



Turun yliopisto
University of Turku

FINNISH CLEANTECH SMES IN CHINA

Challenges and solutions

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Author:
Hans Karjula

Supervisors:
Ph.D. Esa Stenberg
M.Sc. Elina Pelto

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Turku



Turun kauppakorkeakoulu • Turku School of Economics

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1 INTRODUCTION

1.1 China's economic growth and the need for cleantech

In 2011 The Peoples' Republic of China (hereafter China), consumed 3.8 billion tons of coal, almost equalling the consumption, 4.3 billion tons, of the rest of the world combined. What is more, despite governmental support for renewable energy production the use of coal in China is predicted to grow in the future. (Walsh 2013.) As a result, the high usage of coal causes severe stress to the environment as well as health problems. For example, citizens were advised to stay indoors in Beijing in January 2013 as thick smog covered the city for many days (Saastunut ilma -- 2013). Also, the largest cities in emerging markets, such as China, suffer from increasing water stress due to population growth as well as the climate change. Globally, one billion people lack clean water and 4,000 children perish daily because of polluted drinking water. (Stenberg 2012, 2.) Indeed, over 24 per cent of the waters in China are estimated to be so polluted that they are not even suitable for industrial usage let alone drinking. Only around 50 per cent of the water is drinkable. (Kiinan vesistöistä – 2010.)

The reasons for these environmental issues in China can be found in the country's economic development as the nation needs increasingly more energy to fuel the economic growth. China, established in 1949, is the most populated country in the world and the second largest economy after the USA (World Factbook 2012). During the past decade China has enjoyed an economic growth rate that many developed markets can only envy. With an annual growth of more than 8 per cent (see figure 1) for the past ten years China passed Japan in 2010 to become the world's second largest economy after the USA (Barboza 2010).

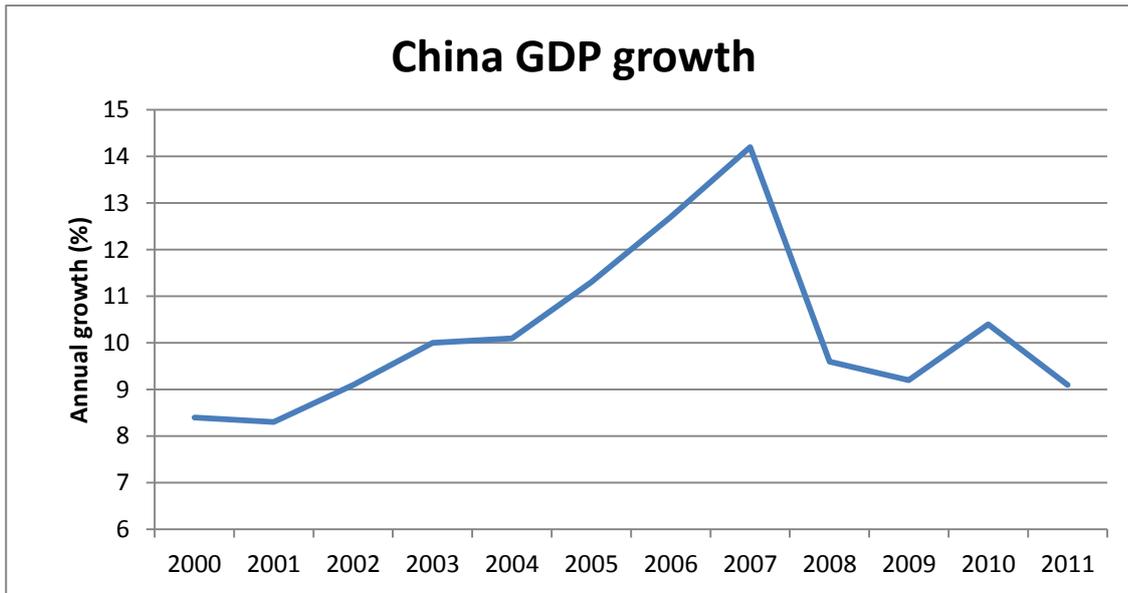


Figure 1 GDP growth in China (The World Bank 2013)

From the viewpoint of foreign companies the rapid economic growth has recently resulted in two distinct phenomena. First, foreign companies are now moving inland from the coastal regions in order to tap into the vast unused potential of rural regions to gain cost competitiveness and to serve the local markets there (Kosonen, Kettunen & Heliste 2012, 8). The coastal regions have become increasingly costly for foreign companies to manufacture in: the eastern coast the Bohai Gulf of the Yangtze River and the southeast coast The Pearl River delta have accumulated a major portion of the country's national income (Economy Watch 2010). The reason for this is that the first Special Economic Zones (SEZs) were opened in 1979 in Shenzhen, Zhuhai, Shantou and Xiamen which are all located on the southeast coast. The special zones were opened for foreign companies and thus served as the engine of economic growth. (RoyChoudhury 2010, 115.)

Second, as production costs are rising in China, foreign companies are locating their production closer to their market. Many European and US-based companies have relocated production facilities in East European countries and Mexico or even domesticated manufacturing functions. This means that the described economic development in China has changed the motives for operations of foreign companies. If companies first entered the market to manufacture in China and ship the products to respective home markets, now firms increasingly enter China to serve the growing domestic market. (Kosonen et al. 2012, 8-9.)

The two trends, moving production inland from the SEZs and entering the country to serve the local market, are visible among the Finnish companies as well: some companies have withdrawn their subcontractor-based production as well as own production back to Europe. Also, the vast market potential in China has become the

most crucial reason for Finnish companies operating in the country. As the costs increase, Finnish companies seek to establish themselves inland outside the coastal SEZs in order to increase market share and gain cost competitiveness. (Kosonen et al. 2012, 9.)

The causes for this regional development are easy to determine. To begin with, achieving a high GDP growth has occasionally resulted in an overheating economy which in turn has meant giving in to inflation to some extent (Kosonen et al. 2012, 6). The estimated inflation in China was 5.5 per cent in 2011, whereas the same figure stands at 3.3 per cent for Finland (World Factbook 2012).

The rapid economic growth followed by inflation has created considerable inequalities among the people. The annual per capita income of urban citizens in China was USD3,434 in 2011 while rural workers earned USD1,098. The per capita income of urban residents grew by 8.4% from the year before and rural income by 11.4%, respectively. (China Daily 2012.) According to the World Bank this makes China already an upper middle-income country (The World Bank 2013).

In conclusion, the developments in the international economic environment combined with changes in the Chinese economic landscape as well as nature have created a situation where it is important to turn attention to the foreign companies, especially in cleantech industry, operating in China. Combined with the environmental pressure to decrease the use of fossil fuels and China's ever-growing need for more energy to fuel the economic growth, the country has taken steps to promote the use of renewable energy technology, which in turn has created business opportunities for foreign companies in the cleantech industry. China's proportion of the global annual newly installed capacity has increased from less than 10 per cent in 2006 to 49 per cent in 2010. This is a part of the Chinese government's low-carbon development strategy, which targets wind power as one of the main energy sources by 2050, constituting 17 per cent of domestic electricity demand. As a result, the government promotes non-fossil energy development, including wind power, hydropower and nuclear power. (IEA 2011, 1, 7, 10.)

1.2 The Finnish cleantech industry in China

China's need for clean technology affects the Sino-Finnish trade relations as well: cooperation in cleantech is now one of the key points between Finland and China, with the latter becoming the main export area for the Finnish cleantech industry in the near future (Mizera 2010). One definition of clean technology, or cleantech, is to describe it as industries "that focus on alternative energy, pollution and recycling, power supplies and conservation" (PricewaterhouseCoopers 2010). Cleantech may encapsulate

industries such as wind and solar power, materials, buildings, water, recycling and electricity transmission. A further elaboration the concept leads to discussing companies that aim to improve energy efficiency of industrial processes through technological solutions. (Tierney 2011, 64.)

The cleantech industry in Finland is an extremely relevant subject for research also as the current Finnish government aims to establish cleantech as one of the foundations of the industrial policy. The target is to create 40,000 new jobs in the cleantech industry by 2020 as well as to double the combined turnover of cleantech companies from EUR20 billion to EUR40 billion by 2018. (Työ- ja Elinkeinoministeriö 2013a.) One of the ways the government attempts to help companies achieve these growth goals is to support the internationalisation of Finnish small- and medium sized enterprises (SMEs), who operate in the cleantech industry, in rapidly growing emerging economies such as China, India, Russia and Brazil (Työ- ja Elinkeinoministeriö 2013b).

Finnish companies first established themselves in the Chinese market en masse at the beginning of the 1990's. This wave was created with the aid of two industry groups. First, Finnish paper and heavy machinery companies invested in China. Second, Nokia and other ICT companies and their subcontractors quickly found their way to the Chinese market. In the 2000's newcomers include Finnish SMEs working as subcontractors for machine companies. More recently, service companies have discovered the Chinese market. (Kosonen et al. 2012, 8). Some of the largest Finnish companies operating in the market are Cargotec, Kone, Konecranes, Metso, Nokia, Stora Enso, UPM-Kymmene and Wärtsilä (Kauppayhdistys 2011).

Some estimates state that approximately 300-350 Finnish companies operate in China currently. About half of those companies engage in production in the country, with the rest having sales and representative offices. (Kosonen et al. 2012, 8.) At the same time, however, it is difficult to reliably estimate the number of Finnish cleantech companies in China. Nevertheless, in total Finnish companies employ about 60,000 people in China (Kauppayhdistys 2011).

Overall, China is Finland's 7th most important export partner with 4.8 per cent of the country's exports flowing into China (World Factbook 2012). However, Finland's business relationship with China is more profound than the mere export of EUR2.661 billion in 2011. The total investments of Finnish companies into China valued at around EUR8 billion in 2010. (Kauppayhdistys 2011.)

To conclude, although the size of the global market for cleantech is estimated to be EUR1,600 billion and thus only 6 per cent of the global GDP, it is one of the most rapidly growing sectors at an annual growth of around 10 per cent. In Finland the cleantech companies' combined turnover accounted for almost 11 per cent of the GDP in 2011. The exports in cleantech were approximately EUR12 billion, accounting for almost 20 per cent of Finland's exports. (Työ- ja Elinkeinoministeriö 2013b). The

Chinese cleantech market, however, grows 15 per cent annually and amounts to around EUR1,000 billion alone. In 2010 the Finnish cleantech industry valued at EUR900 million, a figure that is likely to have doubled by 2013. (Mizera 2010.)

1.3 The purpose and structure of the study

The purpose of this study is to identify challenges faced by Finnish cleantech SMEs in the Chinese market and discuss how these challenges can be overcome. Consequently, the main research question of this study is:

- What challenges do Finnish cleantech SMEs face in operating in China and how can these challenges be overcome?

The main question can further be divided into sub questions which concentrate on the selected themes from the preliminary interview. Thus the sub questions can be formulated as follows:

- What human and financial resource-based challenges do Finnish cleantech SMEs face in the Chinese market and what are their solutions?
- What knowledge-based challenges do Finnish cleantech SMEs face in the Chinese market and how can these difficulties be resolved?
- What network-based challenges do Finnish cleantech SMEs face in the Chinese market, how do they relate to the resource- and knowledge-based challenges, and how can these difficulties be resolved?

In order to determine the unique context in which cleantech companies operate in China the identified challenges are reflected on two non-cleantech cases. This allows the study to recognise and discover very particular solutions that function in the cleantech industry. This study was conducted according to the qualitative research paradigm by using interviews as the source for primary data. Apart from one preliminary interview all of the interviewees operate specifically in the cleantech business.

Furthermore, this particular study concentrates on SMEs, leaving larger companies outside the scope of the research. However, according to the European Commission an SME is a company which has less than 250 employees and either a turnover of less than EUR50 million or a balance sheet total of less than EUR43 million (European Commission 2012b). Still, most of the companies studied do not fit unequivocally the official SME definition. For example in 2011, the latest compiled and fully reported fiscal year, one of the companies interviewed, The Switch, had an average number of personnel of 226 while the turnover was EUR93.8 million and the balance sheet total EUR57.7 million (The Switch 2013). While these numbers grossly surpass the

maximum threshold fitting an SME, the company operates in China in a very asset-light manner making it a *de facto* SME.

What is more, the official definitions of SMEs differ from country to country. In China, for example, companies that employ less than 2,000 people and have annual sales of less than RMB300 million (EUR36 million at current rate) and a balance sheet of less than RMB400 million (EUR48 million at current rate) fit the official description of an SME (Nan & Jin 2010). Consequently, the interviewed companies' size of operations in China has been used as a measure determining the fit of the firm for this study. As no official information was available for all the companies specifying the importance of the Chinese market, the interviewees were prompted to give their own assessment of the company's fit within the SME definition.

Another important aspect for this study is the technological dimension of cleantech industry. As very little academic research has been conducted on cleantech companies in particular, for the purpose of this research cleantech firms are treated as high tech companies in order to establish a viable theoretical base. The interviewed companies add further credibility to this assumption: the firms specialise in technologically advanced and complex products in electricity generation and transfer.

In addition to the purely pragmatic side of this study the purpose of academic research is to bring together two sides of business and academics: theory and practice. Thus, following this line of thinking a thesis should, in addition to the pragmatic value, make a contribution to the theoretical continuum of international business. At the same time, there are concerns that the growing distance between theory and practice may result in irrelevant theory as well as untheorised and invalid practices (Anderson, Herriot & Hodgkinson 2001, 391). Even though processes and phenomena are researched and theorised, the findings might not be conveyed to practitioners. Thus research needs to pay more attention to the processes of implementation. (Beer 2001, 58.) On the other hand, researchers are not the only ones to blame. Academics point out that practitioners often fail to understand the generalised nature of a theory and thus fail to apply it successfully to their own situation Weick (2001, S71).

In order to contribute to the amelioration of the situation this study follows a set structure. Having established the relevance of the Finnish cleantech industry as a research subject this study proceeds to address academic literature on the subject. The structure of the theoretical discussion delves deeper from a more general level towards a more specific subset of issues. After discussing the overall SME internationalisation process, the study moves towards a more specific focus and concentrates on the industry-level challenges and determinants that affect cleantech businesses. Then, the second level of focus is based on the resource-based view of the firm. This rather general theory a firm offers a good platform for discussing certain aspects of Finnish cleantech SMEs and the specific challenges they have faced in China. Next, the third

level of focus is founded on the knowledge-based view of the firm, a more recent theory of a firm, which is often considered to be a spinoff of the resource-based view of the firm. The fourth and final level of focus concentrates on networks and guanxi, a specific Chinese system of personal relationships and their effect on conducting business. The guanxi system has very clear implications on both the resource-based as well as knowledge-based issues of companies operating in China. Thus the discussion moves from a more general level deeper into a more specific subset of issues, a structure that is present in the whole study.

Following the theoretical discussion in chapter two, chapter three introduces the research design and methods used in collecting the data. Chapter four is dedicated to analysing the collected data and synthesizing results. Finally, chapter five briefly summarises the findings, notes the limitations affecting the study and points out further questions for academic research, thus following the underlying philosophy of contributing both to the pragmatic as well as theoretical side of research. Thus the research in whole follows a well-established structure (Gibbs, Kealy, Willis, Green, Welch & Daly 2007, 540).

2 CHALLENGES IN SME INTERNATIONALISATION TO EMERGING MARKETS

2.1 The process of SME internationalisation

Before discussing specific challenges in SME internationalisation it is beneficial to first take note of the literature on how the SME internationalisation process itself takes place. Patterns of SME internationalisation can be roughly divided into three different paths: traditional or incremental internationalisation, born globals or international new ventures (INV), and born-again globals (Olejnik & Swoboda 2012, 466). The first pathway is an incremental internationalisation process where a firm gradually increases its commitment in foreign markets after first developing in the domestic market. This incremental pattern, named the Uppsala model, assumes four distinct stages of internationalisation:

1. no regular export activities
2. export via independent representatives
3. sales subsidiary and
4. production or manufacturing. (Johanson & Wiedersheim-Paul 1975, 307.)

In the first stage the firm has no activities whatsoever, whereas in the second stage the company has an agent in the foreign market selling the firms' products and supplying the company with information concerning the market. In the third and fourth stages the firm commits increasing amounts of resources to the market and in return receives more tangible information of the target market. (Johanson & Wiedersheim-Paul 1975, 306-307.)

Another important factor in the Uppsala model is the assumption of the relevance of psychic distance. This concept refers to factors inhibiting the flow of knowledge between the foreign and the home market. These factors may be determinants such as language, education, business practices, culture and industrial development. (Johanson & Vahlne 1977, 24.) Generally, psychic distance correlates with geographic distance, although disproving examples are easy to identify. An important issue with psychic distance is the possibility of change. Developments in communication systems, trade and social exchanges can alter the psychic distance as two markets increasingly share information about each other. (Johanson & Wiedersheim-Paul 1975, 308.)

However, further research has strongly questioned the relevance of psychic distance as a key determinant of internationalisation. Firms' action towards internationalisation are often more reactive and opportunistic than carefully planned. One of the key influences to internationalisation is client followership. This means that a company enters a foreign market to as a result of the international actions of domestic clients.

Another reactive influence is an unsolicited order or inquiry from a foreign company. In cases like this the psychic distance plays very little role as the entrepreneurial spirit functions as the key driver. (Bell 1995, 65, 67-68.)

The second path to internationalisation discusses international new ventures – companies that are created in an international setting. International new ventures are defined as “-- a business organization that, from inception, seeks to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries.” Instead of gradually committing more resources in other countries, firms may formulate a strategy that allows them to proactively reap advantages in the international market. These advantages may be for example strategic alliances for joint manufacturing or marketing. (Oviatt & McDougall 1994, 49.)

Following the distinction between the number of countries where the firm has operations and the level of coordination of value chain activities a matrix of different types of international new ventures can be created (see figure 3).

Coordination of Value Chain Activities Across Countries	Few	Export/Import Start-up	Multinational Trader
	Many	Geographically Focused Start-up	Global Start-up
		Few	Many
Number of Countries Involved			

Figure 2 Types of international new ventures (Oviatt & McDougall 1994, 59)

The first two quadrants, export or import start-ups and multinational traders refer to companies that move goods between nations with minimal direct investments to any particular country. Only crucial value chain activities such as inbound and outbound logistics systems and related knowledge are internalised within the firm. Geographically focused start-ups differ from the first two quadrants in that their operations are geographically centred on a certain location and that multiple value chain activities, such as human resources, production and R&D are coordinated. Finally, global start-ups are firms that derive their competitive advantage from the significant coordination of value chain activities across highly geographically diversified locations. (Oviatt & McDougall 1994, 58-60.)

Behind the third path of internationalisation, the born-again global path, lies an important realisation that the born-global concept is not necessarily restricted to start-ups. Born-again globals are established firms that have thus far concentrated on

domestic markets, but suddenly internationalise at a rapid pace. (Bell, McNaughton & Young 2001, 174, 186.) Sudden events that lead to the decision to internationalise may be an acquisition, the situation of been taken over, or the introduction of new owners or a new management team (Bell, McNaughton, Young & Crick 2003, 353).

However, the internationalisation of a firm requires suitable conditions. Resources, knowledge, and networks are mentioned in literature as some of the key firm level antecedents for internationalisation (Kuivalainen, Sundqvist & Saarenketo 2012, 452). In order to fully appreciate the impact of firm-specific resources on SMEs it is beneficial to first delve into the industry level business environment in which the companies operate.

Having discussed the SME internationalisation process and identified some of the categories of challenges that these companies can face in China, it is beneficial to deepen the analysis and assess factors affecting the business environment which in turn has an effect on resource-based challenges such as financial, human, knowledge and network resources.

2.2 Business environmental factors

Theoretical literature often concentrates on very particular issues and does not provide comprehension of the phenomenon in a larger scale. Luckily, Michael Porter's work provides tools well fit for analysing the effects of resources in a broader context. Thus, first by using his frameworks it is possible to determine the unique context where human resources and financial resources exist in China and how does the environment ameliorate or aggravate resource-based challenges. One of Porter's most influential frameworks describing these environmental determinants is the five forces model that depicts factors that affect industry competition. These forces are

- rivalry among existing competitors,
- threat of new entrants,
- bargaining power of suppliers,
- bargaining power of buyers,
- and threat of substitute products of services. (Porter 2008, 80.)

