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Information Technology Outsourcing Network and Networking Capability : Based on the Cases of Chinese Companies

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Information Technology Outsourcing Network and Networking Capability: Based on the Cases of Chinese Companies

by

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2016

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List of Abbreviations

BPO	Business Process Outsourcing
COI	China Outsourcing Institute
COC	Contract Oriented Coordination
CMM	Capability Maturity Model
CMMI	Capability Maturity Model Integration
CTO	Chief Technology Officer
FCH	Fujitsu China Holdings
IAOP	International Association of Outsourcing Professionals
IOR	Inter-organizational Relationship
ITO	Information Technology Outsourcing
KPO	Knowledge Process Outsourcing
M&A	Merger and Acquisition
MNC	Multinational Company
NASSCOM	The National Association of Software Service Company
PRC	People Republic of China
RBV	Resource-Based View
ROC	Relation Oriented Coordination
SSC	State Street Corporation
SSTZ	State Street Technology Zhejiang
SSZJTC	State Street/Zhejiang University Technology Center
TIS	Toshiba Information Systems
TSOL	Toshiba Solutions
TDMN	Toshiba Digital Media Network
USD	The United States Dollars
ZJU	Zhejiang University

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Abstract

Outsourcing research primarily focuses on inter-organizational relationships (IOR) related to outsourcing activity. The existing literature stresses the importance of the IOR coordination between outsourcing provider and client. This study will look at IOR in information technology outsourcing (ITO) markets, and start by introducing the current state of ITO development. After reviewing the related theories and prior literature, this research focus on dyadic IOR development and network evolution by integrating resource-based view, social capital, network theory and dynamic capability. This research specifically focuses on Chinese ITO providers and how they develop their ability to build and expand their network with top MNCs. Terms such as relation oriented coordination (ROC), outsourcing network and networking capability are developed in this research in consideration of the characteristics associated with the Chinese ITO market. Case studies of two Chinese providers, NEUSOFT and INSIGMA, provide qualitative data for the dyadic IOR development research. ROC refers to the broad collective trust, commitment and risk sharing between provider and client, while contract oriented coordination (COC) is defined as the IOR between provider and client coordinated by an explicit formal contract. Outsourcing network denotes the set of relationships that the focal provider has with external firms: MNCs, subsidiaries, etc. Networking capability is a concept that describes the processes of managing and utilizing relationships. The results show that ROC is one imperative coordination way, and that social mechanisms such as reciprocity, communication and cultural compatibility are positively related with IOR development. At the same time, ROC also affects additional resource exchange and knowledge transfer positively. Based on the development history of NEUSOFT from 1991 to the present, networking capability is defined as the processes that focal firms use to manage and utilize the nodes and coordination ways. The results also show that networking capability influences network evolution and knowledge transfer positively.

Keywords: Outsourcing, inter-organizational relationship development, networking capability, network evolution.

1 Introduction

Outsourcing has attracted much attention from government, scholars and businessmen in the last two decades due to its significant contribution to the international trade and local economics. For example, India is a developing country with a large impoverished population, and has experienced rapid economic growth by providing outsourcing services to offshore clients. According to related data, global ITO revenue reached a value of 246.6 billion United States dollars (USD) in 2011, a 7.8% increase compared to the revenue of 228.7 billion USD in 2010[1]. The information technology outsourcing (ITO) industry is expected to maintain this robust growth in the years to come. In this dissertation, the term client refers to the outsourcing firm in a foreign country, such as the United States or Japan. Provider refers to the specialized supplier firm that executes business on behalf of the former. At present, providers in India and China dominate the global outsourcing market.

Even though global ITO activity seems active in terms of its consistently robust growth rate, ITO has also been confronted with challenges produced by extreme variations in global economics. Specifically in the period of economic crisis since 2008, ITO suffered severe cutbacks resulting from the global recession. Even today, the ITO industry has not fully recovered from the challenges caused by economic crisis. In addition to the economic downturn of 2008, global outsourcing faces the challenge caused by other economic factors. As proposed by the U.S. President Obama during the 2012 presidential campaign, firms in the U.S.A. should focus on insourcing rather than persistent outsourcing; further, he criticized his opponent for offering outsourcing orders to providers in India and China[2].

As a key ITO providing country, China's ITO industry is experiencing rapid annual growth. As a result, China has encouraged the development of ITO industry since 2006 through multilevel governmental initiatives[3]. Nonetheless, challenges still exist both internally and externally due to the severe global economic situation and competition from other outsourcing nations such as India, Ireland. Compared to providers in India, providers in China cannot compete in terms of scale and capability. Consequently, academic research is needed to determine an effective strategy to achieve the goal of becoming a powerful outsourcing nation. This dissertation

[1]The Indian Express, (August 7, 2012)

[2]The Washington Post, (July 9, 2012)

[3]卢锋, (2007)

contributes to the existing literature that primarily concerns clients in developed countries by highlighting the perspective of Chinese providers. Recently, there are some Chinese ITO providers active in the global market, such as NEUSOFT, INSIGMA, Vance Info and so on.

Kodak's initial outsourcing decision is considered groundbreaking for ITO history[4]. From then on, Outsourcing research issue has shifted from one to another. Inter-organizational relationship (IOR) between provider and client has attracted much attention recently. This dissertation will also discuss the dyadic relationship between client and provider. The relationship between focal provider and its clients is discussed in depth by integrating network theory, resource-based view (RBV), and dynamic capability. A firm is considered as a bundle of resources according to RBV,[5] a bundle of knowledge by knowledge-based view[6], a bundle of processes or routines according to dynamic capability[7]. According to network theory, a firm is a bundle of various relationships, encompassing personal relationships and IOR with external firms. Instead of considering competition among the global ITO providers as determined by resources, knowledge, or capability, firm's competitive advantage is based on relationships with external firms. This dissertation focuses on the network composed of the focal ITO provider and its clients, domestic and abroad. The cases and data collected in China supply much of the evidence to conduct the related research.

This dissertation is organized as follows. First, it analyzes the development condition of ITO industry in different levels, and gives a general introduction about the dissertation. Second, Chapter 2 introduces the theoretical background and literature review which lay a solid foundation for this research. Third, Chapter 3 gives the introduction about the methodology including data sample, data collection and research procedure. Fourth, the dyadic relationship between client and provider, especially dyadic IOR development, is discussed in depth. Next, Chapter 5 describes outsourcing network evolution and discusses the firm's competitive advantage by combining the highest-level capability: dynamic capability. Finally, Chapter 6 mainly gives a conclusion of this dissertation encompassing theoretical implications, practical implications, limitations and future research.

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[4] Loh and Venkatraman, (1992)
[5] Barney, (1991)
[6] Kogut and Zander, (1992; 1993)
[7] Teece et al., (1997)

1.1 Background

1.1.1 Classification of outsourcing

At present, a definition of ITO from different institutions and scholars has not reached a consensus. The definition continues to change and evolve with the development of outsourcing that extends service scope and key properties of ITO. According to Table 1.1 with respect to the definitions of ITO, the definitions emphasize the process of contracting services out to clients. ITO is the process of clients utilizing external resources for cost reduction or other strategic purposes.

Table 1.1: Definitions of ITO

Authors	Definitions
Loh and Venkatraman (1992)	The transfer of property or decision rights in varying degrees over the IT infrastructure by a user organization to an external organization such as a technology vendor or a systems integrator.[8]
Lacity and Hirschheim (1993)	The vendor charges a fixed fee for a pre-specified number of services, known as the "baseline". The customer is guaranteed that its IS costs for this baseline will be fixed over the contract period.[9]
Grover et al., (1994)	The practice of turning over part of all of an organization's IS functions to external service providers. This definition includes the following external services: applications development and maintenance, systems operation, networks/telecommunications management, end-user computing support, system planning and management, and purchase of application software.[10]
Kern and Willcocks, (2000)	A process whereby an organization decides to contract-out or sell the firm's IT assets, people and/or activities to a third party supplier, who in exchange provides and manages these assets and services for an agreed fee over an agreed time period.[11]

Source: Edited by author

Beyond that, Table 1.2 provides detailed description of the business scope of ITO and business process outsourcing (BPO) in order to clarify the types of

[8] Loh and Venkatraman, (1992)
[9] Lacity and Hirschheim, (1993)
[10] Grover et al., (1994)
[11] Kern and Willcocks, (2000)

outsourcing services. The business scope of outsourcing is not strictly limited to the contents in the following table; the service scope and depth of outsourcing changes with the development of information technology and market demand. For example, knowledge process outsourcing (KPO) with more knowledge transfer has recently become more popular. This study focuses on the ITO business in China including software products and software services.

Table 1.2: Business scope of service outsourcing

<table>
<tr><td rowspan="7">Service outsourcing</td><td rowspan="5">ITO</td><td>Software products</td><td>Development, testing and localization, etc. of system software, tools software, application software, embedded software</td></tr>
<tr><td rowspan="4">Software service</td><td>Management and maintenance of IT infrastructure</td></tr>
<tr><td>Operation and maintenance of information system</td></tr>
<tr><td>Consultancy and personnel training of information system</td></tr>
<tr><td>Development, maintenance and upgrading of application system program</td></tr>
<tr><td rowspan="2">BPO</td><td>Internal service</td><td>Human resource service, auditing, consultancy, data center, call center, R&D center, etc.</td></tr>
<tr><td>Supply chain management service</td><td>Service on purchase, storage and logistics</td></tr>
</table>

Source: COI[12] (2008), edited by author

1.1.2 Background of ITO development

This section introduces ITO development condition in different aspects: from world level to country level, and then from model cities level to Yangzi River delta area[13]. Particularly, comparisons with India allow us to understand the relative position of China in global ITO development.

[12] COI (China Outsourcing Institute) is one department of Ministry of Commerce of the People's Republic of China. COI mainly does the research about industrial development, industrial standard, strategic planning, trend forecast etc. Source: COI official website

[13] There are overall 21 outsourcing model cities in the whole country. In Yangzi River Delta area, there are five model cities including Nanjing, Suzhou, Wuxi, Hangzhou and Shanghai.

1.1.2.1 Background of ITO in the world

In 2008, the global ITO market suffered due to the deterioration of global economies. IT expenses in the U.S.A. and Europe decreased dramatically, negatively impacting the economy of service providing countries, such as India and China. As the top outsourcing client countries, the U.S.A. and Japan, are likely to cut their IT expenses in the future in light of the analysis conducted by Gartner in 2007[14]. As Table 1.3 shows, Western Europe, the U.S.A. and Japan account for 83.2% of global IT expenditure, sustaining the annual compound growth rate at around 6%. Therefore, the slow rise will make competition among service providing countries fiercer in the future.

Table 1.3: IT expenditures in different regions

Regions	**Market volume in 2007/million USD**	**Market volume in 2012/million USD**	**Annual compound growth rate/%**
Western Europe	433,946	585,834	6.3
The U.S.A.	400,515	539,913	6.2
Japan	150,503	192,286	5.1
Asia-Pacific (Except Japan)	83,618	129,297	9.1
Latin-America	42,866	89,272	15.8
China	11,836	25,974	15.8
Others	72,906	122,207	10.9
Total:	1,184,352	1,658,809	18.3

Note: IT service expenses include the cost of ITO, discrete IT service and IT cost.

Source: COI, (2008, p4), edited by author.

Statistics in Figure 1.1 describe the overall condition of global service expenses during the disastrous global economic crisis, and reveal the considerable influence of the external environment on the ITO industry. Before the economic crisis in 2008, global service expenditures, including IT service expenses and business service expenses, were able to maintain a growth rate of approximately 10%. However, outsourcing expenditures dropped sharply to a growth rate of negative 3.6%

[14] COI, (2008)

in 2009. Although the growth rate rebounded quickly to positive 2.7% in 2010, it did not match the growth rate prior to the economic crisis[15]. Future service expenses are predicted to rise steadily with the global economic recovery. The economic crisis not only weakened ITO development in China, but also created potential opportunities caused by reconfiguring market structure. For instance, top clients started to consider the uncertainty and risk of ITO provided by a single provider market in India. This reconfiguration of the market creates an opportunity for providers in other countries.

Consequently, as a major ITO service providing country, China should seize the opportunities associated with changes in the market, and capitalize on the growth of the ITO industry to develop its domestic economy.

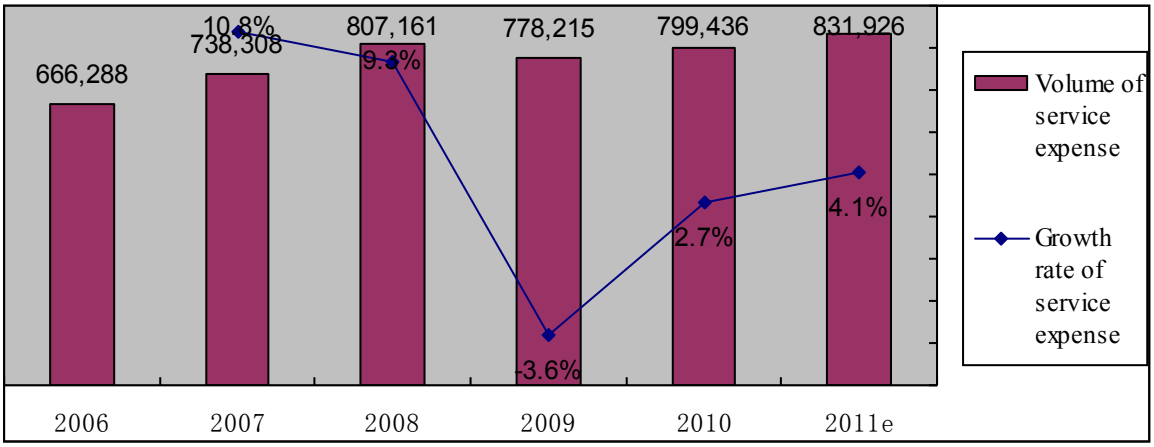

Figure 1.1: Volume and growth rate of global service expenses from 2006 to 2011（Million USD）

Source: COI, (2011, p5), edited by author.

Condition of client countries

The most powerful outsourcing clients are from developed countries such as the U.S.A., Japan and European countries from which most of the service demand originates. According to the Table 1.3, Western Europe, the U.S.A. and Japan are the three largest IT expenditure countries and areas, and some of IT expenditure will transfer into ITO business.

The client adopts two sharply different outsourcing paths based on the selection of outsourcing contract destinations. Clients in the U.S.A. favor remote

[15] COI, (2011)

providers like India, China and the Philippines that are characterized by low labor costs and abundant human resources. However, Japan and Western Europe favor China and Eastern Europe respectively as these countries are closer and have similar culture and language. No matter which path clients choose in outsourcing activity, China fulfills both priorities: low labor costs and cultural similarity.

Condition of provider countries

Global outsourcing providing countries are classified into three categories based on geographical distribution and service features. Latin America provides outsourcing services for the U.S.A. and Spanish-speaking countries due to geographic and cultural proximity, while Eastern Europe supplies service to developed countries in Western Europe for the same reasons. The delegates in Asia, India, China and the Philippines, tend to be favored by clients increasingly[16].

Table 1.4: Geographical structure of outsourcing providing countries

Regions	Model Countries	Main service
Latin America	Mexico	Service in Spanish language
	Brazil	ERP maintenance and support
	Costa Rica	Share service
Eastern Europe	Poland	Background service of Europe
	Russia	Technology maintenance
	Hungary	Background service of Europe
Asia	India	IT, background service and analysis
	The Philippines	Customer support center
	China	Software development

Source: COI, (2008, p6), edited by author

Comparison of scale in top providers, China and India

One manager from NEUSOFT stated that the scale of a provider affected their bargaining power. The CEO of Vince also declared that scale was the first indicator of a provider's profitability[17]. The difference in scale between top ITO provider companies could account for the large gap between China and India. As shown in

[16] COI, (2008)
[17] 和讯网, (August 9, 2010)

Figure 1.2, the top four providers in India, TCS, Infosys, Wipro and HCL have more employees than those in China. The largest Chinese provider, NEUSOFT, has 23,000 employees and is eclipsed by Indian giant TCS, which has 238,583 employees as of 2012[18]. This gap in scale of operations leads to a predicted service gap between providers in India and China. Figure 1.3 also lists logo and business scopes of four top providers in China with over 10,000 employees.

[18] Official website of each firm.

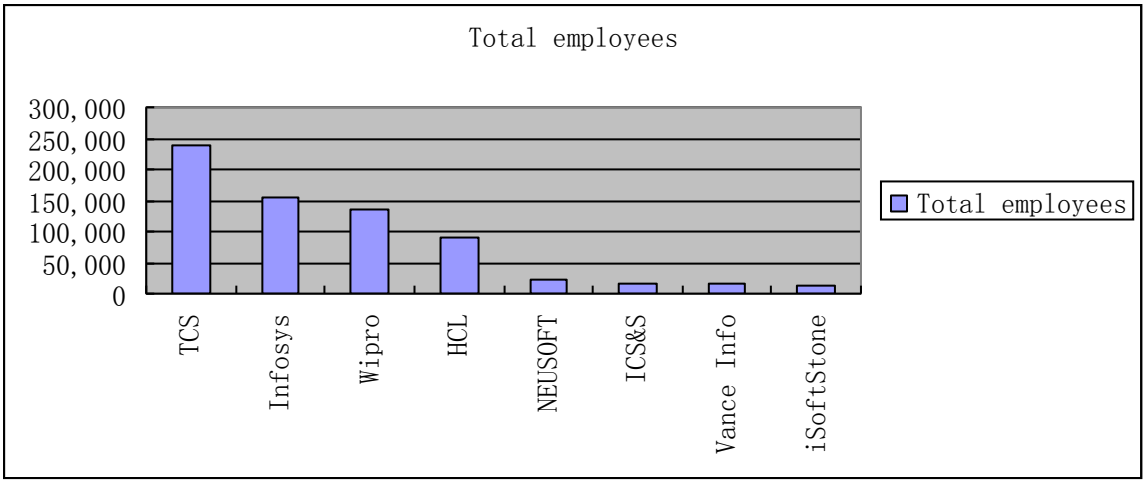

Figure 1.2: Total employees of top four providers in India and China[19]

Note: The first four companies, TCS, Infosys, Wipro and HCL are the top four Indian outsourcing providers while the latter four companies including NEUSOFT, ICS&S, Vance Info and iSoftStone are the top four Chinese outsourcing providers.

Source: Official website of each company, edited by author

Figure 1.3: Providers with more than 10,000 employees in China

Source: Official website of each company, edited by author

[19] TCS, Infosys, Wipro and HCL are top four Indian outsourcing providers while the latter four companies including NEUSOFT, ICS&S, Vance Info and iSoftStone are top four Chinese outsourcing providers.

Comparison of service scope of providers in India and China

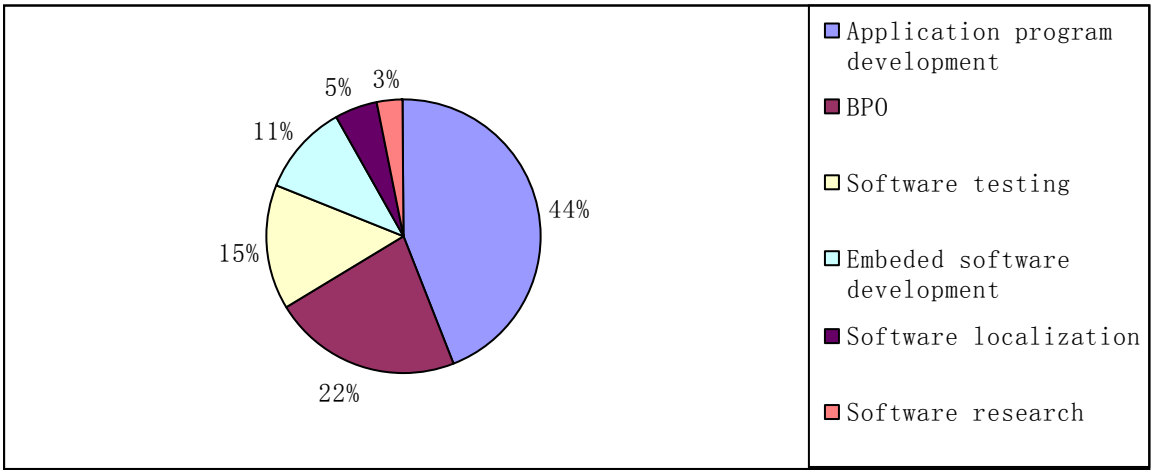

Figure 1.4: Service scope of offshore outsourcing in China

Source: NASSCOM, (2007), edited by author[20]

Note: The largest proportion of business in China is application program development, which is low value-added and low-profit.

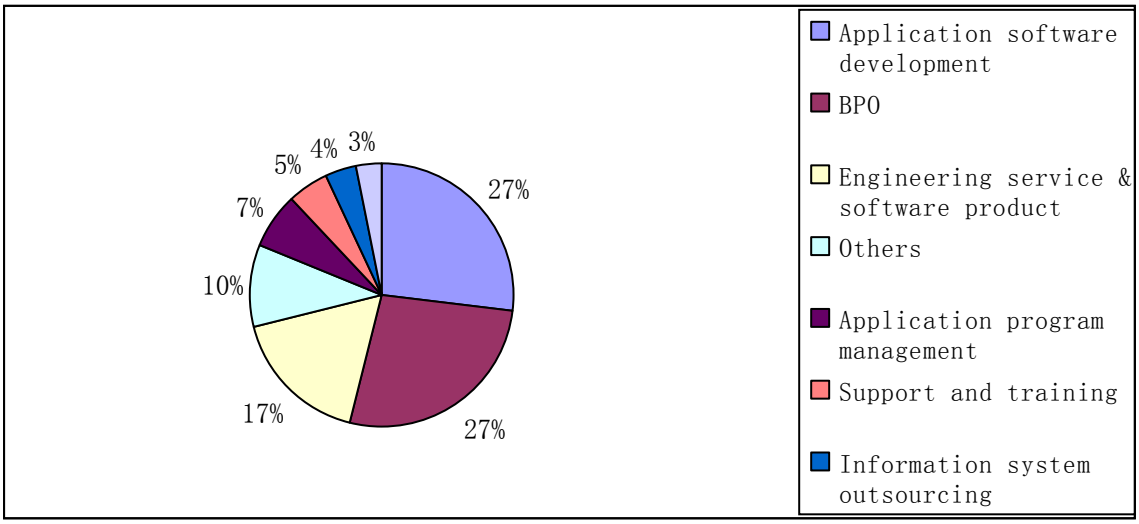

Figure 1.5: Service scope of offshore outsourcing in India

Source: NASSCOM, (2007), edited by author[21]

Note: The largest proportion of business in India is application software development which has higher value-added than application program development in China, as well as BPO, which is also high profit.

[20] Source: NASSCOM, (2007), quoted from 路清, (2009, p20)
[21] Source: NASSCOM, (2007), quoted from 路清, (2009, p20)

According to data from NASSCOM[22], providers in China are chiefly engaged in application program development that accounts for 44% of the total offshore outsourcing volume. Correspondingly, Indian companies mainly provide application software development and BPO, both with 27% of total business respectively[23]. In fact, there are several differences between application program and application software. First, programs are small in size and have limited functionality, but software is extremely large, which requires a large number of developers to be involved in. One mature software product involves a collection of programs[24]. Second, for a program, the user interface is not so important and little documentation is expected. But the user interface of software should be carefully designed and implemented, and the software should be well documented[25]. Therefore, India's services are mainly complicated software products and services, while providers in China mainly work on simple application program development. Additionally, China provides a narrower range of outsourcing services compared to the services provided by India.

There is also one dramatic limitation in this statistics which do not give the comparison between India and China from the same business categories. This limitation is not so helpful for readers to understand the differences between China and India thoroughly.

Comparison of business sources of providers in India and China

So far, ITO clients are concentrated in several developed countries like the U.S.A, Western European countries, and Japan that account for approximately 90% of the total offshore outsourcing volume[26]. The offshore outsourcing business from different countries and regions inherently has different characteristics.

[22] The National Association of Software and Service Companies (NASSCOM) is the industry association for the IT-BPM sector in India. NASSCOM is a not-for-profit organization funded by the industry, that represents and sets for public policy for the Indian Software industry. Source: NASSCOM official website

[23] 路清, (2009)

[24] Open Projects, Computer software definition.

[25] USTUDY, Programs VS Software products

[26] 刘绍坚, (2007)

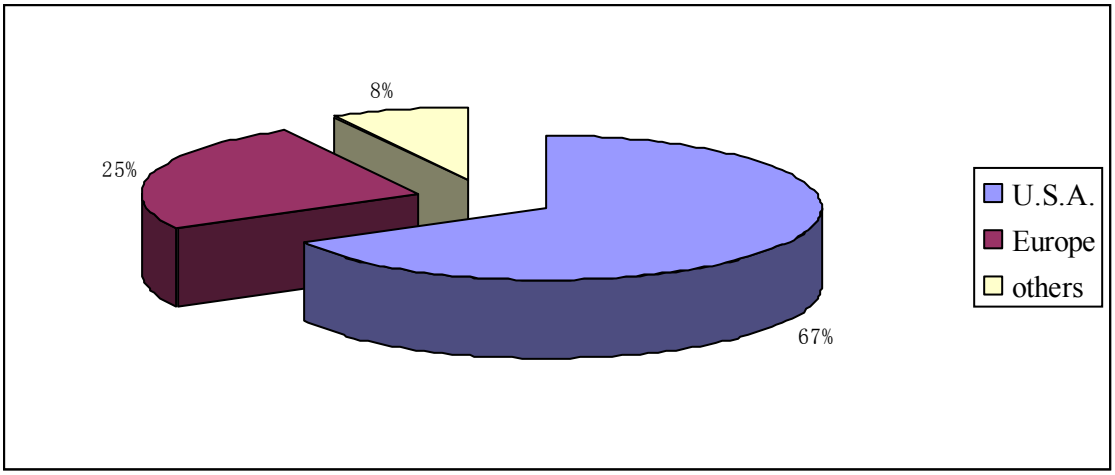

Figure 1.6: Sources of India's offshore outsourcing

Source: NASSCOM, (2007), edited by author[27]

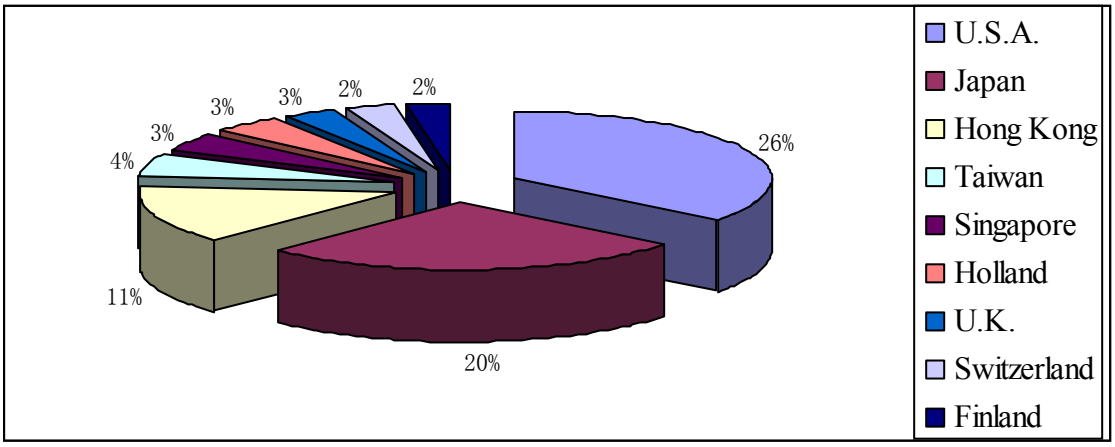

Figure 1.7: Sources of China's offshore outsourcing

Source: 中国商务部, (2007), edited by author

The two pie charts (Figure 1.6 and 1.7) illustrate the general sources of offshore outsourcing in China and India. As indicated, 67% of offshore outsourcing business in India is from clients in the U.S.A. However, business volume from the U.S.A. accounts for a mere 26% of China's total offshore outsourcing. European clients make up 25% of India's business while Japanese clients represent 20% of China's outsourcing business. Offshore outsourcing business from the U.S.A. and European countries is characterized by high profit, high value-added, cutting-edge technology. However, Japanese offshore outsourcing orders, which predominantly use

[27]Source: NASSCOM, (2007), quoted from COI, (2008).

China's providers, loss much profit and value after repeated subcontracts [28]. The success of India's offshore outsourcing depends heavily on the U.S companies. Outsourcing business from the U.S.A. is not only high profit and high value-added, but also accounts for the largest volume.

In addition, India has global clientele gained through relationships with numerous clients in the U.S.A. and Europe. In contrast, China's outsourcing clientele is restricted to the Asian areas such as Japan, Hong Kong and Singapore.

Table 1.5: Comparison between China and India from macro and micro-level[29]

	Criterion	Advantage country	Sources
Macro-level	Infrastructure	China	Gartner, CIO
	Government incentives	China	Gartner
	Intellectual property	India	Gartner
	Cultural affinity	India	Gartner
	Average Labor cost	China	Gartner, CIO
Micro-level	Service language	India	Gartner, CIO
	IT Service scope	India	CIO
	Service delivery	India	CIO
	Management maturity	India	CIO
	Process maturity	India	CIO
	Scale of service provider	India	CIO

Source: Edited by author, consulted from report of Gartner[30], CIO[31].

According to related research from Gartner and CIO on outsourcing country-level competence, both China and India possess their own advantages in the level of macroeconomics. According to interview responses from NEUSOFT and INSIGMA, even though Chinese providers try to protect intellectual property by prohibiting internet access and USB access, weak intellectual protection policies in China weaken the competitiveness of Chinese providers. Moreover, India has qualified human resources who can speak English well and have experience working with software companies in U.S.A. Since there are 12 hour-time difference between the U.S.A. and India, Indian companies could provide the quickest time-to-market for the clients in the U.S.A[32]. Thus, in contrast with China, India has overwhelming

[28] 方慧, (2008)
[29] Gartner and CIO are two leading American research firms, and America is the largest outsourcing client country. Therefore, the report from them mainly compares India and China from the aspect of American clients.
[30] Source: Gartner. Quoted from: COI, (2008)
[31] CIO, (November 29,2010)
[32] Outsourcing2india, Articles.

competitive advantage on the micro-level to obtain the favor from outsourcing clients in the U.S.A.

1.1.2.2 Background of ITO in China

Outsourcing providers in China

According to the Table 1.5, in contrast to India, China has a lot of disadvantages in providing ITO services for clients in the U.S.A, especially intellectual property protection policies in China are still not adequate. Intellectual property protection is important for ITO development in a country-level[33]. Research also suggests that China only has the advantage in the aspects of telecommunication infrastructure, national environment, while India has the overwhelming advantages in terms of technology, talent training, English level and intellectual property protection[34]. However, there are still some successful Chinese outsourcing providers which are very active in the global outsourcing market.

Generally speaking, the outsourcing providers in China fall into three categories. The first group companies rely on substantial support from the government, such as ICS&S. ICS&S was a subsidiary of a top state-owned company when it was founded in 2000. This company was founded to support the government to achieve the objective of electronic government. Currently, its main business clients are still some top Chinese companies like Huawei, Alibaba[35]. The second group of companies is founded by the people who once worked in the top MNCs. For example, the founders of Vance Info once worked at IBM in the U.S.A.[36] and the managers of IBM highly participated in the establishment of Vance Info. The founder of iSoftStone graduated from MIT Sloan Business School and had rich experience in working in IT and financial companies in the U.S.A. Thus, iSoftStone already had a lot of the U.S clients since its foundation[37]. The third group of companies started the outsourcing business totally by the cooperation between Chinese organizations and overseas companies. NEUSOFT and INSIGMA are two typical firms in this group. NEUSOFT was founded by Northeastern University[38] in Shenyang, when Alpine

[33] 白欣禹, (2012)
[34] 阙澄宇, & 柴渊哲, (2010)
[35] ICS&S Corporate Overview
[36] 和讯网, (August 9, 2010)
[37] 新浪网, (July 3, 2007)
[38] Northeastern university is one of China's high-level universities designated for the state key construction of the "211 Project" and "985 Project". The discipline of Control Science and Engineering was ranked number one in China in the first national first-level discipline assessment. Source: Northeastern University official website.

Electronics (Alpine) wanted software solutions support from this University in 1991. INSIGMA initiated its outsourcing business with clients in the U.S.A. in 2001, when State Street Corporation (SSC) searched for software upgrading support from Zhejiang University (ZJU)[39]. There is no any working cooperation history in these two cases before they start the cooperation with each other. Table 1.6 shows the classification of outsourcing providers in China.

Table 1.6: Classification of outsourcing providers in China

Three groups	Typical firms	Establishment background
State owned background	ICS&S	Total Government support
Strong oversea background	Vance Info, iSoftStone	Founders with strong overseas support
Strong local background	NEUSOFT, INSIGMA	The cooperation between Chinese organizations and overseas organizations

Source: Edited by author

Structure of outsourcing in China

Recently, the outsourcing industry in China has been growing steadily due to global labor division. Figure 1.8 shows the contract and execution value completed by Chinese providers in 2010. IT offshore outsourcing, which accounts for more than 60% of total Chinese volume, dominates the offshore outsourcing industry. Apart from this, the execution value of BPO and KPO is 29.3 billion USD and 20.2 billion USD, accounting for 20.3% and 14.0%, respectively, of the outsourcing industry. Generally, KPO encompasses research and development (R&D), product development and legal e-discovery, as well as a number of other business functions. The data below shows ITO's leading role in China's outsourcing industry.

[39] Zhejiang University is a prestigious institution of higher education with a long history. This university ranks fourth in the best global universities for engineering. Source: U.S. News EDUCATION

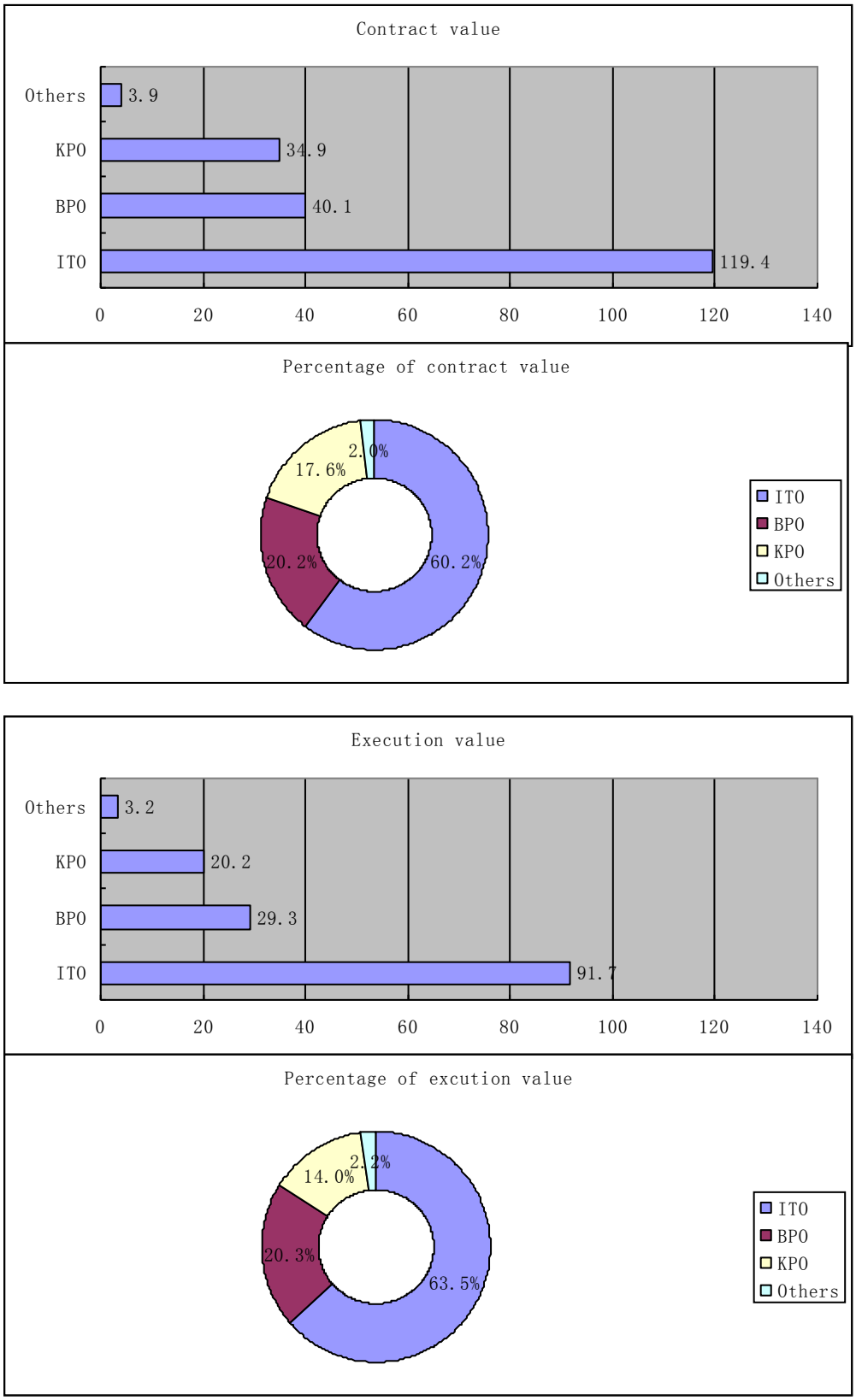

Figure 1.8: Volume and structure of offshore outsourcing in China in 2010

Source: COI, (2011, p17), edited by author

Analysis of structure of source channels for outsourcing

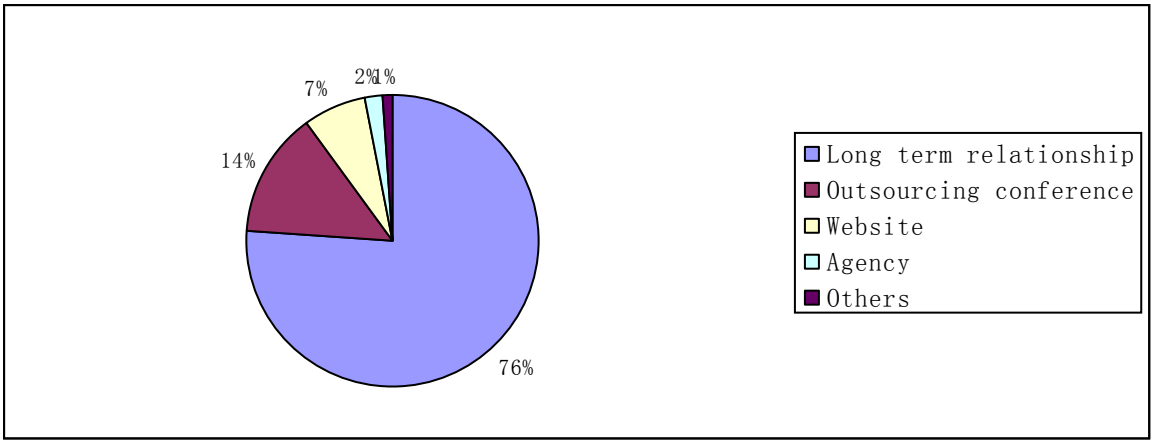

Fig 1.9: Source channels of outsourcing business

Source: 胡兴球, (2010, p59)

Presently, providers in China depend on various channels to access new outsourcing business from foreign and domestic clients. Providers develop their business through the development of long-term relationships and outsourcing conferences held by the government, websites, etc. Figure 1.9 shows that 76% of respondents rely principally on long-term relationships with existing clients. The significance of long-term relationship shows the significance of this dissertation which investigates the acquisition of competitive advantage via IOR. Moreover, 14% of providers utilize outsourcing cooperation conferences offered by multiple governments to attain outsourcing contracts. The outsourcing cooperation conference provides the opportunities for Chinese companies to interact with potential clients.

