated more than 200 Chinese enterprises from different industries, they proved that absorptive capability of Chinese firms has great positive impacts on performance level, but the impact on output of innovative capability is not obvious. Afterwards, Zhou (2008) conducted a theoretical analysis based on relationship between absorptive capacities, priors' knowledge, organizational coordination and investment in R&D, claiming that absorptive capacities can be impacted by prior knowledge, organizational coordination and investment in R&D.

Although Chinese companies are developing rapidly, they still fall far behind after the

developed countries in the aspect of technological capabilities. But Chinese firms started to increase R&D activity as one of the principal approaches to promote their technological capability. In return, this innovative effort can influence on technological capability, which requires a higher level of absorptive capability for firms. Thus, the model of absorptive capability is a very helpful scientific tool to help us exam how Chinese firms utilize optimized the role of knowledge and technology in the context of AC to reinforce their competitive advantages in their internationalization process in Russia.

5. Research methodology & data description

5.1 Multiple case study approach

Since our research goal aims at having a deep understanding and comparative analysis about the role of knowledge and technology inside the Chinese MNC, who are extending business in the Russian market, the most appropriate research approach is to be qualitative. Inspired by our previous characteristics of our study, the objectives and questions of our research are mainly focus on "How", such how does Chinese MNC transfer knowledge and develop their absorptive capacity for knowledge and technology in terms of self-competitive advantages in Russia. Thus, we chose to use a multiple-case study methodology to test our theories, models, and practical experience in reality.

In our study, we choose serial Chinese multinational companies from two types of industries: automotive industry and high-tech industry. The approach of multiple-case study allows us to conduct a comparative analysis of finding similarities and differences concerning on our subjects between these two industries.

Because Russian economic environment has changed dramatically right after the Ukraine crises with results of decreasing economy and devaluation currency, different companies' action and decision-making are equally dynamic, which requires us also make meaningful analysis in both industries.

In addition, our selected enterprises should meet our special criterion sampling (Poulis et al. 2013), all the selected Chinese companies should specially meet the following criteria: firstly, the company should have already established their subsidiaries into Russia and achieved considerable achievements in Russian market; Secondly, they should have notable technology

advantages in their domain. Thirdly, according to an interview, the activities of the company should be found involved in knowledge management and absorptive capacity more or less.

The reason why we selected automotive industry for our study is because the automotive industry could symbolize the Chinese technical manufacture; Choosing high-tech industry as our another targeted facets is meeting our study's requirement by exploring deficits and outstanding knowledge and technological innovation based performance. The role of knowledge and technology could have different level of importance involving their international strategy and performance, competing with other rivals.

Based on the criterion sampling strategy, we selected 5 Chinese automotive companies (Lifan, The Great Wall Motor, Geely, Chery, JAC moto) and 5 Chinese high-tech companies (Huawei, ZTE, Lenovo, Hytera, Haier, Amur Sirius Power Equipment limited company) for our qualitative study.

In order to make our results more credible, the author leverages all the special connections to contact with senior executives or managers of promising multinational companies, such as chief operation officer, CEO of Russian market, team leader in program management, sales chief directors or knowledge management manager. Most of them are pleasure to provide time and multiple sources for making an interview for our study. We treated our interviews as conversation that the ultimate context within which knowledge is to be interpreted. (Rorty 2009) And during this process, we can focus on the cognition of interviewees on how they manage the knowledge and technology as a mechanism to improve their own competitive advantages. And how do they flexibly re-construct their international strategy in the Russian market, especially during this economic turbulence time from 2014.

Based on our extant literature, we clarify our theoretical proposition with the requirement of the interview guide. Preparing structural discussion would be best to handle the interview conversation much more effectively.

5.2 Multiple sources of evidence

Our multiple-case study sources include two parts: secondary data and primary data. The primary data was gathered through in – depth interviews with representatives at leading positions from each company, such as CEO, senior manager or technical engineer, who works in the

Russian market. All the questions will be raised from the angle of KM, AC, governmental role and specificities of their internationalization action.

The name of company	Primary data (Interviews)	Role of interviewees	Approach of interview	The date of interview	Secondary data
Lifan Group	1 Interview	Sales Manager of Russian market	Remote video chat via Wechat (2h)	2016/4/13	Annual report; WIPOA
The Great Wall Motor	1 Interview	Responsible employee	Remote video chat via Wechat (1h)	2016/4/20	Annual report; Media announcement; WIPOA
Geely	2 Interviews	Sales director of marketing department; Senior manager in Russia	E-mail	2016/4/14	Annual report; WIPOA
Chery	N/A	N/A	N/A	N/A	Annual report; WIPOA
JAC Moto	1 Interview	Sales Manager of Russian market	Remote video via Wechat; E-mail	2016/3/24	Annual report; WIPOA
Huawei	2 Interviews	Executive manager of Russian market	Face-to-face interview in headquarter Moscow (3h +1h)	2016/3/11	Annual report; Media announcement; WIPOA
		Customer Manager		2016/3/11	
ZTE	2 Interviews	Executive manager of Russian market	Face-to-face interview in headquarter Moscow (45 min)	2015/12/11	Annual report; Media announcement; WIPOA
		PR director	E-mail	2016/4/17	
Lenovo	1 Interview	Senior manager in Russian market	E-mail	2016/3/24	Annual report; WIPOA
Hytera	1 Interview	Sales director	Telephone	2016/3/2	Annual report; WIPOA
Haier	1 Interview	Marketing director from headquarter	Remote video chat via Wechat (30h)	2016/2/28	Annual report; Media announcement; WIPOA

Table 8: Primary and secondary data for our qualitative study

NB: According to interviewees' intention, the names of interviewees are changed to maintain half-anonymity.

We also gather observations from archival records, company documents, publications, and academic papers (Yin 1994; Lewis 2003, Eisenhardt and Graebner 2007). The archival data were achieved from companies' annual reports, academic papers, publications, databases and the media from the Internet.

But according to my interview with some senior managers, who run their Chinese

companies in Russia, the authenticity of some secondary data posted on the Internet is skeptical. Thus, the true action and thinking about our interview look more important. In the end, we combine inductive analysis data with our theoretical construction codes to get our conclusion.

5.3 Analysis and quality of case study

We conduct out empirical analysis into 2 parts: in the first part, we will have an in-depth analysis in both Chinese automotive industry and high-tech industry, who are expanding their business in Russian market, concerning about their internationalization performance accounted from their knowledge management and knowledge capacity based on Russian market. Secondly, we will analyze our results by comparative analysis based on pervious in-depth findings from 2 industries, and check the similarity, difference and application of knowledge and technology in two main emerging Chinese industries. In the end, our conclusion will be analysis of defective or good performance of knowledge management and absorptive capacity of Chinese firms in Russia, and benefits of their use of knowledge and technology. Based on these conclusions, we will put forward theoretical implications and managerial implications for Chinese firms, who are expanding their business in the Russian market.

6. Empirical findings and discussions

6.1 Characteristics of selected companies

In our study, we initially selected 5 Chinese automotive companies and 5 famous high-tech Chinese companies. The reason why we chose Chinese automotive industry is because they are good representatives for Chinese manufacturing industrial capacity, whose emerging performance is highlighted in their world expansion activities, but their technological skills are still chasing after some well-known automotive companies from developed companies; Additionally, in the current era of technology and information, the remarkable performance of Chinese high-tech companies also show the importance of their initial nature of knowledge and technology, which perfectly suit the objects of our study.

	The name of company	Founded	Headquarter	The year entered in Russia	Employees number	Proportion of Russian and Chinese employees in Russia	Revenue	Global growth rate	Products
Chinese Automotive Industry	LIFAN Group	1992	Chongqing, China	2007	13,653	9:1	30 billion RMB	25~30%	Commercial Vehicles, Passenger cars, Dirt bike engines Motorcycles, sport shoes, wine
	The Great Wall Motor	1984	Hebei,China	2004	70,000	8:2	76 billion RMB	~21.5%	Automobiles
	Geely	1986	Zhejiang,China	2007	18,481	8:2	30billion RMB	~60%	Autmobiles ,motorcycle,engine, transmissions
	Chery	1997	Anhui,China	2005	35,000	8:2	63 bilion RMB	~7.8%	Automobiles, engines
	JAC moto	1964	Hefei, China	2006	17,000	8:2	48 billion RMB	~26.5%	Passenger cars,Tracks; Buses, Automotive components
Chinese High-tech industry	HUAWEI	1987	Shenzhen, China	1997	170,000	7:3	395billion RMB	~35.3%	Mobile and fixed broadband, networks,consultancy, managed services, multimedia technology, smartphones, tablet computers,dongles
	ZTE	1985	Shenzhen, China	2012	69,093	6:4	100 billion RMB	~23%	Mobile phones, smartphones, tablet computers, hardware, software and service to telecommunications service providers and enterprises
	Lenovo	1984	Beijing, China	2008	60,000	9:1	46 billion RMB	~20%	Smartphones, desktops, servers, notebooks, tablet computers, netbooks, peripherals, printers, televisions, scanners, storage devices
	Hytera	1993	Shenzhen, China	2015	5,000	8:2	24.78 billion RMB	~31%	Two-way radios, networking system
	Haier	1984	Qingdao，China	2008	70,000	8:2	188 billion RMB	~20%	Major appliances, small appliances, commercial heating and cooling systems, consumer electronics

Table 9: general characteristics of selected companies

The 5 automotive companies are Lifan Moto, the Great Wall Motor, Geely, Moto, Chery Moto and JAC Moto. All of them have outstanding performance in China. The rest 5 selected automotive Chinese companies have already entered in Russian around 10 years averagely, almost all of them have encountered and conquered the financial crisis in Russian market in 2009 year, as result, they have more market experience and knowledge in Russia, facing the financial crisis in a international environment.

Another five selected companies are high-tech oriented. They are very innovative and modern, which means they upgrade knowledge and technology most frequently. These Chinese companies are Huawei, ZTE, Haier, Hytera, and Lenovo. We chose these companies, because they have impressive performance in Russian market, even in the financial crisis period, they also have a very promising prestige globally due to their quality of products, brand image, innovative service and excellent internationalization strategies, the application of KM, AB and governmental involvement are supposed to be found in their companies.

In the following study, we will overview their current situation in Russia, and then seamlessly stick it to our fundamental subject that reviving in a high - risky and unassailable market highly requires a virtuous combination of knowledge management, absorptive capacity, governmental involvement and wise internationalization strategy. Thus, we will also have a deep analysis on applications of KM, AB and governmental involvement of every firm, combining with their international strategy in Russia. Firstly, we have an in-depth analysis in both of Chinese automotive industry and high-tech industry, then we will have a comparative analysis

between Chinese automotive and high-tech industry to find out the drawback or advanced implication of our subject in Russian market.

6.2 Overview Chinese automotive market in Russia

Currently, Russian consumers still have a higher preference to domestic brand - Lada, who strongly enjoys the inexpensive price and governmental subsidies policy. Although its sales shrink with a big volume compared with 2013-2015 year, it still has the biggest market share under this terrible economic background. South Korean automotive brands still occupied a highly competitive market share, and most of Western and American automotive brands' sales decreased enormously. In Russia, drivers prefer to drive large vehicles, such as pickup trucks, passenger and freight cars, SUV and full-size sedan. Besides, small vehicle and hatchback are "leaders" on the Russian market, such as Hyundai Solaris, Lada, Granta and Kia Rio. The most popular top ten also includes cross-border car, which was undoubtedly pointed out Renault Duster, which has the greatest consumption demand. In the Russian market, there is also a space for Chinese automotive brands.

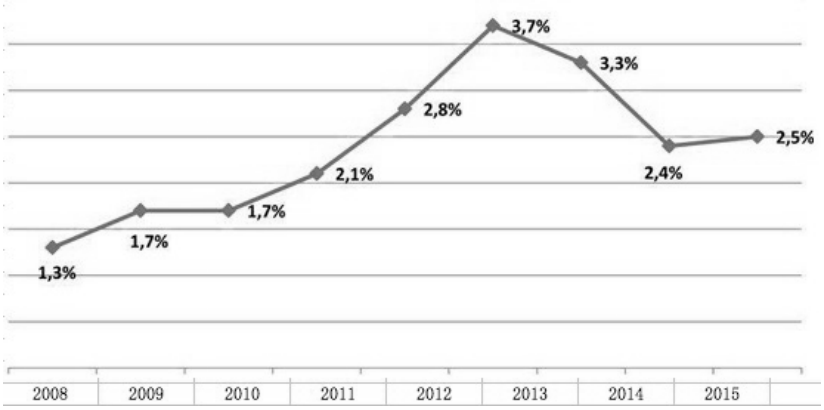

Figure 4: The market share of Chinese self-owned auto companies in Russia (2008-2015)[3]

Source: Author

Chinese automotive market share in Russia is very small, as a latecomer, they face a lot of strong rivals from local and other developed market, who have much more advanced technology and mature experience, facing the Russian and other international brands, along with the unstable geopolitical and economic environment, Chinese automotive brands strides forward very slowly. Affected by the financial crisis in 2008 -2009, Chinese vehicle companies was

[3] http://auto.ifeng.com/hangye/zhuanlan/20160414/1055006.shtml

asked for 15% import tax each car to the Russian government, which forced some Chinese auto companies withdraw from the Russian market.

Before the sanction happened, the close geo-economic and geographic distance between China and Russia had once prove Russia was a wise destination for expansion with high fiscal return, the expected growth trend from 2008-2014 can the best evidence. Thus, more and more Chinese auto companies chose to enter Russia, some of them even intended to build local factory in Russia. But all the promising vision were broken by horrible slump in 2014 due to the economic sanction, even though, still numerous Chinese automotive companies boldly are keeping making directly investment in Russian market.

Although Chinese auto brands' market share is very small in Russia, the achievement still can be considered as a legendry. Chinese car quickly occupied an important position in the Russian market thanks to their advantages of high driving force and low price.

Mozyr Aspen, the Deputy Director of the World Economic Department senior Russian School of Economics, said that the good quality and cheap price of Chinese automotive brand won the heart of Russian consumers. In 2013, even though overall car sales in Russia decreased by 5.5%, China's auto sales in the Russian market are on the rise in some parts of China's auto sales even increased by 30% -50%.

According to the Russian auto market statistics published in 2013, "Lifan" Sold 27,500 vehicle, "Geely" sold 27,300 vehicles, "Great Wall" sold 20,000 units, "Chery" sold 19,900 units in Russia.

Only in the Republic of Tatarstan, China's auto sales grew 74% in 2013, and sales of the Bashkir Republic increased by 77%, in addition, Chinese automotive brand gained the biggest market share in Russian oblast Omsk, which was 9% of the total sales in that region.

But only relying on the preferential policy is not sustainable for MNCs, since the international political situation changes all the time, the inflection point from 2014 is a good example, preferential policy between Russia and China became less helpful, while Russia need to protect their countries' industries due to the economic sanction set by Europe. According to the PWC latest survey, Russian auto market had the largest drop in sales by 43%, which is also the largest drop in sales among the world auto markets. The main reason is the Russian worsening macroeconomic environment, including unstable geopolitical situation, dropping oil price, the weakening Russian currency. Russian government started to implicate a serials of

support measures especially for spurring the local auto brand's sale, including the car fleet renewal scheme, the car loan interest rate subsidy scheme, the subsidized car leasing scheme.

But notably, facing the same worsening business environment, these measures push Chinese auto companies into a worse situation, facing much more lost, since the price of their products became double expensive due to the depreciation currency, and customer will have less interests on Russian cars, which has better car loan interest. Consequently, the combination of these hard objective situations worsened the Chinese companies' performance. For foreign businessmen, the ruble plunged dramatically reduce their profits, and some even operate with a huge loss. Some Chinese companies drawback from Russian market with 0 sales, even the Great Wall companies, who is one of earliest Chinese auto comers, encountered the failure on their sales, and the rest of the companies still need to worry about unpredictable future in Russia, which still could worsen in the following years.

Chinese auto companies	***2016 year (March)***	***2015 year***	***Growth rate***	***2014 year***
The Great Wall	0	3,181	-78.80%	15,005
Chery	1,343	4,964	-72.60%	18,148
Beijing Automotive	13	329	-69.60%	1,082
JAC moto	0	152	-64.20%	424
Haima	96	391	-61.20%	1,009
Geely	1,854	11,617	-38.30%	18,828
Chang'an	184	734	-35.80%	1,114
Huachen (Brilliance Auto)	369	1,202	25.90%	955
FAW	/	/	/	164
BYD	0	/		5
Dongfeng(DFM)	121	1,365	/	/
Lifan	3,643	15,131	－35.9%	23,619
Foton	4	19	－70%	63
Luxgen	/	/	/	86

Figure 5: Chinese self-owned auto companies' performance in Russia[4] (2014-2016 March)

[4] http://qctt.baijia.baidu.com/article/304757; http://www.askci.com/news/chanye/2016/01/20/10633ln0q_2.shtml;

At present, the market share of Chinese automotive brands in Russia is about 4% (in 2015 it decreased because of the negative economic environment, but it's believed that it will soon break through 6%, or even 10% in the soon future.) In addition, Chinese auto companies started to focus on improving the quality of service for the Russian customer, they established after-sales service network in Russia, and aiming at establishment of production and assembly center in Russia, which are conducive to the development of Chinese automobile in Russia.

6.3 Overview of Chinese high-tech industry in Russia

In the old ages of Soviet Union, Russia have had a glorious history in engineering and technology domain, but in 21st century, Russia faces slow growing of its high-tech industry, but the advent of knowledge-intensive world just leads out the deep global integration of high-tech industry undoubtedly, the Russian government just noticed the meaning of technology for enhancing the Russian MNC and global economic standing, Russian government invested vastly into Russian Skolkovo Innovation Centre, which is considered as Russia's equivalent of Silicon Valley. The Russian Venture Company also planned to support the export of Russian high-tech production. These are good incentives to spur the Russian high-tech industry, and Russia intends to increase its IT services and solution experts from current $4billion to $11billion by 2020 ambitiously. Today, the Russian ranks 18th, ahead of China, although the emergence of Chinese companies is very promising, but it is true that Chinese high-tech companies are facing problems and difficulties in the Russian market.

As high-tech industry requires rapid technological innovation, wide resource sharing, Chinese high-tech companies should stay highly competitive, innovative and flexible among all the rivals (Fang Lee Cooke, 2012). But thanks to sustainable political relationship between China and Russia, just as previous Russian President Dmitri Medvedev said, the mutual trust and cooperation between two countries reached the highest level ever these years, which gives more sufficient reason to integrate strategic cooperation on the promising high-tech domain. Differ from the majority of manufacturers, high-tech industry were less impacted by macro-environmental economy, but much more impacted by its own inventive productivity. The fact can be found in the following basic information of Chinese high-tech firms' subsidiaries in

the Russian market.

Chinese high-tech industry also began to grow vastly. They are also latecomer in the Russian market; it is not easy to deal with other rivals from developed country and local Russian companies. Even so, some Chinese companies still impressively stand out from the rest of viable international rivals. It is quite impressive that even under this depressive economic environment, Chinese high-tech companies are still having increasing good performance in Russia. These companies' entire market share is dramatically increasing. Good evidences can be discovered in pioneering market share of smart phone in Russia was dominated by Chines brands with more than 30% in Russia, according to the telecom operator Vimpelcom. (Chinese smart phone market share in 2015:24%, in 2014:14%) China Telecom Company – Huawei has been the biggest foreigner investor, capturing than 50% market share of broadband in Russia. Lenovo also earned the first place of market share PC in Russia. The market share of Haier also earned the first place in Russian white goods market. Even facing an economic depression in Russia, their achievement and market share in Russia still march forward promisingly.