At the same time he points out important things concerning the model: "Understanding the competitive forces, and their underlying causes, reveals the roots of an industry's current profitability while providing a framework for anticipating and influencing competition over time." Also, it is important to note that the configuration of the forces differs between industries as any given factor may be benign in one industry and extremely intense in another. (Porter 2008, 80.)

Another, perhaps even more important model for the purpose of this study is Porter's diamond model. The diamond describes four attributes specific to each nation (see figure 4). The attributes ultimately determine the competitive advantage of a country, and affect where companies choose to locate their operations. The four attributes are factor conditions (factors of production, e.g. infrastructure or skilled human resources), demand conditions (the domestic demand for a given product), related and supporting industries (national suppliers and other related industries), and firm strategy, structure and rivalry (how companies are created and managed in addition to domestic competition). (Porter 1990, 77.) In this study the Porter's five forces model can be seen as a subset of the firm strategy, structure and rivalry component in the diamond model.

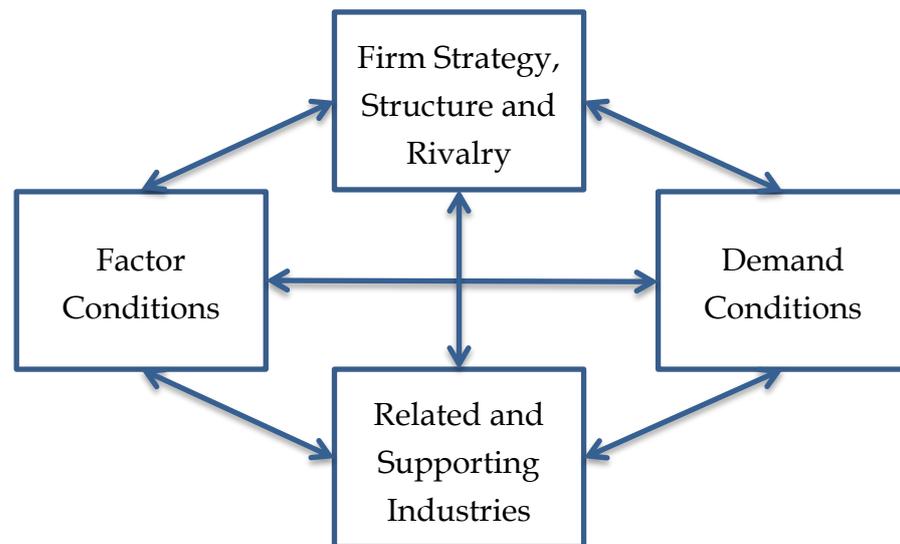


Figure 3 Porter's diamond model (Porter 1990, 77)

A somewhat debated element in the diamond model is the role of the government. Porter does not treat it as an individual factor in the diamond but rather a catalyst and challenger. The government can through policies affect the way companies pursue profitability by creating an environment where firms can develop their competitive abilities. (Porter 1990, 86.) However, there is evidence that in countries where state ownership exists in industries the government plays a very direct role and thus should be included in the model as a separate entity (Pettus & Marilyn 2008, 121-122). As large state-owned companies exist in China the evidence seems to indicate that the separate treatment of government would be an apt choice. With the role of the government analysed in Porter's work and the resource-based view of the firm explained, this study will move onwards to assess more particular challenges related to first financial resources and then human resources.

2.3 Firm-specific assets for SMEs

This chapter aims first to introduce the resource-based view of the firm as well as tools for analysing the theory in a broader context, and then discuss possible challenges to SME internationalisation in China related to financial resources and human resources from the resource-based view. The resource-based view of the firm was first introduced in the 1980's. The theory introduces resource position barriers, which refer to a position where a company's resource position gives it an advantage over competitors. Although originally the theory discusses particular resources such as machine capacity, customer loyalty and technological leads, the resource-based view can be used in a more broad sense to encompass any resource or set of resources vital to a firm. (Wernerfelt 1984, 173-174.) For example, Barney (1991, 101) considers firm resources to include all assets, organizational processes, firm attributes, capabilities, information, knowledge, etc. that is controlled by a company.

For this particular study, three resource types are of relevance: financial, human capital and knowledge resources. Theorists often draw a line between the resource-based view and the knowledge-based view of the firm, and distinguish the theory discussing knowledge resources as a separate paradigm (Spender 1996, 45). However, for the purpose of this study it is beneficial to appreciate knowledge as a resource, but from the knowledge-based paradigm to allow a deeper analysis.

An important element in the resource-based view of the firm is the assumption of the heterogeneity of resources (Barney 1991, 105). As companies try to build competitive advantage by having beneficial factor endowments, the implication is that a lack of certain resources gives a company a disadvantage. It is these disadvantages that the theoretical chapter concentrates on. By identifying challenges that the academic literature proposes it is possible to gather suggested solutions to these challenges. The result is a coherent understanding of the business environment for SMEs in the Chinese economy.

2.3.1 Financial resources

Perhaps one of the most important resources for any company is the financial resources. In this regard, SMEs operate in a very unique environment. For example, due to their size SMEs, in contrast to large companies, often face severe financial constraints and the lack of capital is considered to be one of the most common reasons for a company failure (Tsang 1994, 100; Beck & Demirguc-Kunt 2006, 2931). When probed for reasons for insolvency, one study discovered that managers perceive undercapitalization

and the poor management of debt to be the main reasons for SME failure (Hall 1992, 243).

Yet, at the same time it is important to note that size, ownership and age play a centric role when determining the role of financial resources as older and larger foreign-owned companies report lower financing obstacles (Beck & Demirguc-Kunt 2006, 2936). What is more, the overall institutional development, encompassing stock markets, the legal system as well as financial intermediaries of a nation, is a most significant characteristic explaining a firm's financing obstacles (Beck, Demirguc-Kunt, Laeven & Maksimovic 2006, 948-949). Improving legal and financial institutions in a country improves companies' chances of growing and doing business successfully. Furthermore, as SMEs are more vulnerable to variations in the external environment, they benefit more from positive changes than large companies. (Beck & Demirguc-Kunt 2006, 2941.)

One reason for this susceptibility may be that gaining access to external funding is more difficult for SMEs than large companies. Research indicates that large companies are able to finance a larger part of their operations with bank loans compared to SMEs, whereas smaller companies resort more to informal finance than large enterprises. (Beck & Demirguc-Kunt 2006, 2936.) Some sources of informal finance can be retained earnings, government grant or loans, or more personal sources such as funding from the owners of the company, internal staff or private equity (Xiao 2011, 226). Also, this pattern among SMEs is considerably more prevalent in China than many other economies (Beck, Demirguc-Kunt & Maksimovic 2008, 472). Informal financing and self-finance methods are the most common form of funding among high-tech SMEs as well. What is more, the lack of formal finance is visible at all stages of business development, namely at start-up, early stage and later stage. (Xiao 2011, 230.)

This may be a result of the fact the banking sector in China was mainly established to fund state-owned companies as well as collective firms, not private companies, which in turn translates into a lack of experience in financing private SMEs (Xiao 2011, 220). One survey discovered that SMEs in China were able to raise only 12 per cent of their capital from banks, while the amount was 21 per cent in Malaysia and 24 per cent in Indonesia, respectively. Another study concluded that in 2006 more than 98 per cent of the SMEs in China had no access to formal finance. (Shen, Shen, Xu & Bai 2008, 800.) Although, when addressing such large numbers, one has to remain critical of their accuracy, the statistics are nevertheless a good indication of the situation.

A repeatedly suggested solution to this problem is the establishment of small and medium-sized banks as it is believed that they would be in a better position to finance

SMEs (see Shen et al. 2008, 800)¹. However, the creation of SME banks does not necessarily solve the issue as the bank size, per se, does not affect SME lending. Still, they conclude, that an increased number of banks could result in higher SME lending through more intense competition – an assumption that is confirmed by more recent research. (Shen et al. 2008, 809-810; Mercieca, Schaeck & Wolfe 2009, 149.) Having discussed potential challenges related to financial resources the attention can now be turned towards the next set of challenges related to human resources.

2.3.2 *Human resources*

Another important resource category, often mentioned in the resource-based view of the firm, is the human capital resources (Barney 1991, 101). The lack of human resource capital is an important SME-specific constraint, which restricts smaller companies to undertake less strenuous ventures compared to multinational companies (MNCs). (Tsang 1994, 100.)

Some of the most important challenges related to human resources deal with the retention of employees. Voluntary employee turnover posits important questions to companies: Why do employees leave? How can companies ensure the retention of key operatives? Employee turnover creates hidden, often immeasurable costs to companies. For example, a person leaving may disrupt the continuum of customer service. Also, the screening and recruitment of new employees, temporary staffing and training creates costs. (Holtom, Mitchell, Lee & Eberly 2008, 236.) Additionally, finding the right person for the job is increasingly challenging for high tech companies as personal skills and personality play an important role. Furthermore, the challenge is even more difficult for SMEs to surmount. The human resource management (HRM) and related strategies hold a centric role in these processes.

In order to appreciate the unique context in which the Chinese human resource management functions one has to comprehend its past. The traditional iron rice-bowl practices stem from the human resource (HR) policies employed by the Chinese SOEs. These practices have several differences compared to Western HR policies. First, the reward system is attuned to respecting age, length of service and loyalty. Rewards are often non-material and individual performance is downplayed over collective

¹ Li, Z. J. (2002) Bank structure and financing of small and medium enterprises. *Economy Research*, Vol. 6.; Wang, X – Zhang, J. (2003) Bank credit ration and lending to small and medium enterprises: A model of enterprise's size with endogenous mortgage. *Economy Research*, Vol. 7.

achievements. Also, the personnel department has a strong mission to monitor, control and punish, if necessary. Moreover, the trade unions are subject to the governing Party and thus they promote the governmental policies rather than employee wellbeing. Finally, in the centrally-led system there is no formal labour market, and job allocation is centrally planned. (Goodall & Warner 1997, 571.)

Underpinning the iron rice bowl practices lie deeply rooted beliefs and traditions stemming from Confucianism and the Chinese culture (Cunningham 2010, 2133). For example, whereas the Western HR practices assume individualistic identities, the Chinese HRM takes a more collectivistic stance. Indeed, as China becomes more modern and Western, the popularity of Confucianism increases as the Chinese attempt to create an own blend of traditional and modern values. (Warner 2009, 2180, 2183.) Still, more recent research shows that Chinese HRM practices now converge significantly with Western models, although they retain their unique aspects (Cunningham 2010, 2120).

In the competition for qualified employees SMEs have to compete against other SMEs and especially larger companies in this uniquely Chinese HR environment. Large companies are seen as desirable employers and many workers are willing to switch from a SME to a larger company as they can offer a higher salary and improved career prospects (Gray & Mabey 2005, 480-481). The same situation applies in the Chinese context. The lack of qualified personnel is a crucial challenge for human resource management in China as well. The problem is not only reflected in the recruitment process of manufacturing employees but also the human resource function itself: companies have difficulties in finding skilled HR professionals in China. (Cunningham 2010, 2131, 2134.) Additionally, local companies are increasingly viewing foreign firms as talent pools to tap into and employee poaching can become a serious issue for some companies (Thomas 2000).

Literature recognises several solutions to this problem. First, in addition to finding the best-suited person for a specific job SMEs have to, following the Confucian tradition, build long-term commitment to their company by giving their employees a realistic understanding of their employment and the organisation in which they work (Cunningham 2010, 2134). Following from the turbulent and uncertain political environment, informal HR practices are the key to current HRM in SMEs in China (Cunningham & Rowley 2010, 330). Taking into account the role of personal connections and *guanxi*, using these informal approaches may help potential employee candidates form an accurate picture of the company they are applying to (Cunningham 2010, 2134-2135).

Second, as different types of workers appreciate different kinds of rewards, it is suggested that companies adopt a complete reward scheme to account for diverse needs (Cunningham 2010, 2134-2135). Employee rewards can be divided into two categories:

material incentives (economic gain) and non-material incentives (for example social acceptance) (Li, Zhao & Liu 2006, 682). Particularly in high tech industry continuous innovation and adapting these innovations is the key to successful company performance (Tripsas & Gavetti 2000). Literature suggests that in innovation-oriented industries extrinsic motivation is detrimental to employees' innovation output. Instead, the work environment as well as the reward scheme needs to be attuned to supporting intrinsic motivation. (Amabile 1993, 197.) However, some argue that in creative work both intrinsic and extrinsic motivation should be used in synergy (Mumford 2000, 324). Still, further research again confirms the importance of intrinsic motivation among high tech companies in China as well (Li et al. 2006, 692). Regardless, research points out that in a functional reward scheme that supports innovation the performance evaluation should not be centred on outcomes but progress (Mumford 2000, 324).

Nevertheless, there are growing beliefs among young Chinese that money brings status, material possessions, but also power and control over others (Durvasula & Lysonski 2010, 169). Additionally, in some cases young Chinese portray stronger levels of materialism than, for example, Americans. Evidence points out that the continuous adoption of materialistic values by the Chinese may lead to spending patterns where strong debt accumulation is used as a medium to support the intensifying consumption patterns. (Podoshen, Lu & Junfeng 2011, 22-23.)

Finally, in addition to material and non-material compensation employee training has an important function in HR productivity and employee retention, especially in creative work. Employee training has a very direct positive effect on innovation in China as it helps workers to gain technological knowledge as well as discover new market opportunities and enhance innovation capabilities. The discovery is in line with the resource-based theory which states that continuous resource quality enhancement increases competitive advantage. (Li et al 2006, 692.) It is further suggested that in order to increase innovation in a firm the HR function should train employees how to define their work context: how to manage group dynamics, review work context and processes etc. (Mumford 2000, 326).

However, training does not necessarily have unequivocally positive effects. SMEs have reportedly lower levels of career development and firm-specific competence training compared to large companies. An explanation for this is surmised to be the fear of small business owners and HR managers that if they invest in employee training, these highly trained workers will soon find better employment terms among large companies. (Gray & Mabey 2005, 480-481.) Next, this study moves from discussing challenges related to human resources to analyse challenges in high tech SME internationalisation in China from the knowledge resource perspective.

2.3.3 *The role of knowledge in SME internationalisation in China*

A third category of assets can be derived from the human capital resource, which in the resource-based view of the firm is considered to include the training, experience, judgment, intelligence, relationships and insights of people in the company – in other words, knowledge (Barney 1991, 101). Indeed, in all three models of internationalisation the role of knowledge and resources play a very crucial role. The Uppsala model assumes that the lack of knowledge and resources are the most paramount challenges to internationalisation (Johanson and Wiedersheim-Paul 1975, 306). Also, for born globals experiential knowledge is a key resource of how to internationalise (Chetty & Campbell-Hunt 2004, 73). Consequently, knowledge-based activities are seen as the foundation of sustainable competitive advantage among firms (Valkokari & Helander 2007, 597). Thus a firm's ability to acquire and absorb knowledge assumes a centric position in a company's growth, survival and economic performance (Li, Poppo & Zhou 2010, 349).

The role of knowledge is further emphasised when operating in the Chinese market. For example, in the Chinese context the expert power of suppliers plays an important role for foreign manufacturers. The local supplier may have market knowledge and knows what the final consumer needs or he might have information on a potential new product. (Zhao, Huo, Flynn & Yeung 2008, 370, 380.)

INV start-ups rarely control all the resources required to successfully run a business and therefore only some of them are internalised, while other key resources are controlled by different means (Oviatt & McDougall 1994, 54). Here born-again globals have an advantage as due to their robust background in the home market they have been able to establish steady revenue streams, or to amass a substantial body of knowledge through experience (Bell et al. 2003, 353). Thus the capability to generate intelligence, for example gather information about foreign markets, separates INVs and born-again globals. INVs need to cultivate a higher capability to gather knowledge in order to survive with fewer resources. (Olejnik & Swoboda 2012, 472-473, 490.)

Moreover, the theory of international new ventures suggests elements, such as the use of alternative governance structures, which provide the firm sufficient conditions for sustainable existence. This way hybrid partners engage in resource-based cooperation to reap mutual benefits from the collaboration. However, due to the sharing of resources there is a potential for opportunism. (Oviatt & McDougall 1994, 54-55.)

Indeed, especially in knowledge-intensive industries competitors will try to attain valuable information that gives a company a competitive advantage. This is understandable, as knowledge is used in international new ventures to accumulate competitive advantage from foreign location advantages, another element in the INV theory. Additionally, due to advances in information technology knowledge has become

an extremely mobile resource that can be easily moved across nations, which makes opportunistic behaviour easier. On the good side, knowledge can be easily transferred to supplement immobile opportunities, such as raw materials or market demand, found in specific markets. (Oviatt & McDougall 1994, 55-56.)

However, before knowledge-related issues can be further analysed, some clarifications concerning the different forms of knowledge and their role in academic research should be made. In a very simplified form the extant academic research appears to recognise two flows of knowledge: the transfer of knowledge from the foreign parent company to the target subsidiary or joint venture, and a reverse flow. Further elaborated, these flows can be divided into tacit and explicit knowledge components (Figure 4).

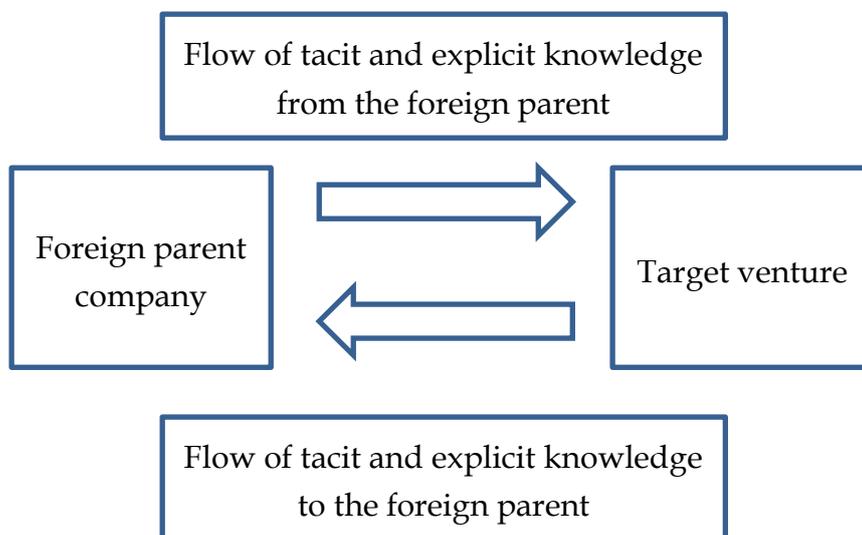


Figure 4 Different types of knowledge flows

However, the concept of knowledge is ambiguous among researchers and studies treat different aspects of knowledge. One definition speaks of intellectual capital which refers to “the knowledge and knowing capability of a social collectivity, such as an organisation, intellectual community, or professional practice” (Nahapiet & Ghoshal 1998, 245). Thus this emphasises the organisational and collective nature of knowledge within a company. Another definition, on the other hand, stresses the importance of knowledge held by individuals. This is based on an argument that even though a lot of the research concentrates on organisations and related knowledge dynamics, these groups ultimately consist of individuals and thus they should be the starting point of research. (Felin & Foss 2005, 441.)

Knowledge can be further divided into tacit and explicit knowledge. Explicit knowledge can be numbers, data, manuals, written information etc. It is easily

transferrable as it can be written down and expressed to others. Tacit knowledge, however, is very personal and difficult to communicate. It can be insights, intuitions, and subjective hunches – things that are rooted into a person’s experience, values and ideals. Furthermore, tacit knowledge consists of a technical dimension and a cognitive dimension. The technical dimension contains know-how, skills and crafts that can only be achieved through experience. The cognitive dimension, on the other hand, comprises of beliefs, ideals, values and mental models which create an individual’s perception of the world. (Nonaka & Konno 1998, 42.)