1.1.2.3 Background of ITO in model cities

Since 2006, government-initiated supportive policies have been promulgated in order to stimulate and encourage the development of offshore outsourcing industry in China. According to the government document, "Suggestions of the State Council of Encouraging the Development of Service Outsourcing Industry", 21 outsourcing model cities were established in 2009[40]. These cities benefit from favorable policies in terms of tax preference, human resource and capital. Table 1.7 shows several core indices including contract value, execution value, number of providers and practitioners, and demonstrates the role of 21 outsourcing model cities in ITO

[40] 杨学军, & 曾国军, （2011）

development. Particularly, the data shows that the actual percentage of contract value and execution value could account for over 90%.

Table 1.7: Indices on outsourcing model cities in China in 2008

Index (USD)	Whole nation	21 Model cities	Percentage
Contract value (billion USD)	58.4	54	92.5%
Execution value (billion USD)	46.9	42.9	91.5%
Number of providers	3,302	2,598	78.7%
Number of practitioners (thousand)	527	437	82.9%

Source: COI, (2008, p17), edited by author

As illustrated in Table 1.8, 21 model cities are categorized into four major geographical areas in China based on similar cultural and industrial structure. For instance, the five cities located in the Yangzi River delta, Shanghai, Nanjing, Hangzhou, Suzhou, Wuxi, are renowned for their common Jiangnan culture with water villages and other specific features[41]. Shanghai is usually perceived as the engine of economic growth in this area due to economic radiation effects. The subject of this paper concerns ITO development in the Yangzi River delta area because its common features comprehensively represent the overall outsourcing development in China.

Table 1.8: Geographical structure of outsourcing model cities

Areas	**Outsourcing model cities**
Around Bohai Sea and Northeast China	Beijing, Tianjin, Dalian, Harbin, Daqing, Jinan
Yangzi River delta area	Shanghai, Nanjing, Hangzhou, Suzhou, Wuxi
Midwest area	Chongqing, Wuhan, Chengdu, Xian, Hefei, Nanchang, Changsha
Zhujiang River delta area	Guangzhou, Shenzhen, Xiamen

Source: 新华网, (2009), edited by author

[41] 刘士林, (2009)

1.1.2.4 Background of ITO in Yangzi River delta area

Yangzi River delta covers a huge geographical area including Shanghai, southeastern Jiangsu Province and northeastern Zhejiang Province. In China, the Yangzi River delta refers specifically to the economic effect of these economic zones. This area has the highest economic volume, fastest economic growth, and leads the economic direction of China. As listed in Figure 1.10 concerning the economic situations in the top five cities in 2011, Shanghai's GDP of 3,081 billion USD ranks first in this area and in all of China. The following one is Suzhou with GDP volume of 1,720 billion USD[42]. Hangzhou, Wuxi as well as Nanjing are almost at the same level and are also among the top cities in China. Additionally, these cities maintain a high GDP growth rate of approximately 10%. These five cities in this area have been designated as outsourcing model cities by the central government.

Compared to other areas of China, the Yangzi River delta area is overwhelmingly superior not only in its overall economic situation, but also in terms of outsourcing industry development. As illustrated by Figure 1.11, the number of outsourcing providers in the Yangzi River delta area accounts for 46% of the total number of outsourcing providers in China; the area around Bohai Sea and northeastern China ranks second with 27% of providers. The rest are located in the Midwest and Zhujiang River delta area, with 17% and 10% of providers respectively.

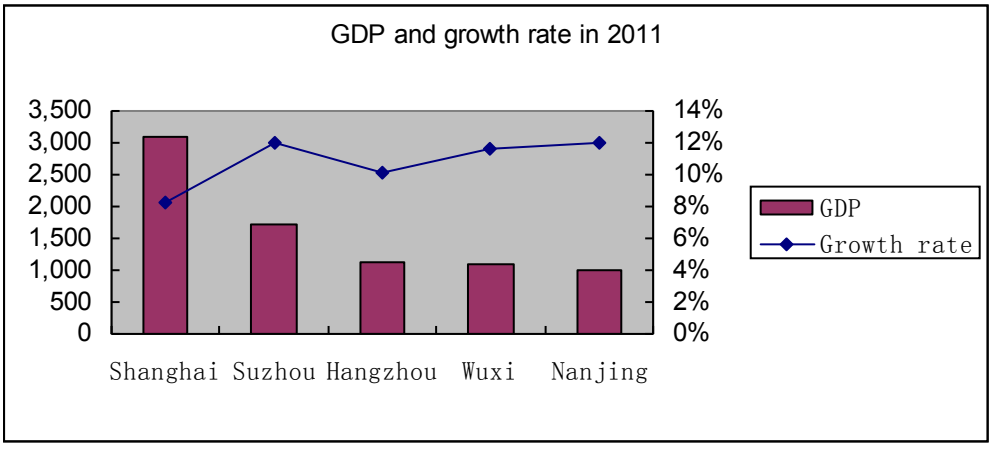

Figure 1.10: Economic situation of top five cities in Yangzi River delta area (billion USD)

Source: 中国商务部, (2012), edited by author

[42] 中国商务部, (2012)

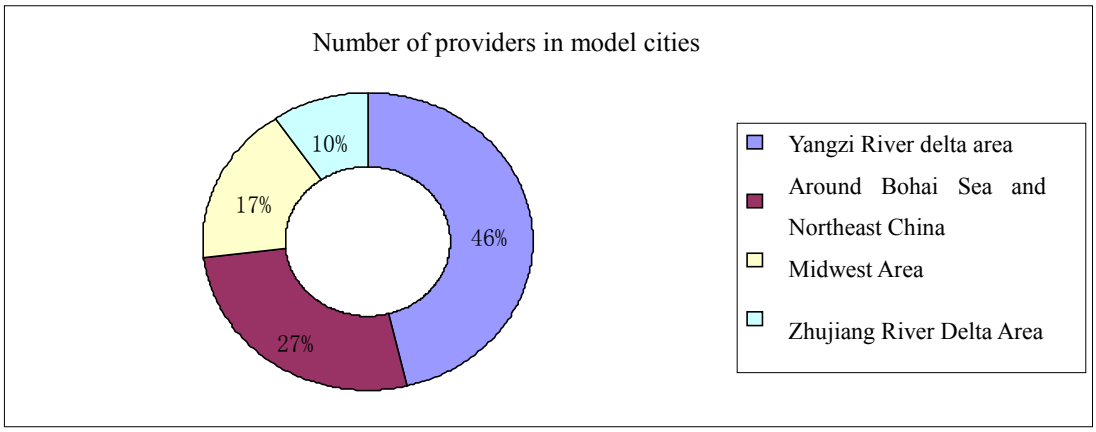

Figure 1.11: Number of providers in four areas' model cities

Source: COI, (2011, p37), edited by author

Figure 1.12 shows the contract value and execution value in 21 outsourcing model cities in China. The cities in Yangzi River delta, Shanghai, Nanjing, Hangzhou, Suzhou and Wuxi, surpass other model cities dramatically. Only Beijing possesses considerable competitiveness compared to the five cities in the Yangzi River delta. According to Figure 1.13, other important indices like new employees and new authentication certificates illustrate this area's dominant position in China. In summary, developing outsourcing industry in the Yangzi River delta area has more advantages than other areas of China.

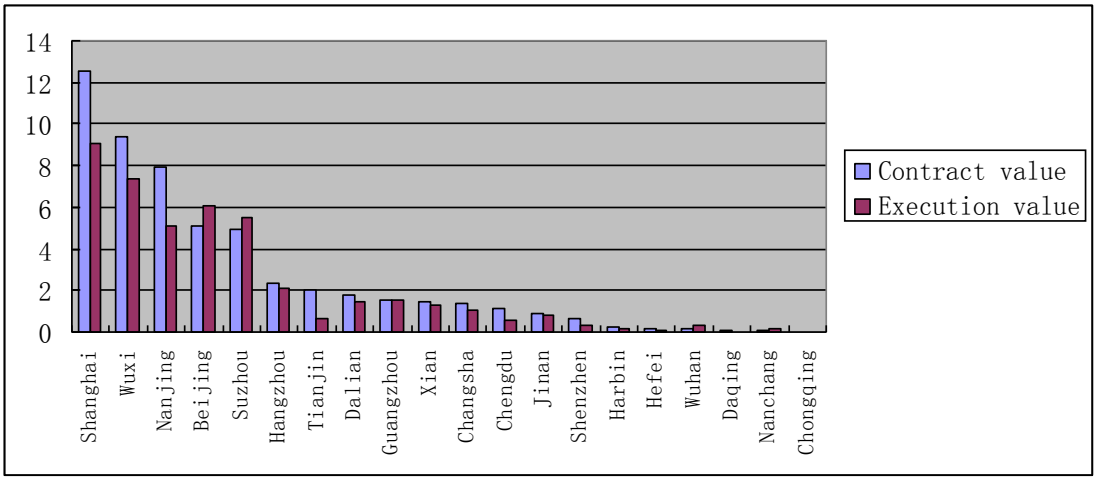

Figure 1.12: Contract and execution value of all the model cities in 2008(billion USD)

Source: COI, (2008), edited by author

Note: Yangzi River delta area including Shanghai (ranking 1), Wuxi (ranking 2), Nanjing (ranking 3), Hangzhou (ranking 5), Suzhou (ranking 6), has overwhelming superiority in contract and execution value.

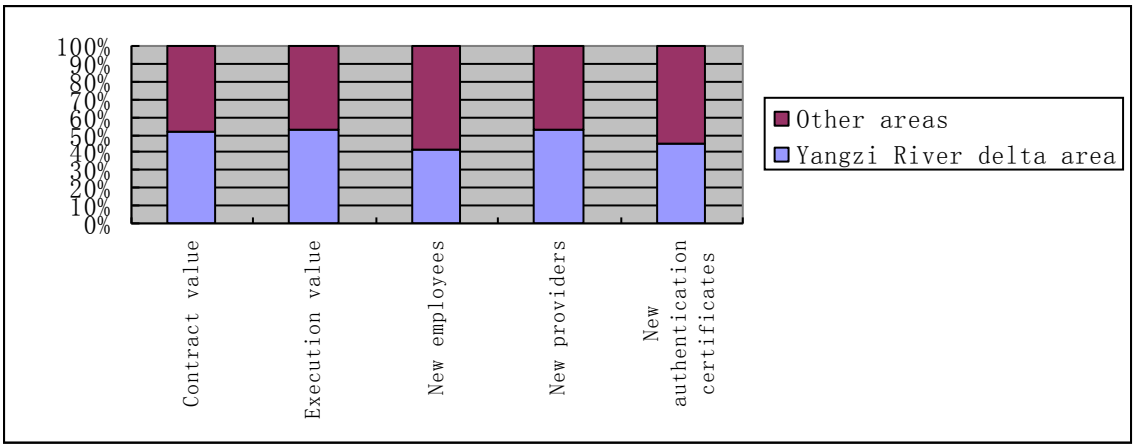

Figure 1.13: Outsourcing industry in Yangzi River delta area

Source: COI, (2011), edited by author

Table 1.9 shows typical information with respect to the features of personnel training and model providers in the five model cities. Yangzi River delta area is competent in recruiting highly qualified employees owing to its social, cultural and economic superiority. Five model cities in this area also formulate human resources training policies based on its own local features. For instance, Wuxi, which does not have the well-known universities of Shanghai and Nanjing, relies on local training institutions to a large extent.

Table 1.9: Five outsourcing model cities in Yangzi River delta area

Model city	**Personnel training (Number of province-level outsourcing parks)**	**Model provider**	**Corresponding clients**
Shanghai	● Shanghai Zhangjiang Institute for innovation: established China's first country-level outsourcing personnel training base. (11)	Chuwa	NRI Nomura Securities
Nanjing	● IBM-ETP program: Government in Nanjing, Nanjing University, IBM, and Nanda SOFTECH cooperate with each other to build the training base. ● Rich reserve in human resources: many well-known universities in Nanjing (15)	Nanda SOFTECH	IBM
		Fujitsu Nanda	Fujitsu
Hangzhou	● Hangzhou Institute of Service Engineering: build the first undergraduate school in China especially for outsourcing personnel cultivation. (9)	INSIGMA	SSC Microsoft
Wuxi	● Large number of training institutions: Government encourages and supports the establishment of 32 training institutions; ● Coverage on the training of outsourcing teachers. (7)	NTT Data	NTT
Suzhou	● Training base in Suzhou industrial park: training institutions towards outsourcing personnel usually negotiate with the providers prior to the opening of the course; ● Collaborate with education sectors to discuss the training plan. (8)	Dextrys	P&G Boeing

Source: COI, (2008), edited by author

1.2 Objectives of this dissertation

The subject of this dissertation mainly concerns the overall IOR conditions in the outsourcing industry. The book, "Managing the Embedded Multinational", written by Forsgren et al. (2005) provides theoretical findings about MNC business network relationship. As stated by them, MNC is able to develop relationships with customers and clients in the developed countries through their own capabilities, especially their "quality" "unique" products and brand effect[43]. However, this dissertation is to analyze how the firms in developing countries facilitate network evolution, especially Chinese ITO providers. The successful network also has lock out effects which means network provides no information and no opportunities for the non-participants or new entrants[44]. Therefore, it is not easy for Chinese firms to be embedded into the existing global networks. Compared to Indian competitors, Chinese ITO providers have no technology advantage and intellectual property protection advantage to join into the global network. According to the research of Forsgren et al. (2005), the case of Danke shows the reason why it endeavors to develop global network and be internationalization, because its domestic market is too small to meet its development demand[45]. Compared with other countries, China as one emerging country has a huge domestic market demand[46]. However, NEUSOFT does not limit its development into Chinese market and makes efforts to be more internationalization.

This dissertation discusses what kind of capability is imperative for Chinese providers to develop and evolve the networks. Some successful firms rely heavily on the support of Chinese government to make the development, and some firms depend on the existing network to develop themselves. This dissertation pays much attention to how Chinese local firms to develop and evolve their networks. Moreover, this dissertation also discusses how Chinese ITO providers improve their capabilities to maximize knowledge transfer in a network.

Specifically, Chapter 4 extends the research of IOR development and how three social factors facilitate dyadic IOR development. In order to accomplish this objective, this paper proposes that relationship and contract coordination are two basic inter-organizational coordination ways. In addition, this chapter discusses whether there are special methods and types of resource exchange or knowledge transfer in

[43] Forsgren et al., (2005)
[44] Gulati et al., (2000)
[45] Forsgren et al., (2005)
[46] 薛澜 et al., (2001)

Chinese ITO industry. The objective in Chapter 5 is to extend the research of network evolution, especially how Chinese ITO providers develop and evolve network through networking capability. Prior research limits networking capability into the management of relationships in a network, thus, new implications for networking capability are examined in this chapter. Moreover, the methods to form and evolve network organization are investigated in Chapter 5.

1.3 Main results and contribution

The dissertation shows some important findings. First, IOR coordination can be classified into two main ways: contract oriented coordination (COC) based on the legal, formal contract, and relation oriented coordination (ROC) based on collective trust, commitment and risk sharing. Furthermore, IOR between provider and client is constantly changing. Second, reciprocity, communication and culture compatibility are shown to be antecedents of IOR development. Third, IOR development is positively related to resource exchange and knowledge transfer between client and provider.

Chapter 4 contributes to the investigation of dyadic IOR development from COC to ROC. This research proves that three social mechanisms are positively related with IOR development. The case condition provides details that social mechanisms could facilitate IOR development by building collective trust in individuals at different levels. Moreover, this chapter contributes to consequences of IOR development by introducing unexpected resources and knowledge, such as channels resource exchange and management knowledge transfer.

The term outsourcing network describes the organizational structure between a focal provider and external firms. Specifically, the case of NEUSOFT provides qualitative data to explore this mechanism of outsourcing network. Three periods of outsourcing network evolution vividly show how NEUSOFT develops its relationship with external firms. The history of NEUSOFT can be divided into three dramatic development periods marked by two significant crises, network crisis in 2000 and financial crisis in 2009. Chapter 5 argues that Chinese ITO providers have to develop networking capability, so that it could gain competitive advantage in the global market. The results show that networking capability is positively related to network evolution and knowledge transfer. The fifth chapter contributes to the literature by showing: First, networking capability involves not only the management of

relationships which are frequently adopted in previous work, but also the utilization of relationships; Second, networking capability facilitates network evolution by three processes; Third, it contributes to the research of absorptive capability from the perspectives of both organizational-level and individual-level.

This dissertation mainly has the contribution on how Chinese ITO providers develop and evolve their network in the global market. It contributes to the literature about how the firms in developing countries improve their capabilities in order to participate into the global network. Chapter 4 mainly contributes to the research about dyadic IOR development from a dynamic perspective rather than a static perspective. Chapter 5 contributes to the literature of networking capability and its effects in network evolution and knowledge transfer.

1.4 Structure of dissertation

Chapter 1 describes ITO development condition, main results, contribution and structure of this dissertation. The second chapter introduces the four main theories utilized in this dissertation, and explains their applicability in the field of outsourcing research. Moreover, this chapter also reviews prior literatures which are related to this dissertation. The third chapter describes the methodology used in this research: data sample, data collection and research procedure. A case study approach is utilized to collect qualitative data and develop related theories.

The fourth chapter describes IOR development in a dyadic level, primarily discussing two types of coordination ways, ROC and COC. In addition, the processes and antecedents of IOR development are also analyzed in this section. Analysis regarding dyadic IOR between provider and client provides the foundation for the following chapter on multiple relationships.

Building on the dyadic IOR development discussed in Chapter 4, Chapter 5 investigates the focal provider's relationships with external firms. The term outsourcing network is adopted to describe multiple relationships in the network. NEUSOFT supplies detailed qualitative data to describe the evolution process of outsourcing network. Moreover, Chapter 5 discusses measures of networking capability and how networking capability affects network evolution and knowledge transfer. Figure 1.14 describes the structure of this dissertation. Chapter 6 mainly gives the conclusion of this dissertation which includes theoretical implications, practical implications and limitations.

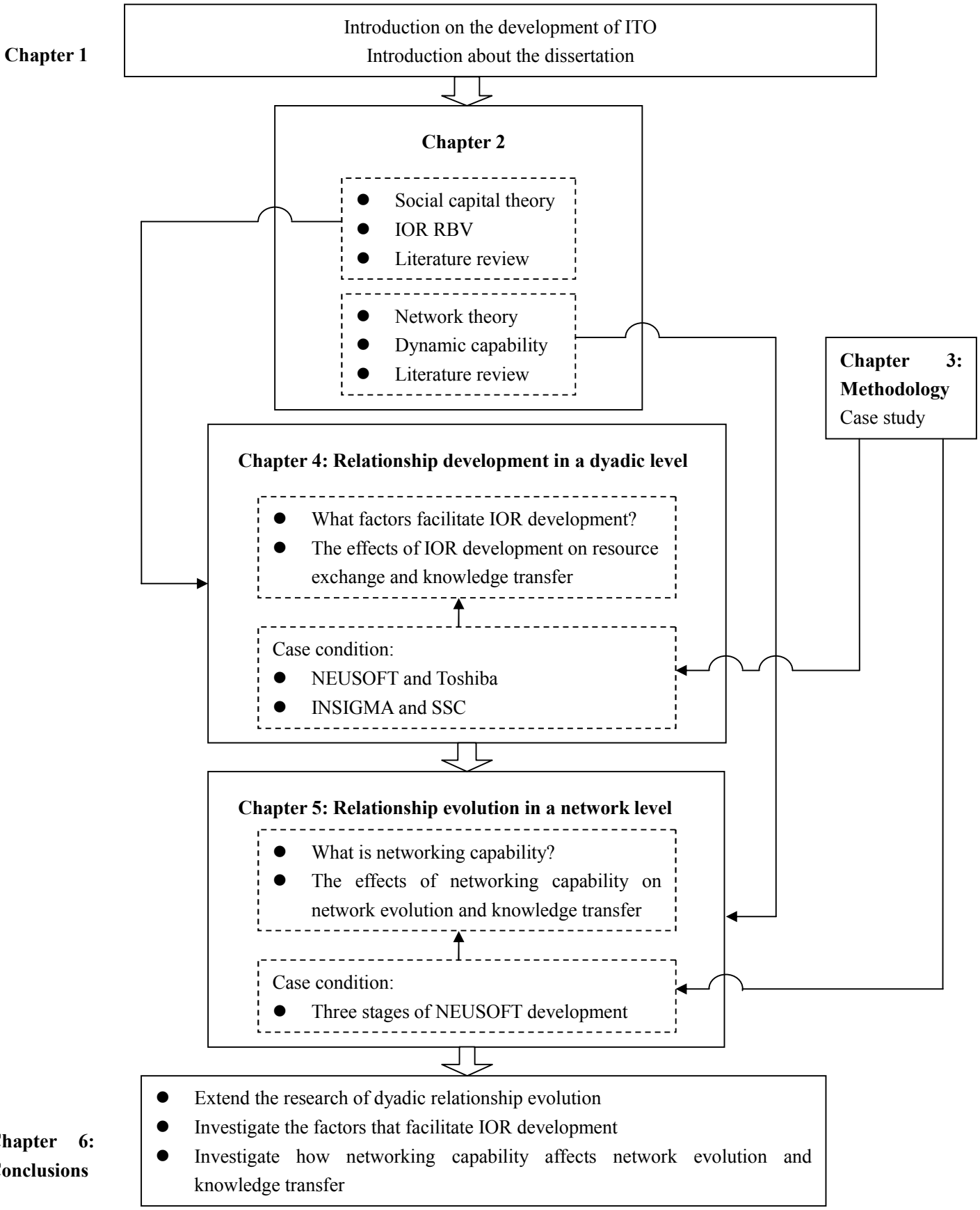

Figure 1.14: Structure of this dissertation

2 Theoretical Background and Literature Review

2.1 Theories

Four theories are adopted in this dissertation to investigate related research topics: resource-based view, social capital, dynamic capability and network theory. Resource-based view and social capital provide the theoretical foundation for the research model in Chapter 4, while dynamic capability and network theory underlie the discussion in Chapter 5.

2.1.1 Resource-based view

Penrose (1959) initiates research on firm from the perspective of resources and capabilities, and her contribution to RBV has earned well-deserved recognition in the last couple of decades[1]. In her book, "The Theory of the Growth of the Firm", Penrose examines the boundaries of the firm which refers to the coordination and authoritative communication under an administrative framework. Currently, the boundaries of the firm have become increasingly indistinct and implicit owing to the appearance of various organizational forms such as joint ventures and alliances. According to RBV, the firm is conceptualized as a bundle of productive resources[2].

Sources of sustained competitive advantage are firm resources that are valuable, rare, imperfectly imitable, and non-substitutable[3]. Through these assets and resources, firms are able to capitalize on environmental opportunities and neutralize threats, and gain a competitive edge over rivals[4]. However, RBV emphasizes the internalization of resources rather than the utilization of inter-organizational resources and, as a result insufficient to explain resources pooling, acquirement and utilization through outsourcing. In response, 石田 (2011) proposes that inter-organizational relationship is valid organizational structure to share resources and knowledge with other organizations via openness[5]; 朱秀梅 et al. (2010) also argue that knowledge acquisition could be achieved by IOR coordination[6]. A number of scholars also consider access to resources by IOR rather than direct control or ownership of

[1] Penrose, (1959)
[2] Penrose, (1959); Wernerfelt, (1984); Peteraf, (1993)
[3] Barney, (1991, p116)
[4] Barney, (1991); Wernerfelt, (1984); Wernerfelt, (1995)
[5] 石田, (2011)
[6] 朱秀梅 et al., (2010)

resources as a firm's strategy[7]. Table 2.1 reviews prior literature that emphasizes the IOR resource flow.

ITO research with respect to resources and capabilities has been gaining attention in the past few decades. Generally speaking, two basic resources, human resources and technological resources, are frequently mentioned in prior literatures from the perspective of the provider.

Table 2.1: Review of IOR from the aspect of RBV

Authors	Terms of coordination	Notions
Das and Teng, (2000)	Strategic alliance	Partners will bring financial, technological, physical, and managerial resource to an alliance. Two dimensions of resource similarity and resource utilization. Four types of alignment: supplementary, surplus, complementary, and wasteful [8].
Ven de Van, (1976)	IOR	Flows of resource and information between organizations appear to be the major processes in an inter-organizational relationship[9].
Eisenhardt and Schoonhoven, (1996)	Strategic alliance	Alliance is driven by a series of strategic resource needs and social resource opportunities[10].
Powell, (1990)	Network forms	Enable the flow and allocation of resources, information and knowledge[11].
Kogut and Zander, (1992; 1993)	Joint ventures	Joint venture is encouraged under two conditions: one or both firms desire to acquire the other's organizational know-how, or one firm wishes to maintain an organizational capability while benefiting from another firm's current knowledge or cost advantage[12].

Source: Edited by author

[7] Powell, (1990); Das and Teng, (2000); Dyer and Singh, (1998); 罗珉, (2007)
[8] Das and Teng, (2000)
[9] Ven de Van, (1976)
[10] Eisenhardt and Schoonhoven, (1996)
[11] Powell, (1990)
[12] Kogut and Zander, (1992; 1993)

On one hand, human resources are important factor in facilitating the cooperation between providers and clients[13]. Considering labor costs in the domestic market, clients in developed countries choose offshore ITO strategy to reduce labor costs. Owing to the low labor costs in developing countries, ITO in India, China and some other outsourcing providing countries reduces clients' labor costs and improves clients' firm performance. There is a large body of low-priced and well-educated human resources in India and China who could afford enormous ITO programs. To summarize, a provider's human resources are an imperative resource that is exchanged and utilized by clients in ITO activity.

On the other hand, technological resources, are regarded as an essential criterion to be evaluated by clients[14]. Table 2.2 provides an outline of the existing literature on resource exchange. There are two explanations for why RBV is applied in research on IOR coordination: first, provider firm's internal resources are crucial for its development and Chapter 6 identifies the types of internal resources in ITO industry; second, as stated by the extension of RBV, firms achieve the competitive advantage not only by possessing valuable, imitable, rare and non-substitutable resources, but also by improving performance through inter-organizational supplementary, surplus and complementary resource alignments[15].

Table 2.2: Literature review on exchanging resources

Authors	Human resources	Technology resources	Relational resource
Levina and Ross, (2003)	√	√	
Palvia et al., (2010)		√	√
Lahiri and Kedia, (2009)	√	√	√

Source: Edited by author

2.1.2 Network theory

Research regarding network theory can be traced back to the research contributed by sociologists on social network[16], that stresses the existence of social exchange or interpersonal relations in such network structure. Eventually, both sociologists and economists find that the market and hierarchy proposed by

[13] Levina and Ross, (2003)
[14] Palvia et al., (2010)
[15] Dyer and Singh, (2000)
[16] Burt, (1976); Emerson, (1976); Granovetter, (1976)

institutional economics are not effective in analyzing the phenomenon of inter-organizational cooperation[17]. Sociologists explain that economic behavior is embedded with social relations[18].

Jones et al. (1997) identify four conditions of transaction cost theory that apply to IOR: first, demand uncertainty combined with stable supply; second, customized exchanges high in human asset specificity; third, complex tasks under time pressure, and fourth, frequent exchanges among parties comprising a network. In contrast, Jarillo (1988) indicates that the more opportunities that exist in value creation between two organizations, the greater the possibility of the formation of strategic network[19]. The appearance of network is inevitable in economic behaviors and economic organizations because interpersonal relationship accompanies and combines with the economic exchange. Additionally, network has significant strategic and economic implications for IOR as shown by Table 2.3. 李维安等 (2003) assert that network organization is efficient in integrating the internal resources and external intellectual capital, tapping into potential resources and internalizing social capital[20]. 罗珉 (2005) proposes that networks are beneficial for integrating and connecting external knowledge[21]. Mutual trust is an important factor for coordination and cooperation between network actors[22].

Table 2.3: Benefits of network[23]

Strategic benefits	**Economic benefits**
● Information and resource flow ● Risks Share ● Core business focus ● Organization learning ● Long-term exchange relationship	● Lower the transaction costs and other costs ● Improve the efficiency and productivity for members

Source: Edited by author

Scholars do not provide a consistent definition for network. Table 2.4 gives a

[17] Richardson, (1972); Granovetter, (1985); Powell, (1990)
[18] Granovetter, (1985)
[19] Jarillo, (1988)
[20] 李维安 et al., (2003)
[21] 罗珉, (2005)
[22] Gulati et al., (2000); Jarillo, (1988)
[23] Gulati et al., (2000); Jarillo, (1988); Larson, (1991); Podolny and Page, (1998)

general overview of terms and definitions of network. The network in this study is defined as a set of collaborations with other members (N > 2). Unlike other definitions that attach less importance to the diversity of members in network, the definition in this dissertation stipulates that network members should represent at least three organizations. Network is engaged in resource flow, pooling, and reuse to realize the focal organization's objectives of value creation, risk sharing and other strategic or non-strategic purposes.

Table 2.4: Review of terms and definitions of networks

Terms	Definition
Inter-organizational network (Granovetter, 1976)	Organizations are embedded in a social structure.
Network forms of organization (Powell, 1990)	Lateral or horizontal patterns of exchange, independent flows of resources and reciprocal lines of communication.
Network organization (Miles and Snow, 1992)	A Cluster of firm or specialized units coordinated by market mechanism.
Network governance (Jones et al.,1997)	A select, persistent, and structured set of autonomous firms engaged in creating products or services
Network forms of organization (Podolny and Page, 1998)	Any collection of actors (N > 2) that pursue repeated, enduring exchange relations with one another and, lack a legitimate organizational authority to arbitrate and resolve disputes
Strategic network (Gulati et al., 2000)	A firm's set of relationships, both horizontal and vertical, with other organization.

Source: Edited by author

Network theory has been highly developed and applied in research on MNCs. The MNC network structure is very efficient in knowledge transfer between headquarters and subsidiaries[24]. The most prominent work in this field is a study by Nohia and Ghoshal (1997) concerning differentiated networks. Headquarters and subsidiaries in differentiated networks are linked via three types of relationships: First, the local linkages within each national subsidiary; Second, linkages between headquarters and the subsidiaries; Third, linkages between the subsidiaries

[24] 石田, (2011)

themselves[25].

Another major contribution to this field of research is business network theory that is distinctive from the former theory in many significant aspects. Business network theory involves not only headquarters and subsidiaries, but also customers, suppliers and competitors. According to the notion of MNC business network, MNC is able to develop its relationships with customers and clients in developed countries through their capabilities, especially through their "quality" "unique" products and brand effect. The case of Danke shows that MNC is more positive in developing dyadic relationship with its partner by virtue of its marketing position, bargaining and procurement power.

Two types of networks existing in MNC: corporate network and business network. The former involves the administrative links between the subsidiary and other corporate units within the legal framework of the corporation. The latter refers to the subsidiaries and other partners which are connected with each other through business activities rather than administrative or legal links. Forsgren et al. (2005) discuss three dimensions of internationalization of MNC: internationalization through extended ownership, external business network and corporate network. The case of Danke suggests that the level of internationalization differs considerably depending on which dimension of internationalization is used. Furthermore, they suggest that subsidiaries of embedded multinationals play an important role in knowledge transfer within the MNC, specifically between headquarters and other subsidiaries. Subsidiaries also exert their role in learning through subsidiaries' external business network[26].

Forsgren et al. (2005) also researched the multinational business network evolution in small developed counties. Multinational business network evolution involves the change of relationships between the focal firm and external firms. Focal firm exerts their power to control business network evolution through business activities with partners, such as delivery and procurement volumes. Business network evolution plays a key role in multinational business network theory for a number of reasons. First, business network evolution is happening all the time along with the business adaptation and other activities. Business network evolves along with the development of relationships from arm's length to embedded tie. Second, any

[25] Nohia and Ghoshal, (1997)
[26] Forsgren et al., (2005)

relationship in this business network inevitably impinges on other relationships in a never-ending cycle. For example, the case of Danke shows that its relationship with Aspi affects its relationships with other actors through purchases, delivery and other business activities. Third, business activities such as marketing, technological improvement and production are neither intra-firm nor controllable matters. These activities in business network will largely determine business network evolution[27].

Firms in developing countries, however, might follow different paths to achieve the objective of internationalization. In contrast to firms in developed countries, these firms do not have absolute technology advantages and quality products. Moreover, compared with manufacturing industries, there are not various suppliers in the supply chain of ITO industry. Thus, the processes of internationalization, network evolution, business value upgrading and knowledge transfer of firms in developing counties require more thorough analysis.

I apply network theory in the research of ITO industry because the dyadic relationship between client and provider is not sufficient in explaining the complex outsourcing relationships completely. Network that connects the focal provider and the other actors makes IOR development and resource flow clearly and explicitly. Additionally, outsourcing network also connects to multinational business network, since offshore ITO activity involves border crossing business activity, and more MNCs and their subsidiaries are involved in ITO activity.

2.1.3 Dynamic capability

With the rapid change of external environment in 1990, the existing RBV and core competence theory are not effective in explaining the dynamic and quickly changing environment. In order to address this deficiency, dynamic capability is introduced by Teece et al. (1997), and further developed by scholars in strategic management. In contrast with RBV which stresses the firm's internal resources, dynamic capability proposes that "the competitive advantage of firms is seen as resting on distinctive process, shaped by the firm's specific asset positions, and the evolution paths it has adapted or inherited"[28].

The term dynamic capability dates back to RBV research and relevant capability theory. Although different researchers continue to debate about distinctive

[27] Forsgren et al., (2005)
[28] Teece et al., (1997, p509)

definitions and implications from the different aspects shown in Table 2.5, researchers have arrived at a broad consensus that dynamic capability is one type of high-level ability. This ability is a complicated, repetitious, detailed and analytic behavior based on part of tacit knowledge.

There are significant differences between dynamic capability and other theories. First of all, the remarkable contrast between dynamic capability and ordinary capability stems from the special external environment, such as "hyper-competitive"[29], "high-velocity" [30] or "rapidly changing" [31] environments. In light of Barney's viewpoint, only resources that are valuable, rare, and inimitable lead to a sustainable, competitive advantage, but the value of these resources decreases in the dynamic environment. In addition, the other distinction between dynamic capability and RBV refers to the responsibility of managers for the actions of the firm, especially the entrepreneurship activities [32]. Additionally, dynamic capability is supposed to manipulate and integrate ordinary (substantive) capabilities that are highly related with desired output and firm performance.

Prior research on dynamic capability is divided into two discernable branches based on different research perspectives: resources integration and learning mechanism. The resource integration branch of dynamic capability emphasizes reconfiguring a firm's existing resources routines. Learning mechanism highlights the potential for inter-organizational learning by virtue of IOR such as joint ventures and alliances.

Few scholars apply dynamic capability to research of outsourcing and rarely use the perspective of the providers. The study of dynamic capability is urgently needed for ITO industry research for several reasons. First, the rapidly changing, dynamic environment confronted by ITO industry requires dynamic capability to cope with inevitable and sudden challenges. For instance, the Lehman shock in 2008 changed the economic environment suddenly and impacted the ITO industry negatively. Second, in contrast to the traditional manufacturing industry, ITO industry involves knowledge transfer and value creation at a global level.