	The name of company	The year founded in Russia	Main Product in Russia	Sale in total (2015)	Market Share 2015 (Russia)	market share 2014 (Russia)	International spread	Others
High-tech industry	**HUAWEI**	1997	Smartphones, tablet computers, dongles Mobile and fixed broadband networks, consultancy and managed services, multimedia technology	¥395.009 billion	9,6%(smartphone) ranked No.1 in broadband	6.50% (smartphone)	Products and services are provided in over 140 countries and regions, serves 45 of the world's 50 largest telecommunication operators.	21 R&D centers in 14 countries, has highest number of application for patent in the world
	ZTE	2012	Mobile phones, smartphones, tablet computers, hardware, software and services to telecommunications services providers and enterprise	¥81.471 billion	10%(smartphone)	2.80% (smartphone)	Products and services are sold in over 160 countries and regions	J&V with Russian Sitronics(ZET:49%); Successful bidder for GSM-R telecommunicational system project of Russian railway company, Cooperate with Yota Devices, Smart city with 1billion deal;
	Lenovo	2008	Smartphones, desktops, servers, notebooks, tablet computers, notebooks, peripherals, printers, televisions, scanners, storage devises	$ 46.296 billion	11%(smartphone); 21% (PC)	8.5% (Smartphone); 14%(PC)	Lenovo has operations in more than 60 countries and sells its products in around 160 countries.	J&V with EMC,NEC; Acquisition of IMB in 2005; Acquisition of Motorola; PC market share located No .1 in the world(15.7%, 2015)
	Hytera	2015	Two-way radios, Networking system	¥2,259 million	second largest global radio terminal manufacturer with a market share of 12.6%	/	a global sales network with 30 branches in the USA, UK, Germany, Australia, Brazil, etc., and 600+ partners across the world	acquisition of Rohde & Schwarz TETRA business in August 2011marke
	Haier	2008	Major appliances,Small appliances Commercial heating and cooling systems Consumer electronics	¥ 200.7 billion	36%	10%	in 2014 the Haier brand had the world's largest market share in white goods, with 10.2 per cent retail volume market share. This was the 6th consecutive year in which Haier had been the market share leader for major appliances.	Sales on-line cooperate with Holodilnik.ru

Table 10: Initial specifies of Chinese high-tech companies

The Chinese government also actively encourages Chinese companies to be innovative and self-independent, after China has entered WTO. Chinese company China holds the world's

biggest fixed-line and mobile network with regard to network capacity and number of subscriptions. In order to fuel the expansion, Chinese companies from telecommunication industry invested more than USD$25 billion to improve the network infrastructure, and the amount exceeds the sum of all western European companies. Government also deregulated and supported some Chinese high-tech companies with high subsidies.

6.4 Analysis of empirical findings

6.4.1 The comparative analysis of application of knowledge management between selected Chinese automotive and high-tech industry confirmed in Russia

Followed by those indicators of developed conceptual framework of relationship between knowledge management and performance of enterprises with government involvement, we collected information by following question during the interview:

Knowledge management proposition questions

- Do you think your company has high awareness of acquiring the local market knowledge and latest information? And how does your company acquire knowledge from the local market? (From partners/ local consulting group/ JV/ experience of CEO/ local employees/ others)
- Do you think your company has high recognition of the latest technology and market changes in the current market?
- Can your company frequently recognize the latest actives and strategies of your rival in Russia?
- How does your company mainly acquire local knowledge, when you enter Russian market?
- How frequently does your company organize regular meeting in your department in Russia? By which form?
- How frequently does your subsidiary contact with parent company? By which form?
- How does your company share information and knowledge inside your company?
- How frequently your company trains your staffs, by which forms?
- Do you have any special intranet to provide educational channel for staffs?
- Do you think the local knowledge acquisition can impact on your fiscal performance?
- How do you exam the result of training on staffs?
- How do you protect your intellectual property?
- Do you regularly produce new product?
- Do you notice the difference of the Russian market from others?
- Do you realize the customer habitats? Do you customize products especially for Russian clients? If yes, does it improve your fiscal performance?
- Do you hire staff with diversified educational background?
- Do your employees have trained or have advanced degree?

- After employment, how do your company provide continuous learning approaches for employees?
- Which following technical infrastructure your company have used for building knowledge management?

  Remote communication: Online conference in distance/ E-teaching/ Remote teaching/ Telephone-conference/internet communication/Intranet communication;

  Knowledge sharing: E-mail/ documentation assets exchange/ online help platform/ technical tools for discussion/ knowledge database/report submission

  Technical infrastructure in working place: small conference room with technical tools/ cafeteria/ Internet network/ electronic bulletin board/ BBS for employ group/ Internet virtual community;

  Learning center: interactive multimedia/ Library/ knowledge evaluation system/ training system related Internet sites;
- Do you recognize cross culture obstacle during your communication with local employees or partners?
- Do you think you have any connection with governments involved in feasibility of your plan in Russia?
- Do your think your employees of different nationality have communication gap, which slow the knowledge sharing process?
- Do you think your local employs assimilate their culture by Chinese, such as Guanxi?
- Do you think your company is very innovation-oriented? What is your motivation?
- How much efforts your subsidiaries put on R&D? How many new products your company made especially for Russian clients?
- Have your company ever sign any promising contract with governmental help?
- Do you think the recent Sino-Russian cooperative relationship have positive influence on your performance in Russian? Can you give an example?
- What is your plan on innovation in Russian market?
- How is your operation performance and managerial performance in Russian market?
- Some other stochastic problem

In this part, we will clearly demonstrate the defective and promising performance of Chinese companies from the angle of knowledge management. All the analysis will be established by doing interviews with senior managers of these companies, combing with secondary data from the media. This process will help us understand the connection between knowledge management and companies' managerial and operational performance, combining their internationalization strategy direction. According to the interview based on above-mentioned questions, we summarized crucial findings as follows.

	Proposition	Factors of KM	LIFAN	The Great Wall Motor	Geely	Chery	JAC	Other note
Knowledge management	The role of knowledge and technology in Behavioral ability of knowledge	Knowledge acquisition	Local consultants; franchise, survey, import and export fairs advertisement agency; Russian employees experience; dealership, JV	Local consultants; franchise, survey, import and export fairs;	Local consultants; franchise, survey, import and export fairs; M&A	Local consultants; franchise, survey, import and export fairs; JV	Survey, local data acquisition import and export fairs;	All the company notice the importance of acquiring knowledge
		Knowledge sharing (face to face, Information technology platform and Internet application)	Regular training; Frequent meeting, intranet education and communication by internet and intranet;					knowledge sharing process is remarkably slow down when individuals are from different nationality, some cross culture problem and difficulties in transferring advancing marketing knowledge from China
		Knowledge application	Regular examination for trainees; Application of new knowledge and technology; New products on sales.					
		Knowledge protection	Patent application					Intellectual protection management

Table 11: the Behavioral ability of knowledge management of Chinese auto companies (in Russia)
Source: author

	Proposition	Factors of KM	LIFAN	The Great Wall Motor	Geely	Chery	JAC
Knowledge management	The role of knowledge and technology in Organizational Structure	Technology	Modern technology tool for communication; increasing engine serving for specially made SUV, growing import tax, non-preferential for Chinese automotive				
		Organizational culture	Innovation, export and reputation	High-quality, innovation and CSR	Safe, eco-friendly, energy saving	Innovation,excellence in diversity	Self-independent innovation, proactive,hard-working
		Cross national culture	Customization for Russian client, communication and behavior difference	Customization , communication and behavior difference	Customization, communication and behavior difference	Customization, communication and behavior difference	communication and behavior difference
		Guanxi	Good relationship with local government, cultural gap with Russian Chinese staff	Failure communication with dealership, considerable good relationship with local government	with local government, Russian&Chinese staff	Cooperation with AVTOTOR auto company, where enjoy the free tariff policy in special economic zone(ended in 2008 due to protectionism)	Russian&Chinese staff
		System	Institutionalization				
	Creative ability	Teamwork cooperation	Lack of diversified educational background	Lack of coordination	Lack of win-win concept	strong	Lack of culture assimilation
		Innovative motivation	initial vision	Brand recognition, benefit	competitive advantage, profit and environmental brand recognition care		
	Government involvement	Transaction-based	growing import tax, non-preferential for Chinese automotive	Preferential land tax in Tula,	growing import tax, non-preferential for Chinese automotive	Russian Protectionism	Russian Protectionism
		commitment-Based	Chinese governmental subsidies to R&D; One Road, One Belt;				
	Performance in Russia	Operation performance	The best Chinese saler in these years, R&D oriented, advanced marketing strategy; Customization	Nothing in this year	Fastest growing	The most popular brand in Russia	Sponsor in Formula racing competition
		Managerial performance	Motivation scheme for dealers in Russia; Staff Motivation Scheme;	Failure cooperation with dealership	Vicious competition		conservative action

Table 12: the knowledge management of Chinese firms in Russia (organizational structure, creative ability, governmental involvement, performance in Russia)

All of these Chinese automotive companies have considerable high awareness to enhance their knowledge management, but they still have a lot of rooms need to be improved, regarding to the knowledge acquisition, they mainly acquire the local market knowledge by cooperating

with local consultants, local franchise, dealership, Russian employees and experience of CEO. Knowledge sharing still reminds on the normal level by using traditional modern methods, and most of them face the obstacle of cross national culture problem, which held back the speed of knowledge sharing and effectiveness of knowledge management. Besides, according to our interviews, majority of these companies' Chinese staffs in Russia only have Russian or English language educational background, they need spend additional time to improve their marketing knowledge and auto technology knowledge, besides, while advanced technology spillover from China, it takes longer time as we mentioned before, a team with diversified background talents will broaden the field of vision, also they will have higher motivation and ability of creativity. Additionally, Chinese stated-owned companies would be supported more by governmental subsidies for R&D, and sign more contracts easier; and those companies, who purposefully put long-term efforts to make good Guanxi with local governments, will get more convenient to make the business locally. All the automotive companies from China were badly impacted by the revenue lost due to economic sanction and Russian governmental strict regulation. The governmental regulation is always a big headache for all the Chinese auto companies, because Chinese products' quality is almost equivalent to the Russian vehicle, but Russian and all the other countries can see the emergence of Chinese ability of productivity and innovation, and Chinese auto companies used to use low price strategy combining good quality, of which performance was considered as a big threat for Russian auto companies, consequently, in order to protect local auto industry, Russian governmental regulation and law are very changeable, the import tax of vehicle, including importing complete vehicle or assembling part import, is increasing time to time, aiming at push more burden on foreign competitive rivals, Chinese auto companies, who has very slight market share and less brand image, would be impacted at first. Especially, after the depreciation currency of Rubles, Chinese auto market shrinks badly. Some even withdraw from the Russian market.

Thus, we can see the fierce competition and unpredictable business environment in Russia, but it is still very worthy to analyze the actions and strategies, that Chinese automotive companies have put forward, when they are facing the this tough and risky market by leveraging the knowledge and technology. In the following part, we will introduce you our analytic findings according to our in-depth interview with these selected companies.

The application of knowledge management and internationalization of Lifan Moto in Russia

Lifan Moto has been the best seller in Russian market for last several years, and it entered Russian very early, it is not unfamiliar to deal with the changeable business situation in Russia, although compared with its previous performance in Russia, its revenue truly reduced, but its market share still increases a little with surprise, its "secret" of success is very meaningful for our study. Even Russia is a very risky country with strict regulation and law in the automotive industry, Lifan still boldly made decision to stay in Russia and explore more opportunities in risk.

After the announcement of factory construction in Tula from the Great Wall, Lifan also followed this action, in the October, 2014, with the witness of Chinese stated council premier Keqiang Li and Russian prime minister Dimitry Medvedev, the Chairman of Lifan Moto and governor of the state Lipetsk signed the investment intention agreement, Lifan will invest $300 million in the state Lipetsk, Russia for building new vehicle factory. Once this project is established successfully, the productive capacity will reach 60,000 units a year.

The chairmen of Lifan Moto – Mingshan Yi had once said through media: "*The future of Sino-Russian cooperation is very promising, Russia is one of the most important market for us, as being the best-selling auto Chinese brands in Russia, Lifan has been the best Chinese vehicle-saller in Russian for 4 years in a row. Establishing the self-owned factory in Russia can stimulate our effectiveness of production. It is also an important strategic layout for expansion overseas. In the first phase of expansion in Russia, we will still use CKD mode, then we will gradually start the localization, and eventually we will form the ability of annual output of 200,000 vehicles.*"

Furthermore, we investigated another customer relationship manager Mr.Piao of Lifan, who engaged in business in Russia, he said: "*Currently, doing business in Russia is bearing huge lost due to the depreciation rubles, but it also gives beneficial opportunity to use the revenue on constructing factory locally, establishing this factory requires two years, when the factory is established, Lifan can promisingly achieve benefit from economy recovering in the long term. This project will not only reduce the production cost and rivalry pressure, furthermore, after productivity is enhanced, we can hopefully expand the market share in Russia with a bigger economic scale. The local government of Lipetsk paid high attention and serials of preferential policy for our projects, which passively impacted on our further development in Russia.*

Correspondingly, the new factory will boost the local economic growth and relevant industries' development, it will provide around 20,000 jobs in Lipetsk."

Besides, by answering the question:" *What is your company's key secret to adapt to Russian market according to your market knowledge?*" Mr. Piao answered: *"The key of our success is not a secret. According to our analysis, Russian people don't care about the brand, but more concern about the driving force of engine and the price. Thanks to our improvement of products' driving force of engine and inexpensive price, we occupied a place in the Russian market. Besides, Lifan pays high attention on the optimizing the quality of after-sale service and setting up effective after-sales service network to attract Russian clients, these actions contribute constructively on improving market share in Russia."*

Another manger Mr. Sun continued: *"After Lifan settled subsidiary in Russia, the first team we sent from China are initially for after-sales. Once any maintenance service was ever complained by our clients, our headquarter will directly sent professional technical experts for them, in the first few years, since our Accessories Galleries haven't been established yet in Russia, we even air-ship the accessories directly, sparing no expense, in order to ensure the vehicle maintenance won't be delayed due to the lack of accessories."*

Talking about the current obstacles in Russia, Mr. Piao said: *"Except the terrible economic environment, the discrimination of Russian policy also made Chinese auto industry into a worse situation. The Russian government took serials of implementations to slow down the decline in Russian vehicle market by providing subsidized car loan, car fleet renewal program and car leasing. You know most of the Russian clients chose to buy cars by loans, and the current average annual interest rate of loan provided by commercial bank is about 24%, then Russian government subsidies 9.33% to support Russian auto clients, then the loan interest rate can be reduced to 14.67%, which is lower than affordability standard limit by 15%. Consequently, this policy can greatly stimulate consumption, in terms of reviving the Russian auto market in this fiscal crisis. However, while other auto brands can conduct this mortgage loan for their clients, but only Chinese auto consumers can't transact this deal so far. Chinese auto companies have asked each broad band by official written form, but still no reply yet. Which means, Russia's department of trade and industry set a non-public list, in which indicate which auto companies can get subsidies, while Chinese auto brands are unfortunately not on this list. Lifan moto has already been asking Russian industrial department of trade, but we still didn't get any replies. At*

present, Chinese companies have already adapted to the sharp fluctuation in economic growth in Russia, those who survived from the two financial crisis in Russia in 1999 and 2008, they have considerable high competitive advantage and better ability in response to the crisis, the current economic crisis temporarily won't case the withdraw of Lifan Moto from Russia. Regarding to the business distress in Russia, in stead of using Red ocean strategy, Lifan chose to allied with other Chinese auto companies to negotiate with relevant departments of Russian government, use the collective power of all the Chinese auto companies and legal means to ask for justice and interest that we deserve. On the other hand, we tried to actively contact with the Chinese embassy in Russia, and ask for cooperation and help from them in order to help Chinese auto companies through. Besides, it is worthy to mention about the clever anti-risk capacity of Lifan, it it true that we are facing double lost due to the currency problem if we change our revenue in Russia into RMB, alternatively, we chose to use these money to multiple investment, such as constructing factory in Russia and waiting for the promising return in the future; Besides, according to our analysis, we found Russian clients prefer payment by installment, so instead of transfer our revenue to parent company in RMB, we chose to invest these money into cooperative bank like Rosbank, Raffayzenbank, etc, in return they help us launch "Lifan Finance" service to allow our consumers to buy our cars by installment payment with considerable preference, this flexible adaptation to local development, which results in good sales of our vehicle model even during this tough time, such as LIFAN x60, etc. Furthermore, as you know, we are private company, every decision we made just like personal aspiration, except selling our cars, we also acquire some local products and luxury cars and sell them back to China through Economic Open Zone with considerable low tax, one of which locates at our headquarters' city, Chongqing, by this way we can compensate our lost by this way. "

Another important empirical findings regarding to obstacle in knowledge sharing part, just as Mr. Piao answered: "*The different culture and thinking habit cause a lot of administrative contradiction problems, and also slow the speed of knowledge sharing and transferring inside the organization. For instance, when Alibaba.com entered into Russia, it organized a online shopping festival on-line, of which idea was very successful in China, normally this event was organized 11th November annually, namely Single Day in China, in 2015 Alibaba won 129 billion RMB of whole trading volume online just in one day. But when Lifan allied with Alibaba and intends to establish promotion idea and practical methods to our local cooperative*

advertisement agency, Russian people didn't seem to be interested in this idea, and we took a long time to establish our O2O platform with our exact idea. Besides, we also noticed that Chinese enterprise emphasize more on market analysis and evidence with preciseness, but Russian employees use to act with their nature and interest without common practices, but very creative. Lifan Moto starts to unite all the Russian and Chinese employees as one with more communication, and increase considerably smooth of knowledge sharing inside the organization. After that we notice the importance of localization and customization, including product development and marketing strategy, we took the all the specifies of Russian culture, climate and habitat into consideration, consequently, in order to make product more suitable for Russian clients, we establish preservative treatment for automotive chassis due to the cold weather in Russian, and broaden the interior, while considering the in nowadays, every time when we announce a new car officially in Russia, we will consult local merchants and consumers about their opinions, and test it one year in advance in local market."

The application of knowledge management and internationalization of the Great Wall Moto in Russia

Among all the approaches of knowledge acquisition, the Great Wall Moto chose the most effective but bold one: establish a factory in Tula, Russia. On the 25 of august, 2014 Great Wall Motor Tula project groundbreaking opening ceremony for celebrating establishment factory was held in Industrial Park, the Russian State Uzlovaya, Tula. This will be the first Chinese auto factory in Russia, which covers all the sections of stamping, welding, painting and assembly (four vehicle manufacturing production processes), this is also the Great Wall Motor's first investment on construction of factory overseas. According to the interview of the chairmen of Great Wall Motor Company Limited Wei Jianjun, the main productions are Hover H1, H2 and other Havel models, which are close to Russian client's physique and taste. And this plant will provide 2500 local jobs, this is a very good evidence that conducting a good guaixi with local government by providing mutual benefit and reciprocal exchange to reach the goal can stimulate the expansion in foreign land, while other automotive companies, including other rivals from developed countries didn't successfully get permission to establish factory in Russia.

"This program will officially start from 2017, getting this permission of establishing factory from Russian governments mainly thanks to the Comprehensive strategic partnership between

Russia and China, which provides a cooperative environment for our business, and the Great Wall Moto promised to strictly follow the Russian laws and regulation in the Russian auto industry, once this factory is built, its productive capacity will reach more than 150,000 vehicles a year, we will try to do our best to serve Russian clients, we will also share the Cooperate Social Responsibility (CSR) to the local residents." As one responsible employee of the Great Wall in Russia said during our interview.

One Chinese auto industry expert expressed its comments through media[5]: "*Establishing factory oversea will breakthrough its brand image and prestige worldwide, and this can be considered as a new approach to enhance their independent innovation ability. The Great Wall establish construction of factory to produce vehicles locally can enable itself to reduce the cost and tax, relieve the competitive pressure, and establish a good brand image in Russia, and continuously keep the growing international competiveness.*"

But before this promising factory is established, the Great Wall Moto face the zero sales in 2015, although the entire the Chinese automotive industry is facing the same problems, its peer rival – Lifan is having a slightly increase in this hard competition, according to the investigation, we found the Great Wall Moto failed its long – term cooperative partner – IRITO, who assemble CKD models of the Great Wall Moto in Russia. As sales manager of the Great Wall in Russia said: "Our imported assembles' price raised because of the depreciation of rubles, as a result, we totally lost our price advantage, along with the whole Russian market turns down, Russian clients won't accept the increasing price of Chinese vehicles, which leads us into a dilemma. In addition, we didn't find a win-win solution for negotiating with IRITO, because of our different way of thinking, we failed the communication with IRITO, which made this factory won't buy our products and collaborate with us anymore, so we have to suspend our sales in Russia without any assembling partnership. At present, we chose to observe the business environment in Russia, and wait for the establishment of our self-owned factory, in terms of avoiding some communicational conflicts with Russian local partner."

Concerning about its organizational culture, the Great Wall Moto's slogan is "Make progress everyday", which aims at sustainable operation and persistent innovation. The Great Wall Moto also made a special training program to practice its employees to have athletic marketing response ability and offensive awareness like a "wolf", the Great Wall Moto also has a "Rational

[5] The official website of The Great Wall Motor: http://www.gwm.com.cn/news_detail-8343.html

advice scheme" to encourage their employees to learn everyday, the contents of this scheme includes constructive ideas to enhance effectiveness, quality of products and process, consequently, with these implementations, the Great Wall Moto improve the productivity and executive force.