These four types of knowledge, explicit, implicit, individual and social, can be combined into a matrix (Figure 5). Conscious knowledge is something that an individual knows and is aware of, for example, he may have invented something. Automatic knowledge refers to an individual’s skill or craftsmanship. Objectified knowledge is generated in a group and it may be something that a team of researchers have built. Finally, collective knowledge can be produced internally in a company and, for example, it may be related to evolving methods of team production. (Spender 1996, 52.)

	<i>Individual</i>	<i>Social</i>
<i>Explicit</i>	Conscious	Objectified
<i>Implicit</i>	Automatic	Collective

Figure 5 Different types of organization knowledge (Spender 1996, 52)

The first knowledge stream can be seen flowing from the parent company to the target venture in the foreign market. Indeed, in an international setting transferring tacit knowledge from the foreign parent is critical to the local venture success (Lane, Salk & Lyles 2001, 1158). However, transferring tacit knowledge is not without its problems. Intrinsic motivation is required for knowledge-based production teams. Furthermore, this intrinsic motivation is closely related to the generation and transfer of tacit knowledge. This motivation is mitigated by competition between teams or firms and it cannot be compelled - only enabled under suitable conditions due to the voluntary nature of intrinsic motivation. (Osterloh & Frey 2000, 545.) As the importance of knowledge grows in the economy, trust is a better means to deal with knowledge assets than traditional mechanisms of price and authority (Adler 2001, 215). Trust is associated with the transfer of tacit knowledge in particular as it reduces perceptions of unfair play and supports close connections (Li et al. 2010, 365).

Moreover, a firm can create a competitive advantage by transferring knowledge to its suppliers which creates an inimitable asset for the company (Dyer & Hatch 2006, 716). One way to engage in this sort of knowledge exchange is joint problem solving with suppliers which helps to transfer and create tacit knowledge (McEvily & Marcus 2005, 1033). The benefits of such cooperation can be striking in the Chinese context under the local reciprocal business philosophy. If the local partner perceives that the foreign participant has been supportive in prior transactions, the local partner may well be willing to contribute significantly more to the knowledge transaction process. (Li, Liu & Liu 2011, 131.) Also, technological area experience is seen to improve communication between companies, in addition to helping in partner selection and monitoring (Macher & Boerner 2012, 1034).

At the same time, different types of knowledge are emphasised in different ties between companies. For example, in traditional supply networks explicit knowledge concerning product specifications, delivery and logistics information plays the central role, whereas innovation networks draw more on tacit knowledge on new business opportunities. (Valkokari & Helander 2007, 602-603.)

However, in SMEs the knowledge is often held by few key persons (Valkokari & Helander 2007, 597). As far as tacit knowledge transfer is concerned individuals are not driven as much by intrinsic motivation, but rather external. As the generation and transfer of knowledge can be attributed to single individuals, the output can be measured and rewarded using external motivational tools. (Osterloh & Frey 2000, 546.)

Still, in order to facilitate successful knowledge transfer the implementation of systematic mechanisms can help the foreign parent company absorb new information from the venture. (Inkpen 2008, 447). Strong foreign parent support is especially crucial in the context of transitional economies as it increases the local venture's learning which in turn improves knowledge transfer (Steensma & Lyles 2000, 847). Nevertheless, further research sees relational exchange arrangements centred on trust as complements to complex contracts and managerial systems, not substitutes (Poppo & Zenger 2002, 707). Thus academic literature is not unanimous concerning the role of correct systems and processes and their relation to knowledge transfer (Li et al. 2010, 350).

Furthermore, the knowledge transfer has a temporal dimension as well: at the early stage of the internationalisation venture assisting learning should be a priority for the foreign parent (Lane et al. 2001, 1158). One cause for this can be that at the beginning of the venture there may not be consensus of the value of the new knowledge, nor a systematic method for communicating the new information (Inkpen 2008, 452). In later stages the application of the learned external knowledge becomes centric (Lane et al. 2001, 1158).

Thus far the discussion has centred on international cooperative settings where the international partner creates and transfers knowledge to its subsidiary and related instances in the target market. Significantly less academic research has concentrated on the opposite process: the transfer of local knowledge from the target venture to the foreign parent (Li et al. 2010, 350; Tsang 2002, 835). Indeed, although Western companies operating in China have superior knowledge in technological and organisational competences, Chinese companies have a better understanding of host country-specific knowledge like marketing tactics and environmental familiarity (Luo 1999, 75). A way to overcome this issue is to learn about the foreign markets and operations (Johanson and Wiedersheim-Paul 1975, 306).

Consequently, Huber (1991, 107) distinguishes five types of learning processes: congenital learning, grafting, searching or noticing, experiential learning and vicarious learning. In his work Tsang (1999) further develops the two latter concepts. According to Huber (1991, 91, 96) experiential learning refers to a process where companies learn, intentionally or unintentionally, by doing, whereas vicarious learning is a more systematic attempt to acquire second-hand experience such as management practices and technologies.

Tsang (1999, 215-216), on the other hand, recognises three sub processes within the experiential learning, namely implementing technology transfer, managing the alliance per se and learning about the new business environment. Here vicarious learning is depicted as a process where the aim is to learn the other partner's skills (Tsang 1999, 215).

When internationalising to a new market the foreign company often creates ties to local firms, and learning takes place for all firms involved. However, the learning goals may vary for every company. When a company from a developed country establishes a joint venture in a developing country, asymmetrical learning often takes place: the partner in the developing country aims to learn technology and management skills from the foreign partner, who, in turn, wants to learn the way of doing business in the new market. (Tsang 1999, 216-217.) Thus the foreign partner engages in experiential learning whereas the company from the developing country uses vicarious learning.

At the same time, in order for a resource or a combination of resources to be of value to a firm they must be somewhat rare or unique. If competitors have access to the same knowledge, any gained competitive advantage is quickly eroded. (Barney 1991, 106.) Thus, in order to protect valuable resources like knowledge a firm can use patents, copyrights or trade secrets to keep information inimitable, at least for a certain time. Another way to protect knowledge is to reinforce its imperfect imitability. Unique resource combinations may lie internalised in the organisational structure, rendering them more difficult to imitate. Also, licensing or franchising may be used to protect a

certain set of skills or knowledge for a set period of time. (Oviatt & McDougall 1994, 56-57.)

In addition to knowledge transfer between companies, learning and knowledge transfer takes place within the firm as well. One important factor to aid learning in the incremental internationalisation model is the role of communication, which increases organisational learning and therefore amount of acquired information on internationalisation. Communication within an organisation increases the likelihood of the creation of new ideas and sharing of knowledge. (Olejnik & Swoboda 2012, 472, 490).

Moreover, a temporal dimension exists for absorbing the knowledge into the foreign company as well. For experienced companies overseeing effort, which describes local venture supervision by the foreign parent company managers through communication, is an apt method of learning. For inexperienced firms, however, management involvement is of crucial importance. Reasons for these choices are relatively simple. Companies learn by doing, meaning that they have to acquire and develop their learning skills before mining knowledge from the venture. Thus direct management involvement, although more costly, offers a very direct conduit for learning. For more experienced firms overseeing effort suffices as they have developed their learning strategies and can learn from indirect contact. (Tsang 2002, 838, 847-848.)

Subsequent studies elaborate on the direct and indirect methods in a relational dimension together with explicit and tacit knowledge. Brokered access, considered to be an indirect relational mechanism, can be created when a major domestic supplier connects the foreign company to other local suppliers. In emerging economies such as China foreign companies often lack legitimacy and local connections, which a brokered access can grant to both foreign and local participants. Moreover, this indirect method supports the transfer of explicit knowledge as the local partner can act as a conduit and draw information from the local network. (Li et al. 2010, 364-365.) Additionally, manufacturing companies should select their distributor partners based on their entrepreneurial orientation and engage in co-opetition with these partners to improve knowledge acquisition from these participants (Li et al 2011, 139).

On the other hand, direct relational mechanisms, such as shared goals and trust, are better suited for improving tacit knowledge transfer (Li et al. 2010, 365). Common goals create ties between firms as “a shared vision can be viewed as a bonding mechanism that helps different parts of a network integrate knowledge” (Inkpen & Tsang 2005, 157). When participants have common goals for the cooperation, it promotes joint problem solving and harmonises individual self-interests. As a result parties share information in the form of explicit and particularly tacit knowledge. (Li et al. 2010, 365.) Subsequently, manufacturing companies should select their distributor

partners based on their entrepreneurial orientation and engage in co-opetition with these partners to improve knowledge acquisition from these participants (Li et al 2011, 139).

Having discussed the different streams of knowledge flowing from and into the foreign parent company the study can subsequently move onwards to address the final set of challenges related to networks and the Chinese guanxi system.

2.3.4 Challenges related to network resources

The final category of assets in the SME internationalisation process for this study is networks. The role of networks is an important determinant for many reasons. For example, firms commonly use existing social ties and networks to identify foreign market opportunities, which are one of the critical antecedents of internationalisation (Ellis 2000, 462). However, a more important reason for the use of networks is the institutional gap often found in emerging markets. In a developed economy institutions reduce transaction and information costs by reducing uncertainty and creating a robust structure for economic interactions (Hoskisson, Eden, Lau & Wright 2000, 252-253).

On the other hand, in transition economies such as China the lack of developed institutions, such as legal institutions and sophisticated management procedures, dictates that a network-based strategy of growth is more suitable than a traditional expansionistic or acquisition-based model of internationalisation. Personal trust and informal agreements among managers allow firms to overcome institutional constraints. (Peng & Heath 1996, 492; Fu, Tsui & Dess 2006, 280.) Indeed, further research confirms that an SME is most likely to adopt a relationship-based network approach when internationalising to emerging markets where the uncertainty related to the business environment is high (Andersen & Buvik 2002, 359; Fu et al. 2006, 300).

Although personal ties are used in many transition economies as a substitute to formal institutional support, China has its own unique context (Li, Poppo & Zhou 2008, 384). In China state-owned companies (SOEs) still function as the government's medium for economic reform. The central government regulates the business environment through interventions and constraints, and extends favourable support to certain companies (Li et al. 2008, 387). As a result, personal ties are more important to private companies than SOEs. To counter the lack of stabilising formal structures private firms' managers tend to create ties to government officials to defend against extortion or appropriation. (Xin & Pearce 1996, 1654.)

There are several theoretical bodies studying the effects of networks, for example the network model of internationalisation and the social network theory (SNT). The network approach, an extension of the Uppsala model of internationalisation, was developed in the 1980's and it described industrial systems where firms engage in

production and distribution as networks of relationships among firms. Companies coordinate their cooperative actions not solely through the price mechanism or central coordination, but also through relationships in a network. In a network these relationships with customers, suppliers, and competitors are dynamically created and terminated to maximize the benefit of the firms. In order to successfully internationalise to a new market a firm need to build relevant relationships and create ties to the market. (Johanson & Mattsson 1987, 34-36.)

However, more recently academic research has advocated the use of the social network theory to analyse the dynamics of networks in business organisations (see Barabási 2002; Buchanan 2002; Watts 2003). Consequently SNT, originating from sociological research, has been used to study networks in China (see Hammond & Glenn 2004; Fu et al. 2006). Rather than concentrating on the personal traits of individuals or the content and form of information in a network exchange the SNT analyses the social exchange ties and the flow of information. The SNT assumes that information and relationships are created in socially interactive groups. (Hammond & Glenn 2004, 24.) In the Chinese business environment also, personal relations, locally referred to as *guanxi*, have long played a major role in everyday business (Luo 1997). Additionally, SNT and *guanxi* share common characteristics which are very useful when studying the dynamics of *guanxi* networks.

Indeed, the SNT and *guanxi* have several striking similarities. First, both separate people who participate in the social network (insiders in *guanxi*, strong ties in SNT) and those who are not part of it (outsiders, weak ties, respectively). Both relationship systems contain sets of social rules that dictate the sustenance of the system, behaviour of people as well as the type of information that is created and shared. Second, SNT and *guanxi* assume constant change in the relationships and information flows which in turn affect social order and the creation of trust. Finally, both emphasise the balancing and sustaining effect of order in the social relations and the disruptive nature new information flowing from weak ties or outsiders. (Hammond & Glenn 2000, 24-25, 29.)

Although *guanxi* has a strong conformity to its Western counterparts of social networking, there are differences. Whereas the Western networking emphasises business relationships between corporates, *guanxi* concentrates on interpersonal levels and includes not only business favours, but also the role of social status. (Luo 1997; Fu et al. 2006, 281.) As the Western point of view treats relationships as assets it often underplays the role of individual actors which is the centre of *guanxi* (Hongzhi, Knight & Ballantyne 2012, 458). Also, in the West conflict is often seen as the force for creating mutual understanding and respect, while the Chinese, not necessarily avoiding conflict, seek to enhance mutual harmony and cooperation (Yau & Powell 2004, 808).

Delving deeper into the issue, *guanxi* can be defined by describing it as “the concept of drawing on connections in order to secure favours in personal relations” (Luo 1997).

Another elaboration of guanxi speaks of a “mechanism by which individuals are able to achieve personal, family, or business objectives through the formation of instrumental associations with appropriately positioned others” (Bell 2000, 132).

The concept of guanxi has some unique attributes that are worth assessing in brief. For instance, the transferable nature of guanxi implies that a person who has a whole guanxi network can act as a middleman bringing together two people hitherto unknown to each other and initiate a guanxi relationship between these two participants. Guanxi is also intangible and highly personal. The relationship follows an unwritten contract and is tied to people rather than organisations. Thus guanxi networks move with people and controlling them can be difficult. What is more, guanxi is based on reciprocity and partners who do not respect this aspect quickly lose face. Still, the relationships are essentially utilitarian, not emotional: the exchange is strongly tied to doing favours and participants do not necessarily need to be friends. (Luo 1997.)

In the guanxi context the concept of “losing face” or “saving face” can be often heard. This refers to the process of gaining, losing or sustaining social status in the Chinese society and it is a crucial concept to maintaining relationships with strong ties. (Hammond & Glenn 2000, 27.) Guanxi and face can have a profound effect on many aspects of business life. For example, these elements strongly affect knowledge management and sharing, a theme already discussed earlier, in companies. Although affect-based trust is strongly related to explicit knowledge sharing, face gaining activities have a more potent effect on tacit knowledge sharing. Explicit knowledge is seen as a common commodity and Chinese employees do not feel like they will gain particular social status by sharing this information. However, employees may fear that by revealing tacit knowledge they might render themselves redundant to the firm. Also, there is a fear of losing face when revealing tacit information as a possibility of erroneous information or conflicting knowledge may rise, which will cause employees to save face by blocking knowledge sharing. Still, in a safe environment sharing tacit knowledge may help gain more face than sharing explicit knowledge. (Huang, Davison & Gu 2011, 569-570.)

These findings imply that people who wish to gain face may be willing to share knowledge through formal channels openly and in an identified manner. In contrast, employees who concentrate on saving face may be more eager to share knowledge through anonymous IT-based knowledge-sharing platforms. (Huang et al. 2011, 571.)

Elaborating the significance of guanxi for other resources further, it has strong implications for HR practices in China as well. Foreign companies are encouraged to develop HR policies that pay attention to hiring employees with good guanxi as a part of their competencies and skills. These personal connections may help the firm build good business relationships with local companies and develop functional networks. (Cunningham 2010, 2134-2135.)

Proper guanxi understanding and control can also mitigate the issue concerning employee retention in China. First, by managing cognition- and affect-based trust in the workplace managers can strengthen their network ties (Chua, Ingram & Morris 2008, 447-448). Second, ties and interpersonal trust are particularly strong among Chinese professional networks (Batjargal 2007, 397). Finally, research on high tech firms demonstrates that these closed guanxi networks increase employees' propensity to stay. The effect is further amplified by high-commitment HRM practices. (Hom & Xiao 2011, 188.)

For example, companies may increase employee retention by creating links between the employee, co-workers and the company through mentoring systems and team activities (Mitchell, Holtom & Lee 2001, 102). This set of tools is supplemented by adding social group activities including people outside the work to create overlapping relationships (Hom & Xiao 2011, 197). Also, foreign managers are suggested to participate in the social and cultural activities of employees and on a personal level to create positive guanxi and to help retain key employees (Chen & Chen 2004, 321). However, there is a negative aspect to strong guanxi networks and links as well. Strong closed networks can lead to a pied piper effect where one key employee leaving begins a snowball effect, drawing other co-workers along (Wysocki Jr. 2000, A1). This means that co-worker's job embeddedness can result in a whole network of employees leaving simultaneously (Felps, Mitchell, Hekman, Lee, Holtom & Harman 2009, 545).

Additionally, there are different types of guanxi relevant for HRM in high-tech companies. There exists a distinction between outsiders (weak ties in SNT) or shengren, people with whom one has common social identities such as the same hometown or school background (shuren), and people with whom one shares kinship (qinren). The findings suggest that understanding this dynamic nature of guanxi may direct businesses to offer social activities to employees so that they can discover common identities with other co-workers and thus become shuren instead of remaining shengren. The existence of these different types of guanxi affects processes in high-tech firms. Shengren guanxi that is based on weak ties implies that a company can receive a wide variety of perspectives to any given decision problem, whereas qinren or shuren (strong ties) guanxi strengthens unity through cooperation and coordination. As a result, guanxi based on weak ties can improve innovation capabilities of a firm while strong ties support coordination and integration at the cost of new ideas. (Fu et al. 2006, 284, 301.)

In addition to guanxi-related issues concentrating on particular resource categories there are also specific issues that bring together the multiple levels of study, for example human resources, knowledge management and guanxi. One such issue affects the international staffing choices of companies. Parent company employees have often been selected to work as expatriates in a foreign subsidiary due to, for example, their technical competence (Harvey 1996, 102). Additionally, managers can gain

international expertise and knowledge by working abroad, adding to the parent company's competences. However, a more important reason for the use of expatriates is the parent company's ability to exert control over the foreign subsidiary. (Kobrin 1988, 64.) One component of this control is the monitoring and influencing of relationships in the international setting, which is advocated by the relationship marketing paradigm. (Harvey & Novicevic 2002, 529).

Delving deeper still into the relationship component, it is the knowledge concerning the local business environment that can give companies considerable competitive advantage (Arnold and Quelch 1998, 11). The knowledge may be information about the market conditions, competitors, customers, distribution channels, as well as the incumbent institutions (Srivastava, Shervani & Fahey 1998, 5). It is the role of the focal company to cultivate proper human resources to provide these knowledge-based relationships that in turn translate to competitive advantage. The managers who have knowledge of the target country market as well as an understanding of the parent organisation can in addition to creating market intelligence and relationships provide coordination and control for the parent firm. (Harvey & Novicevic 2002, 533-534.)

Thus it is feasible to assume that if a parent organisation considers the relationship between its subsidiary and local marketing channels to be of high value, the firm will staff its subsidiary with expatriates or inpatriates (employees from the target country) (Harvey & Novicevic 2002, 534). The assumed capability of the employees to create good relationships with the target country network is further heightened in the case where the parent firm lacks local marketing knowledge and operating capability. In emerging markets good relations can make, for example, a distributor take on the responsibilities of a local marketing organisation. (Arnold & Quelch 1998, 17.)

The international staffing choices can be further elaborated into a framework. The focus theory of normative conduct introduces the concepts of descriptive and injunctive norms. Descriptive norms posit the behaviour of what is typically done. Injunctive norms, on the other hand, describe what is socially and morally acceptable, what should be done. (Cialdini, Reno & Kallgren 1990, 1015). Using the set of descriptive and injunctive norms Harvey and Novicevic (2002, 537) create a matrix of four different possibilities for international staffing (Figure 6).

		Injunctive Norms of Focal Organisations	
		Low	High
Descriptive Norms of Channel Members	Low	Third country national	Home country national
	High	Host country national	Inpatriate
		Market (Transactional)	Integrative (Relational)

Figure 6 Choices for subsidiary staffing (Harvey and Novicevic 2002, 537)

The hypotheses derived from the matrix suggest that if both levels of norms are low, the parent organisation will choose the most cost efficient possibility and prefer third country nationals. The firm attempts to use the regional marketing relationships of these employees to influence norms in the target market channels. However, if the level of descriptive norms is high, companies will use local nationals as they have a better understanding of the relationship dynamics of the foreign subsidiary. (Harvey and Novicevic 2002, 536-537.)