[29] D'Aveni, (1994)
[30] Eisenhardt and Martin, (2000)
[31] Teece et al., (1997)
[32] Ghoshal, (2005); Zahra et al.,(2006)

Table 2.5: Definitions and terms on dynamic capability

Authors	Terms	Definition
Eisenhardt and Martin, (2000)	Dynamic capability	The firm's processes that use resources-specifically the processes to integrate, reconfigure, gain and release resources-to match and even create market change[33].
Kogut and Zander, (1992)	Combinative capability	Synthesize and acquire knowledge resources, and generate new applications from those resources[34].
Teece et al., (1997)	Dynamic capability	Firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments[35].
Zollo and Winter, (2002)	Dynamic capability	A dynamic capability is a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness[36].
Zahra et al., (2006)	Dynamic capability	The abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropriate by its principal decision-maker[37].
Henderson and Cockburn, (1994)	Architectural competence	Firm's ability to integrate the component capability effectively and to develop fresh component competencies as required[38].
Teece, (2007)	Dynamic capability	Dynamic capabilities can be disaggregated into the capacity (1) to sense and shape opportunities and threats (2) to seize opportunities, and (3) to maintain competitiveness through enhancing, combing, protecting and reconfiguring the business enterprise's intangible and tangible assets[39].

Source: Edited by author

[33] Eisenhardt and Martin, (2000)
[34] Kogut and Zander, (1992)
[35] Teece et al., (1997)
[36] Zollo and Winter, (2002)
[37] Zahra et al., (2006)
[38] Henderson and Cockburn, (1994)
[39] Teece, (2007)

2.1.4 Social capital

The term social capital originates from the research of community studies that stresses personal relationships as a solid foundation for trust, cooperation and collective action in the communities[40]. Table 2.6 lists some major definitions of social capital. Social capital may arise from feelings of gratitude, respect and friendship or from the institutionally guaranteed rights in a family, a class or a school[41]. Some social capital, like weak ties, is proved to be privileged source for gaining information and opportunities[42]. The role of social capital is not only limited to human capital, but also refers to the activities of the firms[43]. Granovetter (1985, p491) stresses, "social relations, rather than institutional arrangements or generalized morality, are mainly responsible for the production of trust in economic life"[44].

Table 2.6: Definitions of social capital

Lin, (2001)	Resources embedded in social networks accessed and used by actors for action[45].
Nahapiet and Ghoshal, (1998)	The sum of the actual and potential resources embedded in and derived from the network of relationships possessed by and individual or social unit[46]
Adler and Kwon, (2002)	The goodwill available to individuals or groups. Its source lies in the structure and content of the actor's social relations. Its effects flow from the information, influence, and solidarity that makes available to the actor[47].
Coleman, (1988)	Social capital is defined by its function. It is not a single entity, but a variety of different entities having two characteristics in common: they all consist of some aspect of social structure, and they facilitate certain actions of individuals who are within the structure[48].
Baker, (1990)	A resource that actors derive from specific social structures and then use to pursue their interests; it is created by changes in the relationship among actors[49].

Source: Edited by author

[40] Jacobs, (1961)
[41] Bourdieu, (2011)
[42] Granovetter, (1973)
[43] Baker, (1990)
[44] Granovetter, (1985, p491)
[45] Lin, (2001)
[46] Nahapiet and Ghoshal, (1998)
[47] Adler and Kwon, (2002)
[48] Coleman, (1988)
[49] Baker, (1990)

Social capital involves three dimensions: structural, relational and cognitive, and each dimension is highly interrelated with others[50]. Although scholars have not reached a consensus on the definitions of social capital, they agree on the significance of social capital as: a resource existing in interpersonal relationships. Several features of social capital are worth highlighting. First, social capital as a set of non-trade resources rooted in relations that may yield flow of benefits to actors in the network in the long run[51]. Second, social capital facilitates the creation of new intellectual capital through which firms will successfully integrate, create and develop knowledge[52]. Third, the source of social capital is found in network structure and ties.

Table 2.7: Trust establishment and maintenance factors in ITO[53]

Trust establishment factors	Trust maintenance factors
● Cultural understanding ● Creditability ● Capability ● Personal visits ● Investment ● Social background ● Joint dispute resolution	● Communication ● Transparency ● Demonstrability ● Honesty ● Commitment ● Understanding ● Performance ● Consistency ● Quality ● Timely delivery ● Personal relationships ● Capabilities

Source: Edited by author

Social capital is adopted as a basic theoretical background due to the remarkable nature of the outsourcing industry and Chinese business environment. Social capital plays a prominent role in China since Chinese history and culture emphasizes traditional interpersonal relations or "guanxi"[54]. This cultural history

[50] Nahapiet and Ghoshal, (1998)
[51] Adler and Kwon, (2002)
[52] Nahapiet and Ghoshal, (1998); Rottman, (2008)
[53] Ali Babar et al., (2007; Langfield-Smith and Smith, (2003); Lee et al.,(2008); Mao et al., (2008); Oza et al., (2006)
[54] Chen and Chen, (2004)

influences the role of social capital in the business environment. According to the history of two Chinese providers NEUSOFT and INSIGMA, their establishment and initial network position are directly affected by social capital, particularly the founders' ties and human capital. Third, ITO industry requires considerable knowledge transfer and is able to obtain support from social capital rooted in personal relationships[55].

Although the relationship between trust and social capital has several contradictory arguments[56], the role of trust cannot be neglected when discussing social capital. Trust in ITO not only affects mutual relationships between client and provider, but also influences the degree of knowledge transfer[57]. Of relevance to this study are the factors which could establish and maintain trust in ITO activity. Table 2.7 lists the trust establishment and maintenance factors derived from previous literatures in the area of ITO research.

2.2 Literature review

The literature review section outlines previous research on ITO in four distinct aspects: outsourcing capability, outsourcing IOR coordination, dynamic capability and outsourcing consequences**.**

2.2.1 Literature review on outsourcing capability

The subject of ITO attracts attention from western scholars in the fields of macro-economics, management and even sociology, and the approach to this topic changes depending on the scholars' tastes and actual economic situations. As shown in Figure 2.1, Lee et al. (2003) conclude that the outsourcing issue is initiated from make or buy decision and changed continuously. The future research on outsourcing is still unclear, but the topic of partnership has been attracting attention from academics in recent years[58]. Thus, this dissertation discusses a current popular topic: IOR conditions in outsourcing research.

[55] Inkpen and Tsang, (2005); Yli-Renko et al., (2001)
[56] Adler and Kwon, (2002); Coleman, (1988)
[57] Lee et al., (2008; Sabherwal, (1999); Zviran et al., (2001)
[58] Lee et al. (2003)

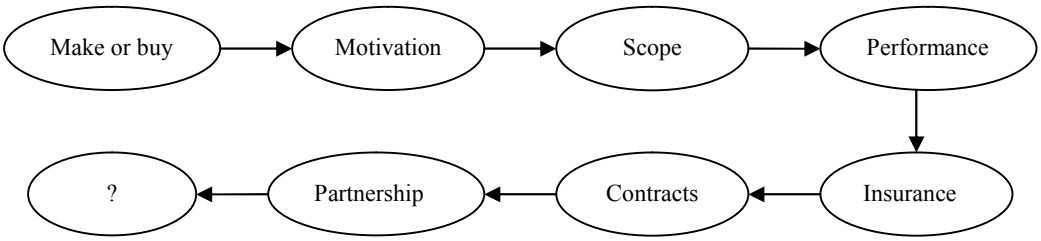

Figure 2.1: Change of Outsourcing research issues

Source: Lee et al. (2003), edited by author

Outsourcing capability is one of the most popular research topics in this area. The term "outsourcing capability", involves the client's resources in personnel, management and other aspects[59]. Prior research proves that outsourcing provider's capability has positive effects on outsourcing success, firm performance and IOR quality. From the point of view of the provider, Levina and Ross (2003) suggest that provider's economic benefits are determined by their ability to develop a complementary set of core competencies, and this ability could be achieved and improved through a variety of outsourcing engagements[60]. Ethiraj et al. (2005) explore the source of provider's competencies and the influence of providers' capability on project performance[61]. Palvia et al. (2010) observe that providers' capabilities are positively associated with the partnership quality between provider and client[62]. Lahiri and Kedia (2009) argue that providers' human capital, organizational capital, management capability and partnership quality are valuable to both provider and client. Partnership quality has partial mediating and moderating effect on the relationship between provider's capability and firm performance[63]. Han et al. (2008) investigate the effect of a firm's resource capabilities and interaction processes on the success of ITO from a process perspective, and the results show that firm's capability affects outsourcing success through the mediation effects of the interaction process[64].

Table 2.8 lists the determinants of outsourcing capability used in previous literature. Key determinants such as human resource capability and management

[59] Kishore et al., (2003); Levina and Ross, (2003); Oza et al., (2006); Ross and Beath, (2006)
[60] Levina and Ross, (2003)
[61] Ethiraj et al., (2005)
[62] Palvia et al., (2010)
[63] Lahiri and Kedia, (2009)
[64] Han et al., (2008)

capability are employed repeatedly.

Table 2.8: Determinants of outsourcing capability

Authors	Determinants of outsourcing capability
Levina and Ross, (2003)	Personnel development, methodology development and dissemination, customer relationship management[65].
Ethiraj et al., (2005)	Client-specific capability and project management capability[66].
Willcocks and Feeny, (2006)	Human resource capability, project management capability, partnership capability[67].
Lahiri and Kedia, (2009)	Human capital, organizational capital, management capability[68].
Palvia et al., (2010)	Relationship management, contract management, information technology management[69].
刘绍坚, (2007)	Human resource, marketing capability[70].
殷国鹏, & 杨波, (2010)	Technology capability, human resource capability, project management capability, relation management capability, industrial experience, delivering capability[71].

Source: Edited by author

Academic studies of management issues are primarily concerned with the aspect of outsourcing providers, but there are limitations in the prvious research. First, studies about outsourcing providers primarily gather sample data and cases from the Indian providers rather than Chinese providers. Providers in India and China face different development problems due to their distinct economic, social, and political environment. Second, the relationship between IOR and outsourcing capability is still unclear. Sometimes the relationship is deemed to be a component of outsourcing capability while other times it is affected by outsourcing capability. Third, the influence of firm capability in IOR (partnership) and outsourcing success overemphasizes the unilateral economic or strategic benefits, either for the provider or client. For example, outsourcing success is usually seen as the client's satisfaction

[65] Levina and Ross, (2003)
[66] Ethiraj et al., (2005)
[67] Willcocks and Feeny, (2006)
[68] Lahiri and Kedia, (2009)
[69] Palvia et al., (2010)
[70] 刘绍坚, (2007)
[71] 殷国鹏, & 杨波, (2010)

towards the outsourcing strategy[72]. In essence, outsourcing success relates to the benefits, achievements and cooperation satisfaction of both provider and client. Fourth, most of the literature focuses on a firm's ordinary capabilities like human resources and technology capability, which are regarded as functionless in a rapidly changing environment[73].

2.2.2 Literature review on outsourcing IOR coordination

IOR is the focus of attention in previous literature because the competitive advantage of a firm is rooted in IOR[74]. In order to investigate the direction of inter-organizational knowledge transfer, 罗珉, & 王雎 (2008) change traditional hierarchy-market model to a three dimensional hierarchy-market-community model[75]. Presently, contract and relation are generally accepted as the two main IOR coordination ways in ITO industry.

Contract coordination is the initial step in the process of ITO cooperation. Barthélemy (2003b) proposes that a poor contract could be regarded as one of seven "deadly sins" and is the leading cause of most failed outsourcing efforts[76]. The significance of contract coordination in outsourcing activity has been advocated in many previous studies, and the management of contract coordination is often deemed as a vital component of both provider and client capability[77]. Contract coordination is crucial for both providers and clients in the initial period of outsourcing activity, since a lack of sufficient understanding drives both client and provider to rely on the formal contract. Currie and Willcocks (1998) suggest that clients should possess suitable contract management ability before obtaining and retaining relation coordination[78]. To summarize, contract coordination plays an important role in the early stages of outsourcing cooperation. Neither providers nor clients can skip this critical control and coordination mechanism. Moreover, the characteristics of the contract that include stiffness clauses and lack of flexibility, are not favorable for clients or for providers.

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[72] Grover et al., (1996)
[73] Teece et al., (1997)
[74] 罗珉, (2008)
[75] 罗珉, & 王雎, (2008)
[76] Barthélemy, (2003b)
[77] Feeny and Willcocks, (1998); Shi et al., (2005)
[78] Currie and Willcocks, (1998)

Table 2.9: Properties of contract and relationship[79]

	Contract	Relationship
Types	Legal cooperation	Partnership, joint venture etc.
Legal enforcement	High	Low
Restriction mechanism	Laws and norms	Ethics
Stage	Earlier stage	Later stage
Psychology	Low trust Low commitment	High trust High commitment
Behavior	Less shared knowledge Less mutual dependency Loose organizational link	More shared knowledge More mutual dependency Tight organizational link

Source: Edited by author

Regardless of the terms used: partnership[80], alliance[81], relational governance[82], scholars have discussed the tendency toward relationship coordination in inter-organizational research. Social theories, such as social exchange theory and social capital theory, are applied frequently to research on IOR issues. The determinants and attributes of partnerships are the dominant themes in this research[83]. Studies confirm that relation coordination, particularly partnership, has a positive effect on outsourcing success[84]. As stated by Barthélemy (2003a), relation coordination becomes more important after the role of contracts in the preliminary stage[85]. Table 2.9 shows a general comparison of the differences between two types of coordination ways.

As Table 2.9 shows, clear distinctions can be made between contract and relations referring to legal enforcement, restriction mechanism, stage, psychology and behavior. Regarding the relationship between these two coordination patterns, the general perception is that a complementary relationship exists between them[86]. Contract lays the foundation for the latter while relation could make up for inflexible

[79] Willcocks and Choi, (1995); Powell, (1999)
[80] Klepper, (1995)
[81] Willcocks and Choi, (1995)
[82] Lacity et al., (2009)
[83] Henderson, (1990); Kedia and Lahiri, (2007)
[84] Gonzalez et al., (2006); Lahiri et al., (2012); Lee, (2001)
[85] Barthélemy, (2003a)
[86] Goo et al., (2009); Poppo and Zenger, (2002); Qi and Chau, (2012)

contract. Therefore, outsourcing IOR should depend on the joint contribution of both contract and relation and both of them should work at the same time. Barthélemy (2003a) contends that contract refers to the hard side of outsourcing management, while relation refers to the soft side[87]. In fact, any outsourcing IOR arrangement is located along the spectrum between two extremes, formal contract and relation[88]. Any IOR coordination way could be represented by a point in this spectrum.

Many scholars have investigated IOR coordination between client and provider by virtue of the two coordination ways: contract and relation. However, several deficiencies exist in the previous literature. More attention should be paid to IOR coordination ways of Chinese ITO providers. Additionally, as both relation and contract only emphasize the static results, more work is needed on the dynamic evolutionary process.

2.2.3 Literature review on dynamic capability

The subject of dynamic capability, which is first introduced by Teece et al. (1997), prompts a number of research studies. Although most scholars employ the same terms to interpret the mechanism of dynamic capability, the existing literature has not reached a consensus on the definition or characteristics of dynamic capability. Generally speaking, research on dynamic capability can be classified into two groups. One group emphasizes the resources configuration, integration, release and access that assist firms in adjusting to rapidly changing environment. The other group focuses on the learning mechanism that involves knowledge codification, transfer and articulation.

Previous research provides evidence of the basic characteristics of dynamic capability. First, dynamic capability involves a firm's processes rather than some visible substances, through which a firm could integrate, reconfigure, gain and release resources[89]. Teece et al. (1997) indicate that dynamic capability is inherent in some processes[90]. Kusunoki et al. (1998) directly adopt "process dynamic capability" as one type of dynamic capability that spontaneously emerges from the dynamic process of knowledge interaction[91]. Second, dynamic capability is one type of strategic managerial capability that could generate new value-creating strategies by integrating

[87] Barthélemy, (2003a)
[88] Clark Jr et al., (1995); Willcocks and Choi, (1995)
[89] Eisenhardt and Martin, (2000)
[90] Teece et al., (1997)
[91] Kusunoki et al., (1998)

and recombining resources[92]. Third, dynamic capability broadens and expands a firm's insight from internal management to inter-organizational activities via learning mechanism, through which a firm is able to absorb external knowledge.

Dynamic capability is widely used in the management of different IOR relationships. Alliance capability is considered to be one type of dynamic capability, by which firms are able to deploy and share alliance management know-how associated with prior experience[93]. A firm's alliance capability is embedded in organizational routines or processes that involve substantial stable, repetitive activities to manage alliances successfully. Generally, alliance capability is based on dynamic capability and a firm's experiences in partner selection, alliance coordination and knowledge management. Existing literature shows that alliance capability is positively associated with alliance performance, which in turn affects a firm's performance significantly.

Prior studies in this field often decompose and classify important components of dynamic capability. 黄俊 et al. (2008) classify dynamic capability into integration capability, organization learning capability and reconstruction capability in their research[94]. 郑胜华, & 芮明杰 (2009) propose that dynamic capability should include integration capability, process and learning in their analytical framework[95]. 贺小刚 et al. (2006) identify five dimensions of dynamic capability including market potential, organization flexibility, strategic gap, organizational learning and organization revolution[96]. 焦豪 et al. (2008) propose that four measures be used for dynamic capability: environmental insights, technological flexibility, organizational flexibility and transformational capability[97]. 罗珉, & 刘永俊 (2009) argue that dynamic capability is composed of market insights capability, organizational learning absorptive capability, social network relational capability and coordination integration capability[98]. 曹红军 et al. (2009) identify information utilization capability, resources acquisition capability, internal integration capability and resources release capability as the measures of dynamic capability[99]. 郑素丽 et al. (2010) integrate knowledge management and dynamic capability to identify three measurements of

[92] Grant, (1996)
[93] Heimeriks and Duysters, (2007); Kale et al., (2002)
[94] 黄俊 et al., (2008)
[95] 郑胜华, & 芮明杰, (2009)
[96] 贺小刚 et al., (2006)
[97] 焦豪 et al., (2008)
[98] 罗珉, & 刘永俊, (2009)
[99] 曹红军 et al., (2009)

dynamic capability: knowledge acquisition, knowledge creation and knowledge integration[100].

Previous research identifies dynamic capability as a high-order capability, but there are limitations in the research. First, the research should combine dynamic capability and network theory to investigate how firms in developing countries evolve their network by virtue of their abilities. Second, the relationship between dynamic capability and networking capability needs more attention.

2.2.4 Literature review on outsourcing consequences

Over the past few decades, outsourcing has become a common strategic decision for firms and has generated advantages for firm performance. Generally, the most frequently discussed outsourcing consequence is economic benefit; outsourcing reduces costs for clients and improves firm performance dramatically. Additional strategic benefits include core competencies focus and risk sharing.

Outsourcing clients often benefit from cost reduction by outsourcing production or services, compared to making it themselves[101]. Transaction cost theory explains why clients select outsourcing; outsourcing saves on costs for clients in contrast to if they make it in-house. Namely, internal production costs are far higher than buying from outsourcing providers[102]. Thus, outsourcing is an effective way for clients to reduce costs and improve performance in the short run, which in turn reinforces the client's outsourcing decision.

The remarkable strategic contribution of outsourcing is that it enables clients to focus on their own core competencies by outsourcing non-core business[103]. Outsourcing non-core business allows a firm to reallocate internal resources that could be utilized to develop its own core competencies in the long run. Risk sharing, which enables outsourcing clients to shift investment and managerial risks to outsourcing providers at large, is another strategic benefit of outsourcing[104].

Even though outsourcing consequences are not new topics in the research field, some specific detailed outsourcing consequences require extra attention. Furthermore, the majority of scholars have conducted the research on outsourcing consequences from the perspective of the client rather than the provider. The cooperation between

[100] 郑素丽 et al., (2010)
[101] D'Aveni and Ravenscraft, (1994); Kotabe, (1989); Loh and Venkatraman, (1992)
[102] Williamson, (1981; 1983; 1987; 1989)
[103] Kotabe and Murray, (1990); Prahalad and Hamel, (1990); Venkatraman, (1989)
[104] Quin and Himler, (1992)

ITO providers and clients generates specific consequences for both sides.

2.3 Discussion

This chapter gives an introduction to related theories: RBV, network theory, embeddedness multinational and reviews the previous literature on outsourcing capability, IOR coordination, dynamic capability and outsourcing consequences. However, IOR coordination ways between Chinese providers and its overseas clients require more analysis. Therefore, Chapter 4 is to integrate social capital theory to analyze the coordination ways in ITO industry. In contrast to MNCs in developed countries, the firms in developing countries, especially Chinese firms, are not easy to be embedded into the global network. The traditional firm's internal resources or capabilities, such as outsourcing capability, are not able to solve this problem. Therefore, Chapter 5 is to combine dynamic capability and network theory to investigate the capabilities that are able to help Chinese ITO providers developing their own network from an evolutionary viewpoint.

The previous literature mainly describes outsourcing consequences based on the perspective of clients. This dissertation investigates some specific, detailed consequences of the cooperation between Chinese ITO providers and top MNCs. In the global network, outsourcing consequences are not limited to cost reduction, core competencies focus on the aspect of outsourcing clients. Attention should be also paid to outsourcing consequences from the aspect of ITO providers, particularly Chinese outsourcing providers.

3 Methodology

3.1 Data sample

A case study is regarded as an effective and flexible method to conduct research related ITO. Yin (1994) defines the case study as an in-depth study or investigation into a contemporary phenomenon using multiple sources of evidence in a real-life[1]. Case studies are common among different disciplines such as sociology and psychology to conduct empirical research, because it allows for exploratory research both prospectively and retrospectively[2]. Compared with quantitative research, the strength of case studies is reflected in the degree of breadth and depth of qualitative data that can be obtained form a real world situation[3]. Bhattacherjee (2012, p93) also mentions this strength of case study in that: "it can help derive richer, more contextualized, and more authentic interpretation of the phenomenon of interest". In contrast to quantitative research, case studies have better flexibility in forming research questions, because they can "be modified during the research process if the original questions are found to be less relevant or salient"[4]. Case studies improve the credibility of research through cross-check data from a variety of perspectives and methods including: questionnaires, interviews and documentary analyses[5].

For research of ITO, case studies are accepted as an important research method to conduct related research. Winkler et al. (1998, p247) suggest that personal interviews with key informants can determine, "how the offshore outsourcing relationships evolved over time and to identify causal relationships"[6]. Bhattacherjee (2012, p94) also confirms that case studies are well suited for "studying complex organizational processes that involve multiple participants and interacting sequences of events, such as organizational change and large-scale technology implementation projects"[7]. That is why the case study method has been adopted to research IOR development and knowledge transfer here. Case studies illustrate the dynamic IOR and network evolution processes in detail based on different time periods; this time analysis is very difficult achieved in quantitative research.

This paper employs case studies of NEUSOFT and INSIGMA to investigate

[1] Yin, (1994)
[2] Perry et al., (2004)
[3] Galliers, (1992)
[4] Bhattacherjee, (2012, p93)
[5] Guba, (1981)
[6] Winkler et al., (1998, p247)
[7] Bhattacherjee, (2012, p94)

related research questions. Bhattacherjee (2012, p95) suggests that case firm selection should be based on "the fit with research questions through a process called 'theoretical sampling' ", by which he means that case firms are chosen based on "theoretical, rather than statistical considerations"[8]. NEUSOFT and Toshiba[9] have already become mutually important partners. Their cooperation processes provide detailed, contextual case conditions for dyadic IOR development from early outsourcing cooperation to currently strategic partners. Moreover, their cooperation is engaged on more technology-intensive products and services increasingly. The outsourcing business has shifted from the initial coding and single testing to the current BPO and intelligent appliance software development. INSIGMA and SSC provide evidence of this as the same changes can be seen in their highly dependent relationship. Knowledge transfer between INSIGMA and SSC has improved dramatically compared to their early cooperation: software upgrading. Therefore, these two cases are appropriate for research on dyadic IOR development and inter-organizational knowledge transfer.

According to the analysis in Section 1.1.2.2, powerful Chinese outsourcing providers are classified into three groups. The first group of companies was founded by with support from the government, such as ICS&S. The second group was founded by people who once worked in top MNCs, such as Vance Info and iSoftStone. The third group includes NEUSOFT and INSIGMA, which were originally founded by Chinese organizations in China. These two companies also received strong technical support from Northeastern University and ZJU respectively. There is no any working cooperation history in these two cases before they start the cooperation with each other, so these two cases are very proper to research how Chinese providers develop IOR with top MNCs.

NEUSOFT initiated outsourcing business with one Japanese client, Alpine. Until 2008, NEUSOFT became an international outsourcing provider company with a global network: 59 clients in Japan, 45 clients in North America, 34 clients in Europe and 51 clients in Middle East etc[10]. NEUSOFT also established the strategic partners with many top MNCs, built several joint ventures with famous companies, and acquired several international companies abroad. The case of NEUSOFT provides

[8] Bhattacherjee, (2012, p95)

[9] NEUSOFT has outsourcing cooperation with many subsidiaries of Toshiba, and NEUSOFT Business Software Division provide service for these Toshiba subsidiaries. Thus, Toshiba here represent the overall cooperation condition between NEUSOFT and the subsidiaries of Toshiba.

[10] 马荟, (2008)

rich details about how this network evolves from a few clients to an extensive network, from simple business outsourcing to strategic partnership. The main outsourcing business of NEUSOFT also evolves from early coding and testing to software R&D and BPO; the case details are helpful in determining the factors that facilitate knowledge transfer between NEUSOFT and external firms. Table 3.1 gives a general introduction to these two cases in terms of the number of employees, qualifications, founders and establishment.

Table 3.1: Chinese outsourcing providers: NEUSOFT and INSIGMA

	Case 1: NEUSOFT	**Case 2: INSIGMA**
Number of employees	Over 20,000	Over 5,600
Other clients	Alpine, Sony, NEC, Toshiba, Boeing etc.	SSC, Microsoft, Cisco, IBM etc.
Qualifications	CMM5, CMMI5	CMMI3
Establishment year	1991	2001
Founder	Liu Jiren	Pan Yunhe
Main business	Industry solutions, engineering solutions, services (BPO)	Services (IT services, outsourcing service, training services) and solutions
Globally	Subsidiaries and branch offices spreading across North America, Asia, Europe and the Middle East.	Subsidiaries and branch office located in New York, Tokyo and some other cities abroad.
Channels	10 software bases, 8 regional headquarters and a comprehensive marketing and service network in over 40 cities across China	Software development and delivery centers in cities such as Beijing, Shanghai, Hangzhou.
Case client	Toshiba	SSC
Interview city	Nanjing (Regional headquarter)	Hangzhou (Headquarter)
Outsourcing Business development route	Software solutions	Software improvement and upgrading
	Household appliance software development; Intelligent software R&D; BPO (Client code management, call center etc)	Financial software R&D
Cooperation years	1996 (20 years)	2000 (15 years)

Source: NEUSOFT and INSIGMA official website. Edited by author

3.2 Data collection

A semi-structured questionnaire was adopted to collect relevant qualitative data. The semi-structured questionnaire requires that the questions are open, not strictly limited to questions prepared in advance. The interviewer has the option to extend questions depending on responses during the interview. In order to maintain consistency, open-ended interviews contain a set of carefully worded questions and the respondents answer those same questions in the same sequence. Open-ended questions help in acquiring any other relevant information with respect to this area of study[11].

The appendix lists the main questions asked in the face-to-face and web interviews. The actual questions asked in the interviews were not limited to questions listed in the table; I added supplementary questions according to the answers given in order to obtain more comprehensive information. For example, for the question "Did you make a lot of friends in the client company?" If the answer was "yes", then I asked follow-up questions such as "How many friends do you have?"; "How do you communicate with each other"; "Other than work, what do you talk to each other about?" etc. The questions deliberately avoided asking questions directly correlated between main variables in this paper, such as the correlation between "culture" and "trust". In the process of writing this paper, I also searched and confirmed the information provided in the interviews through internet news, annual reports of public companies and industrial research reports.

3.3 Research procedure

Before the face-to-face interviews, I read related theories and outsourcing literature to construct a general research framework. According to the literature review and related theories, a series of questions arose in the questionnaires. Prior to the survey, a pilot study was undertaken with ITO managers in other companies and with two scholars whose research is related with ITO, so that the questions were explicit and valid,

Before the interview, I contacted the management staff of NEUSOFT and INSIGMA to receive permission for in-person interviews. One of my friends working in INGSIMA provided support in contacting with the managers and selecting the respondents. A previous university professor who once worked with NEUSOFT

[11] Seaman, (1999); Lethbridge et al., (2005)

assisted me in contacting NEUSOFT. I sent the interview procedure and sessions schedule to the firms in order to enable the interviewees to comprehend the interview and make appropriate preparations. The interview questions were not released to the respondents to avoid potential biases. The interviewees were selected strictly from project team that were fairly familiar with the history of cooperation and had sufficient experience. Two project managers and four technical engineers were invited to participate in the face-to-face interview at NEUSOFT. All of the participants had sufficient outsourcing implementation experience and had already worked in NEUSOFT for an average of seven years. Two project managers and three technical engineers, who had worked for INSIGMA for over six years in average, participated in the interviews at INSIGMA.

The face-to-face interviews with NEUSOFT were conducted in Nanjing, where both NEUSOFT regional headquarters and outsourcing base are located. Because of the scheduled arrangement of respondents, the interview in Nanjing was finished in four days. The face-to-face interviews with INSIGMA were conducted in Hangzhou, where INSIGMA headquarters are located and the interview lasted two days. The interview contents were recorded in a notebook, and the response was written on separate pages. Since the interview was conducted in Chinese, I translated the main points of the interview contents into English when I was writing this dissertation. In consideration of time limits and unexpected questions, email interviews and instant messaging were also adopted in the research work.

After the interview, I organized all the qualitative data and compared the data with previous research framework. The framework changed several times based on the data and extant theories. Some data were removed and useful data were kept and added in the dissertation. In this stage, I paid special attention to the contents that were frequently mentioned by different respondents.

4 The Dyadic IOR Development between Provider and Client

4.1 Introduction

IOR research has become an important topic in many disciplines such as sociology, economics, and management. In recent years, IOR research within the context of outsourcing activity has been attracting much attention[1], and empirical studies have proved that there are critical effects of IOR on outsourcing success and outsourcing performance[2].

A large body of research highlights coordination ways between client and provider and emphasizes on static dyadic relationship, contract or relation. Little research exists regarding the change in condition or the development of IOR. Some scholars have shown that IOR generally develops from contract to relation. Forsgren et al. (2005, p47) describe IOR development as, "the evolution of relationships from the arm's length stage to the close and more profoundly cooperative-level"[3]. Other scholars have noted IOR development and employed different terms to represent contract and relationship stages, such as "arm's length ties" and "embedded ties"[4], "market exchange" and "network dyad"[5], "contractual obligation" and "strategic alliance"[6]. The literature still lacks studies involving mechanism of IOR development and the factors that facilitate IOR development.

In order to fill this gap, this research is designed to investigate whether social mechanisms are able to facilitate IOR development. Prior literature only involves resource exchange and knowledge transfer from provider to client rather than mutual resource exchange. Therefore, the goal of this work is to investigate special methods and the types of resources exchange and knowledge transfer in the Chinese ITO industry.

Thus, Chapter 4 has two contributions: first, it builds the dynamic model of IOR development, particularly addresses the antecedents and consequences of IOR development. Compared with previous works concentrating merely on the static provider-client relationship, this research mentions dynamic change in provider-client

[1] Klepper, (1995); Willcocks and Choi, (1995)
[2] Han et al., (2008); Lee, (2001); Lahiri and Kedia, (2009); 秦仪, (2007); 邓春平, & 毛基业, (2008); 姜骞 et al., (2011)
[3] Forsgren et al., (2005, p47)
[4] Uzzi, (1996; 1997)
[5] Larsson, (1993)
[6] Willcocks and Choi, (1995)

relationship. Second, it finds that resource exchange and knowledge transfer in the Chinese market exhibit special characteristics.

This research starts by developing definitions of ROC and COC in order to distinguish this research from previous work. Collective trust is developed as the mechanism of IOR development. This section also discusses propositions on IOR development and describes the antecedents and consequences of IOR development by combining the cases of INSIGMA and NEUSOFT.

4.2 Definitions and propositions

4.2.1 ROC definition

Contract and relationship are regarded as two general ways in inter-firm relationship coordination[7]. Uzzi (1996, p36) argues that "arm's length ties" exist in "the idea-type atomistic market" and "embedded relationships" are at "the other end of the exchange continuum"[8]. Market (contract) and relationship (partnership, alliance) are frequently employed to describe two opposite, distinct coordination ways between provider and client in the literature on outsourcing. In current research, two terms, COC and ROC are employed to describe two distinct IOR coordination ways respectively.

COC refers to coordination between provider and client through formal, explicit and normative contracts. Considering that provider and client are not familiar with each other in the initial stages of cooperation, formal contract is an essential and effective way for them to coordinate and cope with uncertainty and risk. Thus, each outsourcing case between provider and client cannot pass over COC.

ROC is defined as both client and provider making efforts to maintain their long-term mature dyadic relationship based on mutual collective trust, commitment, and mutual sharing. Coordination pattern of ROC is dominated by informal cooperation and interpersonal relationships in terms of sociological concepts, such as trust, commitment and satisfaction. In fact, any outsourcing IOR coordination arrangement is located along the spectrum of relationships between two extremes, formal contract and pure relation[9]. The spectrum of IOR from formal contract to pure relation is presented in Figure 4.1. Any inter-organizational coordination way, COC or ROC in a particular period, can be represented by a certain point in this spectrum.

[7] Bathlemy, (2003 a,b); Willcocks and Choi, (1995)
[8] Uzzi, (1996, p36)
[9] Clark et al., (1995); Willcocks and Chong, (1994)

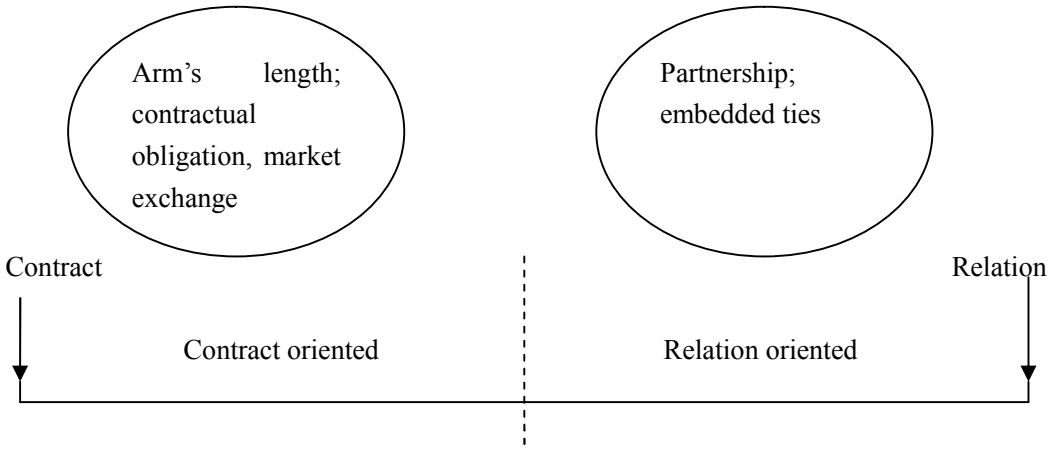

Figure 4.1: Spectrum of IOR

Source: Based on literature[10], edited by author

In this figure, contract means promises or obligations to perform particular actions in economic activities in the future. The specification of promises, obligations, and processes for dispute resolution is highly related to the complexity of the contract[11]. Inter-organizational exchanges also are embedded in social relationships. Therefore, compared with formal contract, relation may minimize transaction costs[12]. Different terms like arm's length, embedded ties are employed to describe these two coordination ways[13].

Compared with the other terms selected to describe dyadic relationships between provider and client, ROC emphasizes that a complete, effective contract provides the solid foundation for mutual relationship improvement. A frequently used term, partnership, is often used to describe IOR between ITO provider and client. Partnership is defined "as an inter-organizational relationship to achieve shared goals of the participants"[14]. However, partnership merely focuses on positive factors such as trust, commitment and risk sharing, and ignores the complementary effect of contract. The term used in this research, ROC, not only encompasses mutual collective trust, commitment, and risk sharing, but also values the influence of the contract as the foundation of IOR coordination. ROC is able to improve the flexibility and adaptability of contract coordination in the process of outsourcing implementation.

[10] Larsson, (1991); Uzzi, (1996, 1997); Willcocks and Choi, (1995)
[11] Macneil, (1978); Poppo and Zenger, (2002)
[12] Dyer and Singh (1998); Poppo and Zenger, (2002)
[13] Larsson, (1991); Uzzi, (1996, 1997); Willcocks and Choi, (1995)
[14] Lee, (2001, p325)

The respondents also explain the relationship between COC and ROC:

> At least we have to finish the contract requirement first, and then clients might have more demand in the process of program implementation.
>
> We have very formal contract with our client, but client demands such as software demands are changing all the time, it is ordinary for us to stray away from the requirement of contract.
>
> We have very good relations with clients, so I think it is allowed if the program is delayed owing to contract demand change.

In accordance with Uzzi's embedded ties, ROC also emphasizes "social ties shape actors' expectations and opportunities in ways that differ from the economic logic of market behavior". ROC also values the features of embedded ties: "trust, fine-grained information transfer, and joint problem-solving arrangements" [15]. Unlike 'embedded ties' that stress key individuals personal ties, following "extended network"[16], ROC here encompasses the wider and broader personal ties, not only trust, commitment, problem solving in high-level managers, but also collective trust in middle and low-level working staff.