As our prior study implied, the cross-national culture skill is an important facet involved in organizational culture. In fact, the products SUV serials of the Great Wall Moto are very suitable for Russian clients, the Great Wall Moto deserve to share a dominant profit in Russian automotive market, but it didn't. It also paid attention on knowledge application，knowledge protection and creative ability, the governmental involvement was also found in its first – perfect action for the plan of self- owned factory establishment, but comparing with its first rival in the automotive industry – Lifan, the Great Wall Moto is having a problematic performance, while Lifan has increased its sales slightly, this comparative result explores a huge problem and defects in its cooperate culture, which hasn't adapted to the Russian culture, the Great Wall Moto still didn't learn clearly how to do and reflect in Russia just as Russian do. Apparently, establishing the same way dealing with dealership in China can't work out in Russia, therefore, the case of the Great Wall Moto shows how important it is for Chinese automotive company to adapt to the local culture and the rationalize more flexile production and marketing network. In this case, although the Great Wall moto has some other advantages in knowledge management, but if it can't adjust its cooperate culture to the local market, it will hit obstacles in Russia.

The application of knowledge management and internationalization of Geely Moto in Russia

After Geely won the acquisition of VOLVO, Geely's brand image and prestige really improved tremendously worldwide, likewise, the dealership and clients will have much more confidence, Geely also gained much more competitive advantages in the fierce market and bad economic environment of Russia, its sales performance is very notable which ranked No.2 among all the Chinese automotive companies in Russia, from the official website of Geely, we found that Geely has a very helpful long term partnership dealer in Russia – ROLF group, this companies signed 1billion dollars contracts with Geely to sell Geely King Kong model and Geely prospect model by whole – vehicle export mode in Russia in 2004. ROLF, the biggest automotive import dealer in Russia said through media: "After ten years cooperation and

development of Geely in Russia, we all saw its conspicuous process in Russia, its quality of product is reliable, Geely also made a very suitable product positioning for Russian market. ROLF will make full use of our existing marketing resources to help Geely open the market further in Russia." One employee from Geely auto told that except the positive influence by acquiring VOLVO Geely, another important reason why Geely is getting popular oversea is because of its high quality and reasonable price. Mr. Chen from, sales director from Geely marketing department, said that *compared with those cars of big automotive MNCs from developed countries, we have comparable quality, but our products are 20% cheaper than theirs. Our clients also gave us feedback, said that Geely products allowed them to save a lot of fees on maintenance and spare parts cost. Nevertheless of course, the more important thing is our implementation of localization strategy. As our vice－CEO (Mr. Zhang Lin) said:"To be a local enterprise!" To be more specific, we cooperate with local assembly factory – Derway to establish CKD, but due to the Russian currency depreciation, our assemble and products became expensive for them, in result, our sales declines, and our cooperated factory chose to reduce production of our vehicle around 40%, although it is very risky to establish our own factory in Russia, but this decision is being discussed and planed, although we are facing loses and obstacles in Russia, but this economy and potential market is very big, once Russia overcomes this economic sanction, our future is very promising. Furthermore, except establishing local production, we also focus on how to customize properly for our Russian clients, we even specially made analysis on Russian's needs, and we specially reformed the vehicle's starting process with better engine and accumulator, according to the local market need, we change the color of interior into black, add heating wire on seat. In result, our sales increased thanks to our decision on customization, and our localization decision is the fundamental guarantee for our sustainable production in Russia."* According to this conversation, we can see company Geely really pays a lot of attention on acquiring market knowledge locally, in order to make a proper strategy for getting a better fiscal performance in Russia, and even in this economic crisis, their sophisticated knowledge acquisition enables them to have a effective and promising strategy in Russia.

It is very worthy to mention that Geely has rolled out production in Belarus by JV with local automotive factory and Union auto technology co., LTD, and made a JV company namely BelGee in Borisov, Belarus with a 32.5% stake, which located at Minsk's Free Economic Zone,

this operation can help assemble cars from semi-knocked down kits, this could successfully established mainly thanks to the support of the two countries' governments.[6] Honestly, the market capacity of Belarus can't compare with Russia; the main incentive is to produce vehicles in Belarus with attractive prices and export into Russian with zero tax. Eventually this Belarus plant would help to raise supply to other former Soviet State. We could say this implementation found a cleverest channel to optimize the hard situation for exporting vehicles into Russia, as we know, there are lots of failure experiences show us how hard to establish smooth and preferential supply chain in Russia, including direct exportation, JV or self – owned factory establishment, even the high tariffs and scrapping tax make Chinese automotive vehicles lost their major advantage by price competition. Geely's JV plant in Minsk's Free economic Zone not only can allows them enjoy the relevant preferential tariff and tax, even assemble vehicles in Belarus doesn't require scrapping tax, thus they sell vehicles with very attractive price in Belarus, and export into Russia with almost 0 tariff, because Belarus has 0 tariff automotive agreement with Russia. This implementation initially avoids some changeable Russian regulation and special protectionism for Russian brands. But this approach has already raised dissatisfactory of Russian government. Just as Russian ambassador in Belarus Aleksandr Surikov said: "Russia will against this implementation, it will definitely threaten the Russian local automate brand, Russia will take some initiatives to protect its local Russian industry." Again, we can see how strictly Russian government is trying to protect their local industry, but Geely's strategy perfectly shows the Geely's wise action dealing with the Russian market's tough regulation and high tax, which mainly thanks to its efforts on deep knowledge acquisition capability.

Concerning about knowledge sharing, knowledge application and knowledge protection facets, the senior manager of Geely in Russia answered: *Geely Moto also leverages technology to implicate an effective online - intranet communication system for employees to communicate, have regular meeting on-line, acquiring education on-line or sharing information and knowledge. Geely has their own strict inspection system to exam and inspire their employees' learning process, although this process goes effectively, but while it works in Russia, the cross culture issues and different languages problems slowed the knowledge sharing, some misunderstanding and conflicts occurred sometimes. But Russian employees were found to start*

[6] WARDSAUTO/ Geely Confirms Plans for Belarus Joint – Venture Plant
http://wardsauto.com/industry/geely-confirms-plans-belarus-joint-venture-plant

assimilating Chinese culture, such as trying to establishing good Guanxi with their Chinese employees and executives, also Chinese employees are also trying to adapted to Russian cultures and Russian's thoughts, but it still took a period to reach this knowledge sharing process. But its knowledge application and knowledge protection work very prospectively.

The application of knowledge management and internationalization of Chery Moto in Russia

Chery was selected as the most popular Chinese automotive brand in 2015[7] by famous Russian automotive media "Autopanorama magazine", and in the 2014 and 2015 its sales ranked third just after the Lifan and Geely, but Chery only has half sales volumes compared with Lifan and Geely. If spite of leveraging basic technical approach such as internet and partial intranet, also using some internal incentive program for inspiring employees to acquire and sharing knowledge, but their partial stated owned nature still slows down its knowledge sharing process, some superfluous rules and usages were required in the daily life, according to some comments from media, Chery's organizational structure really faced a huge problem, it happens very frequently that lots of senior executives resigned from Chery, especially sales managers, the previous sales executive manager of Chery - Mr. Huang has just resigned, another who only has R&D experience replaced him, it is just like a one team, who has no sales experience in sales is leading Chery's sales department, Besides, differs from Geely's divisional organization, Chery's departments don't have right to make direct decision, all the marketing strategy should approved layer upon layer, from the beginning of suggestion – making until the final decision-making, the entire process requires one month, in the end even if the scheme is approved, they have already bungled the best time for business opportunities. Consequently, their organizational structure and culture really needs to be improved urgently. In another hand, its state-owned nature enables them to have more effective opportunities cooperating with foreign companies.

Besides, Chery has signed a preliminary agreement with investment, which is worthy 1billions dollars to establish a local factory in Belarus, just followed by the Geely, trying to leverage the preferential agreements among Russia and Belarus to export vehicles into Russia, this tricky methods still will meet some potential stricter reaction from Russian government for protecting their own automotive vehicles, but still currently facing the bad the economic

[7] http://www.chinanews.com/auto/2015/05-06/7256276.shtml

situation and hard Russian regulation, this establishment is an ideal methods to reduce the tariff and optimize their price competitive advantage. Again, this implementation also more or less thanks to Good relationship (Guanxi) with local government. And this initiative in Belarus was eventually decided by Chery mainly because lots of its failure experience cooperating with Russian native industry, such as Avtotor and TagAZ, consequently, Chery was even forced to close the production line in Kaliningrad, Russia. Besides, efficiently acquiring knowledge locally, Chinese automotive companies need to be much more flexible to deal with this dynamic Russian Market. Although maintaining good Guanxi with local government is important, it is still not enough for the Chinese automotive industry to survive in Russia, because the attitude of the Russian government is too strong to protect their own automotive industry.

The application of knowledge management and internationalization of JAC in Russia

Obviously, JAC is struggling in this Russian market with only 0 sales in 2015, some rumors said that JAC would withdraw from Russian market, according to the interview with one senior sales executives in Russia - Mr. Zhang, he said that JAC will still stay in Russia, but a lot of deficit performances in knowledge management domain were found during interview, which can explain partial reason why JAC decrease their fiscal performance in Russia. Basically, JAC also has basic approaches to establish knowledge acquisition, such as making survey, acquiring knowledge embedded in import and export fairs, but dislikes previous selected companies, JAC didn't have those flexible strategies facing with Russian strict regulation and laws, we also didn't found emergence in establishing JV or M&A to enhancing their knowledge acquisition and competitive advantages in Russia.

Besides, we found that most of Chinese employees and sales executives in JAC, who are engaging business in Russia, only have Russian language educational background or only engineer degree, who is lack of sales, marketing background. This unitary individual background really would lead to a low creative ability in company's teamwork cooperation and innovative motivation. Also reviewing the entire process of interview, we didn't find any consciousness of this company for knowledge management, but according to observation from the interview, very idea on how to optimize their organizational structure is still kind of musty due to its partly – state owned nature, the regular conferences made through distance video conference is lack of effectiveness, and the approaches for knowledge application are not found that interactively and

frequently.

Also, the cross culture problems were also found in JAC moto, and during the interview, Mr. Zhang also agrees that assimilating local culture ability and acquiring local technical and market knowledge can impact their operation performance, as result, they try to understanding Russian people's mindset, and actively acquiring local knowledge and enhancing our working effectives, but these implementations were mainly noticed individually, JAC needs to institutionalize their organizational structure. While Mr. Zhang was talking about the awareness of knowing advantages and situation of peer companies, he said, that JAC acknowledged the importance to knowledge acquisition, but the methods still need to be broadened and improved, JAC stays flexible to know the status of peer industry, actually in the same industry, companies in the same field will discuss with each other about the future of automotive market, and Chinese automotive companies pay attention on the climate change, that could changes the demand and trend of automotive industry. Currently, in the field of commercial vehicles, Chinese peer automotive companies didn't have high competition between with each other, but in the passenger vehicle fields, Chinese peer automotive companies' competitive just a bit fierce.

Russian employees in Russia truly try to assimilate this typical Chinese culture, and willing to establish good relationship with Chinese employees and sharing their local knowledge inside the company. But we didn't find any implementations were mainly established thanks to good Guanxi with local government. That is why we didn't find any breakthrough in JAC sales performance. From the side of the Chinese government, JAC also didn't get any special benefits or support from the Chinese government, although it is owned partially by the state, but they reach any very tremendous and successful big cooperative project in Russia to enhance their fiscal performance. Although JAC chose an adoptive auto model for Russian clients, but they didn't specially pay attention on innovate new products for Russian clients, also no localization strategy, also no excellent pattern for after-sales service, in results, hardly can JAC compare with previous analyzed auto companies. Except the dangerous situation in Russia, JAC's factory establishment initiatives in Ukraine was spoiled by Ukraine crises, which was initially aimed at assembling vehicle in Ukraine and exporting into Russian leveraging free tax policy between Ukraine and Russia, the crisis and economic sanction still haven't been solved and geo-economics and trade relationship between Russia and Ukraine are completely worsen. Thus, this failure strategy even insult to JAC's injury in Russia, therefore, if JAC still doesn't put

forward some efficient and constructive implication to enhance its competitive advantages and compensate its huge lost in Russian and Ukrainian market, undoubtedly, the JAC still will be trapped in the losing proposition, and the future will be not optimistic.

Knowledge management of Chinese high-tech industry in Russia

	High-tech company	HUAWEI	ZTE	Haier	Hytera	Lenovo
Knowledge management	The role of knowledge and technology in Behavioral ability					
	Knowledge acquisition	Partners in Russia, consultant, CEO experience, local specialist recruitment, R&D, cooperation with local university; JV	Partners in Russia, consultant, CEO experience, local specialist, R&D, JV	Partners in Russia, consultant,CEO experience, local specialist, R&D,	Partners in Russia, consultant,CEO experience, local specialist, R&D,	Partners in Russia, consultant,CEO experience, local specialist, R&D,
	Knowledge sharing (face to face, Information technology platform and Internet application)	Regular training locally and in parent company; Frequent meeting online, intranet education and frequent ommunication				
	Knowledge application	Examination system, high welfare motivation system	Examination system, high welfare motivation system	Examination system, high welffare motivation system	Examination system, high welffare motivation system	Examination system, high welffare motivation system
	Knowledge protection	patent	patent	patent	patent	patent
	The role of knowledge and technology in Organizational Structure					
	Technology	telecommunication, LTE, broadbrand	telecommunication , IT, broadbrand	Home appliances Consumer electronics	Two-way radios Networking systems	Computer hardware Electronics
	Organizational culture	Unity, dedication, learning, innovation, benefit and fairness	Respect, be loyal, innovative and effective	Innovation	Talented people -oriented	Benefit and internationalization oriented
	Cross national culture	Start to localization	Start to localization	Start to localization	Exploration stage	Start to localization
	Guanxi	maintain the current advantage as the first mover among Chinese competitors	Very important, as facing first rival HUAWEI, who has widest network locally	Explore more channel by better connection	exploration stage	good relationship with government
	System	very effective and standardized with advanced western management theory	Less effective due to the governmental role involved	sophisicated	exploration stage	With advanced management theory, very internationalization insight.

Table 13: the behavioral ability and organizational structure of KM in Chinese high-tech companies (in Russia)

Source: author

	High-tech company	HUAWEI	ZTE	Haier	Hytera	Lenovo
Creative ability	Teamwork cooperation	impressive performance, but some deficits of knowledge sharing between Chinese and Russian workers due to the attractive welfare motivation scheme	impressive performance, but some deficits of knowledge sharing between Chinese and Russian workers due to the attractive walefare motivation scheme	Flexible	Flexible	big-enterprise-disease
	Innovative motivation	To be No.1 To survive in this innovation intensive environment	explore new way to survive in this innovation oriented environemtn as a late commer	adapt to the requirement of clients	enhance advantages	the requirement of it innovation- oriented nature
Government involvement	Transaction-based	Benefit from Chinese governmental support	Benefit from Chinese governmental support	Benefit from Chinese governmental support	Benefit from Chinese governmental support	Benefit from Chinese governmental support
	commitment-Based	With the witness of Sino- Russian presidents, HUAWEI signed cooperative contract with Russian government under the New silk Road Belt framework	Russian government institution and enterprises claimed the preference to use Chinese ZTE equipment instead of American	The Russian government procurement programme	exploration stage	completed hard deal with government during Putin's president elction by fast action
Performance	Operation performance	Efficiency, high quality, high innovative	Explore more channel to leverage its own advantages	Efficient channel and high-quality after-sales service	Seeking partner	First mover, and successful transformation when needed
	Managerial performance	effective, western management theory application	effective, western management theory application	effective, western management theory application	exploration stage	effective, western management theory application

Table 14: knowledge management performance of Chinese high-tech firms in Russia (creative ability performance combining government involvement)

Source: author

In this part, we will start to explore the knowledge management of Chinese high –tech industry in Russia.

The application of knowledge management and internationalization of Huawei in Russia

Huawei is a very successful case for us to analyze how to enhance competitive advantages by knowledge management and absorptive capacity, here we firstly explore Huawei's key advantages of knowledge management, we contacted with three senior sales managers and one knowledge management executive, according to our initial visit and observation, the working environment, technical infrastructure, the communication atmosphere between employees are very impressive, Huawei has 12 representative office in Russia, except Chinese senior manager and engineer, they have hundreds of Russian employees.

As one of few Chinese companies, who noticed the importance of knowledge management, they even settle sophisticated manager to study and engage in knowledge management in Huawei. It is also the earliest high-tech comer from China, it overcame the financial crisis, instead of shrinking business during this tough economic sanction period after Ukraine crisis, on the contrary, their market share is aggressively at an accelerated pace.

Leveraging its increasing brand image and competitive advantage, their channels of knowledge acquisition also became much broader than those traditional ones, including establishing long-term partnerships with some prestigious and skillful companies to compensate some domain that they are not good at, it is one of the fastest way to compete with other rivals in a fierce market but as a later comer. As soon as they settled their first office agency in 1997, they decided to establish a JV Beto-Huawei with Russian Beto Konzern and Russia Telecom, in the 2003 they start to cooperate with three biggest Russian operators: MTS, VimpelCom and Megafon, in 2014 they also signed strategic agreement with Rostelecom, Russian Railways, Sberbank and VTB with the strong support from two countries' government. Besides, Huawei also cooperates with other famous international firms for consultancy, such as IBM, KPMG, HAY Group, PwC, Frauhofer Gesellschaft, Tower Perrin, Telefonica, Vodafone, KPN, KDDI, STC, Etisalat, Intel, Motorola, Microsoft, Siemens, etc, therefore, such powerful background insures promptness of knowledge acquisition effectively. Besides, Huawei also cooperate with local university for R&D, while other Chinese companies still didn't put efforts to it.

Sales manager Mrs. Li said that Huawei has deep understating of high-tech industry's trend, it is famous of its core solution for information technology (customize cloud technology for

operators and enterprises customers). Huawei occupied a very important place in conference, exhibition and assassination organized by he Russian peer industry, at the same time Huawei actively involved in the research activities.

They have very high innovation motivation due to its high-tech industry nature, Huawei wants to be the No.1in this intensive technology environment, and Huawei have very intelligent employees with diversified education background in Russian subsidiaries, which means that they have a very strong creative ability in Russia, including engineer, marketing, language, IT etc. Their vision is to enrich life through communication. Through Huawei's official website they claimed that Huawei defines human process by innovation that could enrich all the humanity, they emphasize the impact of information and communication technology will be measured by how many people can benefit from it.

Since Huawei business deeply involved in technology and information, Huawei has to share information and protect their intellectual property carefully, Huawei has their own intranet for communication and sharing information, also they have their own internal network for employee to absorb new knowledge, the Chief IP Counsel at Huawei, Georg Kreuz said that Huawei unwaveringly focuses commitments to protecting Huawei's intellectual property as a driver of innovation capability by increasing patent applications, besides, the perfect role of technology was reflected in Huawei's business environment, which is became fully digitized. Huawei could proudly say that Huawei lies on the top contributor to the innovation process in the world.

Huawei also has regular scheme to exam employees' self-learning process in order to keep all the working team having a fruitful knowledge background. In result, Huawei is very good at leveraging the role of technology to enhance their knowledge sharing ability; its knowledge application methods also effectively improve the individual's knowledge acquisition motivation inside the company.

Except innovation, their organizational culture also focus on leveraging welfare scheme and employ stock system to motivate employees to be more eager to learn, share and work, in result, their employees would like to work and share information more effective, and their performance would also be productive. With this competitive atmosphere, some talented employees can become a senior engineer from a junior position within a short time thanks to its contribution to the company. But one employee could also easily be quitted from Huawei due to its poor performance, although he had contributions to company before.

Besides, according to the interview with one senior executive Mr. Bai, who also specially engaged in Huawei's knowledge management domain before about 5 years, he said *the cross-national culture and language problems were also explored in the business establishment process in Russia, but Huawei is trying to practice advanced European theory of knowledge management, and conquering the difficulties in the cross-culture and different language issues by two ways, first approach: localization strategy.* Mr. Bai's opinion is that in order to firmly foothold in Russian market, adapt to Russian culture, the way of thinking and language is very importance, but in order to fill this gap, it still requires time, so firing more sophisticated Russian employees to take over more issues will be a more effective method; In another hand, Chinese senior managers are also very indispensable for Huawei to manage foreign market, another way to enhance the effectiveness of knowledge sharing is to institutionalization, which means institutionalize every system of organization and every role of individual very clearly, this approach will reduce the absent - minded situation happened due to the gap of culture and language.