Consequently, if the parent organisation has strong injunctive norms on how to properly operate a business, but the descriptive norms of the target market are low, it is beneficial for the company to use expatriates as these employees have knowledge of the parent company procedures and are able to impose the injunctive norms on the subsidiary. If, on the other hand, the descriptive norms in the target market are high, the company will try to use inpatriates where possible as they have both understanding of the parent company's codes of conduct as well as knowledge of the local culture and norms. (Harvey & Novicevic 2002, 537-538.)

Summing up, extant literature demonstrates that guanxi has very concrete effects on foreign businesses operating in China. It is further emphasized that "foreign actors should never terminate pre-existing guanxi relationships because such relationships are the foundation of all other relationships" (Hongzi et al. 2012, 459).

However, it has to be noted that foreign companies are not able to extract as much utility from their managerial ties in China as domestic companies. Whereas domestic companies enjoy straightforwardly rising returns from their ties, foreign companies start to experience decreasing returns compared to the input they put into their local relationships after a point. (Li et al. 2008, 383.) Also, managerial ties have a decreasing impact on firm performance as the economy develops towards a more market-driven environment (Peng 2003, 292). This claim was found to be valid for China as well,

which implies that structural uncertainty in turn increases the benefit of tie utilisation (Li et al. 2008, 383).

Adding to the managerial challenge, Worm and Frankenstein (2000, 272) indicate in their research that guanxi networks pose a hindrance to Scandinavian managers, specifically. Scandinavian managers perceive guanxi as an exclusive asset readily available for the Chinese but more time-consuming and difficult for expatriates to tap into. Also, the Chinese in turn may feel that Western expatriates are not able to fully appreciate the importance of face and personal relationships. (Worm & Frankenstein 2000, 272, 274.)

However, Worm and Frankenstein (2000, 267) use Hofstedian constructs as the basis for their research which in turn raises an important point. Further research concludes that Hofstede's cultural dimensions are not as enduring as previously thought. As the Chinese and Western employees work together in an international environment, over time the result in business can be a mixture of these two different cultures. (Batonda & Perry 2003, 1568.) Thus extant literature recognises two juxtaposing elements: on one hand the interaction between people is stipulated by nearly static national cultural roles, but on the other hand over time these different behavioural models can converge to a signifying degree.

Finally, guanxi networks may also have other negative impacts for foreign businesses. It is possible that some people in a guanxi network actively attempt to manipulate relationships in order to maximise their own personal utility (Su & Littlefield 2001, 203-204). An example of such could be the role of personal kickbacks in a business negotiation. However, from the perspective of foreign companies these actions may be difficult to categorise ethically, as a deep-rooted custom or a cultural habit in China may be seen as a sign of corruption in the Western world (Michelman, MacArthur & Shea 2011, 17). Nevertheless, for the Chinese there is a clear distinction between gift giving in a proper guanxi context and the rent-seeking guanxi of bribery and corruption (Su & Littlefield 2001, 199). Still, when it comes to rent-seeking behaviour, it is possible to mitigate the issue by implementing systematic internal controls (Michelman et al. 2011, 19).

2.4 Summary

This chapter has first discussed challenges in the SME internationalisation process to emerging markets and taken the perspective of high tech companies in the Chinese market where possible. These challenges have been addressed first from the resource-based view of the firm, taking note of the extant literature on human resource and financial constraints. Then, following the structure of the study, further issues were

respected from the knowledge-based view of the firm. The knowledge flows were further divided into the inflow and outflow of knowledge from the perspective of the parent company. Additionally, these flows could be divided into tacit and explicit knowledge.

Finally, this chapter introduced guanxi, the intricate relationship system prevalent in the business life in China. Although the Western literature has recognised the importance of relationships in the form of the social network theory, it was shown that guanxi has some unique characteristics which deter a simple analysis from the SNT point of view. In addition to guanxi-specific challenges there were relationship-related issues that affected human resources as well as knowledge resources. Finally, it was pointed out that some guanxi-based aspects of business covered human resources as well as knowledge resources simultaneously.

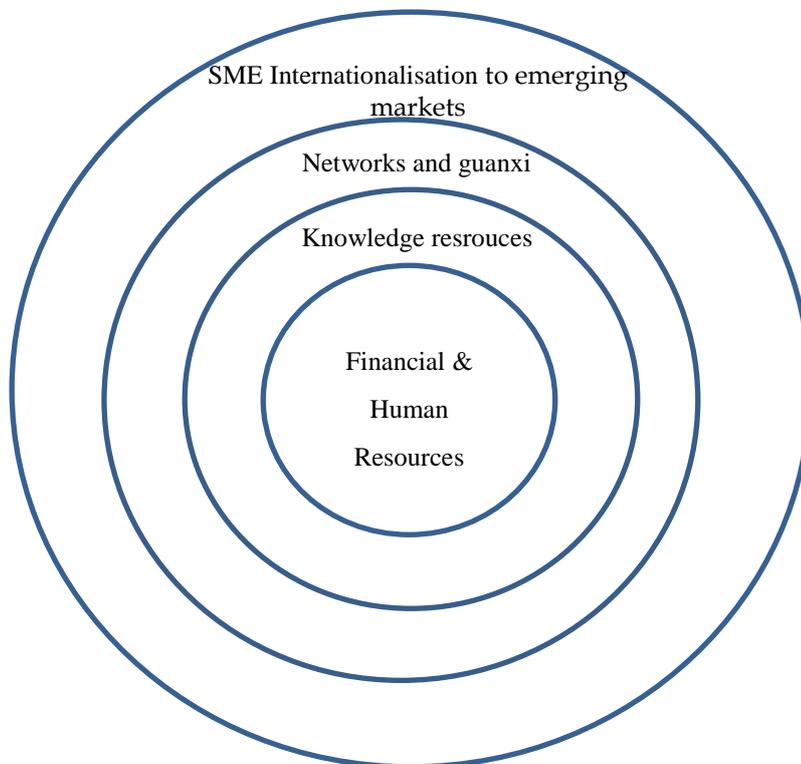


Figure 7 The relationship between resources, knowledge and guanxi in SME internationalisation

Thus based on this information it is reasonable to suggest that rather than a minor detail within the resource- or knowledge-based view guanxi can be treated as an overarching structure that has a unique effect in all fields in the Chinese economy. Also, as knowledge resources and strategies have implications to HR practices, they can be thought of as a structure dominating over financial and human resources. This, however, is a matter of perspective and many could convincingly argue for a different structure.

Still, for the purpose of this study the suggested framework offers a good basis for further analysis (figure 7).

3 RESEARCH DESIGN

3.1 Research approach

This study was conducted following the qualitative research paradigm. There are several reasons for this particular choice. First, there are very practical reasons like the difference in the number of samples required in qualitative research and quantitative research. In quantitative research a large sample is required to establish the trustworthiness of the study, but there was strong doubt that such a viable base could be established. Perhaps partly due to the larger sample base, quantitative research strategy has usually been considered to be superior to qualitative research as the data is also seen to be based on strict mathematically scientific methods and thus hard and reliable (Gummesson 2006, 171). However, it is argued that the quantitative research process is often not nearly as methodologically organised as theoretical publications make it seem (Bryman 1988, 21).

Second, another problem is quantitative research's inability to account for complexity. In questionnaires quantitative methods often allow respondents to answer in terms of simple "yes" or "no" which are easily amenable for statistical computing. (Gummesson 2006, 171.) As in this study the researcher had no strong prior knowledge or biases towards certain themes, utilising quantitative research would not necessarily have revealed relevant challenges and items through the very simplified response process.

Closely resembling the unstructured nature of this particular research is the qualitative research method. Qualitative research is described as an emergent process, where improvisation and adaptation are an intrinsic part (Wilkinson & Young 2004, 207). The process may move between different steps of the research, for example the research question can be reformulated if the collected evidence supports this course of action (Eisenhardt 1989, 546). This predominantly unstructured approach allowed the researcher to concentrate on unexpected topics that proved to be of paramount interest (Bryman 1988, 67). These centric ideas were incorporated into this particular study and the data collection and analysis processes were formulated accordingly.

Third, important for this study is recent trend to rely more on qualitative research methods as they can give a deeper insight into a study (Rahman 2003, 120). Historically, academic research has heavily emphasised the utilisation of quantitative research over qualitative. The role of qualitative research has been seen as a preparatory stage in a quantitative research project, rather than a valid research method per se (Bryman 1988, 94). According to one categorisation the use of qualitative research can be divided into three main groups: inductive theory building, theory testing and

deduction (Bansal & Corley 2012, 509). This study is mainly concerned with deductive research. In general, qualitative research can be defined as a group of data collection techniques and analysis that rely on non-numerical data (Cassell, Buehring, Symon & Johnson 2006, 162).

Furthermore, this research is based on a collective case study. There is a distinction between three types of case studies: intrinsic case study, instrumental case study and collective case study. In the collective case study a number of cases are investigated in order to understand a phenomenon, population or general condition. In this case the particularities of different cases are not of interest, but rather the common characteristics they may manifest. Indeed, often case study as a term is used interchangeably with qualitative study. This is understandable as often in case studies the issue under scrutiny is a general phenomenon or a population, but the study itself is conducted through various cases. Furthermore, case studies are identified as one of the most common methods of conducting qualitative research. (Stake 2000, 435-437.)

Additionally, case studies are often used as an apt platform for creating new theories. Instead of a linear process, the research process includes an interaction between the theoretical framework, upon which the research is built, and the empirical material which is collected. (Eisenhardt 1989, 546.) In qualitative research it is not always possible to have a clear notion of the theories that the research will be based on prior to data collection (Bansal & Corley 2012, 512).

Finally, the qualitative research method is particularly suitable in an international setting where subjective cultural differences play an important role. Whereas quantitative research often considers the social reality to exist apart from the actors, qualitative research analyses social reality as a construct created by the actors. (Bryman 1988, 102-103.) In international business the interaction between participants takes place in a setting where cultural differences often come to fore. These differences, albeit subtle sometimes, imply a subjective and transactional universe where reality is created continuously through social interaction. However, this particular study is conducted from the viewpoint of Finnish companies and thus it can be argued that although the reality may be subjectively constructed and cultural differences play an important role, some of the challenges, for example concerning the legislative environment, still exist very concretely and factually for Finnish as well as Chinese companies. (Silverman 2000, 823.)

Nevertheless, despite its advantages it has to be noted that qualitative research is not without its problems. One such issue is the relationship between theory and the empiric data. Some researchers may feel that by bringing a certain case to the level of abstraction, in other words, introducing the theoretical element, they lose some of the uniqueness of the case. At the same time, too strict adherence to theory may avert the researcher away from the inductive approach. (Bryman 1988, 85-87.)

Table 1 Some differences between quantitative and qualitative research (Adapted from Bryman 1988, 94)

	Quantitative	Qualitative
Role of qualitative research	Preparatory	Means to exploration of actors' interpretations
Relationship between theory/concepts and research	Confirmation	Emergent
Research strategy	Structured	Unstructured
Image of social reality	Static and external to actor	Processual and socially constructed by actor
Nature of data	Hard, reliable	Rich, deep

To sum up, there are clear differences between the qualitative and quantitative research paradigms which are highlighted in table 1. The particular strengths of qualitative research are a driving force behind this study and they are incorporated into the research process accordingly.

3.2 Data collection

This chapter discusses sampling and data collection processes, which have a critical role in determining the quality of a study and its findings. There have been concerns about the quality of qualitative research, with one of the major problems being the lack of information about sampling. This affects the ability to assess the generalizability of a study. (Gibbs et al. 2007, 540.)

The research material was collected through interviews. This study used a pilot interview for the purpose of identifying possible challenges in doing business in China prior to building extensive theoretical frameworks. This pilot interview helped the study bypass some of the less relevant challenges nevertheless emphasised by academic literature, and concentrate on issues important for Finnish SMEs. To this end, the first case company was required to be a Finnish SME with operations and experience in the Chinese market. It is also noteworthy to point out that the interviewee at Alfaram has

previous experience of the Chinese business environment through working for a Nordic cider venture in China, which ultimately led to market withdrawal. Thus he was able to reflect on experiences in both ventures which are used in this study as well. The first interview, aimed at identifying common challenges in the Chinese market, recognised the rapid and unexpected changes in the legislation as well as corruption as important challenges. However, for the purpose of this study these themes have been somewhat omitted and the research concentrates on the resource-, knowledge- and network-based themes, also discovered during the initial interview. Still, this research takes a note on corruption as a subset of network-related challenges.

However, despite neither of the cases, Alfaram nor Suzhou Savon Drinks, operating in cleantech industry, these cases were used in this study to highlight particularities in the cleantech industry. Also, a well-diversified sample contributes to the generalizability of the findings (Gibbs et al. 2007, 542). Thus using these non-cleantech cases permits the study to obtain more accurate information on themes. The sampling method is also called triangulation, which means collecting different kinds of data on the same phenomenon for a deeper understanding (Jick 1979, 602).

Nevertheless, the subsequent case companies were required to operate in the cleantech business, the industry of focus in this research, in addition to being Finnish SMEs. The decision to concentrate on the cleantech industry ultimately stems from several reasons. First, there is very little research conducted on cleantech companies. Thus, a research gap was identified. Second, the industry is currently extremely relevant for China, Finland and the economic relationship between the two countries.

The interviewees at the case companies were selected in conjunction with the companies. The target companies were contacted either via phone or email and requested based on the research focus to identify a person within the case company best suited for giving an interview. The target companies were very helpful in this process and all the interviewees had personal experience concerning the Chinese business environment as well as an understanding of the industry.

The interviews conducted in this study were individual interviews and they lasted for approximately one hour (table 2). The interviews were semi structured one-time events. Although interviewing is not the only way to do qualitative research it is a very common method. It is one of the most common and powerful way to help us understand something as abstract as a human being and related phenomena. (Fontana & Frey 2000, 645-646.) Interviewing is a specifically apt method in international business, which aims to understand processes, interrelationships and mechanisms of transnational business activities. In qualitative personal interviewing the researcher engages the interviewee in an open discursive dialogue which may yield deeper insights into the studied subject. (Wai-Chung Yeung 1995, 315, 333.) The open discursive dialogue implies that the data gathered by qualitative interview methods is rich and deep. This is

in contrast to quantitative data which is due to its pursued theoretical rigor often described as hard, rigorous and reliable. (Bryman 1988, 103.)

The open and dynamic view of a qualitative research process was reflected into the interviewing method of this study as well. In contrast to survey interviews, semi structured or even unstructured interviews allowed the interviewees to point out issues that were of importance to the subject. Thus these issues could be incorporated into further interviews in the form of loose themes which were consequently covered. (Bryman 1988, 46-47.)

The atmosphere during the interviews was relaxed and the interviewees were very willing to share stories, examples and knowledge from their experience. Apart from one interview with a time limit of one hour on behalf of the interviewee the interviews terminated when all research themes were fully exhausted and possible new findings discussed.

Table 2 Overview of the interviews

Company	Interviewee	Time	Duration	Location	Recording
Alfaram Oy	Markus Laine, Director of Sales	25.10.2012	1 hour	Alfaram Oy headquarters, Kaarina	Recorded
The Switch	Juha Tennivaara, Development Manager, Production	14.1.2013	1 hour 20 minutes	Skype	Recorded
Gasera Ltd.	Juha-Pekka Kotro, CFO	30.1.2013	35 minutes	Skype	Recorded
Efore	Panu Kaila, Executive Vice President, Operations	15.2.2013	1 hour	Skype	Recorded

For the data collection process this study used snowball sampling. The first interviewee at Alfaram was an acquaintance of the study supervisor who kindly offered to act as the mediator between the initial informant and the researcher. The interviewee was subsequently able to point out two more potential companies for interviews: Efore

and The Switch. Finally, the fourth case company, Gasera, was identified by a family member of the researcher. In snowball sampling the researcher finds informants through the contact information provided by other informants. The first informant studied may have knowledge of other informants that may hold vital information concerning the study and thus direct the researcher in the right direction. This process is often repetitive and is a good auxiliary method to sampling. (Noy 2008, 330.) The method is extremely useful in identifying interview targets and information sources (Wilkinson & Young 2004, 209).

Another sampling method used in this study was convenience sampling. In this study the first case company lay in the close proximity and conducting the interview was possible despite the scarcity of resources affecting this study. The following interviews were conducted and recorded through Skype, a free VOIP software program. This removed the obstacle of physical distance and permitted the selection of case companies based on their fit for the study.

A very concrete issue in the data collection phase is the geographical spread of the information and activities, especially in the case of international business. The presence of simultaneous business activities in multiple countries can make research a challenging endeavour. At the same time, the process is often constrained by the financial resources of the research project. (Wai-Chung Yeung 1995, 315, 317.) In convenience sampling the targets are selected based on their convenience, such as close proximity and minimal cost of data collection (Ferber 1977, 57).

Following the main question and the derived sub questions, the operationalized themes can be categorised in several groups. First, in order to delve deeper into the issue of possible resource constraints of Finnish cleantech SMEs in China the interviewees were asked questions concerning the challenges related to human resources and financial resources. Second, the themes related to knowledge flows concern the inflow and outflow of knowledge from the perspective of the parent company and respondents were inquired about possible challenges related to these themes. The final sub question concerns networks and *guanxi*, and it can be further divided into themes concentrating on *guanxi*-specific issues that create their own unique challenges and *guanxi*-related challenges that affect the earlier themes, namely financial resources, human resources as well as knowledge resources. (See table 3.)

Table 3 Operationalization of the research question

The Research Question	The Research Sub-Questions	The Operationalized Themes	Sources
What challenges do Finnish cleantech SMEs face in operating in China and how can these challenges be overcome?	What human and financial resource-based challenges do Finnish cleantech SMEs face in the Chinese market and what are their solutions?	What are the challenges and their solutions concerning financial resources?	Beck & Demirguc-Kunt 2006; Xiao 2011
		What are the challenges and their solutions related to the human resources?	Gray & Mabey 2005; Cunningham 2010; Li, Zhao & Liu 2006
	What knowledge-based challenges do Finnish cleantech SMEs face in the Chinese market and how can these difficulties be resolved?	What are the challenges related to the inward flow of knowledge from the parent company?	Inkpen 2008; Lane, Salk & Lyles 2001; Li, Liu & Liu 2011
	What network-based challenges do Finnish cleantech SMEs face in the Chinese market, how do they relate to the resource- and knowledge-based challenges, and how can these difficulties be resolved?	What are the challenges related to the outward flow of knowledge from the parent company?	Luo 1999; Li, Poppo & Zhou 2010; Tsang 1999; Oviatt & McDougall 1994
		What are the particularly guanxi-related challenges and their solutions?	Su & Littlefield 2001; Worm & Frankenstein 2000
		What are guanxi challenges related to financial, human, and knowledge resources?	Huang, Davison & Gu 2011; Harvey and Novicevic 2002

3.3 Data analysis

The interviews were recorded and the recordings were transcribed into text. The transcription process was clear and it left no inconsistencies or ambiguities in the materials. There were a few blurry words to be found in the recorded interviews but these did not in any way hinder the transcription process or affect the explanatory power of the collected material. Interviews are usually transcribed prior to analysis as transcripts support further analysis methods. Also, the written version of the interviews helped to recollect the conversation and track smaller details. (Silverman 2000, 829.)

As the purpose of the interviews was to explore possible challenges faced by Finnish cleantech companies in the Chinese market, after transcribing the interview the material was coded to distinguish themes and concepts. Going through the transcribed material several times provided a good overall picture of relevant themes. (Ghauri's 2004, 118.) The final phase of the analysis was pattern matching, where the theoretical frameworks provided by academic literature were compared with the empirical data. Thus comparing these two sets the validity for the theories used could be analysed *vis-à-vis* the particular setting in this study, and new patterns could be deduced.