Compared with the manufacturing industry, the ITO industry also requires personal ties among entrepreneurs and managers to gain business flow. ITO, as a high-technology and capital-intensive industry, however, relies heavily on trust, commitment, risk sharing of program managers and technical staff between provider and client. Individual relationships are also highlighted in previous work. Hutt et al. (2000, p51) argue that "many alliances fail to meet expectations because little attention is given to nurturing the close working relationships and interpersonal connections that unite the partnering organizations"[17]. Mitrega et al. (2012, p741) also stress the importance of middle to low-level personnel relationships and his research on networking capability "focuses not only on CEO ties but on all personal working relationships between various representatives of business partners in a relationship"[18].

[15] Uzzi, (1996, p676)
[16] Dubini and Aldrich, (1991, p306)
[17] Hutt et al., (2000, p51)
[18] Mitrega et al., (2012, p741)

The importance of close collective relationships in ROC is also mentioned in the interviews.

4.2.2 Collective trust

4.2.2.1 Collective trust: Mechanism of IOR development

Exchanges and transactions between client and provider are dynamic interaction processes rather than static state; an inter-organizational coordination pattern on this spectrum is likely to move from COC to ROC. It is widely accepted that "market" or "arm's length" is able to evolve into "embedded ties" or "embedded network". Uzzi (1996, p679) proposes that "an arm's length tie tends to be recast into an embedded tie"[19]. Larsson (1993, p179) describes two-stage process to establish "closely coupled, trust based, long-term, cooperative network dyad" from "arm's length, price based, short-term adversarial market exchange"[20]. IOR development in this paper refers to the improvement of inter-organizational coordination ways between client and provider from COC to ROC. IOR development is generally accepted to be beneficial to transactions between provider and client because of the effects on resource exchange and knowledge transfer.

In fact, IOR development is determined not only by interpersonal ties between key persons, but also by working staff at all levels, especially workers in middle and low-level. Larson (1991) argues that IOR development from trial period to partnership involves extensive and broad interpersonal ties[21]. He mentions that personnel should "have relationships with engineering and purchasing, a breadth of relationships," and IOR development to partnership "requires a great deal of communications across all levels of both organizations"[22]. Mitrega et al. (2012, p741) maintain that IOR development focuses not only on "CEO ties but on all personal working relationship between various representatives of business partners in a relationship"[23]. Hutt et al (2000, p51) suggest that close working relationships and interpersonal connections that unite partnering organizations determine whether the alliances is successful or not[24]. Kern (1999) argues that many individuals at different levels and across organizations will be involved in outsourcing activities[25]. Thus, IOR development

[19] Uzzi, (1996, p679)
[20] Larsson, (1993, p179)
[21] Larson, (1991)
[22] Larson, (1991, p177)
[23] Mitrega et al., (2012, p741)
[24] Hutt et al., (2000, p51)
[25] Kern, (1999)

should involve working staff in as many different levels as possible.

Trust is typically regarded an important feature of IOR development[26]. For example, Uzzi (1996, 1997) argues that trust as one of three key features of embedded ties[27]; Lee and Kim (1999) indicate trust as an important factor in outsourcing partnership quality[28]. Trust building at the middle and low-level is highly related to IOR development, and outsourcing relationship will suffer a big blow if trust is not established in project team members. Siakas and Siakas (2008, p63) point out that trust in both outsourcing project team members facilitates outsourcing relationship in both depth and breadth[29]. In fact, trust represents an outsourcing client's reliance on the integrity, ability and character of project team members and the confidence placed in them[30]. In the ITO industry, especially in top outsourcing companies, high-level involves CEO and other senior managers in the entire company. Project teams encompass various middle-level project managers and low-level software engineers. Compared with the manufacturing industry, ITO activities require team-level middle and low-level employee interactions.

Collective trust also contributes to the ability of team members to collaborate and develop team cohesion[31]. IOR development reflects interpersonal ties and trust across all levels, particularly middle and low-level workers. In this dissertation, collective trust refer to shared, optimistic expectations of the behavior of project teams as a whole, especially individuals at middle and low-level. Collective trust involves individuals in project teams and organizations as an aggregate, or a collective, since individuals working in a team are willing to maintain trust relations, avoid conflicts and act in ways that are acceptable to the collective[32]. In ITO industry, collective trust mainly involves trust in engineers and program managers from project teams.

Collective trust is conceptualized as "a kind of generalized trust conferred on other organizational member"[33]. The basic difference between collective trust and individual trust, or interpersonal trust is that the former implies that trust exists in an aggregate social system comprised of a large number of individuals[34]. Although

[26] Glückler, (2005)
[27] Uzzi, (1996, 1997)
[28] Lee and Kim, (1999)
[29] Siakas and Siakas, (2008, p63)
[30] Balstrup, (2004)
[31] Costigan et al., (1998); Siakas and Siakas, (2008)
[32] Ndubisi, (2011, p112)
[33] Kramer, (2010, p82)
[34] McEvily et al., (2002)

collective trust is employed to describe a wide and broad trust in intra-organizational relationship, trust in dyadic IOR is also regarded as one aggregate. Project team-level collective trust is particularly important for outsourcing success and service quality. IOR collective trust concentrates on the collective membership taken as a whole. The role of collective trust in members of both project teams is also shown in feedback from the interview.

> We trust our clients and they also trust us. They know our engineers' and project management team's abilities in providing good quality service and they know we are honest and responsible.

> We need all the members in the project team to build good trustworthy relationships with the client firm personnel. Otherwise, they will feel it difficult to proceed with the program.

> The engineers and program managers from both firms always work together and it seems like they are brothers in the same company. They trust each other deeply after long-term programs cooperation

> Trust between two project teams, especially between the engineers is the key to program success and the foundation for our long-term cooperation relationship.

> In order to build good relationship with our clients, we are doing our best to gain trust from their project team members.

> I think it is because they trust our service quality and us, they want to keep cooperating with us.

These descriptions show how collective trust is highly associated with project team members' abilities, service quality and their willingness or intention to develop and maintain the relationship. IOR development values a broader and wider range of social relationships of project members. The answers from the interviews reveal that relationship development process is also a process of collective trust building in

project team members. Collective trust is mentioned here to reinforce the case evidence that shows knowledge transfer efficiency is much higher after building project team-level interaction mechanisms and activities. Collective trust building is highly associated with whether or not two firms establish project team-level interactions mechanisms. As a result, this use of collective trust is regarded as the most important mechanism of IOR development.

4.2.2.2 Collective trust: Mechanism of cross-level trust

Multilevel and cross-level trust have been discussed heavily in prior organizational research. Mayer et al. (1995) present one integrate model of organizational trust and their research proposes that trust facilitates risk taking in the relationship[35]. Although they do not mention whether this organizational trust is fit for different levels trust, their most recent paper describes this organizational trust model also fits for multilevel and cross-level including interpersonal, inter-group, or inter-organizational levels of analysis[36]. Ganeson and Hess (1997, p440) classify trust into four levels trust: interpersonal trust, organizational trust, intra-organizational trust and inter-organizational trust. They mainly discuss interpersonal trust and inter-organizational trust in buyer-seller relationships[37]. Zaheer et al. (1998) distinguish interpersonal trust and inter-organizational trust. Interpersonal trust refers to "the extent of a boundary-spanning agent's trust in her counterpart in the partner organization". Inter-organizational trust is defined as the "extent of trust placed in the partner organization by the members of a focal organization"[38] (p142).

Interpersonal trust and inter-organizational trust are disctinctive and have different implications and consequences. For example, Zaheer et al. (1998, p141) prove that "trust in inter-organizational exchange relationship clearly matters" in firm performance[39]. Zaheer et al. (2002) show that interpersonal trust at different levels of an organization has different effects; interpersonal trust among executives has a positive effect on alliance formation and issue resolution, while interpersonal trust among middle-level managers is greatly associated with day-to-day efficiency in alliance operations[40].

[35] Mayer et al., (1995)
[36] Schoorman et al., (2007)
[37] Ganeson and Hess, (1997, p440)
[38] Zaheer et al., (1998)
[39] Zaheer et al., (1998, p141)
[40] Zaheer et al., (2002)

There is previous research on the relationship between interpersonal trust and inter-organizational trust, Zaheer et al. (1998, p153) prove that interpersonal trust and inter-organizational trust are related to each other. Inter-organizational trust appears to be tightly linked to trust between individuals in those organizations [41]. Inter-organizational trust is a time factor and historical element because this kind of trust is based on previous experience and interactions between organizations. However, there is no history of dynamic interaction between organizations in the beginning, thus this situation requires some level of initial trust so that they could start the cooperation[42]. According to McKnight et al. (1998), there are five factors to interpret how to establish initial trust [43], of which calculative-based trust and cognition-based trust are highly related with outsourcing cooperation[44]. Initial trust between organizations may rely on an individual's rapid, cognitive cues, first impressions or interpersonal ties since childhood[45], Initial trust also facilitates inter-organizational trust in an outsourcing arrangement [46]. In ITO industry, interpersonal trust in senior managers, or entrepreneur's social capital is important for venture success and innovation[47].

There is also some analysis regarding the correlation between inter-organizational trust and collective trust in project team members. As stated by Zaheer et al. (1998, p143) "inter-organizational trust describes the extent to which organizational members have a collectively-held trust orientation toward the partner firm"[48]. Larson (1992) finds that inter-organizational trust is highly related to trust of group of individuals in the organizations[49]. Krishnan et al. (2006) also propose that inter-organizational trust is collectively oriented[50]. Siakas and Siakas (2008) argue that inter-organizational trust in outsourcing relationships should emphasize more trust in project team members[51]. Therefore, collective trust, which stresses broad and wide trust in individuals, is also employed as an important mechanism of bridging interpersonal trust and inter-organizational trust between firms.

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41 Zaheer et al., (1998, p153)
42 Lee et al., (2008)
43 McKnight et al., (1998)
44 Lee et al., (2008)
45 Erikson, (1968); Meyerson et al., (1996)
46 Lee et al., (2008)
47 Sharir and Lermer, (2006; p6); Wu et al., (2008, p265)
48 Zaheer et al., (1998, p143)
49 Larson, (1992)
50 Krishnan et al., (2006)
51 Siakas and Siakas, (2008)

The interview contents show strong differences between interpersonal trust in senior managers and collective trust in both project teams. According to the interviews, interpersonal trust between senior managers guarantees a steady flow of business contracts, while collective trust in engineers and program managers is crucial for the quality of innovation. As stated by the respondents:

> In the beginning, senior managers in two firms negotiate strategic intention, plans for cooperation and do not discuss the details of program development. The long-term successful programs between two project teams are the main reason our firms keep long-term relationship. Anyway, good software quality is the first important thing, which represents their approval towards two teams' abilities, stability and solidarity.

> We see situations where both project teams did not want to give up their technical plan in the process of program implementation. At that moment, senior members will come and trust that exists between them will be helpful in solving the problems and making progress.

> Of course, the trust between members of two project team is improved after completing one successful program. However, it has also happened that program results challenged our relationship.

> Top-level managers already have interpersonal relationships since the early period of cooperation because they have a lot of opportunities to interact with each other. Trust building between our two project team members requires run-in periods in the process of program development. It is inevitable that there are some conflicts and different opinions towards quality control, program progress and technical methods.

According to theoretical analysis and the interview responses above, interpersonal trust in top-level managers is important for negotiating mutual strategic intentions and plans in the initial period, as well as solving tough problems. Collective trust is highly related to project team members' overall condition and final program

results, and requires long-term efforts from members of both teams. Inter-organizational trust and IOR development requires persistent team-level successful and high-quality products and services. Figure 4.2 shows the correlation of trust at different levels: interpersonal, collective trust and inter-organizational. Collective trust is considered to be a mechanism of cross-level trust, that facilitates the transformation from interpersonal trust to inter-organizational trust through well-established trust in individuals on project teams.

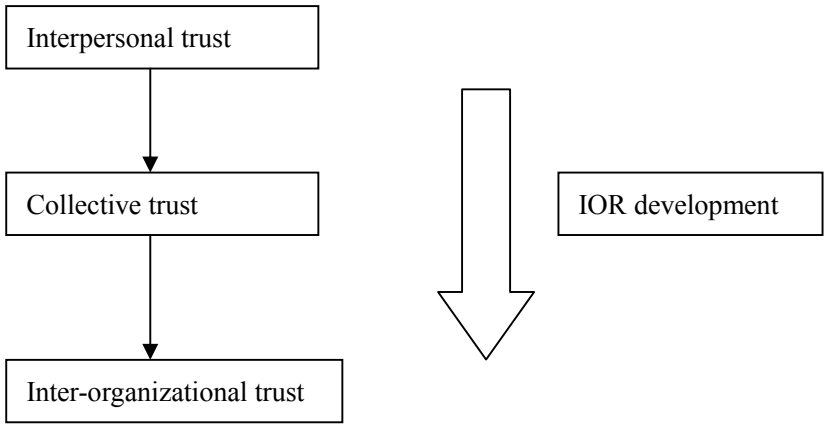

Figure 4.2: Role of collective trust

Source: Edited by author

4.2.3 Antecedents of IOR development

Although previous researchers have shown the potential of IOR development, this paper contributes to the existing literature by stressing IOR development from COC to ROC[52]. The IOR between ITO provider and client exhibits special attributes such as cross-border, cross-culture, multi-language and advanced-technology activities. The analysis on antecedents of IOR development also requires some new perspectives.

By combining the attributes of ITO and social capital, this research lists reciprocity, communication and culture compatibility as three antecedents of IOR development. Reciprocity refers to one side behaving kindly and generously in order to repay the other side's kindness and generosity. The reciprocal response is largely determined by an individual's perception towards whether an action is kind or not[53].

[52] Uzzi, (1996, 1997); Larsson, (1993)
[53] Falk and Fischbacher, (2006)

Moreover, the actor's intentions play a major role in the perception of kindness. Thus, reciprocity is regarded as one form of perception factor that mainly involves the individual's perceptional evaluation towards an action's consequences and intentions.

Communication between outsourcing provider and client is determined by the communication quality, frequency, method and style. IOR exhibits more behavioral characteristics than traditional relationships, and successful inter-organizational partnerships will "exhibit these characteristics with more intensity than less successful partnerships"[54]. Communication behavior is one important aspect of these behavioral characteristics, and these communication behaviors include the "communication quality, extent of information sharing between partner, and participation in planning and goal setting"[55]. Thus, communication is regarded as one behavioral factor in this dissertation.

There are two interpretations of culture in the field of IOR research: organizational culture and national culture. Gurung and Prater (2006) propose that the difference in national and organizational culture is negatively related to relationship quality and psychic distance[56]. Organizational cultural conflict and national cultural conflict are two main conflicts resulting from incompatible culture. Therefore, culture is considered as an organizational factor.

4.2.3.1 Reciprocity and IOR development

Reciprocity is defined as one party's generous or kind actions to reward others' generous or kind actions[57]. According to social exchange theory, economic exchange loses applicability under the imperfect market that incorporates social relations, but social exchange is inherent in handling these imperfections. Thus, economic exchange values the significance of equity while social exchange values the role of reciprocity. Unlike economic exchange based on transactions, social exchange based on trust is able to generate some unspecified returns from its contribution[58].

Kind reciprocity is assessed in two general ways: "the outcome or the consequences of an action and the underlying motivation"[59]. When people or organizations reciprocate each other with kind motivation and this action yields

[54] Mohr and Spekman, (1994, p137)
[55] Mohr and Spekman, (1994, p138)
[56] Gurung and Prater, (2006)
[57] Cox, (2004); Falk and Fischbacher, (2006)
[58] Blau, (1964); Cook, (1977); Emerson, (1976)
[59] Falk and Fischbacher, (2006, p3)

practical benefits, they will be satisfied with the process and results of exchange relations. Molm et al. (1999, p877) divide the exchange into "negotiated exchange" and "reciprocal exchange", and argue that "exchange relations develop when beneficial acts prompt reciprocal benefit"[60].

In essence, IOR development can be regarded as one intentional or unintentional purpose, and the motive of reciprocity increase the possibility that people and organizations understand mutual kindness and credibility. The purpose and motive of reciprocity are IOR "cooperation, collaboration, and coordination among organizations, rather than domination, power, and control"[61]. Oliver (1990, p244) indicates that "the contingency of reciprocity also provides a rationale for the development of certain IOR"[62]. For outsourcing IOR development, Willcocks and Choi (1995, p68) list reciprocity as one of six determinants for relationship formation change from "contractual obligation" to "network dyad"[63].

In order to comprehend the relationship between reciprocity and IOR development, the role of collective trust requires a thorough discussion. Burt and Knez (1996) argue that when trust in party members is reciprocated, members in the other party will also express their trust towards members in the other[64]. In generalized social exchanges, trust is built mostly through an indirect reciprocal process in which people receive benefits from members and repay back in a subsequent period[65]. When people or project team members repay back kindness with unexpected, non-negotiated benefits, the feeling of satisfaction results in increased collective trust in project team members. Das and Teng (1998) argue that alliance rely on generalized reciprocity to facilitate cooperation and ultimately promote alliance performance by increasing trust among member firms[66]. Uzzi (1996) proposes that trust in people or in organizations is developed when exchanges are reciprocated[67]. Therefore, trust in project team members is developed and enhanced if extra effort is voluntarily reciprocated. Larsson (1993, p177) concurs that "trust is achieved after a series of reciprocated exchanges"[68]. Inter-organizational reciprocal exchange and activities need to be accomplished through the efforts of workers at different levels, and will subsequently

[60] Molm et al., (1999, p877)
[61] Molm et al., (1999, p877)
[62] Oliver, (1990, p244)
[63] Willcocks and Choi, (1995, p68)
[64] Burt and Knez, (1996)
[65] Das and Teng, (1998, p499)
[66] Das and Teng, (1998)
[67] Uzzi, (1996, p680)
[68] Larsson, (1993, p177)

increase collective trust in project team members between two firms.

This dissertation emphasizes collective trust between two specific groups of individuals: middle and low-level project team members. Thus, it is argued here that reciprocity is positively related with IOR development by building and enhancing collective trust between the members of two project teams. These observations are summarized as: *Proposition 1: Reciprocity facilitates IOR development by building collective trust.*

4.2.3.2 Communication and IOR development

Communication as a "relational competency" is considered to be an efficient channel for building collective trust and improving relationship, which also "enhances buyer's and supplier's performance" [69] . Communication mainly involves communication quality, frequency, method and style[70].

Intensive repeated communication produces more opportunities for individuals to learn about each other, discuss concerns, solve problems and alleviate uncertainty and risk. Repeated communications of project team members are able to transform formal relationships and expectations to socially embedded[71]. Lee and Kim (1999, p36) emphasize the role of intensive communication in developing and maintaining IOR. He proposes that "intensive communication should lead to better informed parties, which in turn should make each party more confident in the relationship and more willing to keep it alive"[72].

Communication is a way to facilitate inter-organizational trust. Ring and Van de Ven (1994, p101) propose that trust between parties is "produced through an accumulation of prior interactions that were judged by the parties as being efficient and equitable" [73]. High-quality communication is the source of collective trust in inter-organizational relations. Particularly in ITO industry, high-quality communication through efficient communication methods generates collective trust in project team members and increases confidence and credibility in the relationship. In previous research, communication is found to involve the working staff at different levels. Andersen (2001, p178) proposes a general logical path from communication to trust building with customers, then to relationship development; "communication

[69] Paulraj et al., (2008, p48)
[70] Sheth, (1976); Williams et al., (1990)
[71] Ring and Van de Ven, (1994, p103)
[72] Lee and Kim, (1999, p36)
[73] Ring and Van de Ven, (1994, p101)

becomes interactive and the dialogue with the customer takes centre stage in the trust-building process which spurs commitment and adaptation of activities and resources in the relationship dyad"[74]. Siakas and Siakas (2008, p64) proposed that outsourcing project team members needs to promote communication and to take certain actions for actively seeking communication in order to build trust[75]. Mao et al. (2008, p483) also research ITO industry and show that team-level communication quality will enhance trust in project team members between client and provider[76]. Lee and Kim (1999, p37) propose that in the ITO industry, communication quality is treated as an antecedent of trust between participants of outsourcing activities and high communication quality is believed to enhance the quality of partnership[77]. Therefore, this dissertation stresses that communication in project team members is beneficial for collective trust building. This leads to the following proposition: *Proposition 2: Communication facilitates IOR development by increasing collective trust.*

4.2.3.3 Culture compatibility and IOR development

Gurung and Prater (2006, p37) propose that the greater difference in national and organizational culture might lead to lower relationship quality and psychic distance[78]. Culture compatibility is important in IOR development because outsourcing inter-firm arrangements involve many cross-country, cross-culture, cross-race activities, which might bring organizational cultural and national cultural conflicts.

Organizational culture compatibility reinforces firms' high approval with mutual firm culture and value, encouraging firms to coordinate and develop the relationship with each other. In addition to shared values in industry-specific, occupational, or professional knowledge, culture compatibility also establishes shared organizational goals of individuals at different levels. In essence, relationship coordination is actually the process of learning and integrating mutual organizational or national cultures. Ritter and Gemünden (2003, p747) assert that IOR coordination needs organizational-related exchange activities including "information on partner's

[74] Andersen, (2001, p178)
[75] Siakas and Siakas, (2008, p64)
[76] Mao et al., (2008, p483)
[77] Lee and Kim, (1999, p37)
[78] Gurung and Prater, (2006, p37)

strategy, organizational structure and culture"[79]. Lack of fundamental culture compatibility activities may lead to conflicts in shared goals and coordinated action, which are destructive to IOR development and coordination. Dyer and Singh (1998, p668) find a primary reason for companies' failure of developing acquisition and alliances, "because they do not have compatible operating systems, decision-making processes, and culture"[80].

The objective of organizational cultural compatibility is to solve the cultural conflicts caused by different firm values, strategic goals and professional backgrounds. The objective of national cultural compatibility is mainly to cope with the conflicts caused by the different national cultural backgrounds, languages and customs. Gurung and Prater (2006, p30) give one outsourcing example that demonstrates how local national culture gap impacts "the way call center representatives greet and receive the customer calls"[81]. Kshietri (2007, p50) proposes that the degree of national cultural compatibility between the origin and the destination is positively related to the amount of outsourcing flow between the two countries[82].

In addition to the analysis above, cultural conflict resulting from divergent goals, unfamiliar strategic intent, and incompatible actions is likely to increase the feeling of mistrust in project team members. Culture itself is a collective action, a collection of characteristics possessed by people who have many similar characteristics[83]. Individuals in one organizational or national culture, attach great importance to personal adaptability, as a result, individuals comply with rules and adjust themselves to similar culture regardless of their own personal preferences[84].

There is also a large body of research showing the challenge of culture diversity to program teams[85], and workers in overseas assignments[86]. According to Mao et al. (2008), culture compatibility activities should involve project team members as many as possible. They give the example of the outsourcing relationship between Japanese client and Chinese provider. Japanese culture is categorized as collectivist with many strict rules and regulations, so culture compatibility can change the attitude of Chinese project teams, allowing them to understand the importance of

[79] Ritter and Gemünden, (2003, p747)
[80] Dyer and Singh, (1998, p668)
[81] Gurung and Prater, (2006, p30)
[82] Kshietri, (2007, p50)
[83] Hofstede and McCrae, (2004)
[84] Ndubisi, (2011, p112)
[85] Gurung and Prater, (2006)
[86] Bhaskar-Shrinivas et al., (2005)

collectivism and conform to the rules[87]. Lee and Kim (1999, p28) analyze the relationship between trust building in partnership members and cultural compatibility: "Partnership members with similar cultures should be more willing to trust their partners". If the participants do not have similar organizational culture, their relationship may create divergent values that make it difficult for them to trust one another[88].

This dissertation proposes that culture compatibility activities require the participation of workers from different levels, especially from the middle and low-level. Their efforts in culture compatibility promote IOR development by means of building collective trust in middle and low-level workers. According to the analysis above, the following proposition is concluded: *Proposition 3: Culture compatibility facilitates IOR development by increasing collective trust.*

4.2.4 Consequences of IOR development

4.2.4.1 IOR development and resources exchange

Prior outsourcing literatures adopt RBV as a theoretical lens to research the effects of firms' internal resources and capability in outsourcing success and performance. Lahiri and Kedia (2009, p209) argue that a "provider's human capital, organizational capital, management capability and partnership quality are crucial assets"[89]. Han et al. (2008) find that provider's internal IT capability, organizational relationship capability and vendor capability are positively associated with outsourcing success[90]. Human resources, technological resources and relational capital are the most frequently used internal resources in the existing outsourcing literature. However, there is a lack of work focusing on analysis of outsourcing inter-organizational resource exchange rather than analysis of firm internal resources capital. Resource exchange and flow are regarded as a general motive for outsourcing; outsourcing reduces costs by utilizing cheap offshore labor resources, enabling firms to focus limited resources on core strategic business[91]. Therefore, this section discusses special resources exchanged in the Chinese outsourcing industry outside of labor and technology resources.

Prior literature has firmly established that IOR development prompts resource

[87] Mao et al., (2008)
[88] Lee and Kim, (1999, p28)
[89] Lahiri and Kedia, (2009, p209)
[90] Han et al., (2008)
[91] Quinn and Himler, (1994)

exchange between different firms. Arm's length exchange is not able to generate complementary resource exchange, because contract or market has the features of "separable technological and functional systems within each firm that are characterized by low levels of interdependence"[92]. The only way for alliance partners to achieve a complementary resources flow is to "move the relationship away from the attributes of market relationships"[93].

Institutional theory and RBV explain why relation is more effective in resource exchange than contract. ROC can generate resource exchange owing to its effects in "reducing firm heterogeneity by articulating shared norms, standards and rules"[94]. In addition, the embeddedness of economic exchange might carry "strong expectations of trust and abstention from opportunism"[95], and mitigate search costs in obtaining resource information. The analysis in this paper argues that IOR development, especially collective trust at different levels, is able to promote resources exchange. The resources that flow within an IOR might include "money, physical facilities and materials, customer or client referrals and technical staff services"[96]. However, this dissertation focuses on the kinds of special resources exchanged between client and provider in outsourcing activity. Collective trust is an important mechanism of IOR development that might generate better information and unexpected, additional resource exchange.

In ITO research, researchers focus on limited, regular resource exchange like human resources and technological resources from the perspective of Indian providers[97]. However, Chinese providers face different conditions even when dealing with the same clients. For example, the motives of outsourcing are not limited to several obvious strategic intents like focusing on core competencies or resource exchange. Some clients, as powerful MNCs, have different intentions in the Chinese and Indian markets. China and India have different market potential for these MNCs, and most outsourcing clients that choose China as outsourcing destination also intend to develop and enter into the Chinese market[98]. Two MNCs in this case study, Toshiba and SSC, also seek entry into the Chinese market when choosing outsourcing

[92] Dyer and Singh, (1998, p661)
[93] Dyer and Singh, (1998, p662)
[94] Oliver, (1997, p708)
[95] Grannovetter, (1985, p490)
[96] Ven de Van, (1976, p27)
[97] Levina and Ross, (2003)
[98] 孙瑶, (2007, p62)

providers in China. IOR development has helped these top MNCs to gain some important resources that are beneficial for their localization strategy.

With IOR development, the resources exchange between provider and client would be more remarkable in scope and depth. Resources exchanged in the context of ROC involve more valuable resources than those in COC. With IOR development, some additional unexpected resources are involved including clients resources and channels resources. This leads to the following proposition: *Proposition 4: IOR development facilitates channels resources, client resources flow positively.*

4.2.4.2 IOR development and knowledge transfer

IOR development increases the trust between individuals and firms, and facilitates knowledge transfer in the dyadic IOR. Inkpen and Tsang (2005, p154) assert, "Trust plays a key role in the willingness of network actors to share knowledge"[99]. Collective trust alleviates knowledge owners' concerns about others' opportunistic behavior[100], and enhances people's willingness to share knowledge. This research also confirms that IOR development, especially collective trust, facilitates mutual knowledge transfer between provider and client. Walter et al. (2006, p548) emphasize that "technology transfer is mostly an intangible asset transfer that requires mutual trust"[101].

ROC based on wide and broad collective trust at different levels is more positively associated with knowledge transfer activities than normal inter-firm relationship. Efficient and successful inter-organizational knowledge transfer requires good personnel relationships based on "strong ties"[102]. Dyer and Singh (1998, p655) indicate that "know-how transfers typically involve an interactive process of exchange, and the success transfers depends on whether personnel from the two firms have direct, intimate, and extensive face-to-face interactions"[103]. Nahapiet and Ghoshal (1998, p254) suggest the effects of the relational dimension of social capital in intellectual capital sharing and knowledge creation. They emphasize that "trust may both open up access to people for exchange of intellectual capital and increase anticipation of value through such exchange"[104].

[99] Inkpen and Tsang, (2005, p154)
[100] Jarillo, (1988)
[101] Walter et al., (2006, p548)
[102] Inkpen and Dinur, (1998)
[103] Dyer and Singh, (1998, p655)
[104] Nahapiet and Ghoshal, (1998, p254)

According to the interviews, there are three main types of knowledge transfer in the process of cooperation between client and provider. Information technology knowledge dominates the knowledge transfer process in outsourcing activity, which mainly refers to the IT knowledge flow from provider to client via outsourcing products and services. Program-related management knowledge refers to ITO client's process descriptions and details, including business process, organizational structure, background knowledge, operation habits. Management knowledge mainly refers to client firm's know-how in program management, human resource management and strategic management. This analysis leads to the following proposition: *Proposition 5: IOR development facilitates IT knowledge, program-related management knowledge and management knowledge transfer between client and provider.*

Figure 4.3 illustrates the theoretical model of this research, in which reciprocity, communication and culture compatibility are classified as antecedents of collective trust and IOR development. Additional resources exchange and knowledge transfer is largely influenced by IOR development; in other words, IOR development generates the consequences: additional resources exchange and knowledge transfer.

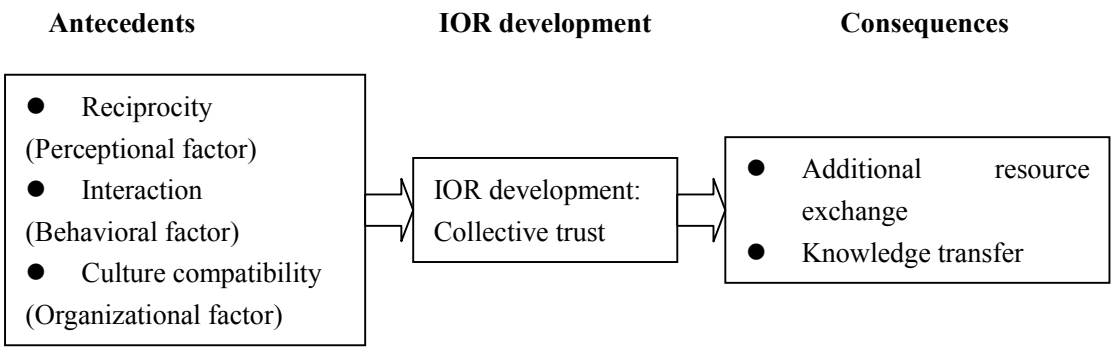

Figure 4.3: Theoretical model in Chapter 4

Source: Edited by author

4.3 Case of INSIGMA

INSIGMA was founded in 2001 by ZJU, which is one of the top three universities in China. The founder, Pan Yunhe, was also the president of ZJU at that time. The top majority shareholder of INSIGMA is still ZJU, which also provides a lot of technical support for INSIGMA. INSIGMA was rated 40th out of the Global Outsourcing 100 by IAOP in 2011. INSIGMA was also ranked among China's Top 10 Leading Outsourcing Companies by the Ministry of Commerce of the P.R.C, and 8th

among China's Top 100 Software Companies by the Ministry of Industry and Information Technology of the P.R.C in 2001[105].

SSC, founded in 1792, is a powerful U.S. financial services holding company. It is the second oldest financial institution in the U.S.A. The company's headquarters are located in Boston and it has offices in 29 countries around the world. There is around 31,000 staff working in the corporation[106].

4.3.1 IOR development between INSIGMA and SSC

4.3.1.1 First period

Around 1997, SSC realized it was necessary to access high-level technology skills at a reasonable cost. Although SSC is world-renowned for providing financial services to institutional investors, SSC realized the increasing importance of IT in the financial transactions. SSC has grown to manage 700 business applications, 5,000 IT staff, 2.7 million trades per month, and with IT cost accounting for 20%-25% of the bank's annual operating expense budget[107]. This corporation sought to collaborate with a Chinese university in Hangzhou, ZJU. Cost savings are the main factor that drives SSC to seek cooperation in China, especially because all the firms in the network crisis cut IT cost at that time. Chinese IT worker generally earn between 25 cents and 33 cents in USD compared with IT workers in the U.S.A.[108].

In 2000, SSC decided to expand outsourcing cooperation with ZJU and created a collaborative research center in this university. The plan involved transferring a small R&D unit to a midsize technology center. It means that the scale of cooperation between two sides was improved dramatically and would help save on costs for SSC during network crisis. In 2001, SSC and ZJU set up State Street/Zhejiang University Technology Center (SSZJTC) jointly in response to the collapse of the internet industry. This joint venture met the requirements of the technology skills of SSC on a large scale[109]. Initially, there were only 15 graduate students engaged in the first program. The first program involved rebuilding and upgrading one transaction software which cost over 5 million USD if they go with proposals from IBM and Microsoft. However, software developers in this center

[105] INSIGMA website: About us
[106] State Street Corporation: About us
[107] 网新恒天, (November 15, 2007)
[108] CIO, (August 15, 2003)
[109] 浙大网新, (August 28, 2003)

rebuilt the system to work faster and handle more volume in less than 10 months and for just 90 thousand USD[110]. After the first success, many outdated SSC applications were improved to a high level of scalability, extensibility and velocity at a reduced and affordable cost.

In order to retain the staff of SSZJTC, ZJU formed one new outsourcing provider called Universesoft through their subordinate enterprise INSIGMA in 2003, which works exclusively for SSC. Universesoft could hire ZJU graduates who wanted to continue with SSC projects[111]. At that time, INSIGMA was already a leading IT software company mainly providing offshore outsourcing service to clients in Southeast Asia. Although the existence of Universesoft solved some personnel problems for SSC, it also introduced the threat that a competitor would acquire Universesoft.

4.3.1.2 Second period

Since 2004, both INSIGMA and SSC started a wide range of language and cultural exchange. In 2004, INSIGMA provided Chinese language education for SSC staff working in China via ZJU. Both INSIGMA and SSC sent a large number of staff to participate in exchange programs abroad[112]. In 2006, SSC and INSIGMA decided to reinforce the strategic partnership and strengthen their cooperation. SSC obtained ownership of Universesoft and replaced the name with State Street Technology Zhejiang (SSTZ) which acted as the commercial technology center for its full-time employees[113]. SSC and INSIGMA decided to expand outsourcing market in the U.S.A jointly, especially the financial market on Wall Street. INSIGMA and SSC created a joint venture called Hengtian that focused on ITO business from third parties recommended by SSC[114].

The cooperation model between INSIGMA and SSC continues to be mature due to the effective allocation of outsourcing business. Business allocation to different institutions, SSTZ, SSZJTC and Hengtian, was decided by a project management committee hosted by SSC CTO and senior executives. Table 4.1 provides further elaboration on the differences between these cooperative institutions and distinguishes

[110] Boston. Com, (July 12, 2010)
[111] 浙大网新, (August 28, 2003)
[112] 浙大校友, (2006)
[113] 浙江日报, (April 6, 2007)
[114] 浙大网新, (April 5, 2007)

institution type, service content and service staff. In order to retain technicians and protect intellectual property, SSZJTC provides R&D service exclusively for SSC.

Table 4.1: Organizational structure for SSC

Institution Name	Type	Service content	Service staff
SSTZ	Wholly owned by SSC	Internal functions of SSC, support or maintenance	Full time employees of SSC
SSZJTC	Lab in ZJU	R&D project	Graduate students and professors in ZJU
Hengtian	Joint venture	Outsourcing service for external clients of SSC	Employees of Hengtian

Source: Edited by author

In 2007, there were over 600 members of the SSC staff working with the staff at INSIGMA in Hangzhou. Three years later, SSC increased its personnel to 5,000 people in Hangzhou[115] and established personnel communication and cultural compatibility mechanisms during this period. Compared to buying from others or making by themselves, the cooperation with INSIGMA already modernized more than 200 applications, and saved on labor and additional training costs for SSC.

In 2008, SSC decided to allocate an additional 200 million USD to invest in BPO business every year. INSIGMA and one Indian competitor, Wipro, participated into the competition for this big contract. Wipro, as one of the top outsourcing providers in India, has abundant BPO business experience through the cooperation with powerful MNCs such as GE, Home Depot etc. The results of the competition are unexpected in that INSIGMA gained access to a more profitable and comprehensive technical service agreement, in contrast to call center and maintenance center gained by Wipro. In 2009, an outsourcing project team in Hangzhou developed the internal websites that are used by SSC worldwide. Currently, the outsourcing business in China has expanded the scope of service and begun to provide business and technical support for its Asia-Pacific offices[116]. In 2014, INSIGMA and SSC jointly planed to develop highly advanced financial analysis software with an aim at analyzing investment targets and supplying financial information through intelligent

[115] 网新恒天, (November 15, 2007)
[116] Boston. Com, (July 12, 2010)

platforms[117].