Another engine of Huawei's impressive and effective performance is its organizational structure: centralization of authority. The CEO of Huawei – Zhengfei Reng has a famous saying: "Stabilization is the foundation of development of one company, Huawei will always follow centralization of authority." Mr. Reng is very cautious on the issues of division of authority; On the basis of centralization, every hierarchy was orderly decentralized layer upon layer, whose slogan is "Fully authorized, strictly supervised" Although there are more then 300 vice – executives inside the company, but only Zhengfei Reng has the highest and the only decision-making power. Consequently, although executive force of Huawei is very strong to make commitment effectively, but once company faces problems, there will be lack of effectiveness to solve the problem from the base.

In the view of Mr. Reng, Huawei is a "3 high" enterprise: an enterprise, who has high effectiveness, high pressure and high salary. He believed that high salary is the first driving force for gathering talents for the company. Huawei's high salary strategy takes huge amount of indirect cost of production, but this implementation storages abundant talented people for Huawei, to some extent, Huawei monopolies the talents market in China, which restricts development of its competitive rivals.

Huawei not only utilizes self-owned technological facility to enhance their effectiveness of

knowledge management, but also utilizes its strong technology capability for knowledge management to contribute on Russian regional government and stated – owned companies to enhance management effectiveness, for example, Huawei's HD videoconferencing solution help Ryazan state government improve governance process by providing HD videoconferencing; Huawei's data center solution help Central Bank of Russia rollout NAPC, which greatly contributes to the financial stability and viability of Russian national economy during the economic sanction; Huawei contributed to Agile Stadium Solution in Russia's Spartak Stadium; Huawei spend Sponsor for the Information Security Russia; In the 2016 Huawei starts to help develop telecommunication transfer network in Russia. As a natural consequence, Russian government would like to provide preferential policies for Huawei, since Huawei showed its social responsibility and high-tech productivity with superiority of price.

Differ from another competitive Chinese rival in telecommunication industry, Huawei insists to establish its sales path along with the Chinese government diplomatic path. The CEO Mr. Ren once firmly declared before: " Chinese diplomatic routes is successful, which help China won more strategic partnership over the world, thus Huawei chose to establish our international marketing followed by Chinese diplomatic path, I believe it will be successful, too." Actually just right after previous precedent of Russia – Yeltsin visited China; Mr. Ren immediately captured the huge potential business opportunity hidden in the changes of this geopolitical relation, subsequently, he chose to speed up the cooperation with Russian market and expand into this country right away in 1997 year. Huawei also achieved substantial support from Chinese government with preferential policy and fiscal support. Huawei also benefits from the sustainable Sino – Russian relationship, 7th Sep, 2015, President of Russian Federation attended the 70th anniversary of the victory of the Anti-Japan War and the World anti-fascist, which shows the strong support from Russia to China, in the same day, Jingping Xi and Putin attended and witnessed a number of bilateral trend and business agreement signed between China and Russia with the background " One Belt, One Road", which includes the agreement between Huawei and Irkutsk's government for developing the Asia – Pacific region data center and cloud service under the framework of the New Silk Road Economic Belt". Subsequently, it is believe that under this healthy cooperative relationship between China and Russian, combing the admirable ability, the positive governmental involvement including transaction and commitment based influence directed into growth of Huawei in Russia. Consequently, another

Huawei's success stems from its long – term cooperative relationship with local partners and good Guanxi established with local executive and legislative governments by active communication, as a natural result, its operation performance and managerial performance are very productive in Russia according to our survey.

The application of knowledge management and internationalization of ZTE in Russia

Except Huawei, ZTE can be considered as another high competitive telecommunication Chinese player in Russia, although its market share of smartphone was increased from 2.8% (2014 year) to 10% (2015 year) with a rapid pace, but its other services in fixed broadband, operation in networks, multimedia technology facet totally can't compare with Huawei at the moment. Huawei came into Russian market and captured the main operator partnerships earlier than ZTE 5 years more to have more market knowledge and experience dealing with this dynamic market.

Besides, we also find some drawbacks and advantages in the knowledge management domain. ZTE's knowledge acquisition includes hiring intelligent Russian local employees, experienced CEO, making survey, ask for consultancy from famous relevant companies, such as Ernst & Young, PriceWaterhouseCoopers, Alcatel, Ericsson, Interl, Switchsore, etc, furthermore, Huawei also cooperates or joints venture with local companies will be a very effective methods to acquire Russian market knowledge vastly.

ZTE's knowledge sharing speed is a bit slower than Huawei due to its partly state-owned nature, some decision and information sharing requires more documentation and confirmed process, but with more equal discussion.

Besides, compared with Huawei, ZTE's technology didn't optimize ZTE's knowledge sharing capability at best level. Analyzing its R&D productivity and contribution on effectiveness of management, ZTE still has considerable fast approaches to share knowledge inside the organization, such as remote video conference, and some technical infrastructure, etc.

Regarding to ZTE's knowledge application and knowledge protection, ZTE is also ranked as one of the highest patent applicants in China; ZTE also highlighted the utmost importance of innovation and intellectual property protection.

Here we can find the similarity and difference between ZTE and Huawei, both companies are highly value the importance of technology and knowledge, which makes two companies put

the talented human resource in an important position, every year they hire a lot of graduates from the best Chinese university, giving them substantial return, whose average salary can stand for the highest level among all the Chinese enterprises. According to the interview with HR of ZTE, who works currently in Moscow, Mrs.Z said: "*Both ZTE and Huawei have used wealth scheme to motivate employees. Huawei's merit is its employ stock system, they don't go public, the more money they earn, the more money they give to employees; But our company ZTE, combining with the partly nature of state – owned, we have more support from governments and more signs of traditional governmental involvement, we don't push our employees that hard, on the contrary, even the business we made is quite tough in Russia, ZTE still persistently provide best subsidy and welfare to our employees in Russia, let alone the how good to be treated in China and other high profit countries. ZTE also uses attractive welfare scheme to motivate individual to learn and work more actively, again, due to its partly state – owned nature, compared with private company, ZTE focuses more on individual's welfare than fierce competition for getting more fiscal profit for company.*"

Subsequently, we also find the value of knowledge and technology in ZTE's cooperate culture, as Mrs. Z said: "*Differs from Huawei, our cooperate culture is emphasizing on communication, learning and understanding. ZTE's CEO once said that <Whatever is has every reason for being. > Which means ZTE has more tolerance for different culture and individual error making. ZTE provides a sense of family for employees, the relationship between company and employees relies on "economic contract" + " psychological contract", while Huawei won't tolerate sub-culture and errors exist. Principally, once Huawei's head office set off one command, other departments should implement it unconditionally. But in ZTE, everything is open for discussion, even employee's ability, we believe: there is no mediocre person in the world, the people became mediocre because they were given a wrong position for showing its talents, thus we allow our employees to change their position vertically or horizontally inside the organization, until they find the most suitable position for themselves, but of course the these applicants need to meet the requirement of this position. Some of our current employees were resigned from Huawei and came to us, because we provide them more feeling staying at home. Working in Huawei is much more like a fierce competition; everyone needs efforts to survival of the fittest, Huawei resigned 30% senior manager regarding to their personal performance and company's development requirements, which was considered as a classic case study for*

manifestations of transition to development. Decentralized divisional system management characterizes ZTE's basic organizational structure. But we won't blindly tolerate the turnover of position, we also guarantee 5% natural elimination rate every year averagely. In accordance with the pragmatism principle, suitable one is the best, with ZTE's organizational structure every member in every hierarchy can share a part of power, responsibility, risk, the pressure of business operation will be transmitted to every employees carrying the same belt of economic indicator, in order to stimulate the motivation of employees, ZTE chose to use cash for awarding employees' performance. Since 2001, the basic salary in ZTE grows at a very rapid pace; the average salary plus awards sometimes are even higher than the one in Huawei. By this way, the initiative of employees will be stimulated with an optimal level; the team consciousness will be enhanced. Consequently, this organizational structure can improve the cohesion and the level of operation of the company. But we can't deny that we can't compare with Huawei's executive force, but once ZTE faces difficulties, the power of our grassroots will make us victorious and perform sustainably. Again, our organizational culture and structure enable us to unite solidarity and diversified talents in our team."

Since ZTE entered into Russia 5 years later than Huawei, consequently, hardly can ZTE grab the dominant market in broadband in Russia from Huawei. Comparing with Huawei's focus on technology R&D, ZTE started to focus more on marketing strategy in Russian market by diversifying its products, service and business channels to increase its performance.

The influence of government in expanding performance and advantages were found in ZTE. In the end of 2012, ZTE has won the bid for GSM-R (Global system for mobile communications railway) communication system project of Russian Railways[8] with 100 million dollars, additionally, in 2015 a breakthrough news that ZTE successfully won one billion RMB cooperative agreement to build "smart city" and "smart transportation system" in Russia, which broke the bottleneck of its ordinary performance in Russia, according to the knowledge of media, this cooperative agreement could be successfully shows ZTE's importance position in the "One Road, One Belt" strategic project, and the positive involvement of governments based on sustainable geopolitical relationship in developing business with more opportunities and less obstacles. One senior manager of ZTE dedicates that the future growth of ZTE will mainly rely on the promising cooperation with governments.

[8] http://wwwen.zte.com.cn/en/press_center/news/201210/t20121011_363293.html

The application of knowledge management and internationalization of Haier in Russia

Haier was founded in 1984 and entered into Russia in 2007, it is the fourth largest white goods maker in the world, a distinguished Chinese multinational consumer electronics and home appliances enterprise, who wrote legendary story of Chinese company's internationalization, in 2015, it was ranked on the top of the list "Fortune Global 500", as being the world's fastest – growing brand. It has also been listed on the top of " The exclusive comprehensive leadership of Chinese enterprises in mainland" for five consecutive years according to the data of "Euromonitor"; The American consulting company BCG announced that Haier is the only Chinese enterprise listed on the top 10 in the list of " the world most innovative enterprises 50" Haier is also famous of its commitment to meet the customers' satisfaction. In 2016, Haier acquired the biggest American appliance company GE, who has 9 factories. Haier is also a big shareholder of Fisher & Paykel.

At present, Haier is transforming from traditional manufacturing industry serving for home appliance products to an innovative industry serving for the whole society. In the current advent of information and Internet, Haier confirmed its commitment to become an informative enterprise in terms of establishing interconnection and interworking by leveraging various resource, which aims at build a new platform to create a win-win situation and optimize ideal effectiveness of sharing information and knowledge world wide.

Haier cooperates with Neusoft Group to establish a famous and effective HGVS (Haier Global Supply System for integrating all the information and operational issues of its international business around the world in the marketing, sales, sales distribution and financial accounting domain.

Externally, Haier built a global open innovation community platform, namely "Haier Open Partnership Ecosystem", in terms of sharing innovative ideas, seeking the best solutions with advanced international partnership.[9] This platform establishes five core capabilities for Haier: Ability capturing the latest industrial technology development; A professional and strong innovative circle of communication; Ability to integrate the whole process and resource precisely; JV laboratories, shared information and achievement of study at fastest speed, by these means Haier optimizes its global supply chain and having the priority of supplier.

Haier's knowledge application can be seen in its diverse new products flowing into market,

[9] http://www.wipo.int/wipo_magazine/en/2015/04/article_0006.html

their abundant patent applications were also good evidences to protect the knowledge property of Haier. The CEO of Haier said once via the media: "*Compared with those famous multinational companies in the world, we didn't have competitive advantages in capital, technique, economic scale, but they have one of our advantages – speed, we can satisfy our clients in the way they want at the fastest speed, including speed of action and innovation, with our efforts, we can proudly say that Haier's innovation speed has exceeded a lot of historical brands.*"

Organizational culture of Haier can also be highlighted as a good performance in the knowledge management domain, which is promoting a "self-created management method" inside the organization, which was even studied by Harvard University. One is OEC (Overall Every Control and Clear) management method, which was formed in 1989, aiming at implementing PDCA (plan-do-check action cycle) precisely into every individual, every detail issues and daily enterprise management approaches. This OEC management contains 6 typical management approaches to guarantee the effectiveness and performance of management in every departments of Haier. These 6 approaches are Position Management, Team Management, Branches management, Function management, Decision – Making Management and the Overall Incentive Scheme Management, this integrative management methods help Haier clarify their goal both in daily life and in long-term, explicate the distance between its biggest rivals, and shorten this distance by enhancing incentives and motivation. In the meanwhile Haier carefully guarantee cost control and the quality of its human resource. This OEC represents a remarkable evidence of its organizational culture, brilliant team creativity and innovation motivation. It does not only create a huge economic benefit for the company, it also creates a tremendous social benefit, which has been awarded by Chinese governments with namely "Golden Horse Prize" for its innovative enterprise management, previous vice – Chinese president Rongji Zhu even tried to promote this management experience in China. Consequently, we can identify the impressive evidences in Haier's organizational culture, effective system and team creativity.

Besides, we confirmed the cross – national culture inevitably happened in Haier's Russian market, Haier also notices this problem, trying to diminish this influence by hiring more Russian local employees and trying to assimilate Russian culture. Additionally, according to the investigation, in the internationalization process Haier aims at learning and integrating all the excellent cultures from the world, in terms of innovating the most unique enterprise culture for Haier. Alternatively, in order to decrease the cross-national culture, Haier also invites its

international employees to come to its headquarter in Qingdao, China to have regular training, experience Chinese culture, learn Haier's cooperate culture, Chinese manufacturing technique, after-sales serve, etc. Besides, thanks to its informative network, most of global business issues were easily accomplished with out human. Thus, some cross-national culture conflicts have been avoided dramatically.

According to investigation, even in this economic sanction period, Haier's sales volume in 2015 is 10 times higher than 5 years ago, which is mainly contributed by its innovation efforts on increasing its brand image and risk- avoiding ability. As we implicated earlier, Chinese multinational companies are still lack of strong competitive advantages compared with those MNCs from developed countries, the biggest weakness of Chinese multinational companies is lack of knowledge of local market rules, regulation and experience, which resulted a lot of failure internationalization strategy. While Haier was establishing internationalization strategy, Haier deeply noticed this, in order to avoid market risks with biggest extension, Haier put forward a principle: "Capture market by flowing our product and enhance our brand image in the first place, then establish factory." This means Haier also follow the Uppsala model (Johanson & Vahlne, 1977) to expand market in Russia gradually by export. And then establish more intensive approaches, when they feel its growth in this market is organic. Haier need to explore local market, and guarantee the lowest break – even point, in another words, only establishing factory, when company make sure it has enough competitive advantages, this principles was proved by successful examples in its establishment in America, Pakistan, Bangladesh and Indonesia. After Haier opened its first official representative office agency in Russian market in 2008, Haier has proved its dominant sales performance and strong competitive advantage in Russia, currently, more than 100 different models products are being sold in Russia, more than 120 Russian cities were raised around 196 service centers. This strong marketing network allows Haier perfectly provide their service to clients. Besides, Haier cooperates with Russian electronic product trade ministry, Haier always highlighted the high-tech, innovation, products' value on the top of its brand strategy, attending in China E – Brand Expo (CEBE 2015 Russia) also helped Haier expand its brand influence in Russia, which was highly required by its brand building strategy.

Referring to Haier's diversification strategy, except its diversified products' variety, Haier also tried to diversify its marketing channels in terms of rolling over their innovative products

through cooperating with more potential cross-broader areas. For instance, except applicant white products, Haier also allied with Russian operator Tele 2 to roll out W719 mode telephone on sale in 2014. Haier has won the cross-broad cooperation with one of the largest Russian real estate developer "PIK" to provide WIFI smart air conditioning. (PIK is the first enterprise, which imports directly with huge scale of air conditioning to insert into their hardbound rooms.) This big deal was established mainly thanks to Haier's reliable well-known reputation and the evolving cooperative relationship in high-tech industry between China and Russia, which provides a healthy business phenomenon.

In the meanwhile, instead of transferring their fiscal profits back to headquarter in China, Haier prefers to use this rubles - revenue to build a factory in Russia, likewise, this initiative will prepare a promising economic scale in the future production in Russia. According to the latest new, a joint Russian – Chinese business project of establishing factory in Tararstan Republic was announced in April, 2016, which dedicates to improve productivity and become proactive towards the European and Central Asian market, at the same time, the R&D center will also be established in Naberzhnye Chelny region. The CEO of Haier Europe Yannick Fierling said: "In fact, our production facility in China could meet requirement of most of the European market, including Russia, the reason why we establish factory in Russia is because we still want to be more competitive in response to logistics flexibility; We believe that the key of successful globalization application is also establishing localization in the same time, in order to get closer to target markets and end-users." [10] Thus the role of guanxi was found as a positive factor involved in promoting Haier's internationalization process in Russia thanks to the reliable geopolitical relationship between China and Russia, in order to reinforce Haier's position in Russia, and follow out the Chinese new economic belt "One Belt, One Road", Haier decided to build self – owned factory in in Kama industrial park of Tatarstan Republic, where is one of the most prosper areal of developing Russian economy, technique, and innovation, this implementation was highly supported by Chinese and Russian government, the special envoy sent by Russian president Vladimir Putin, the president of the republic of Tatarstan, and its prime minister, the mayor of Naberezhnye Chelny and relevant representatives from Chinese and Russian department and institutions have attended on this project opening ceremony along with senior manager of Haier. Once this project is established successfully, the entire investment

[10] http://www.acr-news.com/haier-opens-new-factory-in-russia

amount will reach 55 million dollars, this project will bring advanced production models and unique innovation technique from headquarter of Haier, China, and provide around 1700 working position for the local citizens, the proposition of Russian employees will be accounted for 90%, and the rest 10% are Chinese administrative staff from Haier. This project was even appraised by the Russian president. We could easily find the fact that the Russian government would highly prefer to cooperation and welcome the high competitive and innovative company from China, whilst the Chinese government has also showed the strong support and paved a strategic cooperation road in hosted country.

In addition, it is worthy to mention about the exceptional internationalization process of Haier, differs from all of these selected companies in automotive and high-tech industries, who established international expansion firstly from peer – developing countries, then gradually accessing into developed countries, Haier's initial destination for expansion are developed countries, of which market requirements are very picky, rivals are very competitive and competition is evolving fierce. With this initial idea, Haier eagers to occupy a commanding height, then expanding into developing countries' market condescendingly. Starting from this guidance of challenging strategy, Haier's products have passed all the product certifications in the world, therefore Haier entered Germany, America, Japan successfully, as we know these markets are the fiercest in the world, consequently, Haier won the widespread admiration and a solid foundation for its internationalization process. As for capturing the developed markets, Haier also implicates Uppsala model, firstly, it starts from small amount of investment or exporting, then it gradually intensifies their operation and activities in those markets, including FDI, establishing self-owned factory. The merit of this model is enabling Haier to have more time to accumulate experience, market knowledge, resource, enhancing management ability, risk-avoiding ability and tolerance facing failure. While in the international market, Haier mainly chose localization mode by the principle of "Three in One", which combines design, manufacture and sales together.

Apart from Haier's internationalization strategy, brand building strategy, diversification strategy, networking strategy and global brand strategy, another competitive advantage of Haier is its excellent adoption of information technology into management, while other companies really need to draw lessons from. The evidence is its "Market Chain" management, Haier built an innovative information network online in terms of integrating all the order information flow

with highest effectiveness inside the company, including logistics and capital flows, etc. This platform also visualizes and reengineers all the process of business details. Haier's employees also can align their value orientation with the needs of users. Besides, Haier also provides an information interactive platform for employees to communicate and share information with fastest speed and effective solution making and collaboration across the department. Haier also provides serious of informative platform, such as E- store platform, Haier.com, smart supply chain platform for clients to establish all the knowing and buying process within this informative system. Notably, Haier is one of the world premiers, who perfectly utilize the role of innovative technology in the managing knowledge management and internationalization process.

The application of knowledge management and internationalization of Lenovo in Russia

Lenovo is another famous Chinese multinational company, who is ranked on the top of Fortune Global 500, it is the best PC seller in Chinese market since 1996, Lenovo acquired Business Unite of IBM PC in 2004, which tremendously increased reputation of Lenovo and Chinese companies, it was considered as one of most important steps of its internationalization. In the following years, Lenovo keeps applying M&A with promising companies from advanced countries and developing countries, for instance, Lenovo applied JV with NEC in 2011, and in the following year, Lenovo formed a cooperative alliance with American company EMC. Then in 2013 Lenovo acquired CCE, which is a leading electronics enterprise in Brazil. As result, Lenovo's sales and production volume became the biggest in the world in 2013, subsequently, Lenovo announced its acquisition affair of Motorola from Google with 3 billion dollars, incidentally, Lenovo acquired more than 3500 intelligent employees, 2000 patents and trademarks, along with cooperative relationship with more than world operators at the same time. As positive results showed in the Russian market, Lenovo PC market share exceeded 11%, ranking in the third position in the Russian market, and its mobile phone's market share even supplanted Apple as Russia's second – largest smart phone vendor. According to the investigation with Lenovo Russian office, this achievement mainly thanks to Lenovo M&A strategy and its strong brand reputation, which show confidence and strength to Russian clients. Differ from most of the other companies, who gradually export products into the Russian market, Lenovo chose to floor the Russian market with multitude volume of different models into Russian market boldly.