3.4 Evaluation of the study

The quality, accuracy and validity of qualitative research are often measured with four criteria: confirmability, credibility, transferability, and dependability (Lincoln & Guba 1985). First, confirmability is often contrasted with internal validity, a concept that is used in traditional quantitative research. Thus *confirmability* refers to how well the research material reflects the reality. In social sciences it is important to take note of the subjective, socially constructed nature of reality. (Lincoln & Guba 1985, 294-295.) As the interviews were conducted in Finnish, the native language of both parties, there was only minimal risk of misunderstanding. What is more, if anything remained unclear to the interviewer, further clarifying questions were asked. The interviews were recorded and the recordings were transcribed. Analysis was based on the transcriptions so that a failing human memory could not distort any of the data collected. After the data was analysed a draft was sent to the interviewees to confirm the validity and accuracy of any quotations used in the study.

Second, triangulation is a good way to improve the *credibility* of a study (Lincoln & Guba 1985, 305). In this study triangulation was used in two ways. First, every interviewee represented a different company which in turn means that the study was able to benefit from multiple points of view to the studied phenomena. The companies operate in different sectors within the cleantech industry, they have established

operations in China at different points in time, and they operate in different geographical areas in China. Second, one of the interviews represented two cases which do not operate in the cleantech industry. This in turn means that it was possible to identify issues that affect only cleantech industry or solutions that are specific to cleantech by contrasting research findings with non-cleantech cases. Furthermore, the findings were subjected to peer review, and the categorisation and relevance of the results was discussed in a group of fellow students and instructors.

Third, *transferability* in qualitative research refers to the extent to which the findings of a study can be considered to accurately describe a phenomenon or a set of phenomena in a population. This is a very difficult task as the findings are inseparably bound to the context in which they are studied. (Lincoln & Guba 1985, 316.)

Thus one of the only ways the extent of transferability can be measured is analysing the studied case and the criteria based on which the case was selected. The chapter of data collection in this study contains a description of the case selection as well as a description of the case itself. It can be argued that some of the financial resource-based findings of the study apply only for SMEs, specifically, while many of the cultural differences and knowledge-based challenges are something that Finnish companies may face in the Chinese market regardless of the size or the industry of the enterprise.

Fourth, *dependability* means that the findings of a study are independent from the biases and attitudes of the researcher. One way to increase the dependability of a study is the establishment of an audit trail. This means that the research process itself is documented carefully in order to reveal any possible flaws to a third party. (Lincoln & Guba 1985, 317-318.) The motivation and background for this study is discussed at the beginning to provide an understanding of the underlying motives for the study. Furthermore, the methodology chapter of this study attempts to first establish the research approach of the study. This explains the methodological paradigm that has influenced this study and the choice of qualitative research methods. Then, a subchapter on data collection describes how the data was collected and why these particular choices were made in the collection process. Finally, discussion on data analysis reveals how the data was analysed which in turn gives a good insight into how the results of the study were achieved.

However, a factor that can detrimentally affect the dependability of this study was the lack of experience on behalf of the researcher. The thesis worker had no previous experience on making scientifically rigorous interviews and it is possible that this has resulted in inaccurate questions and the inability to delve sufficiently deep into some issues. On the other hand, during the early interviews the review on academic literature was not yet complete and this allowed the researcher to retain an open mind and discuss themes freely from the viewpoint of the interviewees. In later stages of the study there

were certain issues and themes the thesis worker expected to discover during the interviews and thus there may have been some bias towards certain results.

4 RESULTS OF THE EMPIRICAL STUDY

The purpose of this chapter is to reflect the theoretical framework created in earlier parts of the study to the data collected through the interviews. The chapter retains the structure described at the beginning of this study. After assessing industry-based factors challenges concentrating on financial and human resources are discussed first. Then, the analysis moves onto knowledge-related issues before finally assessing network-specific issues. Finally, the results are collected into a synthesis and new frameworks are introduced based on the findings.

4.1 Introduction of the case companies

The pilot interviewee was Markus Laine, the Director of Sales at *Alfaram Oy*. *Alfaram Oy* is a small Finnish contract manufacturer of wiring harnesses and electromechanical sub-assemblies employing approximately 150 people in Finland, Slovakia and China, with an annual turnover of around EUR10 million. The company itself was founded in 1994. The operations in China were established in 2001 to support key customers in the area. However, in February 2013 after the interview the company was acquired by Hanza AB, a Swedish contract manufacturer founded in 2008. Thus *Alfaram* is currently part of a corporation with an annual turnover of EUR120 million and employee head count of over 1100. (*Alfaram 2013; Hanza 2013.*) *Alfaram* could perhaps best be described as following the traditional incremental internationalisation pattern. The company has internationalised following market opportunities first to China seven years after the inception of the firm and finally to Slovakia in 2008.

Of further interest is the fact that Laine has previously been employed at Fuzhou Savon Drinks Co., which produced Nordic type cider for the Chinese market. This venture ultimately led to a market withdrawal in the face of severe economic challenges. Thus the interviewee was able to draw from his experiences in both companies and subsequently convey a deeper understanding of the Chinese market. Thus, although neither *Alfaram* nor the late Suzhou Savon Drinks participate in the cleantech industry, both companies are used in selected cases to highlight operational challenges in China and contrast the experiences of interviewed cleantech companies in an attempt to identify cleantech-specific challenges or solutions.

The second case company, *The Switch* is the combination of three smaller companies, namely Rotatek, Verteco and Youtility. The fusion took place in 2006 and since then the company has specialised in wind and solar power as well as other industrial applications for cleantech. The company internationalised to China in 2008 through a partnership with Dongfang Electric conglomerate. Dongfang is one of the

largest SOEs in the heavy machinery and equipment industry in China and thus an important player in the market (Dongfang Electric 2013). The Switch cooperates with Dongfang on many different levels in the conglomerate. However, for the purpose of simplicity this study uses Dongfang as a name to indicate the parent company or any subsidiary within the conglomerate. Nevertheless, at first glance it would be apt to assume that The Switch is a born global company due to their rapid internationalisation to China quickly after the fusion. However, precisely because the firm is a fusion of three existing companies with established operations, it would perhaps be better to view The Switch as a born-again global. The fusion also marks a sudden event that changes the decision to internationalise (Bell, McNaughton, Young & Crick 2003, 353).

The Switch had annual revenue of EUR93.8 million and a personnel count of 226 in 2011. (The Switch 2013.) The firm is also a member of the Cleantech Finland forum for Finnish cleantech companies, and has been awarded by the Global Cleantech Cluster Association for achievements in wind power (Cleantech Finland 2013; GCCA 2013). The company does not fit the official description of SMEs, but the firm's operations in China are extremely lightweight and with a team of only 5 people it makes an excellent research subject. Juha Tennivaara, the interviewee from the company lived in China from January 2011 to September 2012 in order to help create the dedicated local team of 5 employees to better serve the partnership with their client in China, Dongfang Electric.

The third company, *Gasera*, is a small Finnish company that specialises in highly sensitive and selective measurement solutions for extreme conditions (Gasera 2013). The company was founded in 2004 as a Turku University physics faculty spinoff to commercialise photoacoustic innovations by Professor Jyrki Kauppinen. The company employs 17 people in Finland with global distributors and partners. Gasera's turnover is roughly EUR1 million with a revenue of EUR2 million due to international projects and EU support. The interviewee, Jukka-Pekka Kotro, carries currently the title of Chief Financial Officer but he has been involved from technical projects to financing and human resource management. What makes the case interesting is the fact that Gasera is still a relatively new player with very modest scale operations. Thus many of the challenges faced by other cleantech companies are not yet visible in Gasera. The company appears to fit well the incremental internationalisation process of the Uppsala model. The company is currently in the second phase where they export some products via various local independent representatives in Asia, North America and Europe (Gasera 2013). However, the interviewee already recognised the possibility of moving onwards in the Uppsala model in the future through setting up production outside Finland when the company has acquired enough knowledge through experience.

Efore, the fourth case company, is a Finnish manufacturer of cleantech electronic products founded in 1975. The company has product development and marketing units

in Finland, Sweden and China. The firm's production is currently in its entirety located in China. During the fiscal year 2012 Efore achieved a turnover of EUR78.1 million with a personnel count of 888. The company offers power systems for telecommunication, industrial electronics as well as electric vehicles. (Efore 2013.) The reason for Efore's presence in China is to utilise the cost advantage. The majority of the firm's products are shipped either to Western customers' factories in China or to Europe or the US. The firm started its operations in China in 1999 when the set up a logistics centre, and imported products from Europe. In 2003 Efore began its own production in China. The Uppsala model seems to be applicable here, too. The firm was established already in the 1970's and Efore's internationalisation to China has moved in stages from simple export and logistics coordination to own production and product development.

The interviewee representing Efore, Panu Kaila, has held the title of executive vice president of operations since 2004 (Efore 2013). He has been specialising in the Asian market since 1985. Then he was employed by Nokia Mobile Phones through Mobira, and made extensive business trips to first South Korea, then Hong Kong and finally Beijing in the 1990's. Additionally he has been working for Elcoteq and Helsinki University of Technology. At Efore Kaila has been working with for example production logistics, procurement, human resource development, finance and logistics main applications, and product data management.

Table 4 Summary of the case companies

Company Name	Number of personnel	Turnover	Year of establishment	Year of internationalisation to China	Internationalisation process
Alfaram	150	EUR10 million	1994	2001	Uppsala model (4 th step)
The Switch	226	EUR93.8 million	2006	2008	Born-again global
Gasera	17	EUR1 million	2004	2012	Uppsala model (2 nd step)
Efore	888	EUR78.1 million	1975	1999	Uppsala model (4 th step)

A summary of the case companies can be seen in table 4 which depicts the internationalisation process in addition to basic information concerning the establishment of the company as well as turnover and number of personnel.

4.2 Industry-based challenges

The results of the study indicate that there are industry-based challenges in China that specifically affect one resource category discussed in this study: financial resources. In order to create revenues to finance business operations a company must sell its products, and to successfully sell its products the firm must compete against other companies. The lack of demand for products as well as competition as a set of challenges could be clearly identified in the case of Fuzhou Savon Drinks as well. The reason for the lack of demand for product was the result of the lack of product recognition. Cider is a very new product in China and at the time there was no culture for consuming the drink. Thus in addition to having finances to run the operations the firm would have needed money for TV advertisements to create product visibility. The company would have required significant resources to create the culture for cider consumption. Also, around the time of the withdrawal the competition begun to be fierce and any subsequent operations would have required finance to counter the effect of rival companies in the market. Research further acknowledges the lack of demand for products and competitor behaviour as some of the key strategic causes for failure (Hall 1992, 243).

However, for cases like Alfaram, The Switch, Efore and Gasera these issues seemed not to have such grave implications. There can be two reasons for this. First of all, these companies specialise in technically advanced products that have a very specific demand which mitigates the adverse effects of competition. The Switch manufactures wind power generators in China, which is a technically complex product to such an extent that only few within the company understand the specifics of its construction. In the case of Alfaram the interviewee felt that for a long time after beginning operations in China the company did not experience competition. Efore's power systems are research-intensive high tech as the company develops products for industrial and other use. Gasera is perchance the best example of this as the company manufactures prototypes for measuring the air quality of Chinese space ships using photoacoustic spectroscopy. Additionally, the interviewee from Gasera noted that the cleantech business industry is heavily regulated which means that fewer firms are able to enter the particular sector.

Overall cleantech business is heavily regulated. For example, there are often specific requirements with what technology a certain gas component (SO₂, NO_x, CO, O₃ etc) is measured in Air Quality Monitoring (AQM). Thus it is very difficult to do it with any other technology, and requires a lot of certification. Also, there might be country-specific restrictions. (Kotro 2013.)

Thus the particularity of the products offered by the interviewed companies seems to be an important element successfully doing business in China. As a result it appears that the quality and manufacturing know-how play a crucial role in the case companies which in turn reduces competition as fewer companies are able to compete with their respective product. Second, the firms specialised in different customer segments than local Chinese companies. Alfaram and Efore both mainly do business with Western companies operating in China, rather than Chinese firms. Gasera, on the other hand, is still in the initial stages of its business in terms of size and scope and thus the customer project is not directly comparable.

What is more, the described companies entered the Chinese market after an initial request by a customer. Alfaram operates in the Suzhou Industrial Park, west from Shanghai, and they entered the market to supply a customer. Also, Efore's main motivation for entering the Chinese market was to serve a Western customer who operated in China. Gasera's main link to China is a project for a customer, although the firm has one local reseller in the country as well. The Chinese customer had secured its financial stability for the project and Gasera has been able to enjoy steady cash flows, although with a relatively low profit margin. The Switch too started operations in Deyang, in Sichuan Province, as a result of their partnership with a local conglomerate, Dongfang. This means that the described companies had secured a demand for their products prior to entering the market, which in turn contributes to stronger financial stability.

Further analysis of the case companies reveals that in the case of cleantech industries in China the government greatly affects the financial environment for the firms through creating demand for cleantech products.

“- - I believe that the (Chinese) government's support for cleantech has had a remarkable effect for The Switch's success in China. This (cleantech business) involves a lot of prototype manufacturing, and in the case of purely market-driven demand the outlook would be more uncertain due to the hesitation to invest. Having the government's support makes things a lot easier.” (Tennivaara 2013.)

However, as the government uses state-owned enterprises (SOEs) as tools for its cleantech policies, the way SOEs operate differs from privately owned companies. Dongfang, the Chinese partner for The Switch, is a state-owned company, and due to this state-ownership there are some fundamental differences in the business logic of the company compared to Western firms. Whereas in Western companies turnover, profit and cash flow are important metrics, Dongfang's performance is measured based on its order backlog.

Also, the interviewee felt that from the viewpoint of their Chinese partner there was no particular inherent preference to what their field of business should be. Operating in the cleantech industry had no ethical halo. If the government decided that Dongfang should concentrate on nuclear energy, then it would take that path. Ultimately this means that the government can be viewed as a currently benign, if somewhat fickle financial sponsor. A good example of both the benevolence and the momentum that the governmental decisions carry can be found in Laine's interview.

"In my opinion the political system is not a risk for foreign companies. The main goal of the Chinese central government is to keep peace and retain the decision making power. This requires economic growth and jobs to people and thus the political measures usually support business. However, if decisions which weaken the position of foreign companies are passed they are implemented extremely rapidly." (Laine 2012.)

Thus, depending on the country's commitment to the low-carbon development strategy the institutional environment may continue to be supportive for cleantech in the long run. As long as the government finances cleantech projects and welcomes foreign businesses to supply this high tech, Finnish cleantech companies continue have positive prospects in China.

4.3 Resource-based challenges

4.3.1 Financial constraints

One important theme which the interviewees identified was challenges concerning resources. These resource-based difficulties can further be divided into three categories: financial constraints, the challenges related to human resources and knowledge-based challenges.

The first preliminary interview with Laine from Alfaram proposed that for a SME gaining access to adequate financing can be a challenging issue. In fact, one of the main reasons why the first venture in the cider business ended in market withdrawal was the lack of sufficient funds. This finding confirms previous research that stated the lack of financial resources as one of the key reasons for company failure (Hall 1992, 243). In order to succeed, the company would have needed considerably more financial resources to advertise the product on TV and to create product awareness.

“The decision was to withdraw from the market as any further operations would have required a proper round of funding, which we were not able to obtain.”(Laine 2012)

However, the interview did not identify any debt-related component that would have been an underlying cause for failure. The poor management of debt is often the second significant reason for company failure with its roots in the operational management of a company (Hall 1992, 243). Delving deeper into the possible causes for the withdrawal yields more interesting details.

In addition to larger factors such as governmental policies for cleantech discussed under industry-based challenges there are very practical issues concerning SME financing in China. The challenge in gaining access funds for Finnish firms can be twofold. First, there are Chinese regulatory restrictions to how a foreign company can finance its Chinese subsidiary. There are several solutions to this problem. For instance, the government has set minimum registered capital limits to different industries. The registered capital is basically the money a company needs to run its daily operations. In the case of a manufacturing wholly foreign owned enterprise the minimum registered capital is RMB1 million or USD 140,000. From the viewpoint of a Finnish company it is possible to increase the registered capital, thus funding the operations in China. However, this creates extra costs as reapplying for a permission to increase capital is not free. Still, it is cheaper than simply transferring money to the local company as the money injection is treated as income and thus subjected to business and profits tax. (Harris 2007; Path To China 2012.)

Another way to overcome the challenge is to delay dividend payments to Finland, leaving the money to fund the operations in China. Also, it is possible to improve the company cash flow to some extent by controlling the accounts payable, and using letters of credit. The former is one of the forms of informal finance identified by literature, which also included government grants and loans (Xiao 2011, 226). This form of financing was easy to identify in Gasera’s case as it almost doubled the company’s revenue.

Second, until very recently it has been difficult for a foreign company to receive loans from local banks. One interviewee felt that the reason for this is that the banking sector in China is built to support large state-owned companies rather than domestic or foreign SMEs, a finding supported by extant research (Xiao 2011, 220). However, during the past two years foreign banks received full banking licenses easier, which has also meant more competition to the local Chinese banks. As a result, it has become easier for foreign companies to receive loans. This finding confirms earlier research which suggested that SME lending can be increased through more intense competition (Mercieca et al. 2009, 149).

There are also other ways to circumvent the challenges caused by the scarcity of financial resources. The solution The Switch has adopted is an asset-light business strategy.

“They (Dongfang Electric Machinery Medium-Sized) have a factory with 42,000 square meters of space and around 400 employees. We have our own team of 5 people located in the facilities of Dongfang and we are able to use Dongfang’s capacity in a flexible manner: if we have no outstanding orders it means we have only 5 people are out of work but if orders come in we can use the whole capacity there.” (Tennivaara 2013.)

Also, company is in a situation where the average project creates a steady stream of income from the customer, but the firm pays for their Chinese partner, Dongfang, only after the project. This means that they practically receive the profit from the customer project before costs realize and The Switch is able to run operations with minimal capital.

4.3.2 The human resource challenges

The second resource-based challenge relates to workforce. The first human resource challenge is to find qualified employees. Hiring employees is easier in clusters where companies and prospective workers come together for business. However, the concentration of resources in clusters means that there is also fierce competition.

Thus, on one hand Suzhou, the industrial park where both Alfaram and Efore operate, draws a lot of educated people as many companies are located over there. Literature acknowledges that economic and technology development zones and special economic zones have a better supply of technical personnel as well as infrastructure (Tsang 1994, 104). On the other hand, however, the presence of a plethora of companies means that the employee turnover rate can be extremely high, especially among key personnel. This trend is particularly visible during an economic upturn. As China is experiencing rapid change and economic growth continuously, large numbers of people move in search of work. This can create especially challenging situations concerning labour-intensive work. As one interviewee noted:

“In labour-intensive work companies have large factories with a lot of employees from other cities and provinces. In one case I know a Chinese company has three thousand employees and after each Chinese New

Year a thousand less come back. They have stayed in their home province or found other work.” (Laine 2012.)

Efore had clearly the same issue. During the Chinese New Year the company may lose 20 per cent of its blue collar employees. Overall, the employee turnover rate is higher among blue collars than white collar employees. The reason for this high turnover, especially during one particular holiday, can be found in the cultural environment. Young people leave their home provinces in North and North-West China to work in Eastern and Southern provinces. People work for a certain period of time, save money, and then travel back home to be joined with their family and take on family responsibilities.

The only recognised solution to this particular challenge by the interviews is to start recruiting new people as in China the annual employee turnover rate can be over 100 per cent. Efore uses external agents to help in the recruitment process. First, prospectors are screened based on their application. Second, HR conducts the first interview after which a second interview is done in collaboration with HR and management. Finally, selected people begin their training period, during which some people already leave. As a result, the final yield from the initial application to a hired and trained employee may be less than 50 per cent.

One issue clearly visible in the studied companies is the strong pull of large companies compared to SMEs, a challenge recognised by extant literature as well (Gray & Mabey 2005, 480-481). The Switch has been able to circumvent the problem by recruiting from areas outside its partner company’s reach. They have found employees from Chongqing and coastal regions. Some of the hired employees originally hailed from the vicinity, left the province to work elsewhere and upon wanting to return to their home province The Switch was been able to employ some of them.

“It is incredibly hard to recruit people in the area (city of Deyang) as Dongfang employs 5,000-10,000 in Deyang which means that they receive all the know-how. They have a considerable superiority in recruitment. Also, Deyang is not considered as an attractive city to move into among young and educated personnel.” (Tennivaara 2013.)