Figure 4.4 illustrates the smile curve of outsourcing business and gives general information about the outsourcing business evolution from the first period to the second period. According to this figure, the main cooperation business between SSC and INSIGMA in the first period involves software improvement and upgrading, and covers demand analysis, detailed design, coding, testing and little maintenance work. In the second period, business contents become broader which involves the whole process of software development. Currently, they are doing KPO products and providing services such as intelligent financial software R&D.

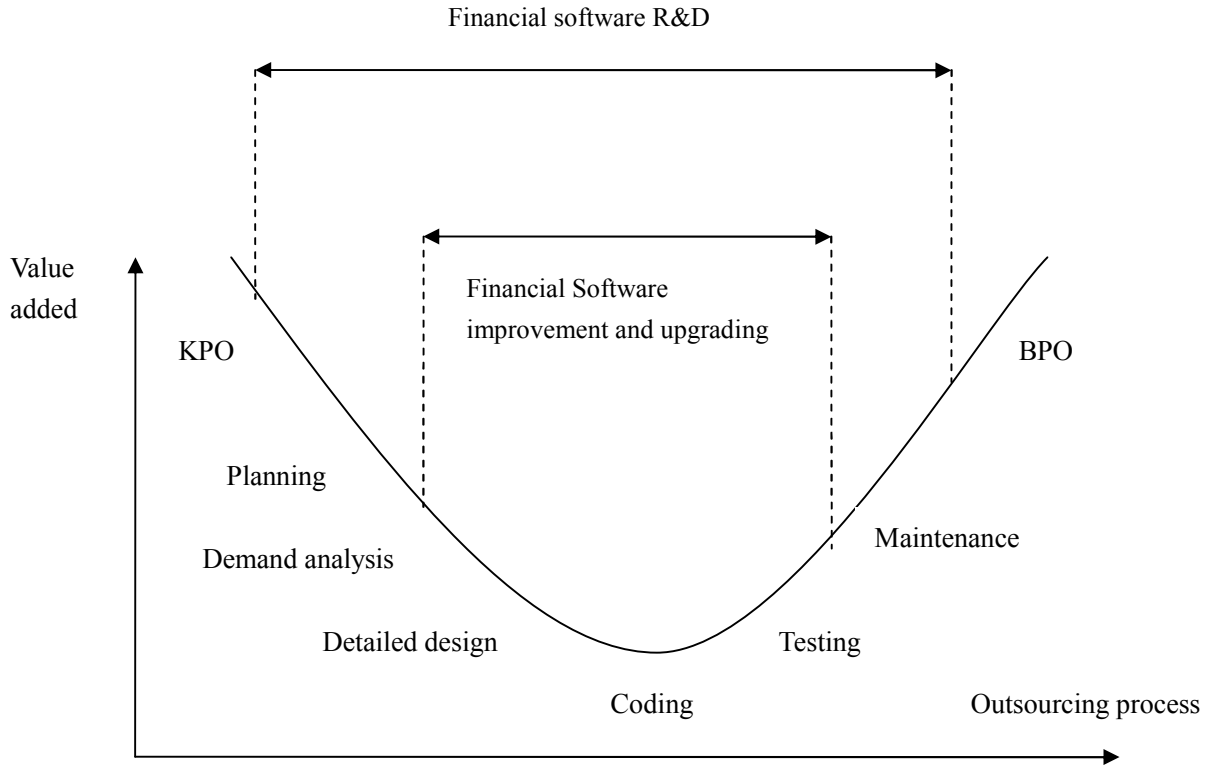

Figure 4.4 Outsourcing business value improvement processes between INSIGMA and SSC

Source: Based on the interview and literature[118], edited by author

4.3.2 Antecedents of IOR development

4.3.2.1 Reciprocity and IOR development

In the process of cooperation between INSIGMA and SSC, both companies make great efforts to reciprocate their efforts in order to improve and develop mutual

[117] 浙大网新, (May 26, 2014)
[118] 邓春平, & 徐登峰, (2010); 刘光宗, & 肖洪钧, (2011); 杨伟文, & 丰晓, (2011)

relationship. INSIGMA chiefly provides high-quality, low-cost service and staff to SSC. The respondents from INSIGMA say that “We are trying to provide our client with some additional software functions which are already beyond their requirement”. “Sometime we added additional services in the software which were not the requirement of clients, and they were surprised and satisfied with our service quality that they trust us more than before”. In return, SSC outsourced portion of IT business to INSIGMA. One respondent, who witnessed the early stages of cooperation period, says: “When we finished the first program in light of requirements of SSC, they were surprised by project quality and low costs; therefore, they decided to transfer more projects to us”. A respondent in INSIGMA also describes collective trust building between middle-level managers in client and their overseas project team.

> XX is a very different program manager. He is so nice that he invites his team and our team to have parties in his house. In return, we also cook Chinese food for them in our dorms. These kinds of activities are beneficial for project team members to know each other better, build trust and improve the team atmosphere.

Another respondent in INSIGMA also mentions how SSC’s reciprocal activities increase trust between two project teams during the period of economic crisis:

> Considering our long-term trustworthy relationship, we did not raise the program cost in the period of economic crisis. Unexpectedly, SSC cut some service flow to other companies but increased business flow to our teams in that period; we are more and more confident with our trustworthy relationship.

4.3.2.2 Communication and IOR development

Client and provider are equally important in communication during outsourcing business implementation, because invalid and inefficient communication could easily give rise to mistrust and misunderstanding. Language is considered to be an important communication method to improve communication quality. The respondents from INSIGMA mention the importance of language in developing IOR:

“Our English language is not as good as those providers in India, so it is pretty hard for us to start an informal relationship and build trust with the staff working for our clients”.

One respondent in INSIGMA mentions the negative consequences of miscommunication in building collective trust. “A client got angry and distrusted our attitude just because they could not get quick enough reply from the technical staff in our project team even though we have a lot of technical talents”. Based on the special features of software outsourcing industry, building collective trust requires high-level frequent communication between both project teams.

> Outsourcing industry is different from other industries in that client demands are changing so quickly. They might change their plans in one day. Therefore, quick, efficient and frequent communication is a fundamental requirement for them to trust our team’s ability to understand them and our attitude to improve the program quality.

In order to solve problems and respond to the changing requirements of clients promptly, INSIGMA uses instant messaging to facilitate real time interactions between engineers and users, avoiding the accumulation of problems, distrust and misunderstandings. The same project teams in both companies maintain communication with each other through website-based group discussion in order to avoid any potential uncertainties. This method improves the efficiency of communication dramatically and builds collective trust in the software development project teams.

Both INSIGMA and SSC sponsor their employees to have exchange visits. The interview contents show the effects of informal communication on IOR development. Both companies will use informal communication frequently in both the U.S.A. and China, such as parties and team trips, which are very helpful for team-level collective trust building.

4.3.2.3 Culture compatibility and IOR development

ITO clients are always from different industries, including automotive, electronics, consulting and manufacturing, so clients and providers have different professional industrial knowledge, competitive positions, organizational structures

and goals. Organizational culture compatibility activities are necessary for providers to learn industry-specific and professional knowledge held by the clients, build collective trust in project team members and develop a mutual relationship. The respondents from INSIGMA say,

> We have special training classes about client firms' organizational structure, managerial practice and corporation strategy for our program members, and these classes are really very helpful for our engineers to understand the basic demand of client firms. After these classes, we found that our working staff had more professional knowledge to talk with the staff in client firm.

> The client's organizational structure and short term goals are changing as time goes by, the best tacit for us to understand their organizational culture is to appear in front of them and see what is going on over there. Our special culture team working abroad aims at solving this problem through building trust with working staff in the client's project team.

According to the interviews, in order to ameliorate national cultural problems, INSIGMA and SSC have built effective cultural exchange mechanism through a cultural communication program in which they share Chinese and the American values and culture. In China, INSIGMA specifically emphasizes cultural training with its own personnel and provides western culture courses every week. Moreover, INSIGMA also sends Chinese language professors to its clients in the U.S.A and establishes a "culture center" in Boston that gives lectures on Chinese culture and business etiquettes. SSC's links to the universities in the Boston area play a significant role in cultural exchange. One respondent provides feedback on these cultural programs and stated: "we learned so many western business customs such as dinner custom, party custom and communication customs. After these, we feel very confident about staying with the project team members in the client's company and we gain trust easily." In addition, the respondents from INSIGMA mention their special method to eliminate national cultural conflict. They recruit local staff for branches in the U.S.A, who play an important role in minimizing cultural conflict and establish collective trust between two project teams.

4.3.3 Consequences of IOR development

4.3.3.1 IOR development and resource exchange

IOR development also encourages clients to recommend their partners to the provider. As stated by one respondent from INSIGMA, "SSC is very willing to introduce its cooperation partners as new clients to INSIGMA, because the past cooperation experience enables them to trust INSIGMA's service quality". INSIGMA and SSC created a joint venture called Hengtian that focused on ITO business from third parties recommended by SSC. SSC introduced its financial partners on Wall Street to INSIGMA since SSC already had a well-established global service network through more than a century's efforts[119].

In the case of INSIGMA, relationship development facilitates SSC's entry into the Chinese market and utilizes the market channels established by INSIGMA. One respondent indicates that, "good relations with us are a marketing asset for SSC and they gained access to Chinese commercial institutions and government bodies through cooperation with us". As is mentioned, people in China use the term "guanxi" to emphasize how the relationship with the government is vital for business success[120]. MNCs are willing to seek good relations with large providers in order to expand their existing government relational resources. In 2010, SSC received a license to provide foreign currency trading to Chinese consumers. Usually it is difficult for foreign financial services firms to manage investments and service assets in Chinese markets[121]. Through support from ZJU and INSIGMA, several senior managers in SSC earned a positive reputation and built strong links with the Chinese governments. For example, Jerry Cristoforo, a senior manager of SSC, has a strong academic link with ZJU and is also a senior advisor to two Chinese boards: the China Foreign Exchange Trading Center, which is a sub-group of the People's Bank of China, and the Shanghai Finance College International Research Centre. Both of these positions are difficult to obtain, even for very successful Chinese researchers[122].

4.3.3.2 IOR development and knowledge transfer

Since providers have the access to IT human resources and IT skills, providers should take the responsibility of developing IT products and transfer IT

[119] 浙大网新, (April 5, 2007)
[120] Chen and Chen, (2004)
[121] Boston. Com, (July 12, 2010)
[122] Investment magazine, (February 11, 2010)

knowledge to their clients by training their clients how to use applications and software products. This IT knowledge transfer is the main outsourcing motive for clients. The respondents describe the role of collective trust in IT knowledge transfer:

> We have to explain how to use our outsourcing products and services to our clients' team; meantime, we also need to deploy technical developers to maintain the software program. Thus good relations and team-level trust are important for us to do so efficiently.

> If the engineers have good relations with client-related personnel, they are more willing to talk and share more about the details of software service.

With the improvement of IOR development and collective trust, the degree of IT knowledge transfer is also greater. In the initial stage of the relationship, both NEUSOFT and INSIGMA were only allowed to conduct elementary work like coding and application updating that is located in the low end of the value chain. IT knowledge transfer from providers has a dramatically positive effect on clients' productivity. SSC's Lattice system is a prime example; the newly re-engineered application could handle 600% more transactions, was five times faster and had greater extensibility than the old edition through improvements by INSIGMA[123]. Along with relationship improvement, both firms tend to use a more flexible model to actualize information technology transfer. Different ITO programs will accept different relationship models, outsourcing or joint venture, in light of program features.

Providers rely on program-related management knowledge to develop appropriate, customized software products for clients. Generally speaking, the more program-related management knowledge providers gain, the more beneficial it becomes for both client and provider to develop specific IT products and services. According to the interviews, both clients and providers adopt visiting exchanges and shared learning to obtain this type of knowledge. With each program, SSC spends a significant amount of money inviting project team members from INSIGMA to visit offices in the U.S.A, so that engineers and managers in INSIGMA can better

[123] Hengtian, (2011)

understand their management process and program requirements. One respondent mentions one case to illustrate the importance of collective trust in program related knowledge transfer.

> Usually we have to know their software operation habits and software users' personal information. We met a situation where some personnel in the client firm were reluctant to share theirs business processes with us, because they thought it would involve business secrets and customer information. Trust in the engineers of client firm is so important in this situation to eliminate this type of misunderstanding.

4.4 Case of NEUSOFT

NEUSOFT was incorporated in 1991 and its foundation dated back to the cooperation with one Japanese client focusing on auto electronics, Alpine. NEUSOFT is currently the largest software company in China and is the first listed on the Chinese Stock Exchange. In technology, NEUSOFT is the first Chinese company to access both CMM5 (Capability Maturity Model 5) and CMMI5 (Capability Maturity Model Integration 5) certifications, as well as the first to receive ISO9001:2000 certification[124]. NEUSOFT has also acquired clients in Europe and the U.S.A. in the past decade and several top MNCs like Intel, Boeing, IBM, etc., have become its clients.

Toshiba was founded in 1875, and currently has a global network of more than 740 companies, with 204 thousand employees worldwide[125]. Toshiba is a leader and innovator around the world with diversified business: digital consumer products, electronic devices and components, power systems, including nuclear energy, etc. Toshiba started its business in China in 1972 by providing broadcasting equipments. There are currently 62 joint ventures and sole proprietorships in China that Toshiba invested in[126]. Toshiba Solutions (TSOL) was founded in 2003 through the combination of several members in Toshiba Group, and it mainly handles information technology in Toshiba Group.

[124] NEUSOFT official website: About NEUSOFT
[125] Toshiba official website: About Toshiba
[126] Toshiba China official website: About us in China

4.4.1 IOR development between NEUSOFT and Toshiba

4.4.1.1 First period

Outsourcing cooperation between NEUSOFT and Toshiba started in 1996 when NEUSOFT and Toshiba built the joint venture "NETS System Integration"[127]. The new joint venture started with only twenty working staff initially[128]. According to the interviews, the personal connections between managers in NEUSOFT and Toshiba initiated the cooperation between these two companies. However, NEUSOFT was not famous and powerful at that time so Toshiba was not willing to give large scale and core business to NEUSOFT. Thus, the initial cooperation between them started with small and simple outsourcing projects.

During this period, NEUOSFT provided software application and solution development services to Toshiba, which mainly involved household appliances software coding and testing. However, high-technology software processes such as software demand analysis and detailed design were finished by Toshiba engineers in Japan. Toshiba did not give big scale business to NEUSOFT and they paid much attention to the improvement of NEUSOFT's software development management capability[129]. In 2001, NEUSOFT received the largest Japanese outsourcing contract from Toshiba at that time which requires more developers' work per month, and this outsourcing contract covered more complicated processes of software development[130].

4.4.1.2 Second period

Since 2001, the cooperation relationship between NEUSOFT and Toshiba, especially in outsourcing business, has changed gradually. In 2002, Toshiba and NEUSOFT decided to start outsourcing business in digital television, DVD and other embedded software development. From then on, NEUSOFT and Toshiba started a large scale of cooperation, requiring more working staff to be involved in the outsourcing service[131]. In 2004, they changed the name of joint venture to "NEUSOFT Business Software Division". In this period, NEUSOFT also developed an onsite working pattern in order to meet Toshiba's requirement. Onsite working pattern required that software developers work in Japan for at least three months,

[127] NEUSOFT official website: About NEUSOFT
[128] 王策, (2012)
[129] 毛亚意, (2003)
[130] 毛亚意, (2003)
[131] 人民网, (2003)

sometimes for one full year.

In 2003, TSOL was established through a combination of two other Toshiba subsidiaries, Toshiba e-Solution and Toshiba IT Solution[132]. From then on, NEUSOFT extended the cooperation relationship with Toshiba mainly through TSOL, and provided service to other members in Toshiba Group[133]. In 2004, TSOL aided NEUSOFT in building "NEUSOFT Japanese Language IT Talent Training center" in order to cultivate more global competitive IT human resources[134]. In this training school, IT talents got an education in Japanese language and culture. In the process of working in Japan, NEUSOFT workers were able to improve their technical abilities and understand the client's requirement thoroughly.

In 2006, the NEUSOFT official website showed that TSOL gives 10% of its outsourcing business to China, 99% of which flows to NEUSOFT[135]. In 2011, TSOL and NEUSOFT build the joint venture: "Toshiba NEUSOFT Information Systems" in Shenyang[136]. This joint venture mainly provides IT solution for Chinese market clients through the technological advantage of TSOL[137]. In June of 2015, TSOL and NEUSOFT terminated this Joint venture. However, NEUSOFT still provides outsourcing services to the members of Toshiba Group, including TSOL. Figure 4.5 shows the general process of business value improvement between NEUSOFT and Toshiba from period one to period two. In the first period, the outsourcing business contents strictly involved coding and single testing. They began to do more R&D work and BPO business in the second period.

The second period also involves many cultural compatibility activities between Toshiba and NEUSOFT when the organizational structure matured in order to guarantee the client's benefits. The internal organizational structure is designed to improve the efficiency of cooperation and protect the client's intellectual property. Since 2001, NEUSOFT established one exclusive division: NEUSOFT Business Software Division, which only provide outsourcing services for members in Toshiba Group. NEUSOFT Business Software Division provides outsourcing service for Toshiba including TSOL, Toshiba Information Systems (TIS) and Toshiba Digital

[132] Toshiba official website: Firm Introduction
[133] 王策, (2012)
[134] 东软, (March 1, 2004)
[135] 东软, (August 9, 2006)
[136] 东软, (July 8, 2011)
[137] Toshiba NEUFOFT Information systems official website, Business introduction

Media Network (TDMN), etc[138].

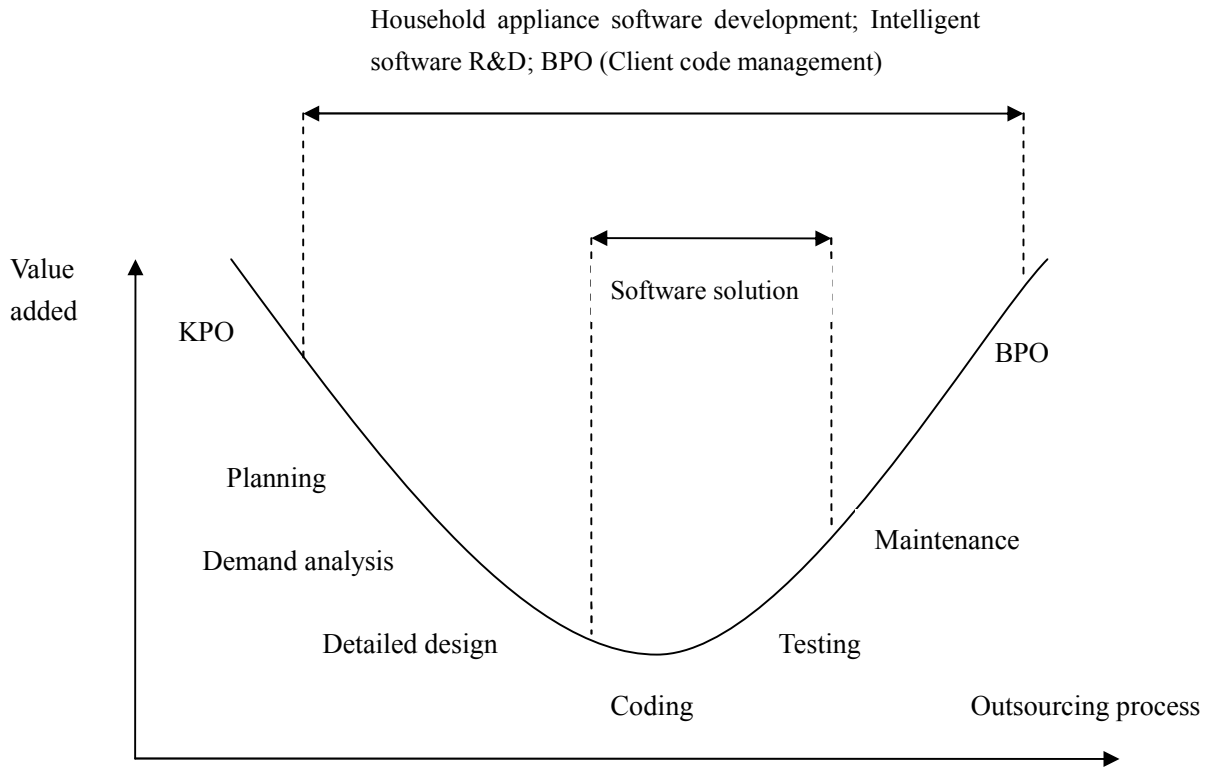

Figure 4.5: Outsourcing business value improvement between NEUSOFT and Toshiba
Source: Based on the interview and literature[139], edited by author.

4.4.2 Antecedents of IOR development

4.4.2.1 Reciprocity and IOR development

Two of the respondents from NEUSOFT mention a virtuous circle process in which reciprocity plays an important role in project team-level collective trust building: "our team provides good-quality, worthy service to our client, and they reciprocate with more high-value, high-profit programs. This is a virtuous circle for keeping our relationship longer and better and making our company and team more powerful". One NEUSOFT respondent also provides details to prove the role of informal reciprocity activities in collective trust building between project team members:

There are some informal reciprocal activities between the teams in

[138] 王策, (2012)
[139] 邓春平, & 徐登峰, (2010); 田毕飞, (2008); 候玉, (2010)

both companies in order to improve their relationship. For example, when we were working abroad, we were always invited to have dinner with foreign clients. We also received a lot of presents and cards when it was the day of a festival. Of course we also hold many formal and informal arrangements to treat Japanese partners when they come to China.

One respondent mentions the effects of reciprocity in collective trust building, especially in long-term partnership development. Collective trust building requires the efforts of the best technical, project management team from both sides.

Trust building between two teams is one form of reciprocity between both sides rather than unilateral benefit gaining. It is beyond our imagination that Japanese clients are familiar with our financial condition, advantages, weaknesses etc. We have to provide the best project team with the best developers, best program managers and best sales manager to serve them, and save the program costs as much as possible. That is why they would like to keep cooperation, share some technology and management know-how with our project team members.

Salespersons are the most important staff in the team to obey the reciprocal rule. Our salespersons and budgeters are required to negotiate program feasibility totally from the perspective of Japanese client. Sometimes it is necessary to reject impossible programs owing to the technological and scale limitations in our team. For example, some programs are too huge to accomplish in a specific time frame because we have a limited number of engineers. This is one important reason why they trust our service quality and team's integrity.

4.4.2.2 Communication and IOR development

Language is a basis for improving communication efficiency when Chinese

providers are communicating with Japanese clients[140]. The respondents from NEUSOFT mention the importance of language in developing IOR and collective trust in both project teams:

> We have very strict personnel recruitment systems so that we can recruit competent management and technical staff who speak both Japanese and English. We found that those technical staff is able to have a better understanding of the client demand and they can make friends with team members in the client company very easily.

> Japanese language is one basic requirement of our project team since we need to communicate more with team members in client companies. Even if developers have good technical skills, they also need to speak Japanese to understand clients demand, improve technical bugs and win trust from them.

NEUSOFT recruits and trains personnel by virtue of the language advantage provided by the city, Dalian, in which there is a significant number of Japanese-speakers[141]. On the other hand, Toshiba also offers high-quality, professional Japanese language courses for their partner NEUSOFT. According to the interviews, in order to improve their mutual relationship, NEUSOFT set up a unique organization structure to meet the special communication requirements of Toshiba. Each NEUSOFT commercial department appoints several key staff members who could be deployed by Toshiba directly, so that Toshiba is able to control and manage the overall processes of outsourcing program operation through efficient communication.

Face-to-face communication is frequently mentioned in the interviews. One of the respondents replies that face-to-face communication is better than written communication for reducing conflicts and building collective trust with client engineers. Each year Toshiba arranges for staff to participate in regular management activities at NEUSOFT, helping them to cope with challenging technical problems. On-site working model is frequently mentioned in the interview. Every year, hundreds of NEUSOFT engineers are sent to Japan and worked together with the staff at

[140] 代冰, (2012)
[141] 杨文艳, (2006)

Toshiba. A separate department is established in Japan to provide service to Toshiba through face-to-face communication. The respondents mentioned that working on-site in Japan guarantees efficient and quick communication and help improving mutual relationship dramatically.

4.4.2.3 Culture compatibility and IOR development

Culture compatibility is vital for employees to build collective trust and improve IOR. The interview respondents list several main organizational and national cultural factors that affect collective trust building in software engineers and program-related staff. First, the difference in human resource management is one challenge to relationship development. Compared with the life tenure system in Japanese firms, the contract system in Chinese firms always leads to low loyalty and a high employee turnover rate. Japanese project teams typically place great importance on the stability of a project team and thus collective trust in middle and low-level developers might disappear as the Chinese employees change jobs. Second, in the initial cooperation period, the project team at NEUSOFT exerts more flexibility to market and technical opportunities rather than obeying formal processes and rules that are observed by Japanese project teams. This organizational cultural conflict also generates many problems for building collective trust in project management team and technical team. Third, the responses to the interview indicate that Japanese clients including Toshiba are stricter about software development process than clients in other counties, especially software documentation development.

Understanding the difference in organizational culture is beneficial for improving relationship and building team-level collective trust. Therefore, employees training should include culture compatibility and engineers should be required to learn about partner's organizational structure and strategic goals thoroughly through training.

In order to improve collective trust in project team members, NEUSOFT made efforts to alleviate national cultural conflicts. Japanese language training is conducted every day at NEUSOFT[142]. One respondent mentions that they recruit staff with study abroad and work experience in Japan. This group of personnel has better Japanese language and knows more Japanese etiquettes and communication customs, and thus, it is easier for them to understand a client's requirement and build trust with

[142] 中外管理, (November 14, 2014)

employees in client firm. Personnel who can speak Japanese fluently are promoted very quickly in NEUSOFT. NEUSOFT provides special cultural training for members of onsite working staff who will work with Toshiba employees in Japan. The training contents contain business etiquette, living habits and even involve how to separate garbage for disposal in Japan. This group of employee plays an important role in gaining client information, building collective trust with client's project team members and improving mutual relationship.

4.4.3 Consequences of IOR development

4.4.3.1 IOR development and resource exchange

Unexpectedly, the positive relationship development between NEUSOFT and Toshiba attracts more Japanese clients to seek cooperation with NEUSOFT. As stated by one manager in NEUSOFT, "Japanese clients have one special feature: they tend to gather together and obtain the service from shared provider because they believe past cooperation record and project team stability is one critical criterion for them to assess and select potential ITO service provider". One respondent also mentioned the effects of project team-level collective trust in attracting other partners in Toshiba Group.

> More subsidiaries of Toshiba try to seek cooperation with us after our success, because they attach greater importance to the stability of our outsourcing development project team compared to our growing technical advantage. They mentioned that stability in project team structure and technical skills are the main reason why they encourage more partners and more programs to work with our team and our division.

In this case, Toshiba also has the goals of localization in China, and thus IOR development with NEUSOFT enables Toshiba to better understand the Chinese market and exploit the nationwide service centers built by NEUSOFT. The distribution channels built by NEUSOFT could almost cover the entire country of China. Presently, NEUSOFT has 8 regional headquarters, 10 software R&D bases and marketing and service network in 60 cities in China[143]. The responses from the interview also suggest that NEUSOFT and Toshiba are selling Toshiba software

[143] NEUSOFT official website, Introduction

products and service all around China.

From 2011 to 2015, NEUSOFT and TSOL established a joint venture in order to expand Chinese market by combing TSOL's technological advantage in IT solution and NEUSOFT's market advantage in nationwide sales channels[144]. Three NEUSOFT information universities also provide human resource exchange to factories and subsidiaries of Toshiba in China. Toshiba has factories and subsidiaries in Dalian, Dongguan and Chengdu where three NEUSOFT information colleges are located nearby. Every year, these three universities train and provide human resource for Toshiba's factories and subsidiaries around China[145].

4.4.3.2 IOR development and knowledge transfer

With IOR development, the cooperation between NEUSOFT and Toshiba involves more technology-intensive service and products. The respondents suggest that outsourcing service is more value-added, complicated and profitable than that in the initial period. In 2011, NEUSOFT and Toshiba started BPO business in Dalian, which was the first overseas BPO business program created by Toshiba[146]. The BPO service provides technical and business support for Toshiba's clients in both Japan and China via call center and helpdesk[147]. The respondents describe the effects of collective trust in knowledge transfer. R&D success is largely dependent on collective trust between two software development project teams, clients trust developers' technical skills and managers' program management skills in NEUSOFT.

Knowledge transfer between Toshiba and NEUSOFT follows a different path: joint training school. At this school, specialized courses called "E-learning" include more than 200 Toshiba training courses for project team members who are engaged in Toshiba-related programs. Employees in both NEUSOFT and Toshiba share the same training courses; therefore, knowledge transfer is structured in an efficient classroom-like setting. Collective trust in software developers effectively facilitates program-related management knowledge transfer from client to provider.

> Whether this software program will be successful is largely determined by how much we know about the client demand, especially client

[144] 东软, (July 8, 2011)
[145] 广东东软学院, (September 3, 2012)
[146] 人人网, (September 2, 2010)
[147] Toshiba official website.

> firm's information systems, management processes and industry-related professional knowledge; obviously, the best way for us to get this information and knowledge is through trust in personnel in the client firm.

One respondent admits that collective trust and relationship improvement is an important source of inter-organizational learning.

> With the relationship improvement, our project management team is allowed to learn advanced IT program management from their team. Program management knowledge such as cost control, delivery management, progress management etc adopts the experience and other features of our Japanese client.

Their good relationship with Toshiba allows NEUSOFT to dispatch internal human resource management experts to visit Toshiba in Japan for studying advanced human resource management systems. After visiting Toshiba, NUEUSOFT holds a series of discussion conferences to transfer and share human resource management knowledge. Then, a lot of reforms and new human resource management regulations take place at NEUSOFT.

Table 4.2: Three types of knowledge transfer in ITO process			
	Cases	**Transferring methods**	**Contents**
IT knowledge	● Toshiba: Same training and field work in Japan ● SSC: Field work in the U.S.A	User manual Field work	● IT products and service
Program-related management knowledge	● Toshiba: NEUSOFT and TSOL share same training course ● SSC: INSIGMA sent staff to the US	Shared training Visiting	● Organizational structure ● Business process ● Software operation habit
Management knowledge	● Toshiba: NEUSOFT sent staff to Japan to study management knowledge	Shared training Visiting	● Human resource management ● Program management etc.
Source: Edited by author			

4.5 Discussion and conclusions

This chapter analyzes dyadic IOR between ITO provider and client. In this research, IOR coordination between provider and client is classified into two primary patterns, ROC and COC. ROC is based on mutual collective trust, commitment and risk sharing while COC relies on a formal, legal contract. ROC is different from other relation-related terms like partnership, alliance or embedded ties, by stressing collective trust between individuals on both project teams. As IOR between provider and client is not a static situation but dynamic, the development process of IOR from COC to ROC is the main focus of this chapter.

This dissertation introduces the cases of two Chinese outsourcing providers to illustrate outsourcing IOR development. The case conditions involve two clients, Toshiba from Japan and SSC from the U.S.A. Although these two countries have distinct languages and cultures, the present study examines their commonalities in managing IOR with Chinese providers. The two cases are highly appropriate to research outsourcing IOR development. Moreover, the information provided by the interviewees is considered highly reliable due to their abundant working experience in related programs.

The results show that three social mechanisms including reciprocity, communication and culture compatibility are positively related to IOR development. The two case studies provide details with respect to these three mechanisms. Reciprocity, communication and culture compatibility positively facilitate IOR development by building collective trust in project team members of different levels. The findings show that communication is positively related to IOR development. Firms improve communication quality through multiple communication methods, intensive communication and face-to-face communication. The cases suggest that culture compatibility not only involves system or activities aimed at sharing value, management practice and organizational goals, but also encompasses efforts in eliminating national cultural conflicts resulting from different geographical distance, languages and business customs.

The effects of IOR development from COC to ROC on resource exchange and knowledge transfer are also discussed here. Although resource exchange and knowledge transfer are not new topic in IOR research, bi-directional resource exchange and knowledge transfer require more attention. The existing evidence shows that special resource and knowledge are required in the process of outsourcing

programs implementation. Unlike Indian outsourcing providers, Chinese outsourcing providers attract many MNC subsidiaries that also want to expand into the local Chinese market. Thus, the case condition used in this study illustrates that MNC subsidiaries make full use of channels established by Chinese firms. Simultaneously, knowledge transfer becomes more efficient due to improved relationships between client and provider. The results show that Chinese firms not only transfer program-related knowledge and IT knowledge but also learn how to manage a company from MNCs.

This investigation provides an outline of the antecedents of IOR development with the empirical research that only considers IOR between provider and client. Therefore, it is also necessary to conduct research with respect to multiple relationships, particular how the focal provider manages and organizes clients and other firms embedded in this business ecosystem. The following chapter focuses on this issue.

5 The Evolution of Outsourcing Network and Networking Capability

5.1 Introduction

Past research on outsourcing emphasizes a firm's resources and capability, and indicates that both a client and provider's capability has a positive influence on the outsourcing performance and outsourcing success[1]. Client's capability attracts attention from researchers because more scholars pay attention to how client companies succeed in terms of outsourcing strategy and how they find reliable providers. Provider's capability is also discussed substantially and often stresses primary resources and capabilities such as human resources and technological capability[2]. Forsgren et al. (2005) research multinational business network evolution in developed countries where there is limited market demand[3]. Firms in China, especially outsourcing providers, may meet different situations and their network evolution exhibits some special features. Compared with the MNCs in developed counties, the firms in developing counties do not have absolute technology or product advantage when they are evolving their global network.

Networking capability as a high-order capability has been shown to be highly related to "innovation success"[4], "international entrepreneurship"[5], "university spin-off performance"[6] and "new venture performance"[7]. However, a gap exists in previous literature with respect to the basic effects of networking capability in forming a network organization. Only Mitrega et al. (2012, p741) present "three relationship stages of networking capability: relationship initiation capability, relationship development capability and relationship termination capability"[8], but they do not provide more details about these three stages. There is limited research concerning the stages of achieving network evolution. In order to fill this gap, this chapter investigates the effects of networking capability in network evolution. This chapter aims to answer the question of how networking capability affects network evolution and knowledge transfer. In other words, this chapter examines the influence

[1] Lahiri and Kedia, (2009); Lee, (2001); Palvia et al., (2010)
[2] Levina and Ross, (2003)
[3] Forsgren et al., (2005)
[4] Ritter and Gemünden, (2003)
[5] Styles et al., (2006)
[6] Walter et al., (2006)
[7] Mu and Benedetto, (2012)
[8] Mitrega et al., (2012, p741)

of processes used by a firm to manage and utilize relationships on network evolution and knowledge transfer.

This chapter contributes to the research in two ways: first, it extends the research on how to evolve various concrete network nodes and coordination in the network rather than simple, ambiguous relationship management; Second, this chapter contributes to the literature on networking capability by incorporating absorptive capacity, which aims to make full use of network mechanism in knowledge transfer.

This chapter is organized as follows: First, the definition and composition of outsourcing network are discussed. Based on previous research, the section also gives definitions of networking capability and related propositions on networking capability. Next, the case of NEUSOFT is introduced to illustrate outsourcing network evolution and knowledge transfer conditions over three periods[9]. The correlation between networking capability and network evolution, knowledge transfer is discussed thoroughly through the case of NEUSOFT.

5.2 Definitions and propositions

5.2.1 Outsourcing network

This section is to develop the definitions of outsourcing network and networking capability. First, the definition and composition are discussed. Then the external environment faced by Chinese outsourcing industry is described to further develop the definition of networking capability. Based on related theories, this chapter also concludes the main propositions of networking capability.

5.2.1.1 Definition of outsourcing network

Following Zhang and Wang (2010), this dissertation defines outsourcing network as a set of relationships with external firms[10]. According to the notion of Anderson et al. (1994), business network provides an important context for the research on dyadic relationships between business actors including suppliers and customers[11]. Outsourcing network focuses on the coordination ways between focal provider and external firms. Business network mainly considers the effects of a firm's resources, activities, and actor-relations on focal firm's network identity, which refers

[9] There are also failure cases in ITO industry, future research will pay much attention to the comparison between the success and the failure.
[10] Zhang and Wang, (2010)
[11] Anderson et al., (1994)

to "how firms see themselves in the network and how they are seen by other network actors"[12]. Gulati et al. (2000, p203) discuss a wide range issues related to strategic network including, "positioning within an industry; inimitable firm resources and capabilities; contracting and coordination costs, and dynamic network constraints and benefits"[13]. Outsourcing network pays much attention to the effects of networking capability in network evolution and knowledge transfer.

Table 5.1: Comparison of three networks

	Business network[14]	Strategic network[15]	Outsourcing network[16]
Firms	Business actors (Supplier, customer and other firms)	Organizational actors (Suppliers, customers, competitors, or others)	Relationships of firms that are doing outsourcing activities
Key point	The effects of Activities, resources, and actor-relations on network identity	Firm resources and capabilities; contracting and coordination costs; dynamic evolution and benefits	The effects of networking capability on network evolution and knowledge transfer.

Source: Edited by author

5.2.1.2 Composition of outsourcing network

In order to illustrate the properties of outsourcing network at the structural level, this research identifies two compositions, nodes and coordination ways, to explain the implications of outsourcing network clearly. Nodes represent the various external firms in the network while coordination ways involves COC and ROC. Relationship types, such as joint venture and M&A might affect coordination ways.