In fact as a high-tech company, Lenovo has noticed the importance of knowledge management in this information explosion era; Lenovo started its integrative knowledge management system since 2003, and attempt to to implement it into every department inside the organization. Along with the expansion process, Lenovo gradually noticed the obstacles of establishing knowledge management with efficiency, while the efficiency and quick response are two essential KPI inside the organization. But as the progressive expansion into other countries, more and more difficulties were found due to the different culture, language, the way of thinking and time location. So did the beginning phase of Lenovo's expansion in Russia.

In the first phase of internationalization strategy in Russia, Lenovo is also lack of local market knowledge, regarding to its knowledge acquisition, except establishing strong partnership with local advantageous companies, Lenovo also regularly makes deep survey and consultancy to understand the needs and specialties of Russian market with the help of local consulting companies and implementation of hiring more local employees. As Mr. Bai the senior manager of Lenovo in Russian region said："*The first time I handled Russian market, I found a huge mismatch between front-end and back-end of our organization, because we set Russian local employees in front-end and Chinese employees in the back – end market, although they are very good at their own domain, but they communicate slowly due to the different language an culture, thus we boldly established a different organizational structure and system in Russian market. We hired more employees from local market for sales and settled a few strong functional position, in Shanghai, we have employees specially dock with suppliers seamlessly, while in Beijing we also have special employees to contact with external partners, such as Intel, we also spend more investment to hire R&D researchers to support our knowledge application. Besides, which is also very important, we use an operation management tool namely "Istanbul management tools" to optimize our effectiveness of operation and knowledge management. This innovative business logic aims at customizing enterprise's modular structure, which has been implanted into every process, which has much more segmentation than traditional competition strategy, Lenovo would list out corresponding simulated rivals in the peer industry according to different price segment, thus in the same market, we will face several competitors. Just because of this module we opened our channel in Russian market and won a large enough bearing capacity of products. Our experience in the Russian market is being transferred around the world as a classic case - study now. Furthermore, in the entire organization, we established an effective informative*

system to enhance the effectiveness of management, including knowledge management."

According to description from Mr. Bai, we cleared out the core idea of informatization can be explained by diagram as follow

Table 15: the core concept of Lenovo's Informatization

The first time Lenovo established Informatization process was in 1994, while all the Chinese companies were lack of practical theory in this domain, so the application of enterprise information management system has just started up without matured experience that can learn, Lenovo could only advance cautiously by itself. Facing this dilemma, Lenovo chose to establish ERP (Enterprise Resource Planning) to upgrade its system by cooperating with SAP and Deloitte. But in the beginning, Lenovo has little knowledge about how to use this software system, internally ERP was mainly managed by the technology department it as an IT project, externally, Lenovo didn't integrate outsourcing partnership perfectly. But the results were that promising. After serious self-examination, Lenovo restarted ERP project in 1999, which authorized the main responsibility on operation department with assistance of technology department, with the help of this technology, The entire business process (including CRM, SCM, PDM) were perfectly systematized, integrated and digitalized.

According to above – mentioned establishments of the informative system, Lenovo's knowledge acquisition, knowledge sharing and organizational structure were optimized not only in the Russian market, but integrated in the entire framework of Lenovo around world.

In spite of independent R&D, Lenovo manage the knowledge protection by patent applications, its acquisition affairs also allow them to capture a lot of additional patents.

After these years of good performance in Russia, Lenovo has showed its impressive reputation and strength ability to the Russian clients and Russian governments, and the good Guanxi with government was initially established thanks to the quick action and reliable ability shown to the government.

An impressive successful case happened in the beginning 2012, while a large-scale demonstration broke out in Russia, pointing out that Russian parliamentary election has corrupt transaction. In order to show the reliability of this election to the mass, Putin proposed to install 200,000 units of surveillance cameras in every polling station in Russia to broadcast directly online via the Internet. Including HP, Lenovo and Dell and almost all the PC giants have received this news that behind this 200,000 surveillance cameras, around 80,000 units monitoring computers were urgently required. This is not simple governmental purchasing issue, it would bring a huge advertising effectiveness for the company, because everyone knows the computers, who can be used for the parliamentary election must the first-class products. But this is also a sort of impossible project, which needs to be done within 3 months, while the computers need to be examined by strict inspection in terms of adapting Russian cold weather, in another side, the flood disaster led to a shortage of hard drives production in this Global supply chain, the more tough issues is that this business would possibly led to a diplomatic accident if something goes wrong once the order is received, which could possibly lost the future development in the Russian market frustrated by government. This is a very risky commercial transaction with government, only Lenovo has managed this deal and delivered within 20 days, the entire strong commitment has shown the effective integration of resources inside the organization. Consequently, Lenovo proved their capability and sincerity to the Russian government. Putin also successfully proved the transparency of election to the mass, in the following days, Russian won the reputation and the highest market share for PC.

The application of knowledge management and internationalization of Hytera in Russia

Hytera is a new comer in the Russian market, who dominates in two-way radios and networking system, although it is a small – medium side company, but it is the biggest mobile radio system supplier in China, which has shown emerging advantages among international

rivals, whose main operation revenue from oversea counts 66% of the whole with 12.6% market share ranked as the second largest global radio terminal manufacturer, after Hytera settled subsidiary in Russia, its market share also increased at an accelerated speed. Hytera aims at becoming a competitive high-tech MNC, by enhancing R&D capability oversea, and meeting the client's satisfaction.

Regarding to it behavioral ability of knowledge management, Hytera chose to hire more experienced employees in the local market, half of the senior executives of Hytera are foreigners, although cross national-culture issue still can be found in their expansion business, but enabling more Russian local employees to engage this market to avoid some inefficiency of communication due to the misunderstanding issue. Hytera also noticed the importance of knowledge acquisition, but only remains in the traditional approaches to manage it, such as establishing partnership with local factories and asking for consultancy with reliable local companies. The current Hytera is very good at private communication network, such as TETRA, MDR, and PDT. In the TETRA domain, Hytera acquired the core technique of TETRA thanks to the acquisition of German company "Fjord-e-design GmbH" (FED), Hytera's knowledge capacity and competitive advantages were incredibly increased by " the reputation and quality of German quality + advantageous price".

Innovation is Hytera's core part of its organizational culture, but according to investigation, their team in Russia is lack of diversified talents, most of them only have Russian language or only technique educational background, the marketing skill hasn't been found in their Russian market, most of knowledge and technology spillover from China by exporting, localization has been found in Russia.

But Hytera also tries to use high salary to attract high talents to meet the need from the expansion market, the executive HR in the Russian office was hired from Huawei, they intend to learn experience from the leading high-tech companies. Thus, in order to meet the whole market potential, Hytera also tries to establish the high salary and reward and punishment system to optimize the creative ability of the whole team. The employees are also required to have remote online-conference with headquarter regularly, and have intensive group training through intranet or workshop. But informative system for management hasn't been found yet in this organizational structure.

Concerning about governmental involvement, Hytera'a high quality and advantageous price

won the preference and trustworthiness from Russian government, the growing goodwill and good performance won the trust from Russian government. Hytera's products were widely sold and used in public security, public utilities and transportation industry, for instance, they sell to Russian Ministry of Emergency Situations. Hytera also actively communicates with local government to maintenance the good relationship with local government. Hytera also tried to actively involve in high-tech form and communication with local governments, in 2013 Hytera won an opportunity to participate in "Professional Mobile Radio Communications Forum", as being the key professional mobile radio supplier in the world, a lot of government and industry users, including Russian Ministry of Defense, Russian Ministry of Interior, Ministry of Emergency, departments of Russian railway also participated in this forum, oil & gas corporations, communications research institutions and many other agencies also participated. Additionally, although the specific figures of market share is not announced, but according to the Internet and executives of Hytera in Russia admitted their organic growth in Russia and the support from Russian government and Chinese government, which were encouraged by the political trend of "The New Economic Belt", provide them confidence to establish factory in Russian market. This idea initially aims at enhancing the cooperative level with Russian emergency situation ministry. As one sales-manager in Hytera Russian office said: "*Currently, although we have huge potential market in Russia, we still haven't established production locally in Russian market, which restricts our development in Russia. Logically, most of local enterprises and governmental organizations are more longing to cooperate with those foreign MNCs, whose local production level exceeded more than 50%, hence, we decided to build factory in the soon future in Moscow. We have achieved the initial permission from Russian government, Russian government also advises us to establish in the special economic zones or high-tech park in Russia.*"

6.4.2 The comparative analysis of application of absorptive capacity of Chinese firms confirmed in Russia

In order to find out the absorptive capacity of Chinese firms, and how knowledge and technology direct on their internationalization strategies, we formulized following question for interview with senior mangers or CEO of Chinese firms in Russian subsidiaries.

The reason why we explore the role of knowledge and technology in the context of absorptive

capacity is due to the fact that the output of one enterprise's absorptive capability can initially enhance the enterprise's performance, it can also accelerate knowledge transfer and the speed of technological capability and innovation.

According to our priori study of absorptive capacity, there are two models that we can explore from the selected Chinese companies.

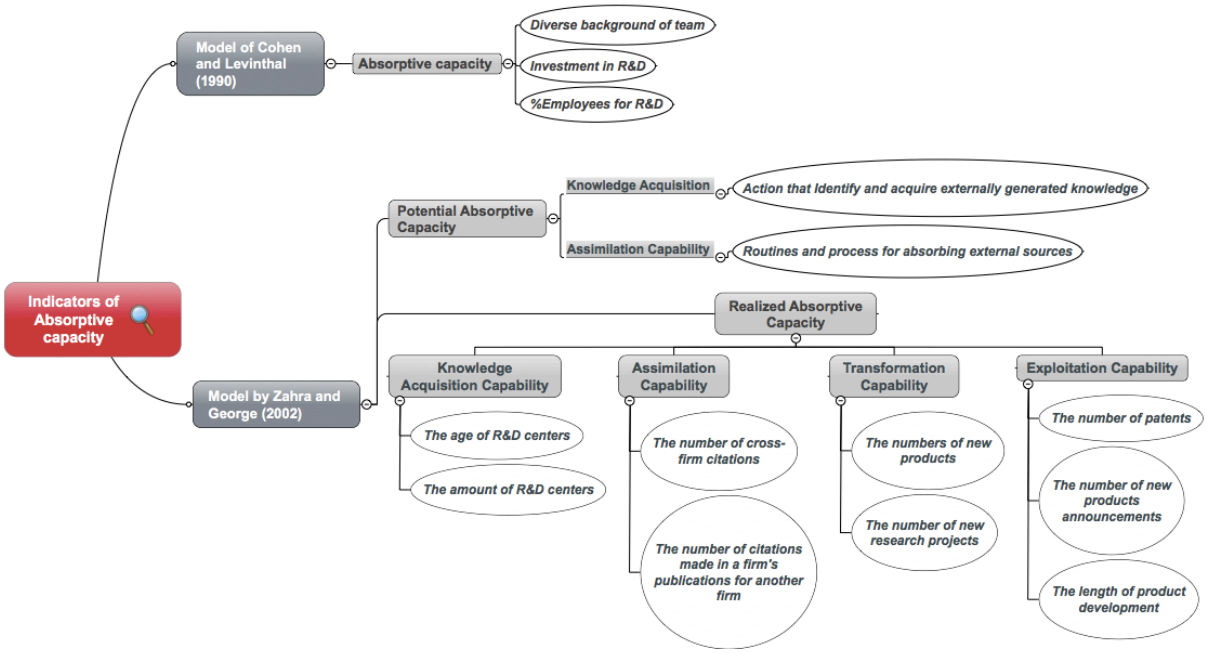

Table 16: Indicators of absorptive capacity

Absorptive capacity proposition questions

- Do you think your company engages in innovation intensively?
- Do you have R&D center? When did they establish? How did the output reflect on your company's revenue?
- How many cross-firm patent citation and citation were made in your company's publication?
- How many percentage of revenue your company paid on R&D?
- Does your company have R&D center in Russia?
- Does your company cooperate with advanced university? Do you locally cooperate with Russian advanced university?
- How many employees of company are involving in R&D?
- How many patents does your company have?
- How many number of new product announced in 2016?
- According to your Russian market knowledge, any factors impact on your expansion in Russia most?
- How does your international knowledge flow into your subsidiary to direct your internationalization strategy?

- What is your company's current strategy and performance in Russia?
- Some other stochastic problems

After asking above questions, we summarized comparative analysis in-depth Chinese automotive and high-tech industries as follows.

Applications of absorptive capacity of Chinese automotive industry in Russia

Proposition	Metric	LIFAN	The Great Wall	Geely	Chery	JAC
Absorptive capacity	R&D Investment% in 2015, location of main R&D	15%(China，Russian 2017, Brazil)	3.69%（China,Japan)	10% (Europe, China, America)	10%~15%（China, and Brazil)	3.64%（Italy, China)
Knowledge acquisition capability	The age of R&D department	5	10	6	>15	15
Assimilation capability	The cross-firm patent citations; the number of citations made in a firm's publications to research developed in other firms	few	few	>1500	few	few
Transformation capability	The number of new research projects（2015）	3	3	5	20	9
Exploitation capability	the number of patents (2015)	138;	76;	1,900;	1,060;	2,656;
	Accumulated number of authorized patents (until 2015)	7,800	3,937	6,500	8,129	4,307
	The number of new product announcements (2015)	11	4	3	13	6

Table 17: the absorptive capacity of Chinese automotive companies in Russia
Source: author

Absorptive capacity of Lifan Moto

Obviously, Lifan Moto put more efforts and investment on R&D than other selected Chinese automotive companies, it is also the only Chinese automotive company, who initially plans to establish R&D center in Russian market, in order to develop new products for Russian clients. Lifan has one R&D center in China, which started working since 2011; Lifan also got most advanced equipment from developed countries. Lifan is also building R&D center in Brazil, in terms of servicing market nearby. According to the results from national enterprise technical evaluation center, Lifan has 7800 authorized patents, which ranks on the top compared with other peer companies, this achievement mainly thanks to the contribution of Lifan's R&D center, which authorized as National Enterprise Technical Center. Lifan R&D center dominates in the VVT technology, dual fuel technology, new energy technology and electric vehicle technology. The company also tries to establish industry innovation - upgrading, that leads company to have more creative motivation on innovation in terms of having more competitive advantages among peer rivals.

Comparing with other peers, its high absorptive capacity also explains a lot for Lifan's

remarkable performance in Russian. Lifan is one of the rare impressive companies, who notice the importance of localization and customization, once Lifan builds their self-owned factory and local R&D center in Russia, along with the occasionally economic recovery in Russia, its future has boundless prospects.

Absorptive capacity of The Great Wall Moto

The Great Wall Moto is a biggest Chinese SUV producer, but its efforts on R&D and patents creativity are the lowest among all. In fact, it SUV market share in China also decreased from 13.2% to 11.7%, along with the 0 sale in Russian market. Its low absorptive capacity is initially explaining its decreasing performance. Currently, the considerable huge amount of patents were mainly contributed by its R&D center in China, the Great Wall MOTO's R&D system contains the Great Wall automotive engineering research institute, technical R&D center, automotive powers R&D center, dedicate molds technical Co. Limited company. Additionally, the Great Wall Moto also established R&D center in Japan, the Great Wall Moto also plans to build at least three more R&D center oversea, in terms of build a powerful supply chain relationship and technical skill from local market. But there isn't news that the Great Wall Moto will establish specially R&D center in Russia. As results of its absorptive capacity, it has more new products announcement than patents'. But only concerning on the quantity of products, but not the core technology innovation will not bring company more competitive advantage in the industry, when almost every high prescient company are trying to establish an industrial transformation to an innovative company.

Absorptive capacity of Geely Moto

Geely Moto is also one of the premiers in the automotive industry, its investment on R&D is considerable high, its R&D centers expand internationally, Geely's R&D centers and labs can be found in China, America and Europe. The labs in China are maintaining self-independent innovative ability, while the R&D centers in America and Europe are trying to absorb the most advanced technological knowledge locally, and then spillover back to contribute on its own deficiency. Its absorptive capacity is strong, which can be observed in its patents applications. According to the report made by THOMSON REUTERS, namely "The state of innovation in the

automotive industry"[11], Geely is the only Chinese brand that ranked 15th as being the top automotive patent assignees (by publication from 2009 – 2013 based on numbers of individual inventions.) The related officials of Geely specially indicated via media that this indicators didn't include the invention contributed by Volvo, Geely has put grant efforts on R&D for a long time already, early in the 2005, Geely has put initial investment on its automotive research institute with 350 million RMB, Geely hoped to hold the initiative in the intellectual property rights, in order to prebuild the strong technical reserves for the future needs. Hence, from this angle, competing with international rivals, Geely still has high strength and competitive advantage.

But after Geely acquired VOLVO, it achieved a lot of knowledge and technical skill to enhance Geely's modes indeed, Geely got part of right to use and own Volvo's patents. This is impressive breakthrough of Geely's absorptive capacity. But this year, they created many new products to meet the requirement of the market, but they haven't put any R&D efforts in Russia. Previewing its performance in Russia, we also need to recommend Geely to enhance their absorptive capacity especially in Russia. Otherwise, their future in this risky market will be questionable.

Absorptive capacity of Chery

Chery's organizational culture clearly highlighted the importance of "self-independent innovation". Thus Chery put 10%-15% from revenues to invest their R&D ability, with their partly state-owned nature, they got a huge subsidies from Chinese government, especially the current policy encourage Chinese companies to enhance their innovative ability. Logically, its patents production should be higher than what they have right now, in another words, their efforts on R&D is not proportional to their result. Consequently, even the company has very good relationship and opportunities due to the good relationship between China and Russia, if the absorptive capacity is not high, their future performance still can't be optimized at highest level.

Absorptive capacity of JAC

At present, JAC's performance in Russian is also very problematic. Overviewing it absorptive capacity, it also put very few investment on R&D part, their productivity of patents is

[11] http://science.spb.ru/files/presentation/2015/thomson_reuters/SOI-Automotive-Industry-Report.pdf

also the lowest among all of these selected Chinese automotive company. It has 2 R&D center, one is in China, and another is in Italy, which mainly focus on vehicles' design patents. During the interview with JAC, the senior manager has not shown any attention on how to enhancing their competitive advantages by improve their knowledge management and absorptive capacity. Although JAC found difficulties selling passenger cars in Russian, they still decided to stay at this market without additional study on creating new conception on their vehicle and marketing strategy to compete with rivals. According to our empirical findings, they will still face a lot of obstacles in this dynamic market with strict regulation, if they still don't pay any attention on their knowledge management, absorptive capacity and active communication with local government.

The applications of absorptive capacity of Chinese automotive industry in Russia

	High-tech company	HUAWEI	ZTE	Haier	Hytera	Lenovo
Absorptive capacity	R&D Investment %in 2015	15.10%	10%	13%	12%	13%
	Number of employees in R&D %	45.00%	36%	40%	30%	41%
Knowledge acquisition capability	Age of R&D department	>10 years (16 R&D centers and 36 JV innovation center around the world,)	>10 years (20 R&D centers oversea and in China)	>8 years (10 R&D centers in China, US, Europe, Australia, Asia)	2～15 years（4 R&D centers in China, 1 in Germany)	>10 years (13 Research Labs, 5 R&D centers oversea)
Assimilation capability	The cross-firm patent citations; the number of citations made in a firm's publications to research developed in other firms	>786	>291	>900	>11	>2000
Transformation capability	The number of new research projects（2015）	> 100	4	>850	2	3
Exploitation capability	the number of patents (2015) Accumulated number of authorized patents（until 2015)	3,898; >50,377	3,516; >24,000	825; 16, 316	79; 322	1,826; 6,500
	the number of new product announcements（2015）	8	2	7	>3	9

Table 18: absorptive capacity of selected Chinese high-tech companies in Russia
Source: author

Absorptive capacity of Huawei

Huawei is not only a premier in Chinese high-tech industry, but also a premier in the international high-tech industry. According to the data of WIPO (World Intellectual Property Organization) confirmed in 2015[12], 3898 patents were applied by Huawei, which ranked on the top No.1 of worldwide patents applicants for 2 years continuously. No matter tracking from the model of Cohen and Levinthal (1990) or the developed model of Zahral and George, the absorptive capacity of Huawei is highest among all, their investment on R&D accounts for 15.1%, which exceeds the rest of selected high-tech companies from China. 45% of their employees are working technical engineers to dominate at R&D part. It has 16 R&D centers

[12] https://www.techinasia.com/china-huawei-zte-patents-2015

around the world, including the one in Russia. Additionally, it has 36 Joint venture innovation centers in the world. It cooperates with more than 500 partnerships dominating in clouding computing. Huawei also has a innovation research program, namely HIRP, which includes more than 100 academic institutions, and thousands of scholars Huawei also has many cross-firm patents; even APPLE also buys their patents. Huawei also was the biggest patents applicant in China; its biggest rival is ZTE in absorptive capacity domain. But Huawei is the only one, which paid attention on cooperating with Russian local university, and settling self-owned R&D center in Russia. In 2015, its new products include smartphone, tablet and wearable, which focus on " premium" to meet the requirement of Mid-to-High End market.