In order to attract and retain personnel companies have had to increase salaries which in turn have resulted in a growth in overall payment levels. Thus competition through salary is one way to mitigate personnel turnover for companies – a tool used for example by Alfaram and The Switch. Especially the latter company has left the possibility open to raise the salary of its team members in China in case it is needed to prevent key employees from leaving. One reason for the firm’s willingness to discuss

salary can be the possibility of employee poaching, an issue recognised by literature (Thomas 2000). However, despite recognising the possibility of such poaching measures Tennivaara had not experienced such practices.

The studied companies' use of salary as a tool to retain personnel raises interesting points *vis-à-vis* theory. Contrary to findings that larger companies are able to lure employees with higher salary, it is in fact the smaller Finnish companies that use the method in China (Gray & Mabey 2005, 480-481). One explanation for this could be that Western companies have more leeway concerning as there is still a difference between compensation in Western countries and China. Indeed, The World Bank ranks China as an upper middle income country, whereas Finland ranks a high income nation (The World Bank 2013). Still, based on 2011 salaries some Chinese earn already as much as American employees (Rapoza 2012). At the same time, however, Alfaram calculates that the cost of labour in China is only one fifth or one sixth of the cost in Finland. Moreover, salary costs are significantly higher in the coastal regions compared to, for example, the Sichuan province where The Switch operates.

Another point regarding the retention of employees is the use of financial compensation among different types of employees. The top three most important factors affecting blue collar retention when asked among Efore's employees in China are salary through the amount of overtime work available, lunch, and working conditions. According to the interviewee, the lunch offered by the firm and the working conditions are the industry median or even above average quality. However, employee salary remains the single most important factor of employee retention among blue collar workers.

The reason for this appears to be the low overall payment level in the industry for factory workers. Although Efore pays its employees based on the area median, the base salary is not enough to cover basic amenities and living expenses. As a result employees need to either work overtime or have multiple jobs to amass enough money for living, let alone save it. An additional challenge with the salary has been the temporal effect of pay rise. Although Efore has made changes to the payment structures, the positive retaining effect of these changes has been brief before returning to the normal employee turnover rate. The problem is that there is always someone who is willing to pay more and it is not profitable for a company like Efore to pay its employees significantly above the industry average.

However, the interviewee from Alfaram felt that they had been relatively successful in retaining their blue collar employees. Although Laine was not able to point out clear reasons for this, he surmised that the size and integrity of the working team played a role. During the time the interviewee worked at the location in China, Alfaram employed 70 people, of which around 12 were white collar employees. Additionally, upon entering the Chinese market Alfaram was able to employ many workers from

another Finnish company that had operated in a similar industry, and had just recently closed its operations. Alfaram still retains some of the people who entered the firm through this transition 12 years ago. Thus the small size of the group combined with good team integrity may positively affect employee retention.

Although in white collar employee retention in procurement and production departments at Efore nonmaterial incentives are used, material compensation nevertheless remains as the key tool, like with blue collar workers. However, here salary is more strongly linked to social status, a type of nonmaterial incentive which will be discussed later. White collar employees earn sufficiently to cover basic living expenses, but money is increasingly used to attain the Western level of consumption. Employees invest in houses, cars, etc. Key employees are retained by following the industry salary development and by offering a bonus and a higher salary based on superior performance.

The same power of money is clearly visible among white collar employees in the product development department at Efore. Also, at product development employees regularly work for a maximum of 2 years collecting experience before moving to a new firm. Still, the interviewee recognised that there are some employees who clearly have a burning inner motivation to develop themselves. These employees are not primarily motivated by financial compensation, but rather are rewarded through their achievements in their work. Nevertheless, these are exceptions and the majority of employees mainly follow monetary rewards. However, Kaila reminds that in order to understand the situation it has to be taken into account that Suzhou, the industrial park where Efore and Alfaram operate, is a cluster where people come to work for money. Still, these findings indicate that literature stressing the detrimental nature of material incentives in innovation-oriented work is not valid in the case of China (Amabile 1993, 197; Li et al. 2006, 692). Rather, the evidence suggests that in China money is the primary driver and motivator in the cleantech industry.

Thus far the discussion on employee retention has centred more on material incentives and its derivatives. However, the second group of incentives relate to non-material means of retaining key personnel. In China, large SOEs have an annual recruitment quota they have to meet as the government controls employment levels this way. This means that people find very secure employment among SOEs, but at the same time there may be only slim chances to advance on one's career as there might not be any official career paths or possibilities for promotion. One company felt that they were able to hire internationally oriented Chinese due to this fact. This is in contrast to earlier findings that larger companies can offer improved career prospects compared to SMEs (Gray & Mabey 2005, 480-481).

Also, another issue affecting a company's ability to retain workforce is the employer's image. On the most abstract level this relates to the image concerning the

employer's home country. One interviewee felt that Finnish companies generally have a positive image. Also, Western companies in general are preferred employers among the Chinese. One reason for this may be the better career prospects discussed above.

Another nonmaterial incentive and a reason for the popularity for foreign companies may be employee education. The Switch offers their employees educational courses in Finland and other European countries as a means to increase employee commitment. This practice has attracted people and the word has spread, thus increasing the company's chances to hire capable people. However, as the legislation in Finland and China are very different the firm has been able to add a clause in their employees' contract which stipulates that if the person leaves the company during a set period of time they have to reimburse a certain part of the training they have received. Considering the fact that training in Finland may be very expensive for a Chinese the dual effect of offered international training may increase employee commitment strongly. Also, this clause works as a buffer against the fear of SMEs that after paid training employees leave to work for larger companies - an issue identified by literature (Gray & Mabey 2005, 480-481). However, having used this practice in the past, Efore does not utilise the tool anymore as the interviewee felt that the method is not very constructive. The described training is often internal and it is very difficult to calculate the cost of the trip other than the travelling expenses. Also, controlling this particular system is very cumbersome.

Finally, it appears that status is an extremely important nonmaterial incentive in China and people are willing to invest in social acceptance and prestige.

“In China it is not a problem to use most of your net salary for a mortgage, or to use the salary of several months for an iPhone. This would be a totally different case in Finland. The Chinese are willing to invest in status and if the firm can somehow aid in this they will be more than happy.” (Tennivaara 2013.)

This is something the other interviewed companies have recognised as well. Being able to offer the possibility to advance on one's career in the future and thus gain social status is an important tool to retaining personnel. People compare themselves to their former schoolfellows, childhood friends etc. During the one child -policy this tendency has strengthened. Parents want their only child to receive a high-status job title, a reputable company to work in, and a high salary.

There can be several explanations for the importance of social status offered by the interviewees themselves. First, during the communist reign of Mao Zedong the people of China were unified as one nation, at the same time creating a mass where it is very difficult for individuals to rise up. Now, after China has opened up as an emerging

economy people want to differentiate themselves as individuals in social life and work. Here status is an important means to achieve differentiation and people are willing to go to great lengths to bolster their social standing.

There is also another complementing view, offered by one interviewee, on the importance of social status. There are a greater number of men in China compared to women. In 2010 the sex ratio at birth in China was 118 males against 100 females. Although the number varies between provinces, reflected to the whole population it means that there are tens of millions of males more than women. (Branigan 2011.) This means that the women are able to make their pick among the best candidates. Having a high social status and a high income contributes to males' possibility to find themselves a wife. In the competition for good employees Finnish SMEs can improve their chances of attracting and retaining people by acknowledging these cultural and institutional factors in China.

4.3.3 Knowledge-based challenges

On the most practical level the information flows from the target country or venture to the parent company can contain information concerning the local market, business culture etc. A small company may not have the resources to conduct extensive market research prior to entry and inadequate knowledge may result in incorrect market entry. Also, the interviewee from Gasera noted that it may be difficult for a foreign company to determine whether market knowledge is up to date. Nevertheless, for example the Fuzhou Savon Drinks was located in a city and province with very few other foreign companies. This meant that the company was the sole foreign operator in the particular market and sector, meaning that they had only limited capacity to gather tacit knowledge concerning the market, business culture etc.

“We had chosen an unnecessarily difficult market - - An area near Beijing or Shanghai would have probably been easier in the sense that we would have been able to gather knowledge from other Finnish or foreign companies already in the market.” (Laine 2012.)

The choice of location can be a significant factor in order for a company to overcome the challenge. Alfaram, instead, operates in an industrial park west from Shanghai with a myriad of other foreign companies. This means that they have had the possibility to communicate with other foreign companies in the area and share experiences as well as gather knowledge on local business culture and other issues. Both Alfaram's and Suzhou Savon Drinks' choices reflect the role of knowledge in making the optimal

decision concerning location. This is in keeping with earlier research from resource- and knowledge-based theorists.

“Foreign companies have their own challenges as they do not know the local culture or codes of conduct. If you are the only player in the market it is incredibly difficult to gain access to knowledge, especially tacit knowledge. There may be practises you simply do not know of, but the information would be available in a cluster or an agglomeration. When you meet people you hear of these things.” (Laine 2012.)

On the other hand, The Switch, too, is located in central China with a very low presence of other foreign companies. However, at the time the company was created through the fusion of three smaller firms there was awareness of the importance of the Chinese market. Consequently the company has recruited people with experience on China through expatriation or business. As a result The Switch was able to create an organisation with ties to China at a rapid pace as they had gathered knowledge resources ex ante. Thus, it appears that in the cases of Alfaram and The Switch vicarious learning, the acquisition of second-hand knowledge, is emphasised (Huber 1991, 96).

Like Alfaram, Efore too operates in the Suzhou cluster in China, but similarly to The Switch their employees have extensive experience on doing business in China. The management of the company have all at least 20 years of experience of business in China. Thus, for Efore continuity is of centric importance, which implies that experiential learning takes place (Huber 1991, 91). Expatriates living and working in China collect, generate and distribute knowledge actively. For example, the Swedish sales manager has lived in the country for 16 years, and in the interviewee’s team two expatriates have worked in China for 6 and 7 years, respectively.

In addition to market knowledge flowing from the foreign market to the parent company there are supplier-level information flows which may create challenges. Dongfang is not only a partner to The Switch, but also a supplier. In the supplier relationship the companies negotiate contracts for certain products and projects and set prices. After details have been agreed upon, the Chinese supplier will logically attempt to improve its own profit margin through optimising the production process. However, as the Chinese partner lacks the complete technical understanding of the final product the firm may make changes to the technical designs of the products which may affect the quality of the final product. Also, to the same end, the company might not inform the Finnish firm of its supplier choices, which could be of importance.

Another issue stemming from the potentially competitive setting between companies is the knowledge regarding to the localisation process of products. From the viewpoint of the Finnish company it would be advantageous to have the knowledge of the specific

requirements imposed on products in China such as electrical resistances, manufacturing processes available, etc. This way the Finnish firm could localise the product self and they would not need to rely on Chinese suppliers to do the localisation from which costs incur. The Chinese company, however, has no incentives to provide the Finnish company with the details as by giving away this knowledge they would surrender their own competitive core capabilities.

The result is that by taking into account the frictional nature of trust and intellectual property rights (IPR) the companies end up labouring more. First the Finnish company builds a complete design of a particular product after which the same design is transformed to comply with Chinese standards by the Chinese partner. The process is time-consuming and thus costly, ultimately eroding profitability for both companies. Thus it seems that although companies are somewhat aware of the beneficial nature of cooperative problem solving, there are trust- and IPR-related issues that prevent the companies reaping the full potential of knowledge sharing (Dyer & Hatch 2006, 716; McEvily & Marcus 2005, 1033).

The second stream of information flows from the parent company to the foreign subsidiary and target markets. Here, too, one challenge related to these flows of information concerns the intellectual property rights. For example, The Switch began their partnership in China by sending relevant pictures and diagrams related to a certain product to the partner and placing an order for the products. Having realised this is not necessarily the best way to handle the information flows the firm established a local team to act as a medium between the parent company and the Chinese partner. This team can then supply the partner with information selectively and in addition to indirectly contributing to IPR protection this strategy allows the company to better respond to information needs of both parties.

Gasera's way of protecting its knowledge-based competitive advantage is to give its Chinese customer certain rights to the products developed in course of the project. The Chinese customer has the right to use the product only for the originally intended use of air quality measurement in space ships. Gasera, on the other hand, has the possibility of marketing the same inventions for other industries and uses in China in the future.

Efore, too, is aware of the IPR-related risks and they have taken measure to mitigate the issue. They have protected certain key elements as software source codes and some detail concerning technical solutions. However, the firm utilises a global functional organisational structure. For example, product development and technology development are global functions. Additionally, product development is divided further into hardware, software, layout, and mechanics development departments which are independent global functions, respectively. This means that the company has to make crucial information stemming from the technology development department available to

its teams in the product development department for them to be able to function properly.

However, the key here is how the information transferred. At Efore the knowledge is not transferred in electric or printed form but through training and coaching. As a result the employee absorbs knowledge that can be taken with when he leaves the company, but Efore has taken conscious steps to reduce the amount of printed information that can leave the firm. For example, in computers the USB ports are available only for selected personnel, and the material cannot be copied and transported easily. Thus, instead of providing employees with explicit knowledge which is easy to transfer the firm transforms the relevant information into tacit knowledge which is more difficult to communicate (Nonaka & Konno 1998, 42).

Despite there being the possibility of some suppliers or partners exploiting the partnership and copying the parent company's product, in high tech industry the complexity of the product somewhat mitigates the issue. This theme was discussed earlier already, and it was noted that the complexity of the product also helps decrease the adverse effects of competition.

The complexity of the product means also that the parent company must be able to transfer sufficient manufacturing knowledge to its operations in China or elsewhere in order for the foreign site to be able to manufacture the required products. However, in the case of Gasera the measurement products are still at such an experimental stage that sending production designs to any other country to an external manufacturer would not be possible. Still, even their products contain standardised modules which can be ordered through an external supplier. Due to the research-oriented nature of the product Gasera's production is conducted through subcontracting according to the company strategy, but the related firms are located in Finland. Thus in case direct involvement in the production process is required by a Gasera employee, it is possible due to the physical proximity of the subcontractors.

Nevertheless, as the products become more and more standardised through manufacturing and design experience, it is possible to outsource manufacturing to more distant countries. For example, Gasera sources certain optical filters from a manufacturer in Sweden, and plans to increase the manufacturer's responsibility and the complexity of the manufacturing process in the future. Consequently, in the long run Gasera's aim is to outsource more of the production process to foreign markets but first the company must gain significant experience in the industry.

Alfaram had good advice for the next phase, setting up international production. The interviewee felt that when setting up operations in China, personal involvement in manufacturing process knowledge transfer is necessary in addition to training target venture employees. For example, there may be different procedures concerning manufacturing processes. A manufacturing company who is just setting up operations

might feel that merely recruiting a qualified, local operations manager is sufficient to set up production.

However, the local manager may have different views on how to set up a certain process and thus the expertise of the foreign management is needed. For example, there may be a programmed robot for a certain task, but a local production team member may feel that it is faster to do the process by hand than set up the automated process. The Switch recognised similar challenges. Also, the interviewee from Alfaram felt that doing group projects is different in China, as the locals react better to clear goals and smaller steps rather than general objectives. This finding adds value to earlier research demonstrating the value of parent company managerial involvement in transferring knowledge from the target venture to the parent company (Tsang 2002, 838). In addition, managerial level involvement appears to be necessary, or highly beneficial, when transferring knowledge from the parent company to the target venture.

The Switch, on the other hand, had good examples of the knowledge transfer process after the manufacturing processes have been set up. The company has organised local projects and operations in China so that they are mainly organised and managed by the local team, but with the help of the parent company. The knowledge transfer process is organised so that employees from the Finnish parent company regularly visit China to give technical assistance in various projects. Similar processes are used by Efore. The firm uses video conference software, training events, but also regular reviews. For example, when the product development department holds an internal review, senior members of the department give feedback, train, and review results, improving the personal competences of employees. Additionally, when required, employees travel to China to give technical assistance or training. Also, the reverse process is used in both companies: Chinese workers visit Finland to learn about the manufacturing standards, etc.

“-- it is good to have people visit Finland too. It is more important for them to see how things are done in Finland than giving any specific technical training. It is very difficult to demand a certain level of quality in China if people have not experienced first-hand what it means. We can demonstrate our processes here in Lappeenranta, how certain products are manufactured, and small things like how clean the factory is. Cleanliness is a relative concept; we have a clean factory in China too but it might not be the same.” (Tennivaara 2013.)

In addition to production knowledge Alfaram attempts to transfer some positive aspects of the parent company culture to its operations in China. The firm changes the foreign chief executive officer in China every three years. During this time the manager

can in addition to learning about the local culture transfer some explicit and tacit knowledge stemming from the parent company. However, the challenge is the temporality of the placement. The manager has to adapt to local conditions during a very short period of time. This transition can be made somewhat smoother as predecessors can mentor the newcomer and transfer relevant knowledge.

At The Switch every project has a key account manager who can be located globally anywhere, and a technical account manager who is often a Finnish employee. This means that Finnish workers often participate in projects where the product manufacturing takes place in China. As a result, employees can form a mutual understanding of the processes in different countries through experience. However, interviewee stressed that specific training would be beneficial for Finnish employees in order to standardise the codes of conduct between sites in China and Finland.

Finally, the third distinguishable theme is mutual learning and knowledge sharing. Here the existing information does not flow between two points, namely the foreign parent company and the target venture. Rather, knowledge is shared and created for mutual use through the utilisation of information technology. This can in some cases be seen as knowledge transfer and communication that takes place within the firm (Olejnik and Swoboda 2012, 472).

The Switch utilises information technology to share and generate knowledge. Before establishing advanced information technology connections to their Chinese partner, the challenge was how to transfer designs, pictures etc. At first The Switch used Dongfang's internet connection which meant that all information flowed through Dongfang. Later, The Switch established own internet connection and servers. Such steps were necessary in the emerging China. Consequently, emails were used for the knowledge transfer and sharing purpose, but the sheer quantity of mail was staggering and many details were lost among the countless messages. Upon discovering the problem the company moved to a web platform called Andon, which is based on Toyota's lean manufacturing systems. The system has since then become the most important communication tool for the firm. In the system users can create cases and describe problems or issues, attach pictures, reports etc.

The system is extremely crucial as The Switch sends their product designs to China, where localisation is then conducted. As the production processes can be different at the Chinese factory or some European production processes may not be available in China, they are able to point out possible bottlenecks or design changes in the system. When technical personnel in Finland process the feedback the knowledge is recorded in the system for future use.

In a similar manner Efore uses product data management software where all documented information is stored. Additionally, the firm actively utilises a collaborative online environment where employees can create discussion boards on for example

enterprise resource planning software projects. Like with The Switch, the Chinese contribute very actively to these digital forums and share and generate knowledge. Thus it appears that the employees have strong, even intrinsic motivation to share knowledge (Osterloh & Frey 2000, 545).

There is also crucial knowledge that is not shared in a software system, but generated among the project leaders concerning particular projects. The Switch has mitigated the possibility of this information leaving the company by having clear knowledge sharing practices concerning different projects. In the local team in China the team leader receives all information and mails on different projects, making sure that projects or deliveries are not in danger when a team member leaves. To summarise, there are clear systematic mechanisms in place to aid in knowledge transfer and generation, a move lauded by literature (Inkpen 2008, 447).

4.3.4 Network-based challenges

The theoretical literature has well elaborated the influence of networks and guanxi in the Chinese business context, but perhaps its profound effect can be best demonstrated by an incident occurred to Alfaram.

“We had a wire supplier who provided us with very good quality goods, just what we needed, but they were very expensive. Although the products were cheaper even in Europe, despite repeated efforts our procurement officer was not able to negotiate the prices. Then at some point I was asked to visit the supplier and try to negotiate with them. So I flew there, but no business-related conversations took place. We dined with the manager and he showed us the factory. Then, the next day after we had returned, they faxed us a new price list with acceptable prices. Sometimes it just requires a personal contact, and there is a big difference whether you are a regular employee or the laoban, the owner of the business. When the manager is present things can go more smoothly.” (Laine 2012.)