Nodes

Nodes involve the firms embedded in the outsourcing network, which consist of the focal provider and different types of clients like MNCs, their local subsidiaries. The clients embedded in networks determine the type and volume of resources accessible to the focal provider. For example, a provider holding several powerful

[12] Anderson et al., (1994)
[13] Gulati et al., (2000, p203)
[14] Anderson et al., (1994)
[15] Gulati et al, (2000)
[16] Zhang and Wang, (2010)

nodes, like Microsoft or IBM, is able to determine the competitiveness and profitability of this overall outsourcing network.

Coordination ways

Relation and contract are regarded as two important coordination ways in IOR[17]. Uzzi (1996; 1997) argues that the coordination ways in a network consist of two main approaches: "embedded ties" and "arm's length"[18]. Similar to Uzzi, multinational business networks theory also think firms connect with each other via "embedded relations" and "arm's length"[19]. In outsourcing network, COC and ROC are adopted as two coordination ways.

COC involves coordination way between provider and client that is mainly dominated through a formal, explicit and normative contract. In fact, any outsourcing IOR arrangement is located along the spectrum of relationships between two extremes, formal contract and pure relation. Contract is regarded as the initial step of IOR. Chapter 4 also discusses how COC lays the foundation for economic exchange, particularly for ROC.

The definition and properties of ROC have been discussed in Chapter 4. As illustrated in the previous chapter, ROC is defined as both client and provider making efforts to maintain a long-term, bilateral relationship based on mutual collective trust, commitment and risk sharing. Coordination way of ROC is dominated by multi-level trust and relations. ROC in outsourcing network emphasizes collective trust of individuals in different levels, encompassing project managers and particularly the technical engineers.

5.2.2 Dynamic environment

Dynamic environment, as a basic precondition in the introduction of dynamic capability, also distinguishes RBV from dynamic capability. Although scholars mention the features of dynamic environment using words like "increasingly demanding"[20], "changing business environment" and "high-velocity market"[21], the literature lacks comprehensive analysis regarding the detailed condition and characteristics of dynamic capability. Since this dissertation selects ITO case firms as

[17] Bathelemy, (2003a,b)
[18] Uzzi, (1996; 1997)
[19] Forsgren et al., (2005)
[20] Teece et al., (1997, p510)
[21] Eisenhardt and Martin, (2000, p1105)

research objects, the case study provides the opportunity to analyze the details and characteristics of the industrial and firm-specific dynamic capability.

5.2.2.1 Characteristics of environment

Dynamic, high-velocity environment is one critical and indispensable part of dynamic capability that distinguishes dynamic capability from ordinary substitute capability. Two dramatic characteristics of the external environment faced by ITO industry are described in this section.

Rapidly changing

The dynamic environment including political, economic and social conditions changes rapidly for outsourcing providers. International and domestic economies never stop changing and sometimes change radically without any notice. ITO industry belongs to a high technology industry that constantly demands new staff and new technology. ITO providers must be sensitive to changes in modern technology and economic development. Technical innovation and economic upheaval have already made a profound influence on the development of ITO industry. For example, the millennium bug in 2000 promoted the development of offshore ITO industry in India positively[22]. In contrary, the Lehman bankruptcy caused an economic downturn that impacted the ITO industry negatively. In the period of global economic crisis in 2009, many MNCs reduced IT costs in order to save money and consequently led ITO providers to suffer a decline in performance[23].

Passive

The other characteristic of this external environment is its passivity. The term "passive" denotes the susceptibility of a company in this external environment. First, outsourcing providers are susceptible to the business of outsourcing clients; survival and death of small and medium-sized providers are determined by several limited outsourcing clients[24]. NEUSOFT, as the top provider in China, has dozens of top outsourcing clients whose preference and IT budget largely determine the annual performance of NEUSOFT. Second, economic circumstances like the economic

[22] 刘绍坚, (2007)
[23] 魏文生 et al., (2009)
[24] 中国商务新闻, (November 2, 2011)

downturn and currency changes also promote outsourcing providers passivity. Because ITO business involves cross border activity, the international economic climate affects this activity. From 2013 until now, the weak Japanese yen has been decreasing the profits of NEUSOFT substantially, because many Japanese clients like Toshiba and SONY choose NEUSOFT as their offshore outsourcing provider[25].

5.2.2.2 External environment of NEUSOFT

As shown in Figure 5.1, the dynamic environment faced by NEUSOFT is analyzed from three perspectives comprised of clients, government and rivals that form the entire external environment of NEUSOFT.

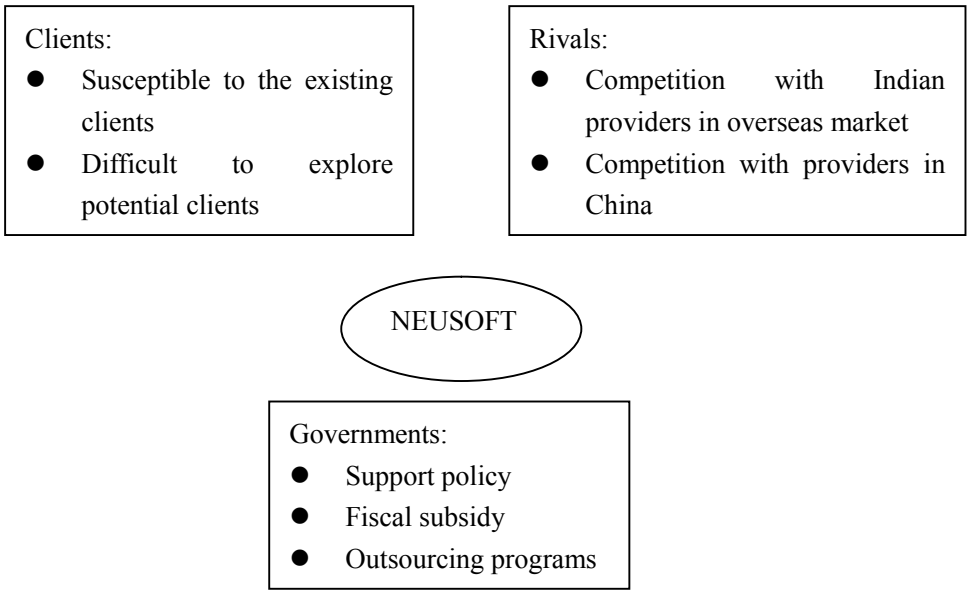

Figure 5.1: Dynamic environment faced by NEUSOFT

Source: Edited by author

Clients

In the early stages, NEUSOFT took advantage of geographical and language superiority to initiate ITO business with Japanese clients owing to the cultural and linguistic commonalities between Japan and China[26]. Currently, NEUSOFT has developed different types of relationships with existing clients located all over the whole world. Top clients like Toshiba and Sony from Japan, Philips and Harman from

[25] 中国外包网, (October 29, 2013)
[26] 黄庐进& 康文娟, (2008)

Europe are embedded in outsourcing network and have built long-term, stable ROC with each other. Nonetheless, precipitate crisis like the network crisis has forced these large clients to reduce IT costs, bringing more or less uncertainty and risk for cooperation with NEUSOFT[27]. Simultaneously, many top potential clients such as MNCs already possess their own long-term outsourcing service providers, so it is difficult for NEUSOFT to penetrate their outsourcing networks.

Government

Government is one critical actor in the development of outsourcing industry, especially in China. Every firm relies on the industrial policies and the relationship with the government to survive and develop in the long run[28]. The policy environment is very favorable for the development of NEUSOFT since outsourcing industry has been favored and supported by various industrial policies formulated at different levels of governments in China. The government has readily been supporting the high-technology, knowledge-intensive and non-polluting ITO industry[29]. Besides industrial policy and fiscal subsidies, NEUSOFT also won many ITO programs from every level of governments in China. The Chinese government, especially the local government in Liaoning province, supports for NEUSOFT's expansion in the domestic market and overseas market.

Rivals

Rivals of NEUSOFT are divided into two groups: foreign rivals in India and Chinese rivals. Indian outsourcing providers like Infosys, TCS and EDS have absolute advantages in scale, technical level, etc, in comparison to Chinese providers[30]. NEUSOFT, as the top Chinese outsourcing provider, accounts for just one-tenth of total revenue and total number of employees in Infosys. Therefore, in such a fierce competitive external environment, NEUSOFT feels pressure when competing with Indian rivals. At the same time, some outsourcing provider giants are eager to occupy the Chinese market. TCS and Infosys from India have established branches in China in order to serve the global market[31]. H&P built service centers in three cities, and

[27] 魏文生 et al., (2009)
[28] 宝贡献, & 余红珍, (2005)
[29] COI, (2011)
[30] 周俊, & 陆愚, (2012)
[31] 新华网, (March 3, 2005)

IBM set up global service centers in four cities in China and capitalized on China's cheap, high-quality labor[32]. Consequently, the competitive environment, full of top outsourcing providers, has affected the development of NEUSOFT.

5.2.3 Definition of networking capability

Capability theory emphasizes the positive affect of a firm's capability on firm performance; outsourcing literature shows the positive role of provider's capability. A network brings new contents and requirements for firm's capability. As stated by Mu and Benedetto (2010), "a firm's capability to manage its networks can be critical to resource deployment, opportunity identification and exploitation, and, ultimately, overall performance"[33]. Therefore, the focal firm needs to build and develop this capability to manage and utilize relationships in a network in order to obtain a sustainable competitive advantage. This dissertation adopts networking capability to illustrate how a focal firm manages and utilizes various relationships through nodes and coordination.

Prior literature has not reached a consensus regarding the essence of networking capability. Some scholars consider networking capability as a type of ordinary capability. Ritter and Gemünden (2003) assert that network competence relates to "tasks" that are performed in order to manage a company's technological network, and "qualifications" that are needed in order to perform these tasks[34]. Mu and Benedetto (2012) propose that networking capability is the only "process by which firms search for and find, manage and leverage their social ties, contacts and connections over time to develop and grow via their social networks"[35]. Other scholars suggest that networking capability has connection with dynamic capability, such as Mitrega et al.'s (2012) proposition in which networking capability "relates to complex dynamic capability"[36]. This paper argues that networking capability is one type of dynamic capability by which a focal firm is able to manage and utilize relationships in this network to cope with the constant changing environment and achieve sustained competitive advantage.

Networking capability is therefore defined as a firm's ability to identify, initiate, develop, coordinate and utilize all kinds of nodes and coordination ways to

[32] 新浪网, (May 20, 2006)
[33] Mu and Benedetto, (2012, p104)
[34] Ritter and Gemünden, (2003)
[35] Mu and Benedetto, (2012)
[36] Mitrega et al., (2012)

cope with the ever-changing external environment. As stated by Teece et al. (1997, p509), "the competitive advantage of firms is seen as resting on distinctive processes" and "firm's processes and positions collectively encompass its competences and capabilities"[37]. Consequently networking capability is reflected in what the firm has done and will do, or the firm's organizational processes.

Table 5.2 lists the definitions of networking capability used in prior literature. Although both networking capability and network capability are adopted as terms, networking capability is more frequently used since this term better depicts the network dynamically. The definition used in this study considers the dynamic environment as a basic prerequisite for developing networking capability. The existing literature focuses on network relationship management, such as "handling the relationships"[38], "shaping the relationships"[39], and "managing the relationships"[40]. This definition here emphasizes the management and utilization of relationships. Management of nodes and relationships provides evidence that can be used to investigate how to evolve network.

As one type of dynamic capability, networking capability also emphasizes the key role of managers in taking responsibility for a firm's actions[41], especially whether entrepreneurial activities are successful or not is largely determined by decision makers. Social relations between key individuals in outsourcing provider and client are an important source of networking capability. At the same time, the staff working at different levels also plays an important role in shaping and implementing networking capability, particularly in the ITO industry.

[37] Teece et al., (1997, p509, p518)
[38] Ritter and Gemünden, (2003, p120)
[39] Mitrega et al., (2012)
[40] Walter et al., (2006, p546)
[41] Teece, (2007); Zahra et al., (2006)

Table 5.2: Terms and definitions on networking capability in previous research

Authors	Terms	Definitions
Håkansson, (1987)	Networking ability	A firm's ability to improve its overall position in a network and its ability to handle individual relationships[42].
Mu and Benedetto, (2012)	Networking capability	The process by which firms search for and find, manage and leverage their social ties, contacts and connections over time to develop and grow via their social networks[43].
Styles et al., (2006)	Networking capability	The capacity of the firm to develop a purposeful set of routines within its networks, resulting in the generation of new resource configurations and the firm's capacity to integrate, reconfigure, gain and release resource combinations[44].
Cho and Lee, (2003)	Networking capability	The specific skills needed to interact with the environment, plug into and tap the external technological resources and infrastructure, and transmit one's own technology to others[45].
Ritter and Gemünden, (2003)	Network competence	The degrees of network management task execution and the degree of network management qualification possessed by the people handling a company's relationships[46].
Walter et al., (2006)	Network capabilities	Abilities to initiate, maintain, and utilize relationships with various external partners[47].
Mitrega et al., (2012)	Networking capability	Set of activities and organizational routines which are implemented at the organizational level of the focal company to initiate, develop, and terminate business relationships for the benefit of the company[48].

Source: Edited by author

[42] Hakansson, (1987)
[43] Mu and Benedetto, (2012)
[44] Styles et al., (2006)
[45] Cho and Lee, (2003)
[46] Ritter and Gemünden, (2003)
[47] Walter et al., (2006)
[48] Mitrega et al., (2012)

5.2.4 Propositions on networking capability

Previous research on the measures of networking capability can be classified into two branches. The first branch emphasizes networking capability as determined by management of relationships. Similar to Reinartz et al. (2004) and based on the commonly used tripartite perspective, Mitrega et al. (2012) posit three components of networking capability: relationship initiation capability, relationship development capability, and relationship termination capability[49]. This dissertation discusses relationship initiation and development rather than relationship termination, because firms in emerging countries, especially in China, should primarily be concerned with network formation and evolution. Although relationship "coordination, adaptability and experience" have been researched in other works[50], these studies simply measure networking capability from the perspective of a simple unspecified "relationship". In fact, different types of external firms and different kinds of coordination ways exist in a network. Therefore, this paper measures the networking capability according to different types of nodes and coordination ways.

Another branch of research investigates this issue from the perspective of a firm's resources and behaviors. For example, Styles et al. (2006) argue that networking capability is reflected in firm's proactiveness, innovativeness and risk taking[51]. Walter et al. (2006) assert that networking capability is a composite which encompasses coordination activities, relational skills, partner knowledge, and internal communication. Similar to the first branch, this method of measuring networking capability also ignores the full use of network[52].

This dissertation measures networking capability based on the management of relationship and the utilization of the firms and relationships in network. Therefore, measures of networking capability adopt network collaboration capability and network absorptive capabilities, and their interaction reflects the management and utilizations of nodes and coordination in network. Network collaboration capability refers to the processes of identifying, coordinating and developing the nodes and coordination ways in the network. Network absorptive capability involves the processes and experience of a focal firm utilizing networks for the sake of understanding, assimilating, and applying knowledge from external nodes.

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[49] Mitrega et al., (2012); Reinartz et al., (2004)
[50] Mu and Benedetto, (2012)
[51] Styles et al., (2006)
[52] Walter et al., (2006)

5.2.4.1: Network collaboration capability and network evolution

Generally speaking, networking capability is deemed to be a "firm-level" "relationship-specific" capability that is engaged in "relationship management" in a network[53]. There are a variety of different terms involving relationship-specific capability and most of these terms suggest that relationship-specific capability deals with inter-organizational level relationships between a focal firm and external firms. Lorenzoni and Lipparini (1999 p317) use relational capability and define it as "the capability to interact with other companies". They also put forward that "relational capability accelerates the lead firm's knowledge access and transfer with relevant effects on company growth and innovativeness"[54]. Sivadas and Dwyer (2000 p33) employ the term cooperative competency to refer to three interrelated facets: trust, communication, and coordination. They emphasize that cooperative competency is "a property of the relationship among unites", and works for the units of both inter-organizational and intra-organizational[55].

Johnsen and Ford (2006, p1004) recommend the new term: "interaction capability" and propose that interaction capability not only encompasses inter-organizational technological interaction, managerial systems interaction and cultural interaction, but also includes human interaction[56]. Blomqvist and Levy (2006, p26) provide a wider, cross-level concept: collaboration capability, that involves "relational interaction on different levels: individual, project team, intra-organizational, organizational and inter-organizational, p33". Collaboration capability is defined as "the actor's capability to build and manage network relationships based on mutual trust, communication and commitment, p40"[57].

Therefore, this dissertation employs the term: network collaboration capability as one important measure of networking capability. Network evolution not only involves relationship initiation, development, coordination, but also emphasizes team-level and interpersonal relationship improvement. Therefore, network collaboration capability is also considered to be a cross-level concept and aims at building collective trust in individuals at different level.

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[53] Ritter and Gemunden, (2003, p745); Mitrega et al., (2012, p741)
[54] Lorenzoni and Lipparini, (1999 p317)
[55] Sivadas and Dwyer, (2000 p33)
[56] Johnsen and Ford, (2006, p1004)
[57] Blomqvist and Levy, (2006)

Node identification

Node is an important component of network and node identification is regarded as the first process of network evolution. Actually, not all external firms and inter-firm relationships are useful in the network. Dyer and Singh (1998, p666) introduce "complementary resource endowments" to assess potential alliance partners. They state "it is worthwhile to think about the proportion of the potential partner's strategic resources that is synergy sensitive with the firm's resources"[58]. Mitrega et al. (2012, p741) assert that a focal provider may select new business partners through standards including: financial assets, technical capabilities and intangible assets, and a willingness to share expertise or local market knowledge[59]. In the process of selecting partners, firms in emerging market emphasized financial assets, technical capabilities, intangible assets and willingness to share expertise more than those in developed market"[60]. Node identification refers to the processes of identifying prospective and potential nodes, and by which providers could select and distinguish nodes scientifically and efficiently. Specifically, the processes of identifying the future nodes are the initial step for providers to evolve a network organization because it will determine the quality of the nodes. Therefore, it leads to the following. *Proposition 6a: Node identification is positively related with network evolution.*

Node connection

Node connection is conceptualized as the processes of initiating the relationships with expected and potential nodes and building COC with them. Firms cannot depend on existing ties and existing nodes, and need to exploit some new nodes. They would risk losing access to potentially important network resources and novel information held by others and isolating themselves from marketing pressure[61]. Node connection is similar to the concept bridging ties proposed in the work of Zaheer and McEvily's (1999, p1136), in which they define "bridging ties as those that link a focal firm to contacts in economic, professional, and social circles"[62]. However, their work only focuses on the effects of three elements of bridging ties: non-redundancy, infrequency of interaction and geographic dispersion rather than how to connect focal provider with external nodes.

[58] Dyer and Singh, (1998)
[59] Mitrega et al., (2012, p741)
[60] Hitt et al., (2000, p499)
[61] Mu and Benedetto, (2012, p104)
[62] Zaheer and McEvily, (1999, p1136)

Node connection also has common features with relationship initiation capability, an important component of networking capability. Although relationship initiation capability is frequently mentioned in previous literature, these studies do not provide detailed processes or methods to connect valuable nodes to relationship initiation capability. Based on previous work, this dissertation classifies node connection processes into relational embeddedness, structural embeddedness, market exploitation, and M&A. Embeddedness is conceptualized as "social relations shape economic action in ways that some mainstream economic schemes overlook or misspecify"[63]. Granovetter (1992) considers that embeddedness could be divided into "structural embeddedness" and "relational embeddedness"[64]. Naphapiet and Goshal (1998) provide more detailed and substantive definitions for these two terms. Structural embededness means "the impersonal configuration of linkages between people or units,". Relational embeddedness is defined as "personal relationships people have developed with each other through a history of interactions"[65].

Relational embeddedness, social capital may be rooted in "a life time of education, employment, and previous entrepreneurial" experience[66], and initiate the inter-organizational relationship. One respondent in SSC mentioned that the cooperation between INSIGMA and SSC began with interpersonal relationships between two key individuals: a professor from ZJU and the former CTO in SSC. They met each other at an academic conference, and the relational embeddedness between them helped to form a great company. The prior research also shows that founder's ties determine the initial position of a company in network[67]. Uzzi (1996) argues that one way to form an embedded network is "previous personal relations"[68]. Due to that business relationships are often mixed with relational embeddedness, relational embeddedness is considered to be an imperative method to attract new partners, initiate and manage relationships with them. According to previous literature, "interpersonal relationships are the lifeblood of every business relationship"[69] and "business relationships are very often interpersonal exchange situations"[70].

Market exploitation or "marketing" is another method for focal providers to

[63] Uzzi, (1996, p674)
[64] Granovetter, (1992)
[65] Naphapiet and Goshal, (1998, p244)
[66] Hallen, (2008, p687)
[67] Hallen, (2008)
[68] Uzzi, (1996)
[69] Mitrega et al., (2012, p741)
[70] Walter et al., (2006, p547)

connect to valuable nodes in a network. In Uzzi's (1996) opinion, marketing is not a good choice because "a lack of prior social relations leaves the new tie without initial resources and behavioral expectation"[71]. Market exploitation, on the other hand, connects nodes in a network and initiates the relationship from COC. Trade shows, monitoring industry-related journals, and exploiting hints from existing partners are very useful for focal firms to identify potential partners and initiate relationships[72]. Market exploitation in ITO industry is an efficient way to exploit new clients and reconstruct outsourcing network structure.

Clients that have successful experience are very willing to recommend their partners to the focal provider. As a result, this recommendation "set expectations for trust between newly introduced actors and equip the new economic exchange with resources from preexisting embedded ties"[73]. Mu and Benedetto (2012, p152) also indicate that "firms can take advantage of their existing social relationships to exploit and explore new relationships with other potential ties"[74].

Merger and acquisitions (M&A) do not influence the formation of a network because M&A is not one type of IOR. This paper considers M&A as an indirect and efficient way for focal firm to connect new nodes and form a network organization[75]. Although the relationship with merger targets eventually becomes an intra-firm relationship, M&A activities can create new nodes, change existing coordination ways, and reconstruct the overall network structure. Thus, it is supposed in: *Proposition 6b: Node connection is positively related with network evolution through relational embeddedness, structural embeddedness,, market exploitation and M&A.*

Coordination upgrade

Coordination upgrade stresses the significance of developing relationships, but differs from one of the components of the previous networking capability: relationship development capability. Relationship development capability involves many aspects: inter-company development, interpersonal development coordination and conflict management[76]. Coordination upgrade refers, in particular, to the processes that facilitate IOR development from COC to ROC. Although coordination

[71] Uzzi, (1996)
[72] Ritter and Gemünden, (2003, p747)
[73] Uzzi, (1996, p679)
[74] Mu and Benedetto, (2012, p152)
[75] Öberg et al., (2007); Havila and Salmi, (2000)
[76] Mitrega et al., (2012, p741); Mu and Benedetto, (2012, p106); Ritter and Gemünden, (2003, p747)

upgrade agrees with the importance of developing, coordinating relationships, and "boundary spanning"[77], it will provide a detailed and specific origin as well as destination of relationship development in this dissertation. If the term node connection could be regarded as embedding the new nodes into the network, coordination upgrade could be considered as the processes adopted in order to lock existing nodes. The effect of coordination upgrade in network evolution is that it transfers IOR from COC to ROC by encouraging collective trust, commitment and risk sharing between individuals.

The previous chapter describes some processes and methods that facilitate IOR development. In Chapter 4, three factors that influence collective trust building are also significant for coordination upgrade. Reciprocity is a perceptional factor because reciprocal response is largely dependent on an individual's perception[78]. Communication as a behavioral factor mainly involves the communication quality, frequency, method and style[79]. Two organizations also have the option to employ culture compatibility activities to enhance collective trust in project team members. For the management of network, the organizational structure is highly related to protection of firm's technology and other intellectual property[80]. This leads to the following: *Proposition 6c: Coordination upgrade is positively related with network evolution through IOR development from COC to ROC.*

5.2.4.2: Network absorptive capability and knowledge transfer

Prior literature on networking capability attaches great importance to the management of networks, but the utilization of networks and inter-organizational relationships have not attracted much attention. Network structure plays an important role in knowledge transfer, although different aspects of network structure have been adopted in previous research. For example, Reagans and McEvily (2003) prove that two network structure contents: network cohesion and range "facilitated knowledge transfer" and "strong interpersonal attachments also facilitate the formation of trust, which may further ease the transfer of knowledge"[81]. Tsai (2001, p102) proposes that network position, as an important aspect of network structure, provides opportunities

[77] Walter et al., (2006, p547)
[78] Falk and Fischbacher, (2006)
[79] Mohr and Spekman, (1994)
[80] Nakamura, (2015)
[81] Reagans and McEvily, (2003)

for shared learning, knowledge transfer, and information exchange[82]. Besides network structure, ties, as one composition of network, are also proved to be conducive to knowledge transfer. Frisch and Kauffeld-Monz (2010) indicate that "strong ties are more beneficial for the exchange of knowledge and information than weak ties"[83]. In order to examine the effects of network in knowledge transfer, this dissertation adopts network absorptive capability as the main measure of networking capability.

Absorptive capacity is firstly defined as "the ability of a firm to recognize the value of new, external information, assimilate it and apply it to commercial ends"[84]. Consequently, absorptive capacity has drawn much attention in empirical studies because of its key role in transferring external knowledge. For example, Ko et al. (2005, p75) suggest that "absorptive capacity and arduous relationship are important for minimizing barriers to effectively transfer knowledge"[85]. A high level of absorptive capacity allows a firm to harness new knowledge from other organizational units, help their innovative activities and improve business performance[86]. Following the work of Zahra and George's (2002), this dissertation also forwards the idea that absorptive capability is one type of dynamic capability[87]. Network absorptive capability plays an important role in utilizing the compositions of network, particularly the relationships in the network.

Generally speaking, absorptive capacity is regarded as one way dyadic knowledge learning process which is adopted by many researchers. Lane and Lubatkin's (1998, p462) research follows this idea of absorptive capacity and suggest a "student-teacher" pairing "relative absorptive capacity"[88]. Dyer and Singh (1998, p666) differ from them and propose that absorptive capacity is "an iterative process of exchange"[89]. Van den Bosch et al, (1999 p565) follow the idea of absorptive capacity as an interaction process, and extend the interaction partners to include "firms and their customers"[90]. By integrating dynamic capability, Zahra and George (2002) adopt a process perspective on absorptive capacity, and divide the traditional absorptive capacity into "potential absorptive capacity" and "realized absorptive capacity"[91]. In

[82] Tsai, (2001, p102)
[83] Frisch and Kauffeld-Monz, (2010)
[84] Cohen and Levinthal, (1990, p128)
[85] Ko et al., (2005, p75)
[86] Tsai, (2001)
[87] Zahra and George, (2002)
[88] Lane and Lubatkin, (1998, p462)
[89] Dyer and Singh, (1998, p666)
[90] Van den Bosch et al., (1999, p565)
[91] Zahra and George, (2002)

sum, these extensions of the definition of absorptive capacity have contributed with new insights, but lack a work to integrate these different studies into a new reconceptualization[92].

Tsai (2001) discusses the relationship between network position and absorptive capacity, his research proves that the interaction between centrality and absorptive capacity facilitates knowledge transfer in networks[93]. Eriksson and Chetty (2003) first mention the term "network absorptive capability". This term, network absorptive capacity, concerns about market knowledge transfer and network absorptive capacity measures involve the collaboration with different organizations[94]. Network absorptive capability is defined as the processes and experience of focal firms in achieving knowledge recognization, assimilation and application in a network. The definition of network absorptive capability used in this dissertation is formed by combining previous research and network theory. First, in accordance with Zahra and George's (2002) idea, network absorptive capability is regarded as firm's dynamic capability[95], and therefore consists of a firm's processes and experience. Second, network absorptive capability is the learning process between a focal provider and external firms. Third, following the idea of Dyer and Singh (1998), and Van den Bosch et al. (1999), network absorptive capability is an interactive learning process between focal firm and external nodes in the network[96]. The following sections explain the special components and effects of network absorptive capability in knowledge transfer.

Components of network absorptive capability

Absorptive capability is conceptualized as "an ability to recognize the value of new information, assimilate it, and apply it to commercial ends"[97]. The application of absorptive capability frequently highlights "knowledge" as the core component. The components of absorptive capability are composed of knowledge recognition or understanding, knowledge assimilation and knowledge application[98]. Zahara and George (2002) propose four distinct but complementary knowledge-related dimensions: acquisition, assimilation, transformation and exploitation. They also

[92] Lane et al., (2006)
[93] Tsai, (2001)
[94] Eriksson and Chetty, (2003)
[95] Zahra and George, (2002)
[96] Dyer and Singh, (1998); Van den Bosch et al., (1999)
[97] Cohen and Levinthal, (1990, p128)
[98] Lane et al., (2001, p1140)

contribute to the literature by dividing absorptive capacity into "potential absorptive capacity" and "realized absorptive capacity[99]. In fact, knowledge-related analysis has several dramatic limitations in the context of networking. First, previous research concentrates on firm-level dyadic abilities and ignores inter-organizational multiple relationships in a network. Second, traditional measures of absorptive capability only partly capture dyadic relationship rather than multiple relationships. Network absorptive capabilities should be understood in a basic context inclusive of relationships and external firms. Knowledge-related activities such as knowledge recognition, assimilation and application are considered to be the objective of utilizing relationships in network.

Another aspect on the components of absorptive capability highlights the role of employees, personnel and human resources. For example, Minbaeva et al. (2003, p586) suggest that absorptive capability is "comprised of both employees' ability and motivation" which could be generated from the application of specific human resource management practice[100]. Considering absorptive capability as a type of dynamic capability, managers should also be responsible for constructing absorptive capability.

Although these two approaches seem different, the only difference lies in the relationship between an organization and individuals in the organization. Cohen and Levinthal (1990, p131) explain this condition by arguing that "an organization's absorptive capacity will depend on the absorptive capacities of its individual members"[101]. The components in this dissertation generally focus on the role of employees and expand on this aspect. This paper will measure absorptive capability in the context of network by considering the role of employees and inter-organizational relationships. The interaction of individual practice and link application not only reflects firm-level and individual-level abilities, but also illustrates the utilization of inter-organizational relationships. Individuals practice refers to individuals' ability and interactions in the process of recognizing, assimilating and applying external knowledge in a network. Link application refers to the experience of focal firm applying and utilizing various relationships flexibly and accurately.

[99] Zahara and George, (2002)
[100] Minbaeva et al, (2003 p586)
[101] Cohen and Levinthal, (1990, p131)

Individual practice

Although individuals are not a composition of the network, firm management and R&D activities can not disregard the role of individuals. Individuals are the carriers of knowledge in a company and the knowledge is created and constructed by individuals, namely human resources, in the firm[102]. The most efficient way to transfer knowledge between firms is through individuals. A firm's absorptive capability also resides in its individual absorptive capability. As mentioned by Cohen and Levinthal (1990, p131), "the development of an organization's absorptive capacity will build on prior investment in the development of its constituent, individual absorptive capacities"[103].

The role of individuals in absorptive capability is also reflected in a firm's "prior related knowledge"[104]. Cohen and Levinthal (1990) indicate that this prior related knowledge adheres to an individual's abilities and comes from individual's basic skills, shared language and professional knowledge[105]. In addition to prior related knowledge which resides in individual abilities, absorptive capacity is also reflected in the "frequency and intensity of social-technical interactions"[106]. By enhancing the frequency and intensity of interactions, individuals expend more energy and have more opportunities to "know who know what and where critical expertise resides within each firm"[107]. In essence, these interactions may also increase individuals' "relation-specific common knowledge". Minbaeva et al. (2003, p586) adopt "employees motivations" to represent an individuals intensity of efforts, and they proposes that "the interaction between employees' ability and motivation will increase the level of knowledge transfer"[108]. Motivated individuals are generally more willing and more efficient to take advantage of their abilities to absorb knowledge.

The role of individuals in absorptive capability is consistent with our proposition regarding collective trust in individuals. This study employs individual practice to stress the role of individuals in absorbing external knowledge from network nodes. Since absorptive capability is largely determined by individual's abilities and interaction in a network, a number of social factors and social activities have been highlighted in the previous research, such as personnel "intimate, and

[102] Kogut and Zander, (1992); Nonaka, (1994)
[103] Cohen and Levinthal, (1990, p131)
[104] Cohen and Levinthal, (1990, p128)
[105] Cohen and Levinthal, (1990, p128)
[106] Dyer and Singh, (1998, p665)
[107] Dyer and Singh, (1998, p665)
[108] Minbaeva et al,. (2003, p586)

extensive face-to-face interactions" and "human resources management practice"[109]. Based on the analysis above, it is concluded that: *Proposition 7a: Individual practice has a positive effect on knowledge transfer in the network.*

Link application

Absorptive capability is positively related to knowledge transfer in different kinds of dyadic inter-organizational arrangements: joint ventures[110], alliances[111], and MNCs and subsidiaries[112]. However, the relationship between IOR and absorptive capability is still not explicit. Only Lane et al. (2001, p1139) list trust between international joint venture parents as an influence of absorptive capacity: "their ability to understand new knowledge held by foreign parents"[113]. Tsai's (2001, p164) research proves that firms' relational embeddedness with customers "does not guarantee higher absorptive capability and innovation performance"[114]. However, their research only focuses on one specific dyadic relationship.

Differing from a dyadic relationship, network encompassing various relationships might provide a new approach to understand absorptive capability. Cohen and Levinthal (1990, p134) argue that network with "a broad and active of internal and external relationship" might strength "individuals' awareness of other's capabilities and knowledge"[115]. By combining the internationalism business network theory and absorptive capacity, the research of Eriksson and Chetty (2003, p690) distinguishes the dyadic relationship absorptive capability and network relationships absorptive capability. He proves that "the absorptive capacity generated from the surrounding network contains more innovative and novel knowledge" than dyadic absorptive capacity[116]. Therefore, this dissertation pays much attention to absorptive capability in the context of network which includes a set of relationships rather than a dyadic relationship. First, modern firm can not survive without ties to multiple external firms in the network. Second, firms are increasingly using multiple ties to achieve their own benefits, and "firms are becoming much more adept at and reputed for the general practice of collaboration with diverse partners"[117].

[109] Minbaeva et al., (2003, p586).
[110] Lane et al., (2001)
[111] Dyer and Singh, (1998); Mowery et al., (1996)
[112] Minbaeva et al., (2003)
[113] Lane et al., (2001, p1139)
[114] Tsai, (2001, p164)
[115] Cohen and Levinthal, (1990, p134)
[116] Eriksson and Chetty, (2003, p690)
[117] Powell et al., (1996, p143)

According to absorptive capacity, the ability to assimilate external information and knowledge is largely determined by "prior-related knowledge" or "pre-existing knowledge structure" [118]. Internationalization literature employs experience to illustrate the prior related market knowledge in the process of internationalization. Lacks of experience in a new market is regarded as a decisive factor to lead unsuccessful new market entry. Firm experience provides the prior related knowledge to collaborate with others, and the ability to handle new situations.

Experience of managing R&D and other types of collaborations is necessary for firm to improve its network position[119]. Eriksson and Chetty (2003) prove that the depth and diversity of experience will influence absorptive capability and then influences a focal firm to assimilate and acquire market knowledge[120]. As stated by Powell et al. (1996, p142), the development of absorptive capacity is one of "serendipitous benefits of collaboration" [121]. Thus, experience in relationships application is considered as an important and influential component of network absorptive capability.

Relationships experience may help focal firm to "select, identify, negotiate, monitor, manage and terminate" collaboration[122] and could also affect knowledge transfer. Collaborative experience allows firms to achieve higher levels of "collaborative know-how" transfer[123]. Experience in a network leads to higher levels of "market knowledge" transfer[124]. In fact, experience in link application also enhances the technological knowledge transfer in a network. There are two main explanations for the effects of experience on knowledge transfer: First, experience in relationships application in a network makes focal firm aware of what kinds of partners and knowledge are essential for its own innovation success. Second, experience helps the focal firm to know how to apply the relationships for the sake of maximum knowledge transfer. Therefore, it is argued in: *Proposition 7b: Link application has a positive effect on knowledge transfer.*

[118] Cohen and Levinthal, (1990, p131)
[119] Powell et al., (1996, p120)
[120] Eriksson and Chetty, (2003)
[121] Powell et al., (1996, p142)
[122] Simonin, (1997, p1155)
[123] Simonin, (1997)
[124] Eriksson and Chetty, (2003)

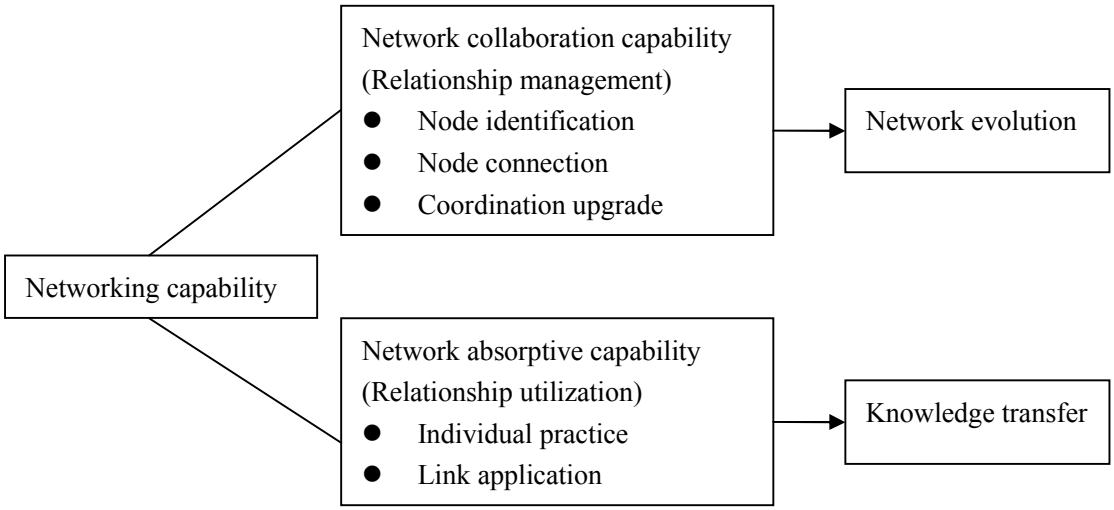

Figure 5.2: Theoretical model in Chapter 5

Source: Edited by author

5.3 Outsourcing network evolution and networking capability

The history of NEUSOFT can be divided into three main periods based on strategic focus, and these periods are related to NEUSOFT's two distinct transformations. Moreover, these two transformations coincided with two well-known worldwide economic crises: network crisis in 2000 and financial crisis in 2008. Thus, each strategic transformation also showed its immediate reaction to the rapidly-changing, dynamic external environment. Table 5.3 and Table 5.4 compare the three periods of NEUSOFT in terms of network evolution and knowledge transfer.