To sum up, Huawei's high competitive advantage was perfectly optimized by combination of virtuous governmental involvements, its highlighted knowledge management and absorptive capacity. Consequently, Huawei became a leading information and communication solution provider; its business became more diverse, including mobile, IP, optical network, telecommunication value-added services and terminal, etc.

Absorptive capacity of ZTE

As we mentioned before, in the patents application domain, ZTE is the biggest rival to the pioneer of the high-tech industry - Huawei, ZTE's oversea R&D centers was even established earlier than Huawei. ZTE's emerging R&D ability and fruitful solutions enable ZTE have more strengths competing with its strong rivals in the high-tech industry. ZTE also put around 10% revenue on investing R&D, 36% employees are sophisticated technical engineer. In China it settle 8 R&D centers and one ZTE institution for reserving and training intelligent technical staffs. In the oversea, ZTE also signed a strategic agreement with American CPES (Centre for Power Electronics System), this American NSF-funded engineering research center is very meaningful for ZTE, it has allied with 5 promising American universities and more than 100 companies, in which terms ZTE and CPES would share the most advanced information and technique. Besides, ZTE built 20 R&D centers overseas, including in China, America, France, Sweden, India, etc. Its PCT patents application amount was proudly ranked on the top 3 in the world. ZTE intends to create value for clients persistently by enhancing their technical innovation. ZTE was even granted "the best mobile technology breakthrough award and outstanding overall mobile technology" by the Mobile World Congress thanks to its Pre5G

Massive MIMO technology[13]. But ZTE's performance still cannot compare with Huawei, as for differences, Huawei established Huawei R&D center in Russian, combing the cooperation with Russian universities, but ZTE only has a small – scale training center in Russia, which means the local knowledge in Russia hasn't been optimized like Huawei does.

In addition, ZTE's partial state - owned nature provides itself numerous support on its developing absorptive capacity and international governmental relationships.

Absorptive capacity of Haier

Confirmed by famous consulting company, Haier was listed on the top 50 of " The most innovative enterprise in the world". Its absorptive capacity can be seen initially in its new products production. Besides, differ from Huawei and ZTE, except spending a huge investment on R&D, they also chose JV and M&A to acquire advanced knowledge and technology from other companies directly. In 2016 Haier acquired the second biggest while appliance enterprise – GE, who has R&D group with more than 600 skillful experts and thousands patents. In 2012 Haier established acquisition of Fisher & Paykel from New Zealand, whose R&D center in New Zealand is considered as one of the five Elite R&D center in the world. Also in 2012, Haier acquired Sanyo Electric from Japan, and roll out a new high-end brand in Japan, namely AQUA, in the same time Haier built the R&D center in Japan, thus, Haier perfectly boosted it internationalization process by combining its reliable productive and advanced technological knowledge from peer industry from advanced countries. In addition, one of Haier's sub-brand — Tongshuai also has R&D team in American, aiming at developing contracted household appliances. Its high-end home appliance brand – Casarte even has 14 design centers and 28 collaborative R&D centers (for instance, Massachusetts Institute of Technology, etc), besides, it organized a powerful designer team with more than 300 intelligent designers from 12 countries, including Italy, British, Germany, France, America, Japan, Holland, China and etc.

In sum, Haier has 10 R&D centers oversea, its creative ability of new products is very high, Haier invested 5 billions RMB on building its own Academia sinica with the most advanced equipment, the establishment of this self – owned Academia sinica symbolized that Haier acquired high profile international science & technology recourse integration ability, R&D ability and technological recombination ability; Haier also has 10 main R&D centers and 48

[13] http://www.zte.com.cn/global/about/press-center/news/201604/2016040703

R&D institutions, 11 National Laboratories, 15 information center, 18 design centers oversea. It is also going to build R&D in Russian market. Every year, Haier can product hundreds new products. It absorptive capacity is quite high. Along with its internationalization strategy, which chose to inter developed countries first, their international R&D strategy also chose to settle in developed countries first, by this means, M&A provides the shortest way to acquire advanced knowledge and technology in terms of complementing its own shortages and building the strong brand mark in the local market and the international market. Haier also announced the plan that they are going to build self-owned R&D center in Russian to further step of localization in Russia.

Consequently, Haier is a very good example who followed the " One Road, One Belt" strategic policy in terms of optimizing their business oversea, established informative system to highly optimized their knowledge management and put high efforts and investment on R&D to enhance their absorptive capacity, by these means, its performance is still very promising in Russian market during the tough economic crisis.

Absorptive capacity of Lenovo

Lenovo also put a lot of money on R&D, JV and M&A to enhance their absorptive capacity, along with its acquisition affair of IMB in 2004, Lenovo also got 2321 patents from IMG according to the assignment. Lenovo established JV issue with NEC in Japan to expand local market, Lenovo also acquired portfolio thousands of patents from NEC to improve its mobile technology. In 2014 he big deal purchasing Motorola from Google also allows Lenovo to get more than 3500 intelligent employees, 2000 patents and trademarks, along with cooperative relationship with world-famous operators at the same time. As results, Lenovo announced 5 new smartphone products in 2015, its sales volumes won the 8% market share and the title of the most popular Chinese smartphone brands in Russian market.

Its R&D center team intends to maintain the product's quality, durability and reliability to meet customers' expectation and experience. Lenovo has its own Corporate Research & Development institution in China to remain its strong innovation and research productivity. Its main R&D centers and labs locate in Beijing, Shanghai, Shenzhen, Hongkong and the United Stated, North Carolina. Another high-tech company "Intel" also assigned a cooperative agreement with Lenovo to build a Intel research center in Beijing, this agreement was built based

on standard industry cooperation, in terms of developing new technologies together, besides, this agreements also includes promoting IT education among Chinese colleges and university by building on-line IT school to develop future R&D potential in Chinese higher education institution. Nowadays, Lenovo's organic growth oversea shows its success of its synergies to enhance their absorptive capacity, which lead to its improvement of competitive advantages. Lenovo's increasing market share also provides us a degree of visibility regarding to its strong competitive advantages, which was initially established by its healthy knowledge management, emerging absorptive capacity with smart portfolio of JV and M&A, also along with its good well shown to local government.

Absorptive capacity of Hytera

Hytera's huge investment applied on R&D shows its wild ambition to expand its business around the world, aiming at guaranteeing advanced technologies and trustworthiness of its products. Hytera has became a competent leader in digital radio technology domain, but compared with others of our selected companies, its absorptive capacity still need to improve in order to enhance its comparative advantages in the fierce business environment. Hytera has 4 research centers in China, and 1 R&D centers in Germany, which cover a platform to maintain its technology research, patents development and product's design. Hytera also establish intensive collaboration with domestic and international universities. In 2011, Hytera and 12 more Chinese companies, including ZTE, Tencent, BYD, Shenzhen virtual university park, etc, became the first "new technology and new industry cadres training base". Besides, acquisition of Fjord - e - design and Rohde & Schwarz accelerated Hytera's innovation ability and competitive competence in TETRE domain. Although Hytera's internationalization process in Russia still in a exploration stage, but according to our observation, in 2015 Hytera increased more investment from revenue on R&D by 26%, which as Chinese leading high-tech company Huawei did, but the output of authorized patents is 10 times lesser than Huawei. Competing with other selected Chinese high-tech companies, its absorptive capacity is relatively low, but we still can see the emergence of its R&D capacity in its efforts. In 2015, Hytera won the title namely "the most continuous innovative productivity Chinese public company". Chinese government also gives high concerns on Hytera, Chinese premier also visited and expressed appreciation in Hytera's independent innovation.

7. Conclusion

According to our empirical findings, we found the involvement of knowledge and technology is ubiquitous in the core accelerator for enhancing firm's innovation ability and competitive advantages. We keep use the scientific indicators of knowledge management and absorptive capacity to exam all the role of knowledge and technology in Chinese firms, who are expanding their internationalization process in Russia. In order to ascertain our research question, we systematize our conclusion as following sectors.

7.1 In - depth analysis in Chinese automotive industry

As above overview figure showed, Chinese automotive companies, who are expanding business in Russian, highly noticed the importance of customization for Russian clients. Due to the special climate (long duration of winter) and big feature of Russian physique, Chinese auto companies found that the big vehicle, such as SUV, which has bigger size, wild design and strong engine to meet the cold, long winter, has higher preference of Russian clients.

Director of the Russian car market statistics and analysis center - Sergei Likov said that the usage of Chinese car is relatively high, compared with the Russian cars，the majority of the Russian people pay more attention to vehicles' driving force.

The most popular vehicle mode in Russia is SUV. It is notable that among all the Chinese auto companies, only Lifan specially has R&D center especially for Russian customization, in result, its sales performance is also better than others.

Due to the changeable regulation and taxation requirement, Russian market requires business players pay high attention in knowledge acquisition. For instance, exporting a complete vehicle will cost more double tax than exporting assembles, so almost all the Chinese auto companies chose CKD (complete knocked-down), firstly, exporting assembles into Russia, then choosing one reliable local factory to package, in the end, the Chinese car will be sold with the cooperative local dealer.

According to our empirical findings, Chinese automotive industry is trying to show its emergence to international market, but its innovation and technology still hardly can compare with some advanced foreigner companies, some of Chinese automotive companies tried to acquire advanced knowledge and technology by M&A or JV, but still lack of independent

innovation ability. Besides, the whole Chinese automotive industry is facing the tough protectionism of Russian government especially with the downturn in the Russian economy due to economic sanction. Besides, since Chinese automotive products have equivalent quality but inexpensive price, which are regarded as threatens by Russian automotive industry, the subsequent discrimination of Russian policy aims at Chinese automotive companies also put Chinese automotive companies into a more difficult situation. Russian government didn't show any preferential policy, while its business market was possibly threatened, even under prospect cooperative partnership atmosphere, under this circumstance, especially in such financial crisis time, there is no opportunistic approaches to enable companies to survive, but only to enhance their absorptive capacity.

Among these selected companies, Lifan has the better performance due to its application of knowledge management and absorptive capacity; the failure case of the Great Wall drawback from Russian market during economic sanction explore its weakness of overcoming cross-national culture and low investment in R&D; Geely's competence in Russia mainly thanks to its wise action in their internationalization strategy, its M&A affairs also enables Geely to have more competence in knowledge management and absorptive capacity, competing with other rivals in the same industry; The case of Chery shows that its partly state –owned nature provides it more opportunities to have considerable preference cooperating with allied countries, Chery also put a huge revenue on R&D, Chinese government also gave it a lot of subsidies to enhance independent ability of research and development, but there is no special commitment confirmed on its knowledge management. JAC is the only selected company, who didn't pay any attention on enhancing their knowledge management, it also put the lowest investment on improving it R&D ability, although it also enjoyed a little subsidies from Chinese government thanks to its partly state owned.

7.2 In-depth analysis in Chinese high-tech industry

In our study, our empirical evidence in Chinese high-tech industry shows us how important KM, AC and governmental involvement are. Every selected Chinese high-tech company show us their advantages in knowledge management and absorptive capacity, combining their wise internationalization strategy, which was benefitted more or less from governmental policy or involvement. Differs from Chinese automotive industry, Chinese high-tech industry has not faced obvious discrimination or protectionism from Russian government. On the contrary,

Chinese high-tech industry is enjoying the preferential policy confirmed by Sino-Russian cooperative partnership. According to our empirical findings, Chinese high-tech industry shows strong competent in Russian, that even Russian high-tech industry is willing to cooperate or ally with Chinese high-tech industry, in terms of acquiring more advanced knowledge and technology from Chinese high-tech industry, which shows again the importance of absorptive capacity, of which role dominates in consolidating their position in a high-risk and unpredictable market. Besides, the goodwill and emerging internationalization performance show the confidence to their partnership and the government. Except enjoying the support from government on their R&D ability, and applying JV or M&A to acquire advanced knowledge and technology, all the selected Chinese high-tech companies in our study have put a huge money on enhancing their independent R&D. It is also worthy pointing out the outstanding performance of knowledge management of some companies by establishing informative system.

At present, Huawei has dominates in broadband, terminal equipment, high-tech solution and mobile phones in Russian market. Among these selected high-tech companies, Huawei is a early comer in emerging industry in Russia, who has the longest experience in Russian market comparing with its peer Chinese high-tech rivals. At the first beginning, none of Russian operators or dealer would like to cooperate with Huawei, but Huawei's active communication and hard work with local government and potential partnership paid off. Huawei successfully established long-term partnership in Russia, and won the trustworthiness from local government. Besides Huawei's organizational culture provides itself strong creativity of innovation by motivation scheme and employee stock system. Huawei also followed the UPPSALA model, Huawei chose geographically close country - Russia as their first expansion place for internationalization, and intensifies their business activities step by step with confirmation of organic growth in local market. Huawei's CEO also insists to establish Huawei's internationalization step based on Chinese diplomatic path, of which results show the reliability and sustainability. Huawei also is the only selected Chinese company, who establish R&D center and Huawei institution in Russia, cooperating with local promising technical university, which shows higher absorptive capacity than most of other selected high-tech companies.

In the case of ZTE, we see the strong absorptive capacity allows ZTE booming its business market in Russia, although its peer rival – Huawei has already occupied majority Russian market of broadband and terminal, ZTE chose to diversify it partnership in other innovative industry,

although its executive force is considerable lower than Huawei due to its partly state – owned constituent, but its human-based management and motivation scheme by case optimize its creativity ability in the knowledge management domain. Also governmental involvement also showed positive influence on their business in Russia.

In our study, Haier is a perfect example, which optimizes knowledge management by informative system. Its famous HGVS enables itself to integrate all the information and resource from the entire departments and districts around the world, it also optimizes its interoperability and efficiency of their business operation at highest level inside the organization. Externally, Haier also has an international HOPE open platform for peer companies and itself to communicate and share information and advanced knowledge via this online platform. Differs from other selected high-tech companies, Haier has its sophisticated self-created OEC management for enhancing efficiency of every individual inside the organization. We could confirm that Haier is one of premier, who saw the trend using informative system to optimize its knowledge management. In the same time, its numinous JV and M&A application enable Haier having a quick acquisition of advanced knowledge and technology from the international market and strong competitive advantages. The positive governmental involvement is also found in its commitments in Russian market.

The Lenovo's study shows us again the fast acquisition of knowledge and technology through JV and M&A is an impressive way to enhance its absorptive capacity; Haier's goodwill and fast, reliable performance achieved the preference from the government. Additionally, its huge patent applications and new products announcement also showed its strong absorptive capacity. Consequently, thanks to its governmental involvement in internationalization strategy, strong absorptive capacity and considerable good performance in their knowledge management, it won the highest PC market share in Russia and highest market share of smartphone compared with its peer Chinese high-tech companies.

The empirical findings in Hytera provides its success in Russia mainly growth on its strong efforts on enhancing its absorptive capacity. But its future performance still remains to be seen.

7.3 Comparative analysis of the role of knowledge and technology in internationalization between Chinese automotive industry and high-tech industry in the context of KM & AC

No matter whether talking about enhancing absorptive capacity, knowledge management or even establishment of good Guanxi with local government, all of these have the same goal,

which are assimilating and understating the knowledge of the local market, and acquiring the most advanced technology in terms of enhancing their competitive advantages in the local market. We can clearly overview how knowledge and technology direct their international strategy and performance in Russian market.

According to our empirical findings from our interview, we found that both Chinese auto companies and Chinese high-tech companies notice the importance of leveraging knowledge and technology in enhancing their competitive advantages, but they still have different orientations. We conduct a comparative analysis about their application based on their knowledge and technology improvement within these two industries as follow:

	Knowledge	**Technology**
Chinese auto company	✓ Customization; ✓ Flexible supply chain; ✓ Advanced strategy theory knowledge flows from empirical experience of parent company and western companies; ✓ Trying to conduct good Guanxi with local government; × Failure case in KM × Slow knowledge flow	✓ Awareness and efforts on enhancing quality of goods; ✓ Good quality of engine; ✓ Design new type of SUV for Russian clients; ✓ Brand image building; ✓ New energy auto product; × Immature technology skill compare with those from advanced countries × No sophisticated technical platform for management;
Chinese High-tech company	✓ Highly innovation oriented; ✓ High efforts paid on R&D; ✓ Increasing and creative organizational culture and system; ✓ Attractive warfare motivation scheme to stimulate effective individual performance and knowledge management process; ✓ JV; M&A ✓ KM still haven't been handled and promoted maturely	✓ Excellent integrative information technology ✓ Considerable technical infrastructure; ✓ Strong productivity of patent; ✓ High efforts in R&D ✓ Emerging absorptive capacity directs to higher technological capability)-Higher quality - Higher competitiveness – Brand image building; ✓ Differentiation; Informationization;

Table 19: the application strategies and actions of the selected Chinese firms directed by knowledge and technology
Source: author

<u>Comparative analysis between Chinese automotive industry and Chinese high-tech industry</u>

- *Knowledge management*

The behavioral ability of selected Chinese high-tech companies is higher than Chinese

automotive companies, the evidence can be found as follow:

Chinese high-tech companies have stronger alliance with local industry to acquire knowledge and consultancy from local market. Thus knowledge acquisition ability of Chinese high-tech companies is higher than that of Chinese automotive companies;

Chinese high-tech companies shows more competent to apply M&A in international market and Russian market in terms of acquiring local advanced technology and knowledge, that companies are lack of;

In trend of using informative system and online platform to accelerate the integration of resource and to share the knowledge at first time was found in Chinese high-tech companies, while Chinese automotive companies are still using the traditional technical approaches to share the knowledge, which are still operated by human. Consequently, the knowledge sharing speed of Chinese high-tech companies is faster. And the utilization of technology was optimized in knowledge sharing in Chinese high-tech industry.

Furthermore, the knowledge application and knowledge protection of Chinese high-tech companies are much higher than those of Chinese automotive companies, of which evidences can be found in amount of patents application and new products announcements of every companies.

Regarding to organizational culture, almost all of these companies' organizational culture refer to innovation, which stimulates their creative ability and innovative motivation.

A more diverse and higher educational background of talents are found in the selected Chinese high-tech companies, while the educational background of employees from Chinese automotive industry, especially those, who works in Russian market, are lack of diversification in their teamwork.

Thanks to attractiveness of higher salary and motivation learning scheme established by Chines high-tech companies, the employees in Chinese high-tech companies have much more motivation and willing to learn, work and cooperate with their employees. In this process, the problematic issue caused by cross-national culture is found lesser in Chinese high-tech companies. The foreign employees of Chinese high-tech companies intend to adapt to Chinese culture.

- *Absorptive capacity*

The absorptive capacity of all the Chinese is gradually increasing in these years, but compared with other impressive brand marks, Chinese companies are still urgently required to enhance their absorptive capacity.

In the Chinese high-tech industry, more JV and M&A applications were confirmed in Russian, which were considered as one of the fastest approaches to acquire local knowledge and advanced technology externally, in terms of enhancing the absorptive capacity.

The Chinese high-tech companies put more investment on R&D, as result, the amount of new products and patents applications were confirmed very high.

In the Chinese automotive industry, except Lifan has considerable higher absorptive capacity than other peer companies, as result, its fiscal performance is the best among all peer Chinese rivals, but its sales value is declining along with the downfall of Russian overall economy, while all the high-tech industry's market share is increasing impressively in the same high-risk market. This evidence proves that only having absorptive capacity is not enough, combining with high informative knowledge management and positive governmental involvements in Chinese automotive industry are absent. Besides, in general, the absorptive capacity of Chinese automotive industry is still lower than that of Chinese high-tech industry.