This account highlights the findings on the importance of personal relationships in the Chinese business environment (Hongzhi et al. 2012, 458). Ties are not formed between companies, but between individuals. Also, it gives an inclination of the business negotiation process in the country. Alfaram’s interviewee further elaborated the process from a Finnish point of view. In a negotiation it is often impossible to start discussing business items right at the beginning. First, participants need to acquaint

each other, which can take considerable time. The interviewee from The Switch advised that creating good guanxi ties takes place through befriending locals by not only drinking and dining, but also by asking personal questions about family etc. which shows the other person that you are personally interested and are willing to make a friend. By rising a toast or singing karaoke outside the business environment one can create a business relationship, otherwise both parties remain strangers. Also, sometimes just by being able to say a few words in Chinese can be sufficient to earn the trust of a local.

Creating these guanxi ties through personal involvement is important as contracts are based more on interpersonal trust. Often what is viewed as a written contract from a Finnish perspective can be seen as merely a letter of intent by the Chinese. Consequently, if one party feels that a contract has been breached or that it needs alteration, it is more effective to pursue this aim through personal negotiation rather than approaching the issue through legal institutions.

Moreover, if parties have established a good relationship, the reciprocity of the guanxi system may yield extremely high returns outside any written contract or formal agreement. Alfaram has a supplier they have purchased a lot from, but also helped to acquire large international customers and thus increased their turnover greatly. They are also acquainted on a higher management level in the supplier's side. As a result, the Chinese supplier has given Alfaram aid in issues and challenges not necessarily related to their own business relationships in any way. Additionally, the help given may create costs for the Chinese supplier, but the costs are simply accepted based on the good relationship with the Finnish company. According to The Switch's experience guanxi is even more important when doing business with Chinese SOEs as the network ties are stronger still.

However, the strong role of personal relations in business negotiations means that there are also negative effects. For example, there is a deeply rooted habit that as sales are conducted on a personal level between the salesman and the buyer, the salesman might offer the buyer a certain percentage of the value of the deal as a personal incentive. This may lead the buyer to choose the vendor based on the largest personal gain and thus the deal may be suboptimal to the company. This becomes more problematic if the foreign company is not aware of the custom and Chinese rivals knowing the custom constantly win the deal. Kickbacks are often taken for granted in China. Such corruption on personal level affects not only smaller companies but large multinationals and Fortune 500 companies as well. Also, discovering such frauds may be difficult as such personal favours are seen as a part of Chinese culture. (China Economic Review 2012, 37-38.) At the same time it is important to note that personal kickbacks are only offered people in certain positions. The interviewee from The Switch explained that he had never experienced such practices himself, as all the business

decision are made on a higher managerial level. Regardless, he had heard plenty of rumours concerning the practice.

If, however, the company is aware of this practice, there are ways to curb it. This requires the participation of the foreign management in deal negotiations. When involved, the management may control deals better. Also, if the management has a good relationship, preferably on a higher level, with the other party, it is harder for the selling party to include personal kickbacks in the deal as this would mean losing face for the vendor. This finding supports research that well-designed internal controls and corporate governance helps to prevent such infringements (Michelman et al. 2011, 19).

“If you want to fight corruption in your own organisation it helps when you are involved in the negotiation process, and that you are acquainted on a higher level in the other company. Then it means losing face for the other party if it turns out that their organisation has paid kickbacks to your employee.” (Laine 2012.)

Another guanxi-related factor recognised by the interviews is the concept of face. The face is closely linked to personal social status and thus losing face represents a devastating blow to a person’s integrity. However, due to the personal nature of guanxi and face, if the foreign firm causes a Chinese partner to lose face, the loss and insult takes place between two individuals and the companies themselves retain their integrity. At The Switch such situation where losing face can take place are critical negotiations between a Chinese partner where both parties discuss issues concerning quality or processes. Even though any possible issues can be very openly discussed, it is important not to embarrass anyone, which in turn would result in that person losing face.

In employee retention losing face in a broader context means also that any employee commitment is likely to disappear due to the negative incident, and the employee will leave to search for new employment. The personal embarrassment of losing face may be too much for a person to be able to overcome the issue while still working for the same company and same people. Precisely because of this employees, on the other hand, will make sure that if the fault is not theirs, this becomes expressed.

The interviewee expressed that due to cultural differences in communication Western The Switch employees had in some cases caused a loss of face to a Chinese partner, but the company has now one safe mechanism. Most of the business negotiations are conducted in Chinese and the local team acts as a middleman between the Finnish parent company and the Chinese partner. Thus, in case a Finnish employee voices feedback too harshly the local team can refurbish the message into a more adept form. Efore, on the other hand, uses a coaching method to discuss issues and solve problems without pointing out the culprit. This requires discussing a challenge in a way that the

problem and cause become evident, but without any individual feeling that he is being criticised.

Concerning another issue combining *guanxi* and human resource, the interviewee from The Switch recognized the advice given by literature that foreign companies should hire people with personal connections, *guanxi*, to help the company build business relationships in the local community (Cunningham 2010, 2134-2135). However, due to Dongfang's strong pull they were not able to hire personnel with fully constructed networks. Instead, the Switch aimed to hire people with the potential to create good business relationships. In order to recruit such people The Switch paid attention to hiring social people with a clear evidence of performance on their career. In China the elderly get more respect and as the Finnish firm's team consists of younger employees they have attempted to increase the employees' credibility by preparing them to portray technical expertise originating from their employer as knowledge of their own.

Efore, on the other hand, does not consciously recruit people with their personal networks in mind, but the interviewee admitted that this was one reason among others when hiring for example the current sales manager in China. The reason why it is not of paramount importance to hire employees with complete social networks in China is that it is very easy to create new relationships if one is active and consciously aims to build a network. A reason for this could be the country's long history of using networks. As people are accustomed to creating personal ties they are also more willing to do so and view it as an integral part of their lives.

Finally, there are *guanxi*-related factors influencing knowledge transfer and sharing. The results suggest that the lack of functional *guanxi* and bad personal relationships inhibit knowledge transfer and communication. However, as the interviewee from Efore noted, this is not necessarily an issue restricted to the Chinese environment. The lack of communication due to bad personal relationships negatively affects knowledge transfer anywhere in the world.

Also, the results indicated some correlation between the concept of face within the *guanxi* system and knowledge sharing. If there is a danger that particular information shared may cause an employee to lose his face, the knowledge is not shared. On contrary, it is possible that people will go to great lengths to hide this information and knowledge that could cause the loss of face. This finding supports earlier research on the importance of face in knowledge transfer and sharing (Huang et al. 2011, 569-570.)

Additionally, network ties improve knowledge transfer from the target venture to the parent company. At Efore the local managers have good relations with the management of the industrial park and the province where they operate, and one member of the board of directors is Chinese. For example, the Swedish manager has good relations with the

Swedish Chamber of Commerce, which is very active in the area and in turn provides continuously knowledge on industry trends such as human or financial resource issues.

4.4 Synthesis of findings

4.4.1 Financial resources and human resources in the cleantech industry

In conclusion, results of the findings on cleantech SME challenges related to financial resources can be grouped into two categories. First, there are very practical and concrete challenges with solutions strongly tied to the current Chinese business environment. Foreign companies may have challenges in financing subsidiaries in the Chinese market as there are restrictions in the way the foreign parent company can transfer financial resources to its local operations. Identified solutions to this were working through the minimum registered capital, dividend payment to the parent company, and accounts payable.

Also, only a very recently changed situation is the foreign companies' ability to access bank loans. As banks were originally established to support SOEs, there was no culture and practices for financing smaller private companies. However, this challenge is slowly subsiding as recently foreign banks have received licenses to enter the Chinese market. Through the increased number of banks competition among financial institutions has increased which in turn has helped SMEs gain official bank loans.

Second, summarising the results of the cleantech SME financing in China contrasted with the Porter diamond model yields several interesting points. First, the interviewed companies operate in the high tech industry. The products are complex and often customised, and the final product is the result of many prototypes. This complexity in the product itself helps mitigate the negative effects of competition. The companies interviewed did not feel that they experienced competition to such an extent that it would hinder their ability to do business in China. This finding is in stark contrast to the Fuzhou Savon Drinks case, which experienced strong competition by the end. These points affect the factors in the Porter's five forces model, controlling variables concerning competitors, the threat of new entrants, and the threat of substitutes.

Next, as a result of this complexity in the product the companies were requested to engage in a business transaction in China. Gasera, while not having any own production or research in China, is doing business with a Chinese partner. The Switch and Efore operate in the market after an initial invitation by a local partner. This implies that the bargaining power of the companies in relation to their customer, or buyers, is relatively beneficial. Having secured a customer or a partner in the market may help the company

secure adequate financing for its operations. Thus the complexity of the product in the high tech industry combined with the form of the business strategy appear to control somewhat the possible negative effects in the firm strategy, structure and rivalry segment of the Porter diamond model through factors in the Porter's five forces model.

Finally, cleantech sector in China benefits currently from the benign government which supports the industry. This support in turn affects the demand conditions in the market as many projects may enjoy financial government support. Finally, the low-carbon development strategy also affects related and supporting industries in the cleantech sector as the central government directs the SOEs to manufacture cleantech products as was the case with Dongfang, the local partner company for The Switch. This means that cleantech SMEs in China enjoy what Porter calls benign forces in three segments of the diamond model.

Resulting from this discussion it can be, with some conviction, said that contrary to research emphasising the separate treatment of government as a fifth force, the government plays a more Porterian role in the diamond model in China. However, as the central government intervenes very directly in the cleantech industry it cannot be treated merely as a background force, but rather an overarching element affecting two quadrants in the Porter diamond. The modified version of the diamond can be seen in figure 8. The fourth quadrant concerning factor conditions is discussed in the form of the human resource challenges in the market.

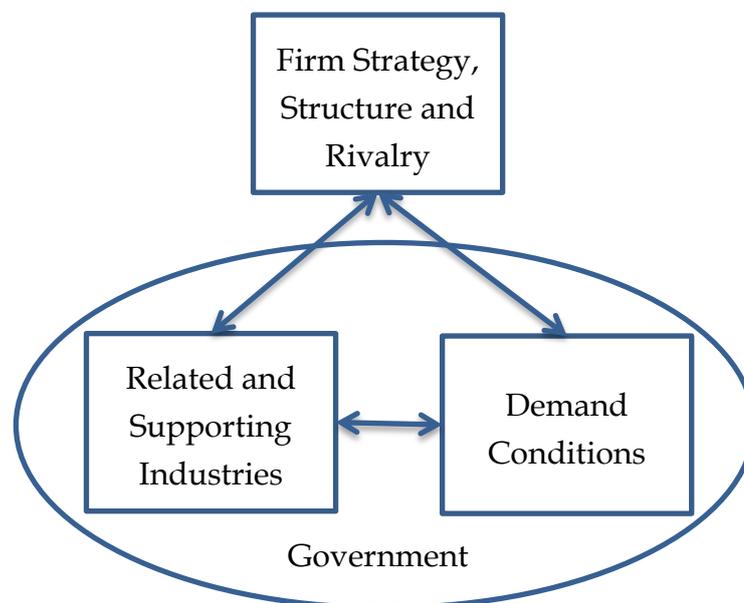


Figure 8 Financial factors: the benign forces of cleantech industry in China

Moving on to sum up the challenges and solution related to the human resource factor in China for Finnish cleantech SMEs it appear that there are several clear themes.

First of all, the themes can be divided into hiring suitable personnel and retaining these employees. When delving deeper into the component of retaining personnel there are two distinct themes of material and non-material incentives (see figure 9).

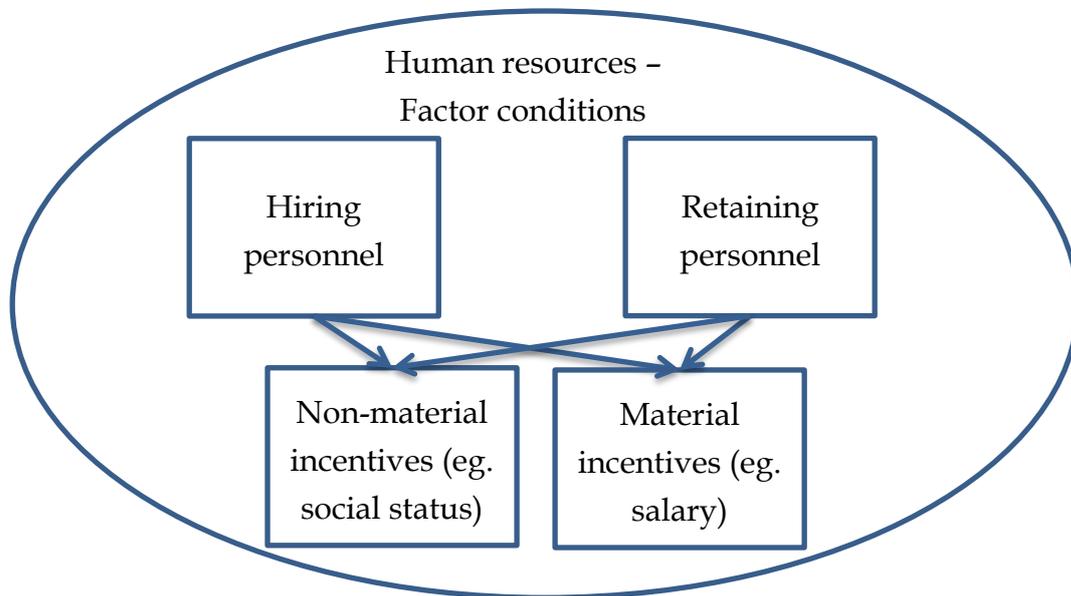


Figure 9 The human resource factors affecting business for Finnish cleantech SMEs in China

It was discussed that the recruitment of personnel can be a challenge for smaller companies as large companies, especially Chinese SOEs, have superior capabilities to hire people due to their size and the influence of the government. However, results indicate that in some cases Finnish SMEs have several advantages. First, Finnish companies have generally a good reputation. Second, foreign SMEs from developed economies may in fact have a better position to financially compensate employees due to the income differences between countries. Finally, *vis-à-vis* SOEs foreign companies are able to offer better career opportunities, thus attracting internationally oriented employees. This finding is in contrast to earlier studies (Gray & Mabey 2005, 480-481).

Nevertheless, the interviewed companies mentioned financial incentives as one of the main tools to attract and retain personnel. Interestingly, literature suggests that in innovation-intensive sectors such as the high tech industry extrinsic motivation created through material incentives can be detrimental to creativity and innovation (Amabile 1993, 197; Li et al. 2006, 692). Thus, contrary to literature results indicate that material incentives are the main solution to retaining personnel and it was not viewed as an ambiguous solution.

There can be two reasons for this. First, although the companies studied engage in high tech production, for example the Switch has its product development and research in Finland. This means that the theories for extrinsic and intrinsic motivation may not be

applicable directly to the case companies. Still, even in the case of The Switch the local team has technical expertise to process product localisation and adaptation to particular projects. These tasks require complex knowledge and creativity which suggest that the local employees indeed work in an innovation-oriented industry. Furthermore, Efore has full-fledged R&D in China and the interviewee repeatedly mentioned material incentives as the main driver for employee retention.

This leads to another possible explanation for the functionality of material incentives. The interviews suggest that the ever more Westernised young Chinese generations strive to achieve material wealth and money and high salaries pay a crucial role in the hopes and dreams of the modern Chinese. This finding is in line with more recent research (Durvasula & Lysonski 2010, 169).

Also, there was evidence in the interviews that well as many Chinese are willing to use a vast majority of their earnings to pursue material wealth, for example an apartment or an iPhone. This Westernisation of Chinese values also supports Cunningham's (2010, 2120) suggestions that the Chinese Confucian system now converges increasingly with Western habits. Additionally, the finding supports earlier discoveries that debt is used as a medium to support the intensifying consumption patterns (Podoshen, Lu & Junfeng 2011, 22-23).

Next, the most important non-material incentive, closely tied to material wealth and consumption, is social status. One of the reasons why employees are willing to spend so much on material belongings is the social status and acceptance they create. Thus it was found that a company ability to contribute to an employee's social status by titles or other means greatly increases employee retention. In conclusion, despite some cases displaying intrinsic motivation or Finnish companies' good reputation, salary (material incentive) and social status (non-material incentive) appear to be the most important factors affecting employee retention and a company's ability to hire people in China. In conclusion, through the geographically dispersed case companies this study contributes to the very thin layer of geographically biased and concentrated HR research among SMEs in the Chinese context (Cunningham 2010, 331).

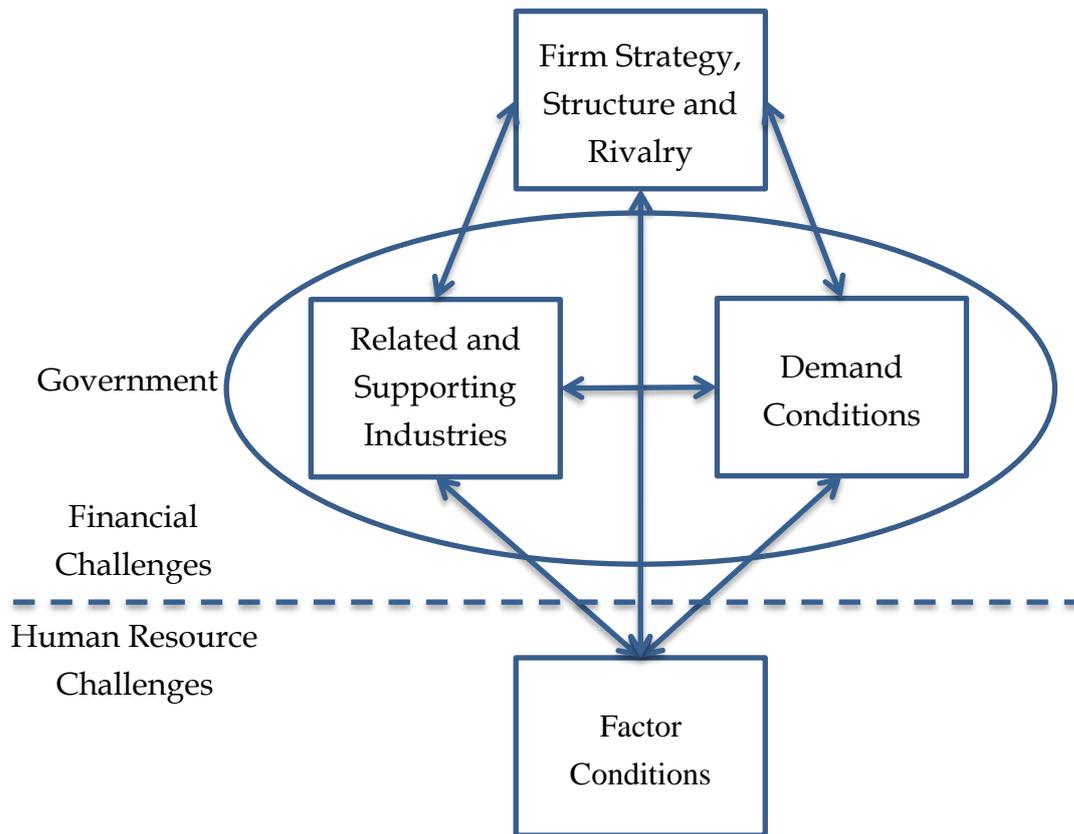


Figure 10 SME challenges from a resource-based view of the firm

Finally, combining the partial Porter diamond discussed in conjunction with the financial challenges in China, the human resource component corresponds well to the factor conditions determinant of the model. The result is figure 10 that clearly depicts which parts of the diamond model correspond to their respective challenges faced by Finnish cleantech SMEs in China. As discussed earlier, financial challenges were found to affect three determinants in the Porter model: demand conditions, related and supporting industries, and firm strategy, structure and rivalry. Furthermore, the government was found to affect the demand conditions as well as related and supporting industries. Finally, challenges related to human resource seem to have implications for the factor conditions –determinant in the Porter diamond.