Table 5.3: Comparison of three periods on network evolution

Three periods	Japanese market reliant	Market diversion and labor expansion	Knowledge oriented
Periods	1994-2000	2000-2008	2008-Present
Implications	Relying on Japanese market owing to the geographical and cultural advantage	Employees are increasing and the development relied on human resources.	Focusing on three main businesses with more technology and capital investment
Consequence	Over dependent on Japanese market and low technology, low-profit	Labor cost in China increased significantly and the profit decreased	Network within firm cross border and get knowledge outside company
Target market	Japan	Japan, Europe and the U.S.A.	Japan, Europe and the U.S.A.
Main clients	Alpine, Toshiba, etc	Alpine, Toshiba, Intel, Philips etc	Alpine, Toshiba, Intel, Philips, Harman, SAP etc.

Note: Edited by author, based on interview.

Table 5.4: Comparison of three periods on knowledge transfer

Three periods	Japanese market relied	Market diversion and labor expansion	Knowledge oriented
Business value upgrading	Auto auxiliary program development, Household appliances program development etc.	Auto audiovisual, navigation, household appliances software development etc.	R&D in three main businesses: auto electronics solutions, mobile terminal solutions and medical solutions.
Knowledge related	Coding and simple software testing	All processes involved in software development	KPO, BPO, Intelligent software R&D
Capability development	Capability initiation: Leaders' abilities and personality Cheap labors	Capability development Technology abilities Human resource	Capability maturation Collaboration capability Absorptive capability

Note: Edited by author, based on interview and literature[125]

[125] Sharir and Lerner, (2006, p6); Nadkarni and Herrmann, (2010, p1050); Quinn, (1999, p9)

5.3.1 First period

The history of NEUSOFT can be traced back to a research laboratory in Northeastern University, which was established by three young professors in 1988. Initially, there were only three simple 286 series computers and 30 thousand Chinese Yuan in this laboratory[126]. Liu Jiren, the founder of NEUSOFT, was the first doctoral student in the field of computer science in China at that time. He also had some scientific cooperation with one National Lab in the U.S.A. He become one professor in Northeastern University when he was only at the age of 33 owing to his research ability. At that time, Liu Jiren was also the youngest professor in the whole of China[127]. Although the founder, Liu Jiren, had a dream of commercializing its technological achievements, the biggest obstacle at that time was a shortage of capital[128].

In 1988, several managers of Alpine went to Northeastern University and tried to seek cooperation owing to the university's reputation as one of the best engineering universities in China[129]. Liu Jiren was selected as a representative to present his research, and his research plan attracted huge attention from Alpine. After the first meeting, Alpine intended to work with Liu Jiren and the managers invited him to visit Japan to discuss the possibility of cooperation. In that year, Liu Jiren received 300 thousand USD in venture capital from Alpine[130]. In fact, it was considered very risky to create a start-up company as a university professor in China at that time, and professors were reluctant to mix their scientific research with commercialization. Liu Jiren received a lot of criticism from his colleagues, and thus the predecessor of NEUSOFT functioned as only one laboratory rather than one company from 1988 to 1991[131].

In 1990, they changed the name of the previous lab into one university-level R&D center. In 1991, Northeastern University and Alpine built a company called NEU-Alpine Software Research Institute (a limited liability company) based on this R&D center[132]. In 1993, the name of this company is changed into NEU-Alpine Software after merging another company: OPENSOFT. NEUSOFT was officially

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[126] NEUSOFT official website, About us.
[127] 成都日报, (July 4, 2008)
[128] 吴宗鹤, (2007)
[129] Northeastern University official website, About NEU
[130] 同花顺, (May 26, 2014)
[131] 成都日报, (July 4, 2008)
[132] NEUSOFT official website, About us

branded in 2001. Figure 5.3 elaborates the gradual change of the NEUSOFT brand.

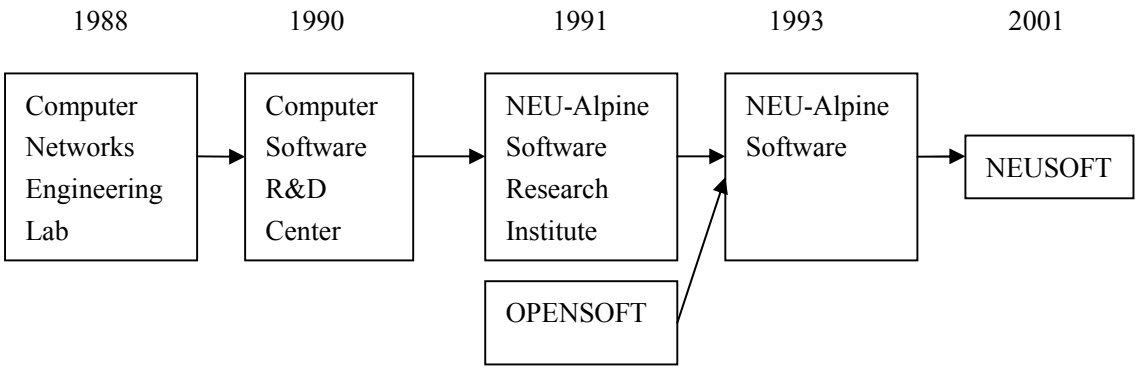

Figure 5.3: Change of NEUSOFT brand name

Source: Based on NEUSOFT official website, edited by author

NEUSOFT experienced rapid growth of 100% in revenue during this period, especially from 1992 to 1997[133], even though NEUSOFT was only capable of doing low-end customized software development with little R&D input. In 1998, Chinese software companies were debating heavily about whether it was worthwhile to develop outsourcing that involved low value-added and low-profit services. However, top managers in NEUSOFT made their decision that they would invest more in outsourcing development. Liu Jiren insisted that each industry had both high-value business and low-value business, and the key was to achieve business upgrading through innovation[134].

In this period, NEUSOFT adopted a simple method of recruiting and training its software workers by virtue of Northeastern University, because it was very difficult to get access to professional software engineers in China at that time. Most of the working staff at NEUSOFT was students from Northeastern University. NEUSOFT had software training classes to develop the abilities of students from this university[135]. Students were typically required to pass required exams before entering into "software intensive class". There were 33 junior students from the first class at Northeastern University, who already became the core staff at NEUSOFT. Northeastern University provided labor support through altering organizational structure. For example, in 1995, a software development center at the University in

[133] Annual report of NEUSOFT, (1992-1997)
[134] 王扬, (2007, p24)
[135] 网易, (August 22, 2014)

which more than 20 staff members merged with NEUSOFT[136].

5.3.1.1 Network evolution in the first period

Outsourcing cooperation between NEUSOFT and Alpine started since 1988. Initially, NEUSOFT only provided outsourcing service to Alpine exclusively, and outsourcing business from Alpine mainly was related to program solutions for automobile auxiliary utilities such as stereo[137]. In 1996, Toshiba started outsourcing cooperation with NEUSOFT in China and built a Joint venture in Shenyang. Outsourcing business with Toshiba also followed the same path as Alpine, and primarily involved low-technology coding and single testing work. Because outsourcing business was low value-added and they did not build a wide range of interaction in employees, the coordination ways between NEUSOFT with Alpine and Toshiba are regarded as COC. In this period, NEUSOFT also had several other Japanese clients.

In fact, many Japanese clients tried to cooperate with outsourcing providers in China and visited cities all around China, but most of them were not successful to find partners. Top managers at NEUSOFT realized that the best way to develop outsourcing network with Japanese clients was to narrow cultural distance and build trust with them[138]. Before the network crisis in 2000, NEUSOFT was not regarded as a global ITO provider due to its limited client base: several Japanese clients like Alpine and Toshiba[139]. Figure 5.4 shows NEUSOFT's outsourcing network in the first period. Alpine and Toshiba were two typical clients in this period.

[136] 阿部, (2015, p110)
[137] 金羊网, (December 20, 2007)
[138] 环球企业家, (August 31, 2006)
[139] NEUSOFT has the cooperation with several members in Toshiba Group, thus Toshiba represents the overall condition of these subsidiaries of Toshiba Group.

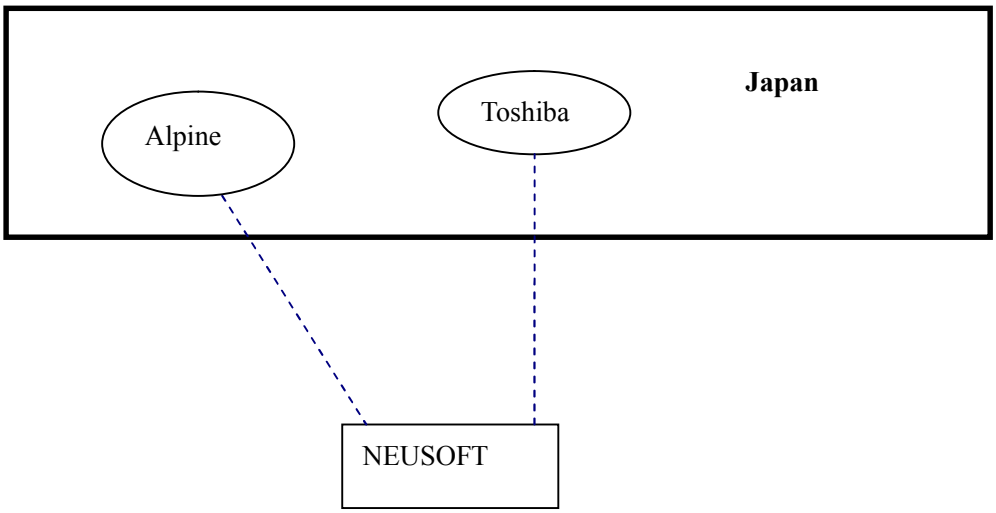

Figure 5.4: Outsourcing network in the first period

Note:

1, in this period, NEUSOFT built COC with its Japanese clients including Alpine, Toshiba, etc.

COC

National boundaries

5.3.1.2 Knowledge transfer in the first period

Although NEUSOFT developed quickly in the first period, it was still very difficult to provide high-technology and high-stability outsourcing products for its Japanese clients due to the poor efficiency of knowledge transfer[140]. Outsourcing cooperation between NEUSOFT and its clients did not contain core technological contents. Usually, Alpine finished software demand analysis, and designing in Japan and outsourced coding to this company[141]. According to interviews, coding is an easy part of software development and is located at the bottom of the software value chain, which requires a huge number of workers.

In this period, project management knowledge transfer is also important for NEUSOFT's development. NEUSOFT learned a lot from Alpine about how to manage and control project progress, cost and quality[142]. Outsourcing business with Toshiba also primarily involved low-technology coding and single testing work. However, the high-technology software processes such as software demand analysis

[140] 东软, (August 9, 2006)
[141] 王杨, (2007, p26)
[142] 吴宗鹤, (2007)

and detailed design were finished by Toshiba engineers in Japan. Toshiba did not give large-scale business to NEUSOFT and paid more attention to the improvement of NEUSOFT software development management capability[143].

Knowledge transfer was not efficient during this period and business contents were not high value-added due to weak capability of NEUSOFT. NEUSOFT lacked sufficient program management knowledge, language abilities and cultural exchange mechanism. In fact, very few of working staff member at NEUSOFT could speak Japanese at that time. They tried to improve workers' language level and promote communication in the Japanese language. However, this activity generated much resistance and complains from employees because most of them could not speak Japanese very well[144].

The main outsourcing business in this period, coding and single testing, required a huge number of cheap laborers to work together. For ITO businesses, labor cost could account for more than 50% of the total cost of the service[145]. According to related data[146], the average annual wage in China was only 424 USD in the year 1992 and increased to 1,305 USD in 1999, but it was still quite low compared with wages in developed countries.

5.3.2 Second period

Partly in response to the bursting of the dotcom bubble in 2000, the challenging economic conditions around the world encouraged IT companies to choose outsourcing in order to reduce IT costs[147]. At that time, NEUSOFT's business also suffered due to the crisis, but they also perceived newly available opportunities. NEUSOFT recognized that was the time to transform to meet the global market demand for growing ITO services.

In the second period, NEUSOFT improved its capital condition dramatically by introducing several powerful investors. In 2006, NEUSOFT acquired investment from Intel and a Germany software company, SAP. Table 5.5 lists the ownership structure of NEUSOFT in 2014. From this table, major clients like Alpine, Toshiba and SAP are also important strategic investors in NEUSOFT. The table shows the

[143] 毛亚意, (2003)
[144] 环球企业家. (August 31, 2006)
[145] 新浪网, (March 29, 2013)
[146] National Bureau of Statistics of the P.R.C
[147] 刘绍坚, (2008)

percentage of shares and year in which they become investors. This ownership structure is also very beneficial for investors to maintain mutual relationship.

Table 5.5: NEUSOFT ownership structure

Northeastern University	Alpine	BAOSTEEL[148]	Toshiba	SAP	Intel	Public shares
16.227%	15.585%	5.132%	2.977%	1.327%	1.302%	57.450%
1991	1991	1998	1996	2006	2006	1996
NEUSOFT (100%)						

Source: Annual report of NEUSOFT in 2014, edited by author

NEUSOFT paid extra attention to improving its overall technological abilities through passing international authoritative quality certifications during this period. The managers realized that they might only be able to work on coding and testing if they did not have these authentications[149]. In 2000, NEUSOFT received ISO9001: 2000 authentication. In 2001, 2002 and 2004, NEUSOFT also received CMM3, CMM5 and CMMI5 authentications gradually, which was also the first Chinese firm to pass these international authentication assessments[150]. CMMI is the abbreviation for Capability Maturity Model Integration which is the highest quality standard in the software industry. This quality standard was established by the United States Department of Defense and Carnegie Mellon University in 2002. NEUSOFT was also the fourth company in the world to receive this high-level authentication, CMMI5. These authentications showed that NEUSOFT was working to improve its technological ability gradually, which were helpful for clients to assess NEUSOFT's technology abilities[151].

NEUSOFT continued to increase its investment into technology innovation gradually, and planed to invest at least 10%-12% of total revenue to innovation every year. In 2004, innovation investment accounted for 11.7% of total revenue, while in 2006 this ratio reached 12%. In 2008, the innovation investment ratio was nearly 15% of total revenue[152]. NEUSOFT developed many independent copyright products like OpenBASE and SEAS in this period. Although technology ability was improved

[148] BAOSTEEL is one state-owned, the largest steel manufacturer in China.
[149] 张越, (2007)
[150] NEUSOFT official website, About us
[151] 吴宗鹤, (2007, p61)
[152] 王扬, (2007, p16)

dramatically through quality authentications and huge investments in innovation, outsourcing business at NEUSOFT was not as high value-added and high profit as that of its Indian outsourcing competitors[153].

In this period, NEUSOFT endeavored to improve its human resources through several effective strategies. Software engineer recruitment and training were no longer limited to students from Northeastern University. NEUSOFT set up its first information university in Dalian in 2000 and two more in Chengdu and Nanhai were founded in 2002 and in 2003 respectively[154]. These universities were engaged on cultivating international IT talents via all kinds of language education and technology education. The students in these universities not only met the requirement of NEUSOFT, but also provided human resources for its partners through firm-customized classes. NEUSOFT regarded these universities as an important business strategy, through which NEUSOFT saved much cost and energy in recruiting and training new employees, and further developed relationship with its partners[155]. According to the interviews, this training method cultivates engineers who are very familiar with both NEUSOFT and its partners. Furthermore, students who graduated from the same university still had strong connections with each other even though they went to work at different firms. Table 5.6 provides details on the introduction of these three NEUSOFT universities.

Table 5.6: NEUSOFT universities

Name	Year	Location	Students(2014)	Area
Dalian NEUSOFT University of Information	2000	Dalian, Liaoning province	Around 14,000	573 thousand square meters
Chengdu NEUSOFT University	2002	Chengdu, Sichuan province	Around 10,000	400 thousand square meters
NEUSOFT Institute, Guangdong	2002	Foshan, Guangdong province	Around 8,000	420 thousand square meters

Source: Edited by author

NEUSOFT also improved abilities of personnel by extending a campus style system, tutor system, by which new employees were able to learn new knowledge and improve themselves with help from their tutors. This tutor system was successful in

[153] 靳静, & 李薇, (2010, p22)
[154] NEUSOFT official website, About us
[155] 东软, (August 9, 2006)

the first few years and was widely promoted in the entire company. The interview contents show details about this tutor system. First, tutors should have a good personality and have more than two years of working experience at NEUSOFT. Second, tutors should be either technology talents or reserve cadres. Third, a tutor is only able to cultivate five or fewer new employees in one year in order to guarantee quality. This tutor system was beneficial for new employees to adjust themselves into the new environment and improve relationship with their collegues.

From 2000 to 2008, the growth rate of ITO business in NEUSOFT was maintained at a very high-level, sometimes at more than 50%[156]. Although NEUSOFT had achieved rapid growth in the global market and improved its technology ability through cooperation with its partners, Chinese outsourcing providers relied heavily on the expansion of human resources[157]. A total of 3,051 employees worked for NEUSOFT in 2000, and this figure went up to over 15,000 in 2008[158]. One manager of Toshiba made a public statement that they wanted to give more outsourcing business to NEUSOFT, but NEUSOFT still did not have sufficient human resources to accomplish these tasks. Chinese providers continued to adopt lower-level development models dependent on a large number of software engineers to compete for outsourcing clients by virtue of low program price[159]. Many firms in China were aware that the traditional ITO development model had risks, but it was difficult for any firm to transform to high-value services immediately.

5.3.2.1 Network evolution in the second period

Top managers at NEUSOFT realized that they would change their strategy from passive waiting to positive marketing so that NEUSOFT would be able to develop a global network. In 2001, NEUSOFT established its first overseas subsidiary in Japan to reinforce and develop in the Japanese market[160]. NEUSOFT was not able to do effective marketing by its own resources and abilities, thus they chose to seek cooperation with a professional public consultancy, PRAP. In 2002, through cooperation with PRAP, NEUSOFT conducted a wide range of marketing in Japan and the NEUSOFT brand appeared frequently in Japanese media[161]. The significance

[156] Annual report of NEUSOFT
[157] 毛亚意, (2003)
[158] Annual report of NEUSOFT
[159] 新浪网, (March 29, 2013)
[160] NEUSOFT official website, About us
[161] 毛亚意, (2003)

of outsourcing provider's subsidiary is not only marketing, but also its role in providing after-sale service and understanding clients' requirement thoroughly. The success of India in outsourcing development relies heavily on its many subsidiaries in U.S.A. In this period, NEUSOFT built and promoted a software park: Dalian NEUSOFT Park, to attract clients, especially from Japan[162]. According to the interviews, the promotion of this software park was also conducted by one Japanese expert. Currently, Japanese companies such as SONY, NEC and Nomura Research Institute have already established branches in this park. In 2006, NEUSOFT built two overseas branches in Osaka and Nagoya to expand their presence in the Japanese market[163].

Since 2000, the cooperation between NEUSOFT and Alpine entered a new period. NEUSOFT conducted firm-customized training for new employees of Alpine, through which Alpine was able to hire Chinese software engineers directly from its partner. According to the case condition outlined in Chapter 4, cooperation between NEUSOFT and Toshiba improved dramatically from 2000 in the aspects of business value, volume and interaction mechanisms. Thus, coordination way between NEUSOFT and Toshiba changed into ROC.

From 2000 on, NEUSOFT branched out from the Asian market to the global ITO market on the basis of long-term ITO outsourcing experience with Japanese clients. The U.S.A. and the European countries were the main outsourcing client countries, and ITO business from these regions became more profitable and required more investment technology[164]. In 2006, NEUSOFT set up a subsidiary in the U.S.A. to expedite expansion into the ITO market in the U.S.A.[165].

In 2001, NEUSOFT started outsourcing cooperation with a powerful client in the U.S.A, Intel. According to the interviews, the initial cooperation with Intel was mainly channeled through Intel's subsidiary in Dalian, China. In 2004, NEUSOFT and Intel established two R&D centers in Beijing and Shenyang respectively. NEUSOFT and Intel made efforts to develop ROC from the beginning. The interviews show that both sides paid much attention to outsourcing cooperation and relationship improvement once R&D centers were established. Both sides promised to conduct teleconferences once a month and hold face-to-face conferences once in a

[162] NEUSOFT official website, About us
[163] NEUSOFT official website, About us
[164] 谭力文, & 田毕飞, (2006)
[165] NEUSOFT official website, About us

quarter for the sake of efficient interaction. In order to improve communication efficiency, engineers from both sides adopted different colors of characters to indicate the different problems while communicating with each other. In 2006, Intel invested 40 millions USD into NEUSOFT as a strategic investment and become one of the majority shareholders. This was the largest investment Intel had ever made in a Chinese firm at that time[166].

In 2004, NEUSOFT started cooperation with a powerful European client, Philips, through establishing a joint venture focused on innovation and manufacturing of medical equipments[167]. This joint venture was engaged in technology-intensive medical equipments R&D. According to the interviews, NEUSOFT and Philips adopted several effective ways to mitigate conflicts when conflicts were detrimental to their cooperation efforts. First, they conducted personality tests and analyzed for each employee to help them understand each other. Second, both sides encouraged employees to teach each other about the history of their company and customs in their home country. Third, the joint venture also encouraged all kinds of communication, especially informal communication. In 2005, the joint venture started to build a practice teaching base for students of Northeastern University, through which they recruited many high-level technology talents from that university[168]. The relationship between NEUSOFT and Philips developed quickly through building these interaction mechanisms. The coordination way between them is considered as ROC in this period. Figure 5.5 shows NEUSOFT outsourcing network in the second period. The U.S and European markets attracted much attention from NEUSOFT in the second period.

[166] 喻文, (2006, p5)
[167] NEUSOFT official website, About us
[168] NEUSOFT official website, about us.

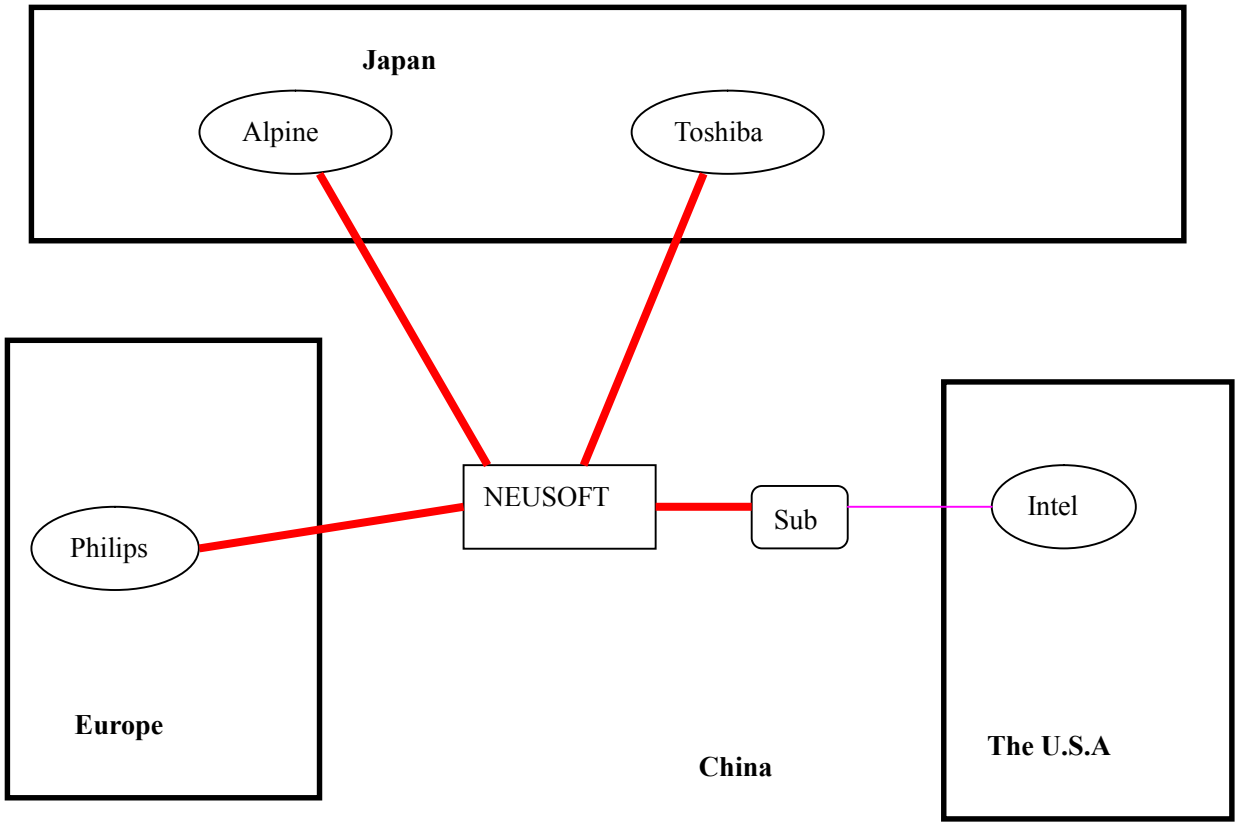

Figure 5.5: Outsourcing network in the second period

Note:

1: COC between its Japanese clients like Alpine, Toshiba evolved into ROC.

2: NEUSOFT built COC with clients in Europe and the U.S.A.

ROC

COC

National boundaries

Subsidiary of MNC

5.3.2.2 Knowledge transfer in the second period

Due to the damaging impact of the network crisis, outsourcing clients tended to allocate more technology-intensive work to outsourcing providers to save on costs during the network crisis[169]. After ten years of technology and talent accumulation, NEUSOFT's outsourcing business was not longer limited to coding and testing. NEUSOFT was capable of covering the entire software design process, and most projects included demand analysis, designing, coding, testing, maintenance[170]. Joint work had become a popular way in this period of improving the efficiency of knowledge transfer, and this working style was very beneficial for project team members to learn mutual demand.

In 2003, NEUSOFT and Alpine started to work in auto electronics software R&D jointly[171]. One joint R&D center was established in Dalian NEUSOFT Park and this center mainly utilized new technology to develop advanced automotive software products[172]. After finishing R&D in the center, Alpine would transfer the technology into the products and sell them on the global market. By 2006, there were around 250 top engineers from both companies working in R&D[173]. The cooperation between NEUSOFT and Toshiba also involved the overall development of household software. Cooperation between NEUSOFT and Intel mainly provided IT solution innovation for the next generation of computer chips: Centrino[174]. Thus, with the improvement of project complexity, knowledge transfer required more efforts from both client and providers. The engineers had to learn more about management processes, hardware knowledge and IT condition of clients and transfer it into software development. Philips was a powerful global medical company. Through the cooperation with Philips, NEUSOFT began to learn more about medical equipments R&D and improved its innovation capability in this service solution area.

From the beginning of this period, foreign language, culture training and learning already become required courses for employees of NEUSOFT. These interaction mechanisms improved efficiency of knowledge transfer dramatically. A newly appointed vice general manager had ever taken the responsibility of promoting Japanese language speaking. NEUSOFT also established four levels of Japanese

[169] 张越, (2007, p14)
[170] 东软, (August 9, 2006)
[171] 王扬, (2007, p26)
[172] NEUSOFT official website, About us
[173] 东软, (August 9, 2006)
[174] 东软, (April 8, 2004)

language ability, employees who passed the second grade would have the opportunity to receive a raise in their salary[175]. The methods of learning and transferring knowledge between firms were also diverse in this period. Overseas onsite working styles started in this period and working staff also gained new knowledge through sharing training courses.

5.3.3 Third period

In 2008, the disastrous Lehman bankruptcy led to a worldwide economic crisis that negatively impacted global ITO business development. At the same time, the macroeconomic situation in China and the growing labor costs in the Chinese market reduced outsourcing profits drastically. With the rise of labor costs in China, more clients transferred their outsourcing destination from China and India to the Middle East and other ASEAN countries[176]. One manager in NEUSOFT recalled, "When the gross profit rate drops from 30% to 20%, finally 10%, it means that it is time to transform the existing ITO model to the high-end of outsourcing by providing more value-added service"[177].

In consideration of the negative impact of global economic crisis and the increasing labor cost in the Chinese market, NEUSOFT was determined to conduct the second transformation from ITO business relying on a large number of human resources to technology-intensive outsourcing business. Managers at NEUSOFT had been conscious that this transformation would take place a long time; top manager recently admitted that their transformation was initiated five years ago[178]. This transformation involved increased R&D input with more scientific staff and capital allocated to three prospective areas encompassing auto electronics solutions, mobile terminal solutions and medical solutions. In 2011, there were over 2,000 members of the advanced research staff specifically focused on auto electronics solutions in China, Japan and Germany, as well as more than 2,000 personnel working exclusively for the mobile terminal service in China, Japan, Finland and the U.S.A.[179].

After several years' endeavor in transformation, NEUSOFT achieved satisfactory firm performance in contrast with its rivals in both China and India.

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[175] 池铁江, (2003)
[176] 凤凰网, (March 30, 2013)
[177] 搜狐, (September 6, 2012)
[178] 和讯网, (April 3, 2013)
[179] IT168, (June 14, 2011)

According to statistical data from 2012, the job-waiting rate in the top three Indian outsourcing providers, TCS, Wipro and Infosys, reached 72%, 65% and 70% respectively[180]. In addition, the revenues of NEUSOFT's competitors in China dropped dramatically. However, NEUSOFT's yearly revenue increased by 21.2% and the net profit rate was 9.41%[181].

In 2011, Alpine advanced the supplier position of NEUSOFT to Tier 1 Supplier (a first level supplier), which means that NEUSOFT had to complete over 80% of software solution and be able to purchase hardware products from Alpine[182]. According to the interviews, Alpine sent new Japanese employees to receive training at the Dalian NEUSOFT University of Information to enhance the relationship among employees. After more than twenty years of cooperation with Alpine, NEUSOFT had filed 54 domestic and international patents in the area of automobile electronics by 2015. In 2015, NEUSOFT and Alpine invested much capital to set up a joint research center to meet the requirement of market demand. The new joint venture was designed to focus on technology-intensive and prospective business: new energy automobiles and unmanned automobiles[183].

The joint venture by NEUSOFT and Philips was successful in both R&D and marketing in this period. The products were sold to more than 90 countries around the world[184]. Although NEUSOFT and Philips terminated this joint venture in 2013, Philips has maintained outsourcing cooperation with NEUSOFT. The founder of NEUSOFT, Liu Jiren said that this joint venture was perfect because both sides maximized their benefits through cooperation. NEUSOFT reinforced the relationship with its client, Intel, in this period. In 2013, NEUSOFT and Intel started research institute-level cooperation to solve technical problems in big data, cloud computing, etc. This cooperation involved two top-level research institutes: NEUSOFT National Key Laboratory and Intel Collaborative Research Institute[185].

The value of global property dropped dramatically because of the Lehman Shock in 2008, and NEUSOFT has been able to adopt M&A frequently as an expansion method since that time. In 2009, NEUSOFT bought three subsidiaries of SESCA in Finland, which were mainly engaged in the mobile phone software

[180] 和讯网, (April 3, 2013)
[181] NEUSOFT annual report, (2012)
[182] 中外管理, (November 6, 2014)
[183] 东软, (July 29, 2015)
[184] 东软, (February 5, 2013)
[185] 人民网, (April 18, 2013)

solution[186]. All the projects between the subsidiaries of SESCA and Nokia were transferred to NEUSOFT, and were thereby reflected in the profitability of NEUSOFT. In this period, NEUSOFT and Nokia become mutual strategic partners and Nokia become an important strategic investor in NEUSOFT. NEUSOFT sought to alleviate national cultural conflict and organizational cultural conflict through building new organizational culture and ensuring existing employees' benefits[187]. In 2010, NEUSOFT bought another mobile phone software solution company in U.S.A. and an automobile navigation software solution company in Germany[188]. After several acquisitions, NEUSOFT has formed an extensive global R&D and marketing network. By 2014, there are more than 500 foreign employees working at NEUSOFT and over 6,000 employees involved in international business[189]. NEUSOFT built several overseas subsidiaries and renamed some acquisitions in the third period. Table 5.7 lists the NEUSOFT internal corporate network until 2014.

Table 5.7: NEUSOFT Internal corporate network around the world

Continent	Subsidiary name	Year
Asia	NEUSOFT Japan (Japan)	2001
	NEUSOFT Middle East (United Arab Emirates)	2010
America	NEUSOFT the U.S.A. (U.S.A.)	2006
	NEUSOFT Peru (Peru)	2012
Europe	NEUSOFT Europe (Switzerland)	2009
	NEUSOFT Mobile Solutions Oy (Finland)	2009
	NEUSOFT EDC SRL (Romania)	2009
	NEUSOFT Technology Solution GmbH (Germany)	2010
	NEUSOFT GmbH (Germany)	2010

Source: Edited by author

[186] NEUSOFT official website, About us
[187] 网易, (August 22, 2014)
[188] NEUSOFT official website, About us
[189] 中国企业家俱乐部, (September 24, 2014)

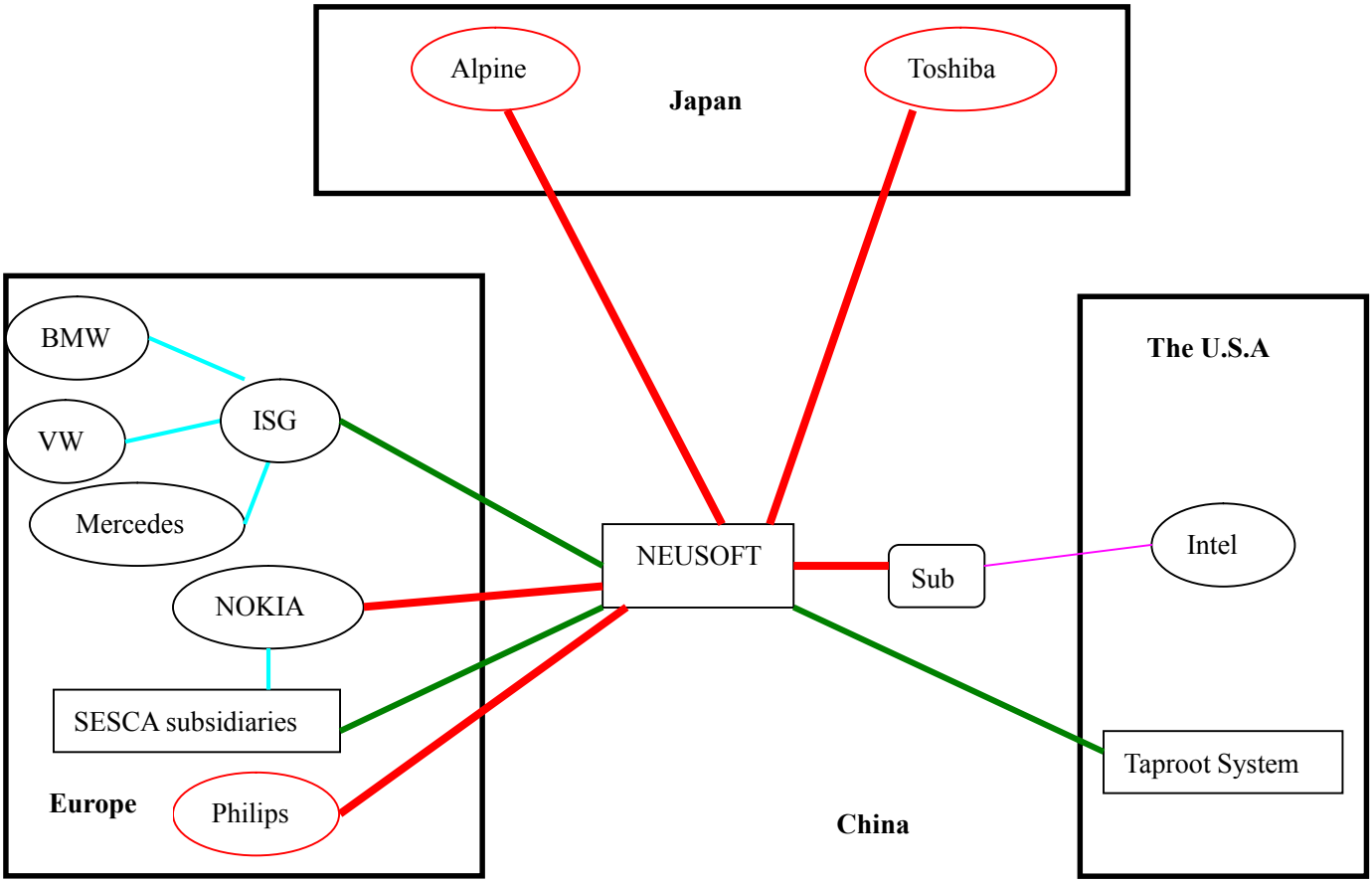

Figure 5.6: Outsourcing network in the third period

Note:

1, NEUSOFT acquired TaprootSystem in the U.S.A, ISG and SESCA subsidiaries in Europe.