The overall investment in R&D of Chinese automotive companies still not very high. Besides, with the partial state – owned nature, JAC and Chery have gotten huge subsidies from Chinese government, but unfortunately, their achievement of patents is not in direct proportion with its investment on R&D. Consequently, if the company is lack of absorptive capacity, the positive effect of governmental involvement won't be obvious.

- *Uppsala model*

According to our investigation, all the selected companies confirmed Uppsala model to roll out their internationalization process in Russia. Following four sequential stages of internationalization process, Chinese companies initially start from export activities, and then gradually increase their commitment in foreign market based on their tolerance to the highest risk. As result, the applications of Uppsala model between two industries are different. Firstly, Uppsala model requires that the decision of expansion should be regarded by its market knowledge acquisition. As more conflicts and inefficiency were found in Chinese automotive

industry due to cross national culture issues, which means the Chinese automotive industry still haven't adapt to the local culture; the failure case of the Great Wall Moto, who started to established self-owned factory but faced zero sales and productivity currently due to its failure communication with its local dealership, shows the mismatch between its market knowledge and market commitment. The case of Lifan shows a good example of risk – avoid ability for the peer-rival, that increases interactions with market environment to reduce considerable uncertainties by investing its revenue earned by depreciating rubles on other investment portfolio and factory establishment, in terms of reducing unpredictable uncertainties in the Russian market.

The Chinese high-tech companies initially chose another conservative decision of Uppsala model, which is intensifying its operation scales in Russian market with abundant resource and advanced technology, when they ensure the maximum tolerable market risk can be handled through their flexible commitment.

Regarding to entry model, differs from others, Haier chose advanced countries as their first expansion destination, along with JV and M&A application to settle their brand mark in the local market, then gradually moves into developing countries (Russia). This " from hard to easy" mode required Haier to put more efforts and money in the beginning, but it was much easier to capture Russian market, when Haier successfully gained advanced knowledge & technology and built reputation in the developed countries. Besides, its internationalization process is established along with its R&D center establishment in the local market.

The rest of Chinese high-tech companies and Chinese automotive companies' entry model initially chose geographical or economical closely market, mostly firstly from developing countries then gradually expand into developed countries, thus Russia is mostly their first choices among developing countries. Meanwhile, as one of the first expansion countries, Russian market is much more unpredictable and problematic due to its geopolitical problem, which requires companies spend more time and efforts to acquire market knowledge in Russia.

- *Governmental involvement*

Government supports has been directed at Chinese industry, but impact is not significant, only significant for stated-owned companies. Private firms are struggling with high competition and protectionism in Russia.

The Chinese high-tech industry companies enjoy more positive governmental involvement

in Russia, while Chinese automotive companies, whose knowledge management and absorptive capacity were absent. Enjoy governmental involvement less.

The Chinese automotive industry faces protectionism, while Chinese high-tech industry nearly doesn't face, this mainly because Chinese automotive industry was regarded as threatens due to its mostly equal or higher quality and lower price compared with Russian's, while Chinese high-tech industry was considered as good alliance and partnership due to its reliable goodwill and more advanced knowledge and technology that Russian peer industry is willing to learn from.

7.4 The final conclusion based on empirical finding

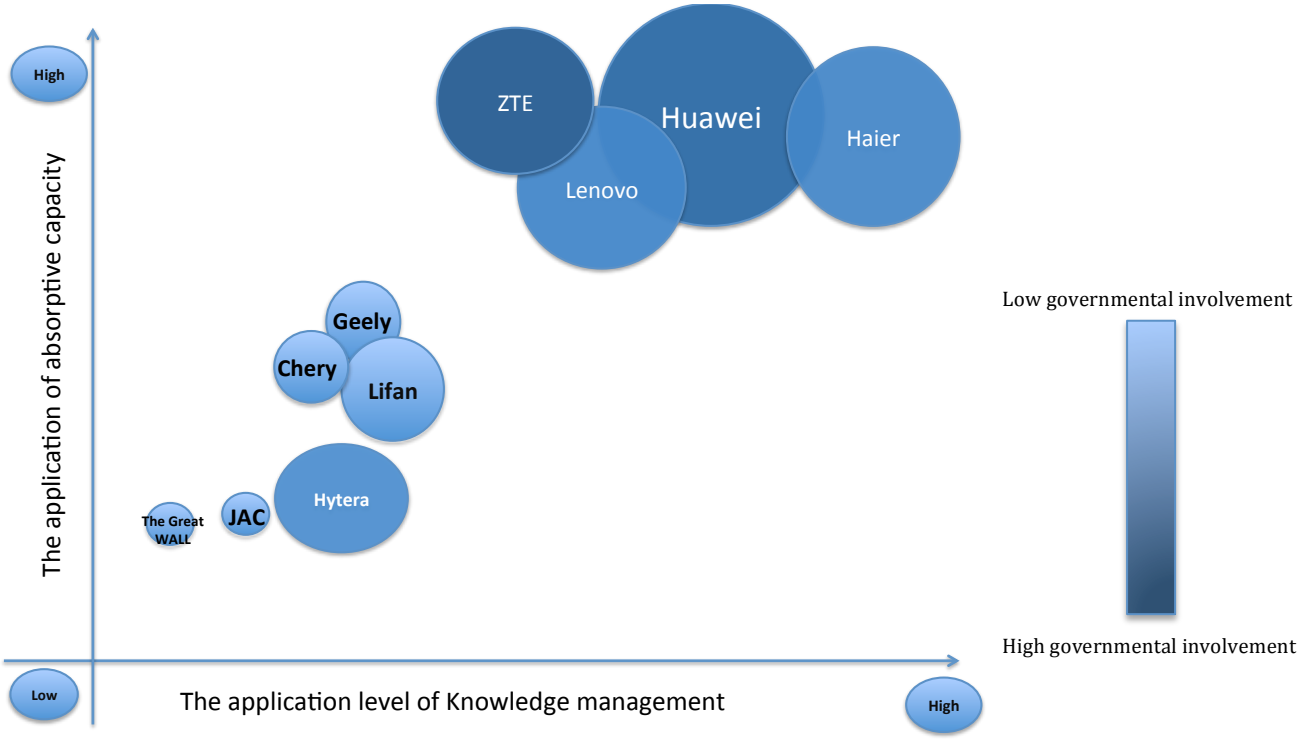

Table 20: the comparative analyses of Chinese firms' internationalization performance influenced by KM & AC (In Russian market, 2015)

Source: Author

In order to put forward a more understandable conclusion based on big scale empirical finding, we visualized the internationalization performance of Chines auto and high-tech companies directed by the role of knowledge and technology in the context of knowledge and absorptive capacity, of which applications were initially collected in Russian market.

As the above matrix shows, we have following conclusions:

1) The Chinese high-tech companies have much more competitive advantages and better performance than the Chinese automotive companies in Russian, because Chinese high-tech companies have much better KM&AC applications.
2) KM of Chinese high-tech companies is better than Chinese automotive companies, because the utilization of innovative technology firms was found in Chinese high-tech firms, which highly accelerates the efficiency of KM. This mainly thanks to the innovative incentive nature of high-tech industry.
3) The company, who has more positive governmental involvements in their business, has a better internationalization performance in Russian than those, who doesn't have.
4) Absorptive capacity, knowledge management, positive governmental involvement and the right internationalization strategy in Russian are indispensable for enhancing the company's organic growth and performance.

7.5 Key findings

The cross culture problem slowed knowledge management, besides, the different mindsets of two countries results in longer the time of transferring knowledge.

The Chinese marketing concepts are much more diversified and mature than Russia, but some are not suit for Russian because of different culture and different thinking model.

The governmental involvement was found in Chinese enterprises' internationalization application in Russian market, but the positive effects of governmental involvement would be invalid in its competitive advantage, if company's absorptive capacity and knowledge management were absent or very weak.

Mismatch between technology & knowledge and Chinese companies' internationalization strategy commitments in Russia.

The informative system confirmed in Chinese high-tech company, which could enhance knowledge management and interoperability in its internationalization business.

The complexity of the auto industry need for long-term R&D Investment make this kind of leapfrogging more difficult than in many other sectors

Both industries noticed the importance of Customization for Russian consumers, and customization products increase their economic growth of companies.

Localization will accelerate the process of transferring knowledge and technology.

Long-term competitiveness necessitates a strategy of long term R&D, but only high-tech Chinese companies conduct R&D in Russia and cooperation with universities locally.

Facing the decreasing of Russian economy, Chinese companies are urgently required to indicate additional action to increase it anti – risk ability.

8. Theoretical implication

Following the logical track of our priori literature review, we confirmed the importance of knowledge management, absorptive capacity, positive governmental involvement and proper application of Uppsala model for enhancing company's competitive advantages in the international market. But according to our empirical findings from our selected Chinese companies, although every of them are doing very well at least one domain of four capabilities mentioned above, their internationalization performances differed from each other. Only the one, whose capability combines all of these four sectors, will survive and stand out from the crowd in the Russian market. In fact, in the financial crisis time, the outcomes of enterprise from developing countries (such as China) in another developing countries (such as Russia) especially point out the drawback that only dominating at one of abilities from KM, AC, GI or establishing Uppsala model is totally not enough for companies from developing countries to face the challenges, only the combination of these four factor could perfectly integrate company's competitive advantages at highest level.

Consequently, we conduct an integrative model for optimizing knowledge and technology for internationalization process (adapt to Chinese MNC, who are doing business in Russia)

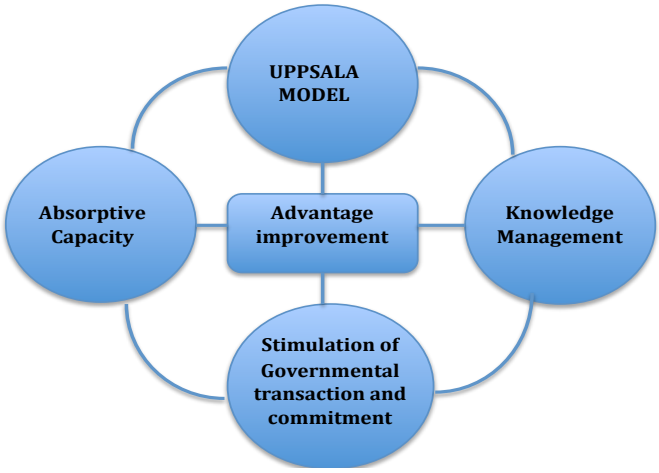

Table 21: Integrative ontological model of four capabilities for MNCs doing business in

emerging markets

Based on prior theoretical framework, the function of knowledge is reflected in internationalization strategy, which requires adoption of knowledge management with optimized adoption of information technology in the global environment, in another side, absorptive capacity highlighted the importance of technological innovation, which is embedded in competitive competence (Zhou and Wu 2010; Fernhaber and Patel 2012). Additionally, for doing business in a high-risk country, the governmental role is also an important part for companies from developing countries as market knowledge. The stable and strategic relationship between two countries will promote the cooperation and deals. Especially for the companies from the developing countries, when they probably have no enough capability to compare with rivals, but the preferential policy conducted by governmental involvement will help them to survive in another evolving fierce business environment. Thus, combining Uppsala model, knowledge management, absorptive capacity and stimulation of governmental transaction and commitment will formulate a perfect virtuous circle to improve companies' competitive advantage. This is also the fundamental logic of our study to exam the function of knowledge and technology, of which contribution fills the theoretical gap in how to enhancing competitive advantages of enterprise from developing countries in internationalization process established in another developing high-risk country. According our findings, every elements of this framework is indispensable to each other in terms of enhancing competitive advantages at most optimized level.

9. Managerial implication

Along with our theoretical implication of enhancing competitive advantages in Russia, we also conduct some convertible recommendations for Chinese automotive industry and high-tech industry to establish internationalization process in Russian market.

	Matching degree for strategy	Effective ness	The degree of control	Degree of risk	Stability of strategy	Others
Exporting ⭐⭐	non-conformance	quick	-	Very low	Impacted by tariff policy	High taxation; Restrained by local regulation
Wholly owned subsidiary ⭐	conform	Very slow	high	Very high	Long-term strategy, stable	Low control, require for strong KM
JV; M&A ⭐⭐	conform	slow	High	Particular high	Long-term strategy, stable	Risky; Restrained by local regulation
CKD ⭐⭐⭐	conform	Very quick	low	normal	Impacted by regulation policy, short term strategy	Restrained by unstable regulation
Local factory construction ⭐⭐⭐⭐	conform	Normal	Very high	normal	Long-term strategy	Restrained by regulation; Require effective KM and AC; Bigger economic scale to reduce costs; Higher productivity;

Table 22: An alternative business model for Chinese automotive companies
Source: Author

As we mentioned before, Chinese automotive companies face strict regulation and high tariff of export duty in Russia, which makes exporting finished vehicles not profitable at all. Establishing wholly - owed subsidiary is a stable model for a very long-term strategy, but it requires strong knowledge management, as its business scale grows oversea, besides, Chinese automotive companies are still regarded as threats to Russian automotive industry due to slightly higher quality of Chinese vehicle.

JV and M&A of local factory or local companies are one of the most popular models for foreign automotive companies, which was also theoretically proved by Ahuja (2000) that company's resource constraints can be compensated by firm's alliance partner. But its risk is particular high, besides the dynamic regulation of Russian government aiming at controlling its rivals, Russian local factory's equipment and infrastructure are mostly very old, the Russian automotive relevant companies are lack of advanced technology that Chinese automotive company can learn or exchange. Furthermore, due to different way of thinking and culture, a lot of failures communication with Russian, which can lead to deathblow of international business in Russia.

CKD (Completed knocked down) is the most favorable and flexible model, which is established by most of Chinese automotive companies, but it could be only suitable for short time, since the Russian regulation is very changeable, once the tariff for CKD is increased again, this model will lost the preference totally.

Establishing factory is the most sustainable model for a long – term strategy, which would be confirmed in a mature phase of internationalization, when the potential market is found. There

are two ways to establish factory, in terms of selling vehicles into Russia. One is establishing in commonwealth of Independent State next to Russian, then assembling vehicles in these countries and selling them to Russia with zero tax and tariff according to the preferential policy between CIS. This model has already tried by Geely and Chery, which were condemned by Russian government that this could highly possible threaten the Russian automotive industry. Thus, the feasibility of this model is still unpredictable due to Russian changeable regulation. Another one is establishing factory in Russia, choosing Open Economic Zone, in terms of enjoying basic preferential policy, additionally, this requires company to establish good Guanxi with local government, in order to maintain sustainability of long-term benefit with preferential policy. Once this model is successfully established, automotive company's economic scale will reduce a lot of cost and its productivity will be optimized at a very high level.

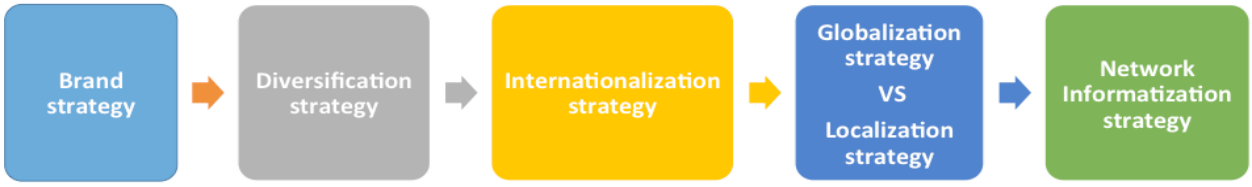

Table 23: Alternative strategies for Chinese high-tech companies
(Optional for Chinese automotive companies)

From the case of the Chinese high-tech industry, we see the emergence of Chinese MNCs around the world, most of the Chinese high-tech companies notice the importance of quality of products in the internationalization process, thus they initially launched brand strategy to won the client's satisfaction and requirement. Subsequently, company will establish diversification strategy to meet the requirement of markets. Next, when company has enough fiscal and managerial ability, and the home market is statured, company will choose internationalization strategy to expand their business. While focusing deep rooted in foreign countries, company need to decide whether chose globalization strategy or localization strategy, it depends on the requirement of local market, but no matter which strategy company would choose, its business scale has already expanded huge enough, the resource, information, employees, knowledge and technology will be very hard integrated, sometimes, the cross national culture and nature of company's organizational culture will slow down the efficiency of management, as result, the

company will lose the competitive advantages oversea. Informative system of Haier shows us a good example to enhance knowledge management in an international environment. Consequently, not only for high-tech industry, automotive industry and other industry should follow this inevitable trend to confirm a Network Informative strategy, in order to digitalize all the information and manage all the process on a informative system, this could provide high interoperability and efficiency of management, in terms of enhancing company's operation and fiscal performance.

10. Limitation

Our study is conducted by qualitative methods, of which nature would lead to a doubt regarding to its generalizability. Ten Chinese companies picked from automotive and high-tech industries are perfectly suitable for our research design, since these companies were found involved in absorptive capacity and knowledge management during their internationalization process, which are doing business in Russia. But in the future, more Chinese emerging companies will continually enter in Russia, some analyzed companies will successfully upgrade, the future of Russia will also unpredictably contain some other crucial factors, the concerns of knowledge and technology in the international environment would be impacted by other factors. For the future study, it is highly recommended to observe the market trend of Russia, keep analyzing in companies from these two industries, but also combining additional analyses with a larger sample size from additional sectors. At present, there are not enough Chinese MNCs found in Russia, who can be involved in our research design, but as the time goes by, more and more Chinese MNCs would expand into Russia, it is worthy to make a quantitative analysis to guarantee a higher trustworthiness of our results.

Appendices

Appendix1.The successful case of Huawei in Russia

The best combination of knowledge management, absorptive capacity and good Guanxi with local government to have a competitive advantage in Chinese high-tech industry

Huawei's development history in Russia

- 1997 – First office agency established in Moscow; Establishment of Joint Venture Beto – Huawei Company.
- 2000 - Technical Support Center established in Ufa.

- 2001 - Established Huawei educational center in Moscow with Moscow State University of communication and information technology.
- 2002 - Establishment of R&D center in Moscow.
- 2003 - Set up cooperation with three biggest Russian operators – MTS, VimpelCom and Megafon.
- 2005 - The amount of Russian employees exceeds more than 500; Office agency in Yekaterinburg was established.
- 2007 - Roll out deployment of 3G equipment in Russian market.
- 2010 - Huawei expands relevant projects on enterprises targeted customers; Established one technical support center in Novosibirsk.
- 2011 - Start selling terminal solution of Huawei.
- 2012 - launched LTE-Advance communication network for Russian Yota Network.
- 2014 – Expanding LTE-A business communication network for Megafon. Signed strategic agreement with Rostelecom, Russian Railway, Sberbank and VTB; Huawei and MegaFon announced first 5G testbed project with the University of Surrey's 5G Innovation Center (Including negotiation for collaboration to build trial 5G networks in the run up to the FIFA World Cup 2018);[14][15] Huawei Floor Distribution Boxes (FDBs) helped Rostelecom's Fast Connect Service (FTTH);[16] More than 10 chain retail stores across Russia; Huawei's HD videoconferencing solution help Ryazan Oblast state government improve governance process. [17]
- 2015 – Russian's largest cellco by subscribers Mobile TeleSystems company MTS has signed Long Term Evolution (LTE) network equipment supply contracts with Huawei; Huawei's data center solution help Central Bank of Russia rollout NAPC, which greatly contributes to the financial stability and viability of Russian national economy during the economic sanction;[18] Huawei deployed Agile Stadium Solution in Russia's Spartak Stadium.[19]Sponsorship for the Information Security Russia, 2015.[20]
- 2016 - Sponsor for the VII International Conference " Transport Networks Russia 2016 – Development of telecommunication transport networks in Russia and the CIS.[21]

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14 Huawei official website/ Coperate/ Huawei and MegaFon Announce 5G Network plans for Russia http://pr.huawei.com/en/news/hw-397407-5g.htm#.Vy-kXsdJPG8

15 ComputerWeely.com/ Huawei invests £5m in University of Surrey 5G/ http://www.computerweekly.com/news/2240234215/Huawei-invests-5m-in-University-of-Surrey-5G-innovation-centre

16 Huawei official website/ Home/Press Center/ News/Huawei FDB Helps Rostelecom's FTTH Deployment/ http://pr.huawei.com/en/news/hw-362164-ftth.htm#.Vy-2SMdJPG8

17 Huawei official website / Quick Links/ Communication & collaboration : HD video conferencing for Russia regional government/ http://www.huawei.com/ilink/ru/success-story/HW_323676?ABCG=&Product=&Operator=&Geo=&ABCG_index=&Product_index=&Operator_index=&Geo_index=&StartRow=1

18 Huawei official website/ Quick Links/ Huawei Steps In to keep Russian Economy Stable/ http://www.huawei.com/en/EBG/Home/case-studies/global/2016/201602011138

19 Huawei official website/ Home/ Huawei News Room/ Huawei Successfully Deploys Agile Stadium Solution in Russi's Spartak Stadium/ http://e.huawei.com/en/news/global/2015/201502131126

20 Huawei official website/ About company/ Press Releases/ http://pr.huawei.com/en/news/hw-362164-ftth.htm#.Vy-2SMdJPG8

21 Huawei official website/ About company/ Huawei Unveiled its vision for the development of the main transport networks/ http://www.huawei.com/ru/about-huawei/newsroom/press-release/hw-474718.htm

Appendix2.*The case of the best utilization of technology used in Haier's Internationalization From "Informatization Strategy" to "Informative Company"*

Haier is one of the pioneers, who have already applied five international development stages, which are Brand Strategy, diversification strategy, internationalization strategy, globalization strategy and Informative network strategy.