4.4.2 Knowledge resources

Based on the research results it can be said that rather than the two flows of information depicted in Figure 4 (see page 22) there are three flows, or points, where knowledge is

generated and transferred: the flow from the target venture to the parent firm, the flow of information from the parent company to the target venture, and mutual sharing and generation of knowledge. First, the flow of information from the target venture or country to the parent firm mainly consists of information related to the explicit knowledge of legislations, codes of conduct, technical requirements and product localisation needs, and implicit knowledge of business culture, cultural differences, *guanxi*, etc. This inward flow of information is extremely important already prior to the internationalisation as the company needs information concerning the target country before being able to enter the market (Johanson and Wiedersheim-Paul 1975, 306). Thus it can be said that in an internationalisation process this inward flow is the first when the temporal dimension is taken into account.

The interviews clearly identify two ways of creating inward flows of information and acquiring market knowledge. First there is the possibility of acquiring knowledge prior to the whole internationalisation process by recruiting people with experience on the market. This method was utilised by The Switch and Efore. Quickly after the establishment of the company The Switch recruited people with experiential knowledge on the Chinese market. For example the managing director of operations in China has prior knowledge on China through working at Nokia and Nokia Siemens Networks. Here the company demonstrates the advantage of born-again globals compared to other forms of internationalisation, as the firm able to gather knowledge due to its robust financial and experiential background (Bell et al. 2003, 353). Although not explicitly mentioned, Efore, too, has a similar strategy as the company has operated in China since 1999, but the management of the company has more than 20 years of experience in doing business in China. This indicates that the firm has been able to recruit personnel with specific area expertise over time.

The second way of acquiring local market knowledge relates to the choice of location. This was most strikingly visible in the interview of Alfaram's Laine who was able to reflect on two different cases. As the first venture had no extensive experience in the particular market prior to internationalisation, the location played an important role. As the company was the only Western firm in the area, they were not able to acquire knowledge from other Western firms and thus suffered from lack of sufficient market knowledge for the venture. On the contrary, Alfaram was able to learn from other Western companies operating in the Suzhou industrial park. In a similar manner Efore operates in the same industrial park and demonstrates that the different ties created within the cluster greatly improve inward knowledge transfer. These findings strongly support earlier research that knowledge acquisition and absorption capabilities are essential for firm survival (Li, Poppo & Zhou 2010, 349).

Additionally, literature proposes an untested hypothesis that the greater the cultural distance between two knowledge exchange participants is, the more likely direct

management involvement is used to acquire knowledge (Tsang 2002, 851). The case companies display some evidence supporting this hypothesis as direct managerial involvement and expatriates are used for knowledge acquisition as well as knowledge transfer to the local participant.

The second type of knowledge flows is directed from the parent company to the target venture. The parent company needs to be able to transfer sufficient knowledge to the venture in China for the supplier, subsidiary or partner to be able to manufacture the technologically complex cleantech products. Combined with the inward flow of information discussed above these findings demonstrate the asymmetrical learning identified by academic research (Tsang 1999, 216-217). Taking into account the temporal dimension of knowledge transfer, this flow can be seen as the second information flow after the inward stream.

In the case companies this information flow of production knowledge was organised via physical presence as well as the use of information technology. Experts from the parent companies visit the sites in China to provide local employees with training and required competences to successfully run the operations. Also, the reverse process was used: Chinese employees visit the sites in Finland to learn more about the manufacturing processes etc. Similarly, in addition to physical travel these aims were completed with the use of video conference tools as well as online knowledge sharing systems.

Although the role of IPR, trust, and competition were somewhat visible in the inward flows of knowledge to the parent company, the interviewees stressed more their importance in the outward flow of information. The Chinese partners have a motivation to engage in vicarious learning and actively learn the advanced manufacturing processes and technologies of the foreign partner. However, the interviews confirm the warning given by literature that the knowledge resource must remain unique for it to be a source of competitive advantage (Barney 1991, 106). Precisely due to the transferable nature of knowledge and the knowledge intensity in high tech companies this is extremely important (Oviatt & McDougall 1994, 56).

As a way to protect these unique knowledge resources Gasera was the only case that explicitly mentioned giving the Chinese customer certain rights, or licenses, of the products, a solution offered by literature as well (Oviatt & McDougall 1994, 56-57). However, a more novel result was the mixed use of tacit and explicit knowledge. The case companies actively used means to restrict the transfer of explicit knowledge and where possible transformed it into tacit knowledge. This solution is in line with literature that emphasises the personal nature of tacit knowledge (Nonaka & Konno 1998, 42).

The third and final type of knowledge flows identified based on the interviews is the creation and sharing of knowledge between the two participants. It is justified to portray

this flow as a stream of its own as here the knowledge is not generated to serve either party in specific, but to mutually serve both participants. In an SME internationalisation process this type of knowledge flows can be seen as the last stage in the temporal dimension.

This mutual information generation was done principally with the use of information technology. Companies use online platforms for the sharing of information and joint problem solving. This form of knowledge sharing is perhaps closest to the common goals for cooperation described by the academic literature (Inkpen & Tsang 2005, 157). However, although the literature sees the particular process harmonising individual interests and supporting tacit and explicit knowledge sharing, it was difficult to elaborate the process here (Li et al. 2010, 365). Still, as the interviews expressed their satisfaction for the activity of all participants in the knowledge sharing process, the evidence seems to support the extant literature (McEvily & Marcus 2005, 1033).

Here any identified challenges were related to the technology itself rather than components of the human interaction itself. It may be possible that the mutually beneficial nature of this knowledge sharing erodes some of the competitive nature of the knowledge transfer associated with unidirectional information flows. As the participants do not feel that they are giving away their own competitive knowledge without receiving anything in turn, they may be more willing to contribute. As a result it can be surmised that in a mutual knowledge sharing process the participants have the intrinsic motivation required for successful knowledge transfer.

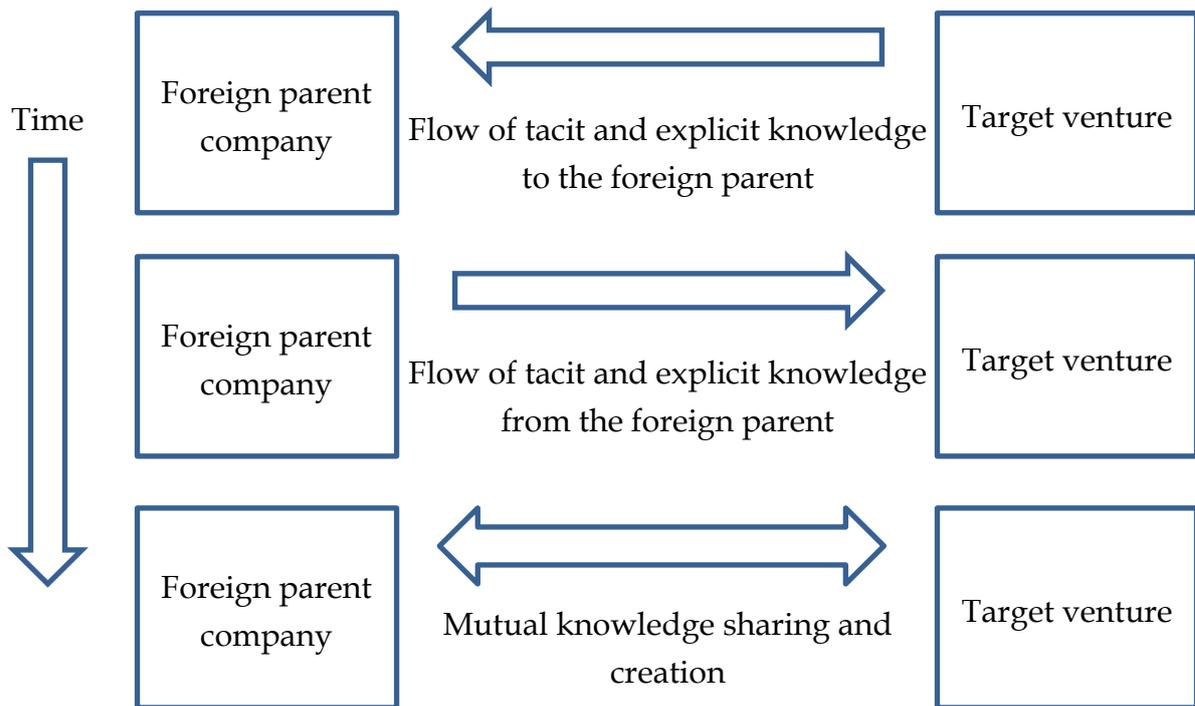


Figure 11 The modified knowledge flows between participants in a temporal dimension

To sum up the findings related to the knowledge component the Figure 5 (see page 22) describing knowledge flows between participants can be updated to include the third element of mutual knowledge sharing. Also, based on the findings this study proposes a hypothesis on knowledge transfer in the temporal dimension as well. In an SME internationalisation process the first flow is directed from the target country towards the parent company as the foreign firm attempts to learn sufficiently for the internationalisation process to take place. Second, after the internationalisation to a foreign location is completed, the parent company transfers necessary information for the target venture to operate successfully. In this phase the role of IPR, trust, and the potentially competitive setting of the venture are important from the viewpoint of the parent company. These determinants create a strongly frictional element in the knowledge transfer. Finally, in the third phase when both parties have amassed enough knowledge for basic operations, mutual knowledge sharing and generation can take place. In this phase the participants trust each other more and the frictive determinant loses some of its importance. Iterating from the findings and academic literature the increased trust over time should mean that the transfer of tacit knowledge increases (Li et al. 2010, 365). Thus the new modified version takes shape in figure 11.

4.4.3 *Networks and guanxi*

The results on networks and guanxi can be summarised to three groups: items related to the guanxi system itself, the role of guanxi in human resource challenges, and the role of guanxi in knowledge resource challenges. First, the results emphasised the importance of guanxi and its benefits which can far exceed any utilities gained from traditional Western networks. If a good guanxi relationship is established, local companies may be willing to help the foreign participant with many issues and improve changes of successful business operations in China. However, the creation of guanxi ties needs time and attention, and foreign companies need to have the required sensitivity to create these ties through being personally involved and spending time with the partner they wish to create ties with.

On the other hand, interviews also warned of the rent-seeking side of corruption and bribery in guanxi. When negotiating deals, a Chinese company may offer a personal kickback worth a certain percentage of the overall value of a deal to the negotiating party in order to tip the favour. Also, as this behaviour may take place between Chinese companies, it may be difficult for a foreign company to successfully compete for a business deal without resorting to similar practises. In line with the literature the solution here is to establish internal controls in the form of managerial involvement in the negotiation process (Michelman et al. 2011, 19). This way it is more difficult for the Chinese company to offer kickbacks as by being discovered the practice would lead to a loss of face for the Chinese firm's management.

Second, guanxi-related factors affect two items in human resource management. First, the concept of face was found to be important in employee retention and commitment. If the Western company causes a loss of face for a Chinese employee in a publicly broader context, this employee will lose any commitment to the company and seek employment elsewhere. The context where the loss of face occurs most easily is feedback and problem solving. Thus Finnish companies need to address issues in such a manner that it will not cause embarrassment to anyone. Also, local translators or teams can be used as a middleman to reformulate cutting remarks to a more socially acceptable format. Second, interviewees were able to recognise the usefulness of hiring personnel with established guanxi networks (Cunningham 2010, 2134-2135). However, for smaller companies this may often be difficult as larger companies are able to amass the most capable people. Thus it may be more effective for Finnish cleantech SMEs to hire people with the potential to create guanxi ties and cultivate these capabilities.

Finally, guanxi was found to affect knowledge sharing and transfer in China. Bad guanxi ties were found to inhibit knowledge transfer as people without good personal relationships are not willing to share knowledge. Also, if sharing certain knowledge may cause the loss of face, this knowledge remains hidden. Additionally, it was found

that good guanxi ties in the larger business environment context can strengthen knowledge flows from the target market towards the parent company.

Overall, findings gave mixed support to earlier research discussing the negative role of guanxi from a Scandinavian point of view. Some interviewees had strongly negative associations with guanxi, relating it strongly to bribery and corruption, whereas others felt that it is rather easy to form good ties, and that these ties may be mutually highly beneficial. (Worm & Frankenstein 2000, 272, 274.) Thus it is possible to conclude that Western attitudes towards guanxi have changed to a more positive stance as business cultures have somewhat converged over time, a result that also support extant literature (Batonda & Perry 2003, 1568). Still, results supported the view that guanxi is a time-consuming system to establish, and that Western people may easily disregard the importance of face from a Chinese point of view (Worm & Frankenstein 2000, 272, 274).

5 CONCLUSIONS

The purpose of this study was to determine what challenges do Finnish cleantech SMEs face in operating in China and how can these challenges be overcome? This main question was further divided into three sub questions which concentrated on particular themes in the Chinese business environment:

- What human and financial resource-based challenges do Finnish cleantech SMEs face in the Chinese market and what are their solutions?
- What knowledge-based challenges do Finnish cleantech SMEs face in the Chinese market and how can these difficulties be resolved?
- What network-based challenges do Finnish cleantech SMEs face in the Chinese market, how do they relate to the resource- and knowledge-based challenges, and how can these difficulties be resolved?

This study followed the path of qualitative research and thus the data was collected through four lengthy interviews. The interviewees represented Finnish SMEs that operate in the Chinese market, and apart from one pilot case all the studied companies operated in the cleantech industry. The cleantech industry was chosen as the epicentre of the study as thus far very little academic research has been conducted on cleantech, and the industry is particularly relevant at the moment in Finland and in China.

The findings on the first sub question, human resource challenges, can be grouped into challenges related to hiring personnel and challenges related to retaining personnel. Finnish SMEs can at times face difficulties in recruiting qualified personnel in China as the employee turnover rate and mobility are very high. Also, there is a fierce competition for highly trained employees and Finnish companies have to succeed against other foreign companies, larger firms, and finally SOEs that have a very strong pull. The second challenge is how to retain employees under the high employee turnover rate and competition for skilled workers.

Although some of the solutions to these challenges are related to good reputation of Finnish companies as an employer and the potential pull of foreign companies, the two most important themes are material and non-material incentives. The most interesting finding starkly contrasts extant literature: *material incentives, in other words money, seem to be the main driver behind the case companies' ability to hire and retain personnel.* Earlier literature has emphasised intrinsic motivation and non-material rewards as a way to motivate employees in creative and innovation-oriented industries. The second important finding relates to the effective use of social status, the most paramount non-material incentive among Chinese employees. *Finnish cleantech SMEs' ability to create, support and increase social status through titles and other means greatly increases employee motivation to stay.* Thus managers should pay close attention to these two relevant factors when internationalising to China. Companies

should find the discovery on the effect of social status especially useful due to its minimal resource cost and good return.

Next, the financial challenges faced by Finnish cleantech SMEs yielded two types of results. First, some practical solutions used by the case companies include *financing through the minimum capital requirement, using letters of credit, postponing dividend payments to the foreign parent company, and working through the accounts payable*. Also, very recently foreign banks have received licenses to operate in China which in turn has resulted in increased lending to smaller companies through more intensive competition among banks.

Second, it was discovered that business environmental factors such as demand and competition greatly affect the case companies' ability to operate profitably. Here cleantech companies appear to experience clear advantages. The cleantech case companies operate in high tech business and the complexity of the product somewhat seems to mitigate competition. Also, the technical nature of the product seems to respond to a very specific demand with complex specifications, which in turn helps to ensure a demand and fight competition. Thus, *the high tech nature of cleantech means that the business environment offers beneficial endowments to Finnish cleantech SMEs in China*.

Also, due to the political support for cleantech the government positively affects demand conditions for cleantech in China. Additionally, through SOEs the government affects the related and supporting industries by creating a domestic cleantech industry. This creates competition, but it can be seen as possibility for cooperation as well. Consequently, the good market situation in China for cleantech positively affects Finnish SMEs ability to finance their operations in the country. Thus *managers of cleantech companies are advised to pay close attention to the business environment in China and especially potential changes that the government may make concerning the role of cleantech industry*. However, currently the market appears to be beneficial and offers good opportunities for new cleantech companies.

The challenges related to knowledge resources can be separated into three groups: the inflow of knowledge to the parent company, the outflow of knowledge from the parent company, and the mutual knowledge sharing process between the parent company and the local participant. The single most important inflow of knowledge is related to local market knowledge containing information on customs, legal issues, culture, and local market conditions etc. The results indicate two ways to collect this information. First, *companies can recruit experts before the internationalisation process with the required knowledge*. Second, *the company can locate its foreign operations in a cluster where the required knowledge is easy to tap into*, and use managerial involvement at the foreign site to acquire knowledge.

Next, the most important items related to the outflow of knowledge are the production knowledge and product specifications required by the foreign participant for successful manufacturing. This knowledge flow can be completed by *training and expert visits from the parent company to the local operations as well as local employees visiting the operations in Finland*. Here the main challenge is related to IPR. The most interesting *solution to this is the purposive process of transforming explicit knowledge into implicit knowledge which is more difficult to copy*.

Finally, the mutual knowledge sharing process takes place after the parent company has absorbed sufficiently local market knowledge, set up foreign operations and transferred necessary knowledge to the foreign participant. Here challenges are mostly technical as the knowledge sharing process uses software systems. It is hypothesised that due to the reciprocity of the process, the existence of trust, and the temporal precedence of the two other knowledge flows there are no notable challenges in the final knowledge sharing process itself.

Regarding the final sub question, *guanxi* appears to affect business negotiation processes, human resources and knowledge resources. Although time consuming, creating good personal relationships with local businesses and Chinese partners creates positive effects ranging from successful business negotiations to help given beyond the boundaries of the official business relationship. However, the challenges regarding the personal *guanxi* networks are corruption and bribery, which require *managerial involvement on behalf of the foreign company* if the foreign company wishes to mitigate these issues.

Furthermore, it was discovered that the concept of *face within the guanxi system affects both employees' propensity to stay and knowledge sharing*. The loss of face in a larger social context can cause an employee to leave the company. Also, if there is a possibility that particular knowledge shared may cause a loss of face, the information remains hidden. The solution is to give feedback and discuss issues in such a way that no loss of face occurs on behalf of the foreign company. As a result, this study has answered an important question posed by extant literature on how face affects knowledge-sharing intention (Huang, Davison & Gu 2011, 572).

In conclusion, it appears that *the only cleantech-specific issues affect the financial environment for the case companies*. These are visible in the Porter's diamond model where it can be demonstrated that the cleantech industry enjoys some benefits from the government-induced demand and supporting industries. The case companies do not appear to face any uniquely cleantech-inherent challenges related to human resources, knowledge or *guanxi*, but rather these challenges are common for high tech companies in general. As such, it can be tentatively suggested that apart from the findings related to the financial resources the results of this study can be generalised to encompass Finnish high tech SMEs operating in China.

Moreover, in addition to guanxi-specific challenges it appears that guanxi plays an important role in human resource management as well as knowledge transfer processes, but not in challenges related to financial resources. This could indicate that from the viewpoint of foreign companies *there is sufficient institutional efficiency concerning financing in China* which means that foreign companies do not need to, or cannot, rely on personal relationships to secure financing.

Also, this study has some limitations that affected the results of the study. Academic literature distinguishes many different types of flows of knowledge in addition to tacit and explicit knowledge. However, to reveal all these flows the study would have required a more lengthy and thorough data collection setup. For example, to truly discover the nature of the tacit knowledge held by Chinese employees at the Finnish cleantech companies would have required studying the knowledge carriers themselves. Moreover, this study was able to establish only limited findings on cleantech-specific issues. Nevertheless, the findings have established the direction for further studies concentrating on the cleantech industry.

As a result it can be said that for further cleantech research studies should concentrate on the business environment of cleantech companies, for example the institutional support for cleantech which affects demand conditions, competition and supporting and related industries. In China, the government has a strong role in supporting and controlling these variables, but the findings cannot yet be generalised based on a single country study. Thus it would be interesting to discover how important the governmental support is for cleantech industry's success and how market-driven the industry can be under current economic conditions. To conclude, this study has identified several challenges Finnish cleantech SMEs face when operating in the Chinese market and attempted to offer applicable solutions for practitioners to these challenges as well as offer new findings and directions for further studies in the academic field.

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