2, NEUSOFT and Philips ended the joint venture, and NEUSOFT bought all shares of this Joint venture.

3, the red circle indicates some important nodes for NEUSOFT in this outsourcing network

ROC

M&A

National boundaries

Subsidiary of MNC

Client-Supplier relationship

5.3.3.1 Network collaboration capability and network evolution

In the third period, more powerful clients were embedded into the NEUSOFT outsourcing network, particularly through M&A. NEUSOFT had already formed its own capability to develop a global network. According to the analysis in section 5.2.4, network collaboration capability consists of three components that facilitate network evolution. The following section provides case evidence that illustrates the effects of network collaboration capability on network evolution.

Node identification

Node identification refers to processes of identifying prospect and potential nodes, by which providers can select and distinguish nodes scientifically and efficiently. NEUSOFT identifies and assesses future potential clients from two perspectives: program profitability and future strategy. One respondent confirms this idea of node identification:

> NEUSOFT has several criteria to assess our future clients, not only from program profits, revenue, but also long-term strategic intentions. Usually NEUSOFT also introduces some non-core business and clients to its partners in China and keeps potential good quality clients.

NEUSOFT strictly selects primary business and elaborately evaluates potential cooperation partners, concentrating IT service on three promising business areas encompassing auto electronics solutions, mobile solutions and healthcare solutions. According to the interviews, most of the technology advantages possessed in these industries are held by firms, such as Harman, Philips and Alpine. One respondent mentions the reason why NEUSOFT has focused on auto electronics solutions since the early period of formation is because of expansive potential market and client resources. Moreover, auto market is maintaining a high growth rate in China since 1990s. This industry has also a long industrial chain in which there are more potential clients and potential cooperation opportunities. According to the interviews, potential service areas and nodes in ITO industry should be identified based on specific factors to fit into NEUSOFT long-term strategic plan: complementary resources, accessibility of information and knowledge and stable business flow.

Node connection

The case study provides examples of the importance of relational embeddedness in connecting new nodes. According to the interviews, top managers at NEUSOFT keep good interpersonal relationships with top managers of their clients. The founder of NEUSOFT, Liu Jiren, has a good personal relationship with CEO of TSOL, Kajikawa, and a good relationship with Ohmae Kenichi, one famous Japanese business and corporation strategist, who was instrumental in attracting Japanese outsourcing business to NEUSOFT[190]. Relational embeddedness between high-level managers enables a steady business flow.

Market exploitation is another way to connect new clients and develop outsourcing network; NEUSOFT set up its subsidiaries and branches in Japan, America and Europe respectively where potential clients were located. These subsidiaries and branches abroad indicated the important role of marketing. In addition, there are opportunities for promotion through outsourcing cooperation conferences held by different organizations globally. According to the interviews, the representatives of NEUSOFT attend world-level outsourcing conferences as many as possible, and new clients come to know about and contact NEUSOFT through these conferences. NEUSOFT also sponsors outsourcing conferences in China and invites potential clients, so that they can understand each other and win favor from potential clients.

Long-term trustworthy clients also recommend their partners to seek cooperation with NEUSOFT. The interview contents provide evidence that supports the idea of structural embeddedness in building COC with new clients. NEUSOFT's first Japanese client, Alpine, has already introduced many of its partners to NEUSOFT in the past two decades. More subsidiaries of Toshiba have also been seeking to conduct outsourcing cooperation after the success in 1990. Boeing's partners have also sought to cooperate with NEUSOFT after Boeing become a client in 2007.

Each acquisition case executed by NEUSOFT aims not only at the strong technological background of the acquisition target, but also network evolution intent: gaining clients. According to the interviews, the reason NEUSOFT bought ISG was because its clients, BMW, Mercedes-Benz and Volkswagen. NEUSOFT now has access to market information about these top auto companies through ISG. In 2009, after several rounds of screening from five European mobile software providers,

[190] 东软, (February 10, 2010)

NEUSOFT acquired three subsidiaries of SESCA that were engaged in high-end smart phone application development. As mentioned in the interviews, the acquisition of SESCA subsidiaries in Europe was largely dependent on its strong connection with the largest mobile phone maker Nokia. In 2010, NEUSOFT also acquired a mobile phone software provider in the U.S.A called Taproot System that had many powerful clients in the U.S.A. Since then NEUSOFT formulated global mobile ITO network including subsidiaries and branches in Finland, the U.S.A., Romania and China.

Therefore, node connection methods include not only direct ways such as relational embeddedness, structural embeddedness and market exploitation, but also indirect way such as M&A. These methods support focal firm in initiating COC relationships with external firms and accelerating outsourcing network evolution.

Coordination upgrade

The effect of coordination upgrade in network evolution is that it transfers the IOR from COC to ROC by building collective trust, commitment and risk sharing in project team members. One respondent mentions the importance of developing and maintaining relationship. “For every strategic partner, we want to develop and maintain a good relationship with them, and this good relationship not only brings business flow, but also may bring some unexpected benefits”. The previous chapter shows how some processes and methods facilitate IOR development. Reciprocity, communication and culture compatibility exert positive effects in upgrading coordination through collective trust building in project team members. Although NEUSOFT adopts different methods to upgrade coordination with different partners, reciprocity, communication and culture compatibility are three basic factors that could facilitate collective trust building in project team members. For example, NEUSOFT and Alpine, a Japanese client, established an exchange fund to encourage project teams to work and be trained abroad, so that engineers could build trust with each other[191].

The protection of intellectual property is also crucial for coordination upgrade with different partners in a network. NEUSOFT has a refresher course for employees every few months and prohibits them from discussing the details of their work in public places, especially on websites. For several core, technology-intensive programs,

[191] 新闻文化网, (October 20, 2015)

only senior managers know exactly what is being researched and developed.[192] Organizational structure arrangement is important for coordination upgrade and relationship improvement with various partners in a network[193]. In the third period, NEUSOFT established a mature organizational internal structure in order to provide service to each partner exclusively and protect their intellectual property. In accordance with descriptions from interviewees, Figure 5.7 outlines the internal organizational structure for different clients of NEUSOFT. NEUSOFT provides services through independent divisions and joint ventures with each company. Specifically, the NEUSOFT Business Software Division provides outsourcing service for Toshiba. IA division provides service to SONY, while AVNC&IS division mainly provides outsourcing service to Alpine. Ensuring intellectual property protection for each partner is very helpful for developing the global network.

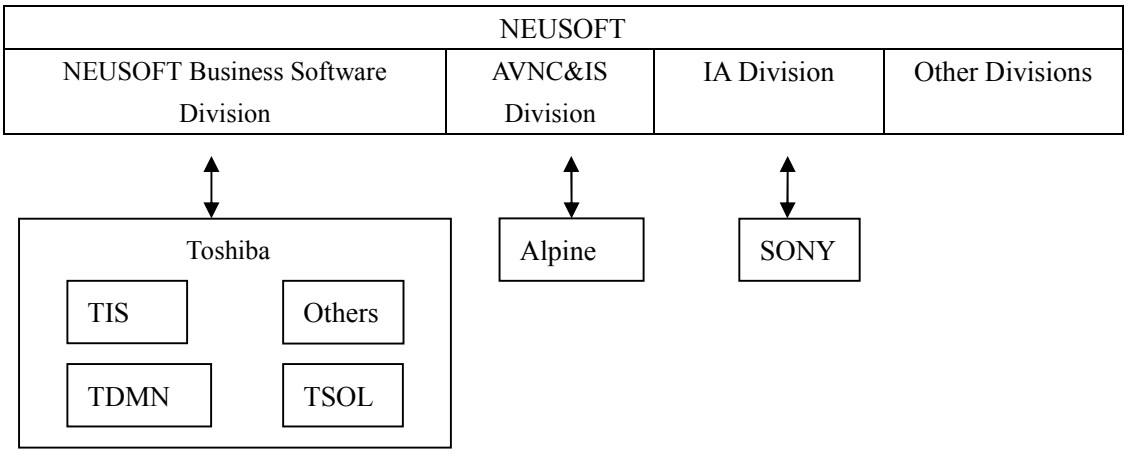

Figure 5.7: NEUSOFT Organizational structure for different partners.
Source: Based on the interview and NEUSOFT official website.

According to Figure 5.8, three processes describe how network collaboration capability facilitates network evolution, including node identification, node connection and coordination upgrade.

[192] Forbes, (July 14, 2006)
[193] Nakamura, (2015)

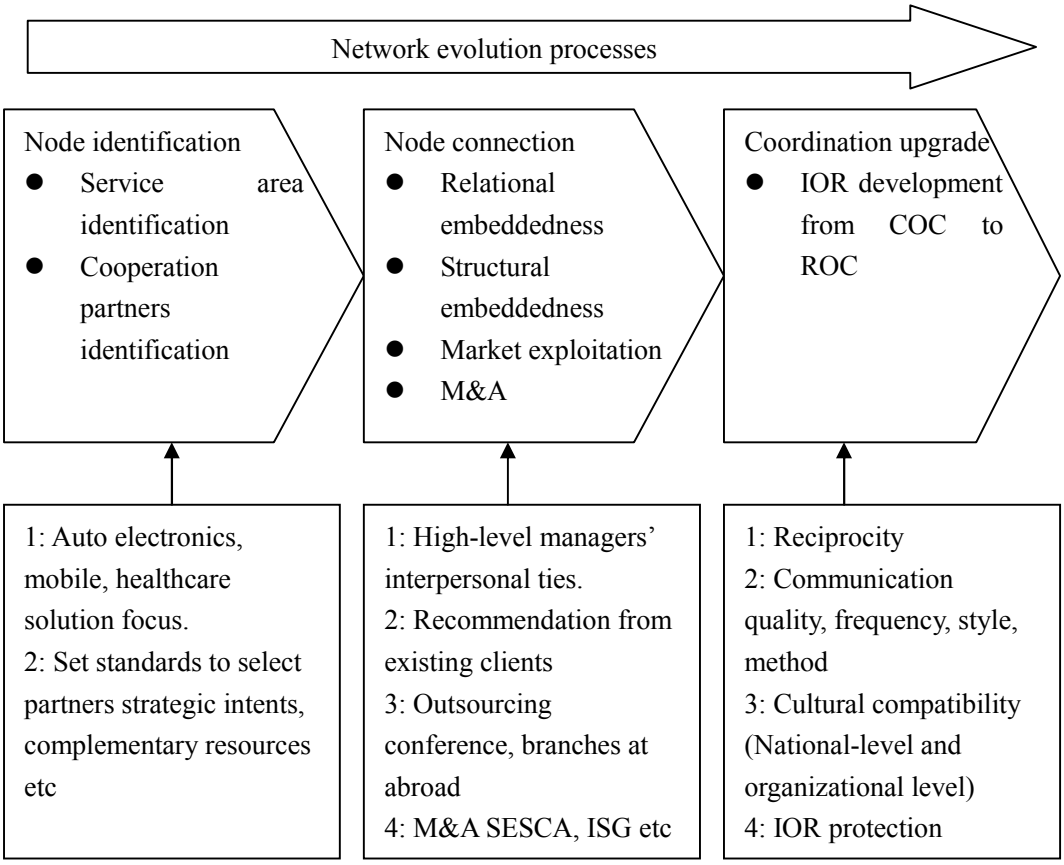

Figure 5.8: Three components of network collaboration capability

Source: Edited by author

5.3.3.2 Network absorptive capability and knowledge transfer

In the third period, NEUSOFT started doing KPO and BPO through cooperation with some top clients. For example, NEUSOFT and Toshiba started BPO business in 2011; NEUSOFT and Alpine started KPO business in the area of new energy automobiles and unmanned automobiles in 2015[194]. BPO and KPO business are more technology-intensive and profitable in outsourcing industry and have high demand for volume, quality and efficiency of knowledge transfer. According to the analysis in section 5.2.4, network absorptive capability has two components that facilitate knowledge transfer; the case evidence will show how individual practice and links application facilitate knowledge transfer in outsourcing network.

[194] 东软, (July 29, 2015)

Individual practice

The respondents in the interviews list many important individual abilities necessary for knowledge transfer in a network; individual technical skills, foreign language ability and teamwork ability are three frequently mentioned factors. In order to improve individual abilities, NEUSOFT provides a series of software development languages training like PB, C++, JAVA and JSQ, Oracle etc. NEUSOFT also cooperated with several professional training management companies including: American Management Association China.

The founder of NEUSOFT, Liu Jiren, described that more than 1,000 employees were learning a foreign language, more than 6,000 employees were proficient in foreign language and more than 100 employees were receiving leadership training every day[195]. NEUSOFT had made vast improvement in its training system to a large extent in this period. Three NEUSOFT universities take more responsibility in improving individual abilities. In 2012, the three universities introduced the training for Japanese Kentei: The Official Business Skill Test in Book-keeping. Employees in NEUSOFT also compiled Japanese language textbooks by themselves based on outsourcing market demand. In order to improve individual language abilities, three NEUSOFT universities built students exchange programs with over ten Japanese universities including Waseda University and Kokushikan University[196].

Individual interaction also plays an important role in knowledge transfer between NEUSOFT and external organizations. One interview respondent mentions that the only effective way of knowledge transfer is to appear in front of clients and interact with them face-to-face. In 2013, more than one thousand employees worked together with overseas clients, and around two hundred of employees worked overseas as permanent representatives[197]. According to the interviews, Figure 5.9 shows the flow of knowledge transfer through interactions between individuals from different organizations. Interactions between top engineers in NEUSOFT and professors of Northeastern University ensure that new scientific research achievements at Northeastern University are commercialized effectively. The interaction between employees of NEUSOFT and employees of external clients

[195] 中外管理, (November 14, 2014)
[196] 大连东软信息学院, (March 11, 2013)
[197] 中国企业家俱乐部, (September 24, 2014)

guarantees the transfer of IT knowledge, program-related knowledge and management knowledge, and allow NEUSOFT to provide successful and high-quality outsourcing services to clients. Simultaneously, individual interaction, especially personnel exchange and joint training between NEUSOFT and external firms, provides more opportunities for R&D cooperation. According to the figure below, three NEUSOFT universities also supply a huge number of human resources to external firms like SAP, HP and Toshiba in order to guarantee that their personnel thoroughly understand both firms' requirements[198].

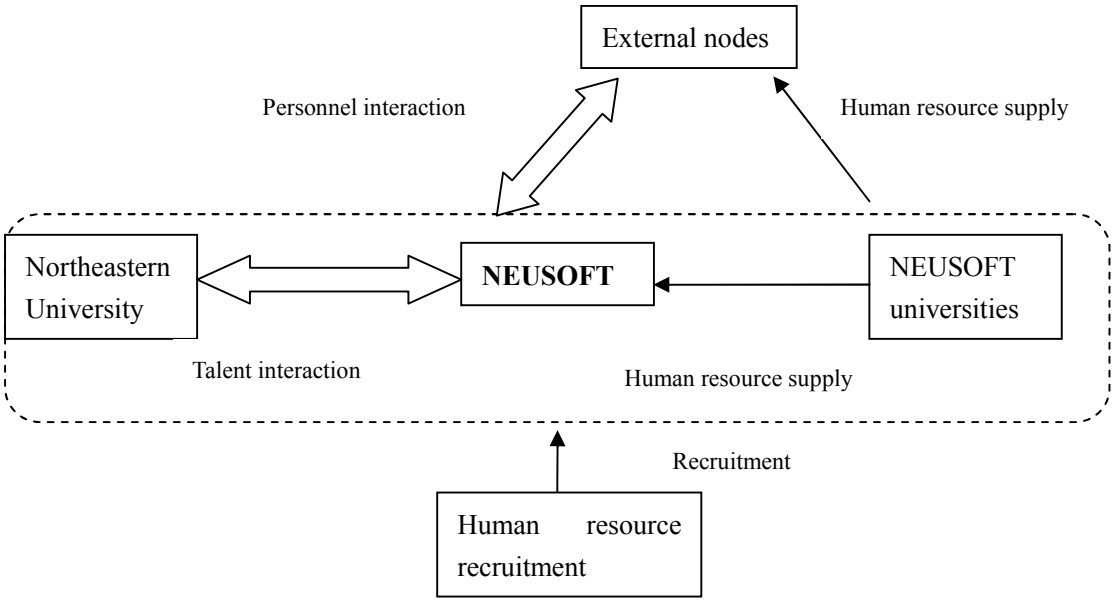

Figure 5.9: NEUSOFT human resource flow and interaction

Source: Edited by author

Notes: ⟶ Human resource flow

⟺ Human resource interaction

Link application

NEUSOFT was founded over twenty years ago and its development created opportunities to gain along cooperation experience. Interview respondents frequently mention the importance of experience-related words such as "the past cooperation history tells…"; "cooperation experience is…"; "The past tells us…" The respondents explain the effects of joint venture experience in knowledge transfer and emphasize that they had already gained abundant experience in establishing and managing joint ventures. There are two crucial standards for selecting joint venture partners:

[198] NEUSOFT official website, IT education and training

possessing technical advantage and conducting business in Chinese markets. Generally, joint ventures with these firms can improve NEUSOFT's R&D ability dramatically and facilitate knowledge transfer between them. According to the interviews, the joint venture between NEUSOFT and Philips altered domestic and international medical equipments markets, and made full use of Philips innovative potential and NEUSOFT's local R&D advantage. They successfully made more than 20 types of medical products, of which 17 products obtained FDA[199] authentication and CE marking[200]. NEUSOFT is currently able to make advanced equipments like CT, magnetic resonance etc.

NEUSOFT had already set up joint ventures with Alpine, Toshiba and Philips etc in the first and second periods of its development. By virtue of its experience in establishing, managing and utilizing joint ventures, NEUSOFT set up a new joint venture with a German client, Harman in 2010, built another joint venture with a Japanese client, NEC, in 2010, and established two joint ventures with two Japanese clients, A&T and Alpine, in 2012[201].

M&A experience also facilitates knowledge transfer and sharing between NEUSOFT and M&A targets. According to the interviews, the best method to maximize knowledge transfer with merger targets is for NEUSOFT to retain original foreign engineers. Based on the experience with its first merger targets, subsidiaries of SESCA, NEUSOFT used a series of cross cultural management methods to retain the original top-level engineers from ISG, a merger target in Germany. NEUSOFT paid special attention to the suggestions from the labor unions present in that company, because they realized that labor union had considerable power in managing companies in Germany. Currently, innovation through ISG is highly successful in the global market. NEUSOFT already changed ISG into an important R&D center in Europe[202]. One of the services offered is auto navigation service upgrades and maintenance for users in Europe and North America. Mercedes-Benz, Volkswagen owners pay NEUSOFT for this service every time they finish upgrading the navigation system[203].

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[199] The Food and Drug Administration (FDA) is a federal agency of the United States Department of Health and Human Services, one of the United Stated federal executive department.

[200] CE marking is a mandatory conformity marking for certain products sold within the European Economic AREA since 1985.

[201] NEUSOFT official website. History.

[202] 东软, (February 10, 2010)

[203] 中外管理, (2014)

Experience in relationships application has also helped NEUSOFT to achieve effective knowledge transfer with clients from the same country. In an interview, one respondent replies that they had abundant relationship experience with Japanese clients, and NEUSOFT brand had already become the first choice of Japanese clients. After many years of cooperation experience with Japanese clients, NEUSOFT has formed efficient routines to maximize knowledge transfer and develop software products effectively with its Japanese clients.

Furthermore, cooperation experience with clients in the same industry also improves knowledge transfer efficiency. According to the interviews, innovation success with Harman, a German auto electronics manufacturer, relied heavily on relationship management and program management experience with its first client, Alpine, a Japanese client in the same industry. Currently, NEUSOFT is already very successful in auto electronics IT solutions. Taking auto navigation solutions as an example, NEUSOFT is able to provide more complicated and advanced solution with over ten thousands of lines of code, while competitors have only several thousand of lines of code. Usually, global auto manufacturers regard NEUSOFT as the best navigation solution provider in China[204]. Table 5.8 lists the case condition of links experience in joint venture, M&A and experience in different markets.

Table 5.8: NEUSOFT Case condition of Links experience

Links experience	Case condition
Cooperation experience with Japanese clients	Alpine (1989); Toshiba (1996), etc; 59 Japanese clients
Cooperation experience with European clients	Harman (2000); SAP(2003); 34 European clients
Cooperation experience with American clients	Intel (2001); 45 North American clients
Joint venture	Philips (2004-2013); TSOL (2011-2015); NEC(2013-)
M&A	SESCA subsidiaries (2009); Taproot System (2010); ISG(2010)

Source: Edited by author

5.4 Discussion and conclusions

This chapter mainly introduces how outsourcing providers acquire a long-term competitive advantage in the context of dynamic environment and outsourcing

[204] 冀勇东, (2011)

network. Networking capability, as a type of dynamic capability, refers to a focal firm's processes in network organizations by which firms can manage and utilize the relationships in a network. Networking capability is different from ordinary outsourcing provider capabilities like human resource capability and technology capability.

This chapter also examines the dynamic environment faced by firms. Two remarkable characteristics of the environment confronted by outsourcing providers are rapidly changing and passive. The external environment conditions of NEUSOFT are also summarized from the perspectives of clients, government and rivals. All the firms which are around NEUSOFT formulate the basic external environment and play an imperative role in the development of NEUSOFT. Clients are the most important external partners, and subject to the external economic condition easily. Although governments at various levels provide political support such as fiscal subsidies and tax waivers, competition from other rivals, especially foreign rivals, is still very fierce.

Based on evidence from the case of NEUSOFT, networking capability not only refers to the management of relationships mentioned in prior research, but also involves the utilization of nodes and relationships in a network. Thus, this chapter highlights that network absorptive capability is positively related to knowledge transfer in network organizations via link application and individuals practice.

The results show that network collaboration capability is positively related to network evolution through three processes: node identification, node connection and coordination upgrade. The case study proves that node identification rather than relationship initiation should be the most important process to manage the relationships. Furthermore, it is found that node connection covers not only "embeddedness" methods like relational embeddedness and structural embeddedness, but also includes some indirect methods such as M&A. Marketing also influences node connection in outsourcing network according to outsourcing cases. Coordination upgrade differs from the prior networking capability research that stresses vague, abstract relationship development and coordination; coordination upgrade refers specifically to the relationship development from COC to ROC.

6 Conclusions

This dissertation addresses the following questions based on case of two Chinese companies: What factors influence IOR development? What are the effects of IOR development on resource exchange and knowledge transfer? How networking capability affect network evolution and knowledge transfer?

This dissertation contributes to the existing literature by providing an example of how firms in developing countries can develop and evolve their own global network. This study also contributes by evaluating IOR development in a dynamic way rather than a static way and by discussing networking capability from a new perspective. The findings show that three inter-related social factors, reciprocity, communication and culture compatibility, facilitate IOR development on a dyadic level. At the same time, IOR development between client and provider also facilitates knowledge transfer and resource exchange between two firms. Chapter 5 also proves that network collaboration capability has a positive effect on network evolution by three processes: node identification, node connection and coordination upgrade. The other measure of networking capability, network absorptive capability, advances knowledge transfer in a network through two components: individual practice and link application.

6.1 Theoretical implications

Contract and relation are considered to be the two main inter-organizational coordination ways in outsourcing research[1]. The dissertation adopts the term: collective trust to measure IOR development. Collective trust, that involves wide, broad trust in different levels of staff, is highly related to IOR development. ROC in this dissertation not only stresses the role of some positive factors like trust, commitment and risk sharing between firms[2], but also emphasizes contract as the foundation for ROC. Prior studies on IOR frequently mention that IOR develops from contract to relation[3], but lack analysis on the processes of this IOR development. By employing social capital theory and case conditions, this dissertation provides an analysis of how reciprocity, communication and culture compatibility promote IOR development from COC to ROC. The results have important implications in understanding the influence of these three social factors on IOR coordination

[1] Bathelemy, (2003a,b)
[2] Lee, (2001)
[3] Uzzi, (1996); Larsson, (1991); Willcocks and Choi, (1995)

development.

Kramer (2010) firstly introduces collective trust that mainly refers to the intra-organizational wide and broad trust[4]. This dissertation extends collective trust into research on inter-organizational relationship and identifies collective trust as an important mechanism for IOR development. In recent years, more research has started incorporating multilevel and cross-level trust [5] . Interpersonal trust and inter-organizational trust are frequently discussed in the past literature[6]. Zaheer et al. (1998) also prove that interpersonal trust and inter-organizational trust are related to each other[7]. Therefore, this dissertation also adopts collective trust as one important mechanism to bridge interpersonal trust and inter-organizational trust.

Previous studies have examined the effects of networking capability on "innovation success" [8] , "international entrepreneurship" [9] and "new venture performance"[10]. Networking capability in the previous research focuses on the management of relationships [11] . This dissertation mainly provides a process perspective to analyze how networking capability affects network evolution. Network collaboration capability is one dimension of networking capability that involves three continuous processes: node identification, node connection and coordination upgrade.

This analysis identifies the compositions of network that have important implications for understanding how different relationships form and evolve. The results suggest some new contents for networking capability. Firstly, node identification should be the first process of networking capability and networking capability should set standards to select different partners before initiating relationships. These results are consistent with research on partner selection in the work of Dyer and Singth, (1998), and Hitt et al. (2000). Compared with previously identified components of networking capability, this research also provides a detailed analysis of the methods of focal provider connecting valuable nodes in networks. Node connection signifies the establishment of COC relationship. Along with relational and structural embeddedness, M&A also influences node connection and network reconstruction[12]. M&A activity connects target's clients into the focal

[4] Kramer, (2010)
[5] Mayer et al, (1995) ; Schoorman et al., (2007)
[6] Ganeson and Hess, (1997); Zaheer et al., (1998)
[7] Zaheer et al., (1998)
[8] Ritter and Gumunden, (2003)
[9] Styles et al., (2006)
[10] Mu and Benedetto, (2012)
[11] Reinartz et al, (2004); Mitrega et al, (2012)
[12] Öberg et al., (2007); Havila and Salmi, (2000)

provider's network.

The existing research in this field has frequently proven that absorptive capacity facilitates knowledge transfer between firms and between units[13]. This dissertation offers a new perspective to evaluate the effects of absorptive capacity in knowledge transfer by developing the term, network absorptive capability. Network absorptive capability is an interactive learning process between focal provider and external firms. This notion furthers the findings of Cohen and Levinthal, (1990), and Lane and Lubtkin (1998), who maintain the idea of absorptive capacity as a dyadic learning process between "teacher" and "student"[14].

This notion also extends the idea of Dyer and Singh, (1998) who argue that absorptive capacity is an interactive process between two firms[15]. The results support and extend the findings of Van den Bosch et al. (1999) and determine the components of network absorptive capability[16]. Individual practice, that includes individual abilities and interactions, is found to be positively related to knowledge transfer. At the same time, the other firm-level component, link application, also facilitates knowledge transfer between focal provider and external firms through the relationship utilization experience[17]. This network absorptive capability also broadens networking capability from the management of relationships to both management and utilization of relationships.

6.2 Practical implications

According to business network, the degree of embeddedness is dependent on the mutual adaptation of resources and activities[18]. However, the degree of IOR development relies much on collective trust and commitment in both project team members, especially individuals at middle and low-level. Network evolution of MNC in small, developed counties appears simple by virtue of their capabilities in technology, and products advantage. Simultaneously, subsidiaries play an important role in knowledge transfer both within MNC corporate network and within subsidiary business network[19]. However, the case of NEUSOFT suggests that it has specific processes to evolve the network. Owing to relationships development with clients

[13] Cohen and Levinthal, (1990); Ko et al, (2005); Tsai, (2001)
[14] Cohen and Levinthal, (1990), and Lane and Lubtkin (1998)
[15] Dyer and Singh, (1998)
[16] Van den Bosch et al., (1999)
[17] Simonin (1997); Eriksson and Chetty, (2003)
[18] Forsgren et al., (2005)
[19] Forsgren et al., (2005)

possessing technology and management advantage, network plays a significant role in knowledge transfer between NEUSOFT and external organizations. NEUSOFT's network evolution facilitates knowledge transfer and improves its own innovation capability. Therefore, the findings have important implications for firms in developing countries. Chinese firms could rely on network and relationships with external organizations to improve their innovation capabilities and achieve the objective of internationalization.

The findings in this dissertation confirm that IOR development has a positive effect on mutual knowledge transfer and resource exchange between client and provider[20]. This dissertation explores the detailed, specific resource and knowledge that are exchanged and transferred between firms. The results are meaningful because they show that some MNCs utilize the channels resources established by Chinese outsourcing providers. Moreover, Chinese providers learn how to manage their firms from the top MNCs. Therefore, firms in the developing countries, especially in China, can rely on its good relationship with top MNCs to learn management knowledge and improve their project management ability.

The findings also suggest that firms could extend and develop their network through M&A which has an indirect effect on constructing a network and changing network structure[21]. Focal providers might be more active in providing services for expected top clients through acquisition of their cooperation partners. The findings suggest that firms should consider how to improve individuals' abilities and develop interaction mechanisms in order to maximize knowledge transfer in a network. For example, Minbaeva et al. (2003) propose that human resource practice facilitates knowledge transfer through improving individuals' abilities and motivation between MNC headquarters and subsidiaries[22].

6.3 Limitations and future research

There are also some limitations in this work and further research is essential in order to conduct comprehensive research in this area. One evident limitation here is the methodology adopted in this research. This research used only case studies rather than quantitative data analysis, so the case data is not enough to support related propositions. Owing to the time limitation, research regarding IOR development and

[20] Dyer and Singh, (1998); Inkpen and Tsang, (2005); Oliver, (1997)
[21] Öberg et al., (2007); Havila and Salmi, (2000)
[22] Minbaeva et al., (2003)

network evolution covers only limited case samples instead of multi-sample analysis. Only two case firms, NEUSOFT and INSIGMA, supply the qualitative data for IOR development, while only the NEUSOFT case supports the propositions with respect to network evolution and networking capability. This study also lacks detailed analysis on the correlations of the two case conditions of NEUSOFT and INSIGMA. Future research could combine both qualitative study and quantitative study to obtain comprehensive and persuasive findings.

The qualitative data is limited to successful case conditions to support related propositions. NEUSOFT and INSIGMA are two very successful Chinese outsourcing providers around the world and already succeed in developing their global outsourcing networks and capabilities. In essence, there are a lot of failure Chinese outsourcing providers those could not develop themselves in the global market and go bankrupt eventually. Moreover, there are also many Chinese outsourcing providers that still are able to supply low value-added work to outsourcing clients. The lack of comparison with failure cases limits this discussion and causes the results to be less persuasive and general. It is suggested that future research adopts multiple cases and quantitative data to analyze the related research questions. Especially, future research should also select both failure cases and successful cases to make persuasive research findings.

There are also some limitations in regards to discussion at the individual-level. Collective trust, as an important mechanism of IOR development and multilevel trust, provides much theoretical support for the findings. Collective trust in this dissertation refers to trust between individuals at middle and low-level of both project teams. This finding has important implications for technology-intensive team work activities, such as R&D alliance. However, the limitation is in the ability to generalize the findings. For example, top managers in small outsourcing companies are often important members on project teams. Moreover, collective trust may not be applicable in the manufacturing industry since low-level workers do not have to interact with employees in client firms. Because it is very difficult to have an interview with senior managers in Chinese outsourcing firms, Collective trust only concerns about the trust at middle and low-level workers of both project teams. In fact, senior manager should also play an important role in building collective trust between organizations through their efforts. Future research could pay more attention to the generalization of collective trust, especially collective trust should also consider the trust in senior

managers.

Next, although this dissertation discussed about three antecedents of IOR development from the aspect of social context, one evident limitation is that these three factors are highly correlated with each other. For example, communication is positively related with reciprocity, and culture compatibility also facilitates communication. Future studies could distinguish between these antecedents from different aspects. Furthermore, these antecedents only cover three social factors and ignore the effects of other factors on IOR development. Future research could investigate whether other factors affect IOR development, such as institutional factors and organizational factors etc.

Several limitations are also present at the organizational level. First, based on previous literature with respect to coordination ways, this dissertation develops COC and ROC as two important coordination ways in ITO industry. The research questions mainly focus on how outsourcing providers develop the dyadic relationship coordination from COC to ROC. In fact, it is possible for IOR to deteriorate from ROC to COC. Outsourcing provider and client might reduce or terminate their cooperation owing to the increase of distrust. Future research could examine the factors that might change coordination way from ROC to COC and compare successful cases and unsuccessful cases to research the antecedents of IOR development.

Second, network evolution described in this study has limitations in terms of generalization. Network evolution here only considers one specific service industry, ITO industry, which has its own specific features in contrast to other industries. Thus, the findings on outsourcing network evolution are not applicable to low technology-intensive industry, such as firms in the manufacturing industry. At the same time, this outsourcing network evolution only discusses how the firms in developing counties develop and expand their network gradually with firms in developed countries. Thus, the results are not applicable to the firms in developed counties or the firms that already have technology or market advantage. Future research could combine the cases in both developed counties and developing counties to examine network evolution. Furthermore, it lacks analysis on whether network evolution affects a focal firm's performance, or generates some risk and uncertainty. Future research could focus on how network evolution influences firm performance and innovation.

Third, knowledge transfer is an important topic in this dissertation, and the efficiency of knowledge transfer improves with IOR development and network evolution. It lacks detailed analysis about how case firms recognize, assimilate and utilize external knowledge and create knowledge by themselves. However, it is found that the case firm, NEUSOFT, has been paying much attention to knowledge creation and products innovation in recent years. Thus, future studies could focus on not only knowledge transfer from external firms through IOR development and network evolution, but also knowledge creation and innovation capability improvement after transferring knowledge successfully.

Finally, networking capability is integral in evolving network organization and knowledge transfer, but this dissertation does not investigate the antecedents of networking capability and how networking capability affects management issues. Future research could examine how networking capability is formed based on organizational theories and social theories. Future study is also necessary to conduct empirical research on the effects of networking capability on network structure, firm performance and network performance. It is suggested that future research could adopt quantitative data to research the relationship between networking capability and network structure, including network position, social cohesion and structural hole. Network absorptive capability has been found to be positively related with knowledge transfer in IOR, and more research also is necessary to investigate how to transform and exploit external knowledge in intra-organizational units, and produce more innovative products and services.

Although there are a number of limitations in this dissertation, the findings suggest the antecedents of IOR development and processes of outsourcing network evolution. It rebuilds the framework of networking capability and gives implications about the consequences of dyadic IOR development and network evolution.

Appendix

Table 6.1: Main questions in the interview (Face-to-face and web)

Provider Company related
Could you tell me some history about your company?
Could you tell me some thing about your founder and your top managers?
How did network crisis and financial crisis affect outsourcing industry and your company?
Contract related
What did you write in the contract?
With the relationship improvement, will you simplify the contract?
Will you change the contract in the process of program implementation?
What is the role of contract in the process of program implementation?
With the relationship improvement, will you still strictly obey with the contract?
Relation related
How do you assess the relationship with xx company?
How do you like the role of trust in your relationship with xx company?
What is the turning point for the relationship between you and xx company?
What kind of service do you provide before and now?
How do you improve the relationship with that company and the staff?
In what condition, you feel you are satisfied with the relationship?
Do you make a lot of friends in the client company?
How do you like the relationship between top-level managers?
How do you communicate with each other?
How often do you communicate with the client?
What is the requirement of the business for your language level?
How was the overall foreign language level in your company?
What are methods to improve your language level?
What are informal communication ways between each other?
How many working staff is sent to client company usually for the program?
What is the importance of working in clients company?
How often do you meet your clients face-to-face?
What are the culture exchange mechanisms when you are doing business?
Why you want to emphasize the culture exchange mechanism?
What kind of contents did you learn from the cultural class?
How do you know client company's organizational culture and its objects?
How do you think the cultural conflict between China with Japan, the united states?
Do you meet the condition you had the cultural conflicts with your client?
IOR Consequences:
What do you get from the cooperation with xx company?
With the relationship improvement, what kind of resources do you get from this relationship?
What factors are important for the program success?
With the relationship improvement, will the programs be more successful?

For xx company, what do they obtain from the cooperation from you?
With the relationship improvement, what special resource did they obtain from you?
Why they choose your company as provider?
With the relationship improvement, what kind of special thing did you learn from them?
With the relationship improvement, will you grasp the client requirement better?
Network related
How many main clients do you have in Japan, Europe and the United States?
How many clients do you think you have good relationship?
What is the manager's role in obtaining business?
Could you give me some examples about interpersonal ties in obtaining business?
What is your standard to select and cooperate with those partners?
For the strategic partners, what special thing did you do?
Which client is obtained from the recommendation from existing client?
Why they recommend their partners to you?
How do you expand your market?
How many joint ventures do you have?
Why do you acquire xx company?
After buying that company, what did you get from that company?
What kind of service you provide is high-technology around the world?
Did your company improve your R&D level through the cooperation with xx company?
What is the role of developers in the process of program implementation?
How your company improves the abilities of the developers?
What kind of abilities is important for knowledge transfer from external partners?
How do you like the role of cooperation experience in the process of knowledge transfer?
What kind of cooperation experience do you have?
What did you learn from the past cooperation experience, especially in the aspect of R&D?
How do you like your joint venture cooperation experience, especially in the aspect of R&D?
What is your cooperation experience with the merger targets, especially in the aspect of R&D?

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