When the third Industrial Revolution comes, Haier is the well-deserved premier among Chinese Multinational Companies, who initially established transformation from a Big-scale enterprise to a platform enterprise.

Haier applied a principal concept namely "3 without" for establishing an Informative network strategy: Interaction and communication among companies without boundary (Haier Open Enterprise Network), Informative management without human-manned (Intelligent network) and Scale - free Supply Chain without limitation and insufficiency (Transform center). By these applications, Haier established Shared-Information business ecosystem between clients, suppliers, partners and shareholders.

The informatization development is based on requirement of enterprise's innovation strategy: transformation from enterprise – oriented " Informatization strategy" to customers – oriented informative enterprise". Haier's informatization process experienced following stages:

1) The early construction stage (1995-1998):

   In 1995, Haier put forward pioneering international serve system for clients. Internally, Haier applied application and construction of an internal Office Automation (OA), computerization and basic network system, in terms of enhancing managerial efficiency of internal organization and the speed of response to user's requirements.

2) Enterprise Basic Managerial Informatization stage (1998-2006):

   Haier started its internationalization strategy in 1998, with reengineering its own business process linked by its market chain. Haier established a pioneering on-line platform to integrate its SCM, logistics, cash flow settlement management and customer relationship. Using this informative platform, Haier has successfully integrated its global users' information, global supply chain recourse, centralized its order information, as result, Haier realized synchronized virtuous operation of logistics and cash flow, gradually realized zero inventory, zero unoccupied working capital and zero distance with targeted customers.

3) Transformation stage: To be an advanced informative enterprise (2007 –till now)

   Haier launched a 1000 - days informatization reengineering plan in 2007;

   Haier competed a Global Information value-added system (HGVS).

Haier established an informative network to unite the flow of information, the flow of logistic and the flow of capital as one unity by BI, GVS, LES, PLM, CRM, B2B, B2C, etc. As result, Haier realized the unification of global marketing operation, procurement and settlement on-line. A global procurement and distribution network was built up by HGVS. All the end-to-end process and internal & external coordination can be visualized and managed on-line, which provides Haier a high-efficient mode of operation and knowledge sharing.

Continuity of innovation in informatization:

From internal driving force - oriented to user experience-oriented.

Haier tries to provide an innovative network to enable clients participate the whole process of user experience. The five R&D center has been the strong resource interface, they actively cooperate with the world – first class supplier, research institution and famous universities to establish strategic cooperation.

1) Virtual interactive platform

   Haier established an active virtual interactive platform to attract via Haier.com, Facebook, and virtual showroom to attract clients and provide the firsthand information about the new products. Relatively, Haier achieves firsthand information about clients' faction,. Additionally, Haier docks frontline information and market information with backlines information (R&D system, marketing system and supply chain system) seamlessly.

2) "HOPE" open innovation platform

   This is a third party resource platform providing patents, experts and solution. Under this platform, all the global experts and solution resources were perfectly integrated via this platform, the network resource, quality and efficiency were optimized at highest level.

3) Establishment of MPA

   Haier developed an integrative data platform of product life cycle, enhancing finished modular capacity.

4) Informative supply chain

   Haier built an end-to-end supply chain via informative network to optimize the whole process of global order. By this mean, Haier shares the latest information, visualizes the whole process of orders, predicts risks through data analysis, enhances productivity and avoids potential risks.

Pioneering in open big logistics platform:

"Home delivery service within 24 hours!"

1) E- store: This is a virtual customer – oriented management network, which supports Hair's marketing network, logistics network and service network information. Haier has created a new milestone in retail channel by informative management.

2) Haier on-line shopping mall: This online shopping mall guarantees the service " delivering within 24 hours, which achieve appreciation of clients and market. The key secret remains its perfect integration of virtual sales on-line and distribution channels in reality by its informative network. Additionally, Haier established a informative interaction platform for its employees, which aims at realizing cross – department collaboration and knowledge sharing. This information interaction platform is built by cloud and innovative workshop, in the meanwhile, Haier also integrate clients' advices and ideas inside a closed-loop user interaction circle.

   Consequently, by establishing this informative networking, the efficiency of management and operation is optimized at highest level. Clients are provided the most advanced products and solutions. This innovation virtuous circle provides an organic growth to Hair, the capital turn over days (CCC) IS lower than 10 days, which is ahead of the peer industry.

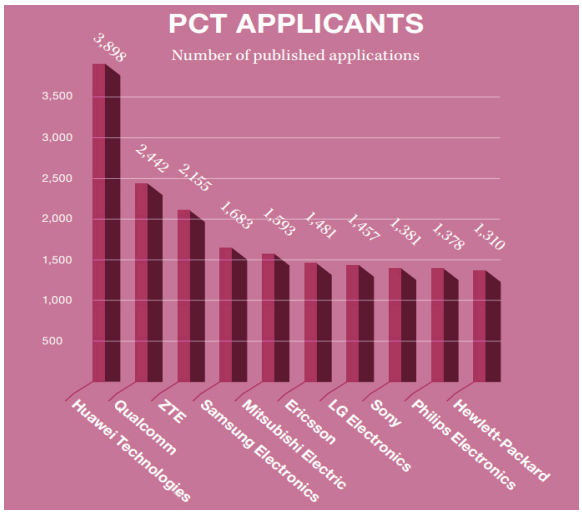
Appendix3. Market share of Top five smartphone brands

Top Five Smartphone Vendors, Shipments, Market Share and Year-Over-Year Growth, Calendar Year 2015 Preliminary Data (Units in Millions)

Vendor	2015 Shipment Volumes	2015 Market Share	2014 Shipment Volumes	2014 Market Share	Year-Over-Year Growth
1. Samsung	324.8	22.7%	318.2	24.4%	2.1%
2. Apple	231.5	16.2%	192.7	14.8%	20.2%
3. Huawei	106.6	7.4%	73.8	5.7%	44.3%
4. Lenovo	74.0	5.2%	59.4	4.6%	24.5%
5. Xiaomi	70.8	4.9%	57.7	4.4%	22.8%
Others	625.2	43.6%	599.9	46.1%	4.2%
Total	**1,432.9**	**100.0%**	**1,301.7**	**100.0%**	**10.1%**
Lenovo + Motorola	73.9	5.16%	93.7	7.20%	-21.1%

Source: IDC Worldwide Quarterly Mobile Phone Tracker, January 27, 2016

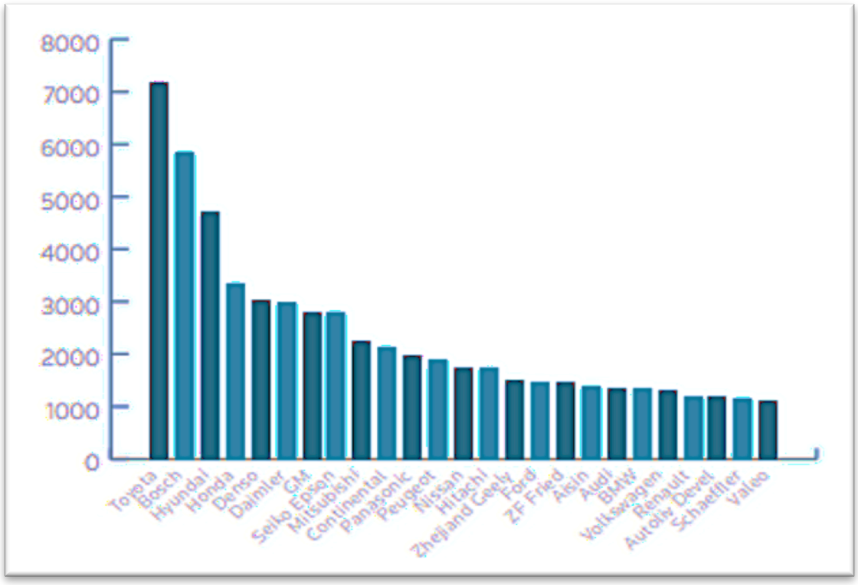
Appendix4.Top worldwide patent applicants announced in 2015



Source: WIPOA

Top international automotive patent assignees (2009 – 2013)

Chinese brand – Geely randed on 15th



Source: Thomson Reuters

Reference:

1. Aharoni, Y. (1996). The Foreign Investment Decision Process. Boston: Div. of Research, Graduate School of Business Administration, Harvard University.
2. AdliFariba. (2003). Knowledge management: a movement toward to beyond knowledge', Tehran, FarashenakhtieAndisheh Publication.

3. Ahuja, G., (2000). Collaboration networks, structural holes, and innovation: a longitudinal study. Adm. Sci. Q. 45, 425–455.
4. Abecassis Moedas, C., & Mahmoud Jouini, S. B. (2008). Absorptive capacity and source recipient complementarity in designing new products: An empirically derived framework. Journal of Product Innovation Management, 25(5), 473–490.
5. Blalock, G., Gertler, P. (2008). Welfare gains from foreign direct investment through technology transfer to local suppliers. J. Int. Econ. 74, 402–421.
6. C.X.J. Ou, P.A. Pavlou, R.M. Davison. (2014) Swift guanxi in online marketplaces: the role of computer-mediated-communication technologies, MIS Q. 38 (1), 209- 230+A1-A24.
7. Cohen and Levinthal. (1990). "Absorptive capacity: A new perspective on learning and innovation", Administrative Science Quarterly, Volume 35, Issue 1 pg. 128-152.
8. Fan, P. (2006). Catching up through developing innovation capacity: evidence from China's telecom-equipment industry. Technovation 26, 359 – 358.
9. Chen, Y. S., Lin, M. J. J., & Chang, C. H. (2009). The positive effects of relationship learning and absorptive capacity on innovation performance and competitive advantage in industrial markets. Industrial Marketing Management, 38(2), 152–158.
10. Darroch, J. (2005). Knowledge management, innovation and firm performance. Journal of Knowledge Management, 9(3), 101–115.
11. Davenport, T., & Grover, V. (2001). Knowledge management. Journal of Management Information Systems, 18(1), 3 – 4.
12. Davison, R.M., Ou, C.X.J., M.G. (2013) Martinsons, Information technology to support informal knowledge sharing, Inf. Syst. J. 23 (1), pp. 89–109.
13. Damanpour, F. (1991). Organizational Innovation: a meta-analysis of effects of determinants and moderators. Acad. Manag. J. 34 (3), 555–590.
14. Drucker, P.E. (1993). Post-capitalist society. London, New York: Taylor & Francis, Routledge.
15. Dutta, S. (1997). Strategies for implementing knowledge-based systems. IEEE Transactions on Engineering Management, 44(1), 79 – 90.
16. Daegeun, H., & Euiho, S., Choonghyo, K. (2011). Developing strategies for overcoming barriers to knowledge sharing based on conversational knowledge management: A case study of a financial company. Expert Systems with Application, 38(1), 14417-14427.

17. Eaton, J., Kortum, S., (1996). Trade in ideas: patenting and productivity in the OECD. J. Int. Econ. 40, 251–278.
18. Fathollahi B., Afshar Zanjani E. and Nozari D. (2010). "Is the University of Isfahan Ready for Implementing Knowledge Management?", FASLNAME-National Library, 21(3): 6-20.
19. Fernhaber, S. A., & Patel, P. (2012). How do young firms manage product portfolio complexity? The role of absorptive capacity and ambidexterity. Strategic Management Journal, 33(13), 1516–1539.
20. Grossman, G.M., Helpman, E., 1991. Innovation and Growth in the Global Economy. MIT Press, Cambridge, MA.
21. Ghorbani, Noghabi, and Nikoukar. (2011). Relationship between organizational structure dimensions and knowledge management (KM) in educational organization, World Applied Sciences Journal,vol.12,no.11,pp.518-528.
22. George, G., Zahra, S., Wheatley, K., Khan, R. (2001). The effects of alliance portfolio characteristics and absorptive capacity on performance: a study of biotechnology firms. J. High Technol. Manag. Res. 12, 205–226.
23. Gold, A. H., Malohtra, A., Segars A.H. (2001). Knowledge management: An Organizational Capabilities Perspective, Journal of Management Information System, 18(1): 185-214.
24. 郭彦文，徐盈之. (2006) 现代服务业知识管理能力总和评价模型研究。广东经济管理学院学报，21（5）：27-31.
25. Holsapple, C.W., & Singh, M. (2000). Toward a unified view of electronic commerce, electronic business, and collaborative commerce: A knowledge management approach. Knowledge and Process Management, 7(3), 151–164.
26. Javorcik, B.S. (2004). Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages. American Economic Review 94, 605–627. Katrak, H., 1989. Imported technologi.
27. Lim, E. G. (2001). IMF Working Paper WP/01/175. Determinants of and relation between foreign direct investment and growth: A summary of recent literature.
28. Lee, S.-G., Trimi, S., & Kim, C. (2013). The impact of cultural differences on technology adoption. Journal of World Business, 48: 20–29.
29. Massey, A. P., Montoya-Weiss, M. M., & O'Driscoll, T. M. (2002). Performance-centered design of knowledge-intensive processes. Journal of Management Information Systems, 18(4), 37 – 58.

30. Mudambi, R. (2008). Location, control and innovation in knowledge-intensive industries. Journal of Economic Geography, 8(5), 699–725.
31. Murovec, N., Prodan, I., 2009. Absorptive capacity, its determinants, and influence on innovation output: cross-cultural validation of the structural model. Technovation 29, 859–872.
32. Mclnerney, C., Koenig, M. (2010) Knowledge management process in organizations: theoretical foundations and practice. San Refeal, Calif Publication.
33. Nonaka, I. and Takeuchi, N. (1995), The knowledge-creating company: how Japanese companies create the dynamics of innovation. Oxford University Press: New York.
34. Nonaka, I., Toyama, R. Konno, N. (2000). SECI, Ba and Leadership: a Unified Model of Dynamic Knowledge Creation. Long Range Planning 33, 5–34.
35. Tzokas, N., Kim, Y. A., Akbar, H., Al-Dajani, H. (2015) Absorptive capacity and performance: The role of customer relationship and technological capabilities in high-tech SMEs. Industrial Marketing Management 44, 134-142.
36. Pascarella, P. (1997), "Harnessing knowledge", Management Review, October, pp. 37-40.
37. Qiu, J., Wan, C. (2015). Technology spillovers and corporate cash holdings. Journal of Financial Economics, 115, 558-573.
38. Rorty, R. (2009), Philosophy and the Mirror of Nature 30th Anniversary Edition, Princeton University Press, Princeton, NJ.
39. Ravi, R., Selvi, K. R. (2013). A study on knowledge management in business opportunity to industry
40. Smith, E.A. (2000), "Applying knowledge-enabling methods in the classroom and in the workplace", Journal of Workplace Learning, Vol. 12 No. 6, pp. 236-44.
41. Skrzypek, E. (2004). Valuation of knowledge and intellectual capital, and their impact on the efficiency in the organization. In Szyjewski, Z., Nowak, J. S., & Grabara, J. K. (Ed.), Strategies of informatization and knowledge management. Warsaw: WNT 11–26.
42. Seaton R.A.F. & Cordey-Hayes M. (1993). The Development and Application of Interactive Models of Industrial Technology Transfer, Technovation, 13: 45-53.
43. Sullivan, D. M, Marvel, R.M., (2011). How Entrepreneurs' knowledge and Network Ties Relate to Number of Employees in New SMES. Journal of Small Business Management, volume 49, Issue 2, 185-206.

44. Strivastava, M., Gnyawali, D., Hatfield, D. (2015) Behavioral implications of absorptive capacity: The role of technological effort and technological capability in leveraging alliance network technological resources. Technological Forecasting & Social Change, 92, 346-358
45. Nelson & Winter (1982). "The Schumpeterian Tradeoff Revisited", The American Economic Review, Volume 72, Issue 1,pg.114-13.
46. Nieto, M., Quevedo, P. (2005). Absorptive capacity, technological opportunity, knowledge spillovers, and innovative effort. Technovation 25, 1141–1157.
47. Steers, R. M., Meyer, A. D., & Sanchez-Runde, C. J. (2008). National culture and the adoption of new technologies. Journal of World Business, 43: 228–260.
48. Thurow, L. (1999). Building wealth: the new rules for individuals, companies and nations in a knowledge-based economy. New York: Harper Business.
49. Tapanes, M. A., Smith, G. G., & White, J. A. (2009). Cultural diversity in online learning: A study of the perceived effects of dissonance in levels of individual/collectivism and tolerance ambiguity. Internet and Higher Education, 12: 26–34.
50. Visser, M. (2002). Managing knowledge and action in organizations; towards a behavioral theory of organizational learning. EURAM Conference. Organizational Learning and Knowledge Management. Stockholm. Sweden.
51. Volberda, H.W., Foss, N.J., Lyles, M.A., 2010. Absorbing the concept of absorptive capacity: how to realize its potential in the organization field. Org. Sci. 21, 931–951.
52. Wah, L. (1999), “Making knowledge stick”, Management Review, May, pp. 24-9.
53. Wagner, R.K. and Sternberg, R.J. (1987), ``Tacit knowledge in managerial success’’, Journal of Business and Psychology, pp. 303-12.
54. Yasuyuki Todo, Weiying Zhang, Li-An Zhou. (2009) Knowledge spillovers from FDI in China: The role of educated labor in multinational enterprises, Journal of Asian Economics, 20, pp 626-639.
55. Yougesh Mahutra. (2007). Knowledge, assessment and measurement, MohamadHasanzadeh, Tehran, Seitron Publication.
56. Zahra, S.A., George, G., 2002. Absorptive capacity: a review, reconceptualization, and extension. Acad. Manage. Rev. 27, 185–203.
57. Zhou, K. Z., & Wu, F. (2010). Technological capability, strategic flexibility, and product innovation. Strategic Management Journal, 31(5), 547–561.

Internet:

1. Source: Federal State Statistics Service http://www.gks.ru/bgd/free/b04_03/IssWWW.exe/Stg/d06/8.htm
2. Source: Huawei official website/ Coperate/ Huawei and MegaFon Announce 5G Network plans for Russia http://pr.huawei.com/en/news/hw-397407-5g.htm#.Vy-kXsdJPG8
3. Source: ComputerWeely.com/ Huawei invests £5m in University of Surrey 5G/ http://www.computerweekly.com/news/2240234215/Huawei-invests-5m-in-University-of-Surrey-5G-innovation-centre
4. Source: World Intellectual Property organization http://www.wipo.int/wipo_magazine/en/2015/04/article_0006.html

Database:

World Intellectual Property Organization

www.wipo.int/portal/en

Report:

Lifan Moto Annual Report 2015:

http://www.cninfo.com.cn/finalpage/2016-04-22/1202220318.PDF

The Great Wall Annual Report 2015

http://www.gwm.com.cn/Upload/2016/0325/c9669d6c78728f9e.pdf

Geely Annual Report 2015

http://www.geelyauto.com.hk/core/files/financial/tc/2015-02.pdf

JAC Annual Report 2015

http://www.jac.com.cn/u/cms/www/201604/29084756rj7n.pdf

Huawei Annual Report 2015

http://www.huawei.com/cn/about-huawei/annual-report/2015/

ZTE Annual Report 2015

http://wwwen.zte.com.cn/en/about/investor_relations/corporate_report/annual_report/201504/P020150408612617327250.pdf

Lenovo Annual Report 2015

https://www.lenovo.com/ww/lenovo/pdf/C_099220150527.pdf

Haier Annual Report 2015

http://www.haier.net/cn/investor_relations/1169/announcements/201508/P020150805609761530575.pdf

Hytera Annual Report 2014

file:///Users/laitianrong/Downloads/141%E3%80%812014%E5%B9%B4%E5%B9%B4%E5%BA%A6%E6%8A%A5%E5%91%8A%E2%80%9403.30%EF%BC%881%EF%BC%89.PDF