INTELLECTUAL PROPERTY PROTECTION IN CHINA IN THE CASES OF OUTSOURCING AND OWN MANUFACTURING

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ABSTRACT

The intellectual property (IP) environment in China is still very immature. There are several problems in legal, political, economic, social-cultural, competitive and labor environment which have hindered IP legal enforcement. Under such circumstances, IP misappropriation is a major concern especially for foreign small and medium-sized enterprises (SMEs) doing business in China. These circumstances require foreign companies, no matter whether they are multinational corporations (MNCs) or SMEs and have own manufacturing in China or not, to take strong IP actions. Therefore, the purpose of this study is to discuss *how IP can be protected in China in the case of outsourcing and in the case of own manufacturing*.

The comparison will consider the process of outsourcing and own manufacturing consisting two *stage*s: *preparation stage and operation stage*. In order to clarify the conceptual arguments, two illustrative case studies were studied. The case data bases on two semi-structured interviews of the managing directors, field notes and archival data.

The findings propose that attention in IP protection should be given to following issues: integrating IP strategy into the company's business strategy, protecting the most critical knowledge, regarding IP *step*s as a whole in the protection mechanism and making IP strategy as proactive as possible. The major difference between outsourcing and own manufacturing in IP protection is in the operation *stage*. Besides, the findings also provide managerial advice on IP protection, e.g. foreign managers should be prepared for IP risks in China, they should establish an own IP protection mechanism which matches the company's situation and they should consider IP protection as an on-going process.

Key words: IPR protection, China, SME, own manufacturing, outsourcing

Table of contents

List of figures

List of tables

1 INTRODUCTION

1.1 Background

In the middle of 1980s, China started to attract foreign investment by advertising itself as a cheap manufacturing country for the export markets. Soon after, a great amount of foreign direct investments (FDI) started to flow in China annually (cf. Stevenson-Yang & DeWoskin 2005, 12) and China's inward FDI has been the largest among developing countries since 1993 (Hitt & He 2008, 364). Recently, China's annual inward FDI has exceeded USD 70 billion (Collins & Block 2007, 10). In the mid-1990s, due to the inward FDI China became "the factory for the world" (Redefining intellectual property value ... 2005, 41). Companies worldwide, but particularly in Europe and North America, have been affected by the impact of ultra-low-cost manufacturing in China (Collins & Block 2007, 10; Lieberthal & Lieberthal 2003, 71; Redefining intellectual property value ... 2005, 1, 41). Due to the fierce global competition, many multinational corporations have been forced to invest heavily in manufacturing in China in order to gain the improved margins (Collins & Block 2007, 10; Redefining intellectual property value ... 2005, 1). Under the prevailing circumstances, also many foreign SMEs want to enter the Chinese markets (Collins & Block 2007, 10).

Simultaneously, in order to attract FDI and new technology production in China, the local government has made consistent efforts to improve intellectual property (IP) environment. Especially during the recent twenty years, Chinese government has developed IP laws successively (Wang 2004, 255-256). Despite the fact that various institutions carry out actions against IP infringement, for example by burning the pirated products and cracking down the underground factories (Swike, Thompson, Vasquez 2008, 493; Wang 2004, 255), the prevailing problem of IP misuse has frustrated foreign investors (Wang 2004, 259).

Counterfeit and pirated products also pose a serious challenge in China-EU businesses. China is by far the largest source of counterfeits and around 60% of these counterfeits are seized at the EU borders. (Customs: EU and China … 2009.) Counterfeiting is a major concern to foreign companies, owning to the fact that there are counterfeit products available and sold for unbelievable cheap price on the streets (Swike et al. 2008, 493). Globally, counterfeiters are

encouraged by the high profit margins achieved without any investment in R&D and advertising. With the help of the modern technologies, piracy production can quickly reach the goal of cost effectiveness. (Shultz & Nill 2002, 672)

Because overcapacity has been bringing a negative impact on pricing and value (Redefining intellectual property value ... 2005, 22), the price has become a normal mean of competition in the Chinese market. Many small Chinese manufacturers have been influenced by market pressure for a long time (Redefining intellectual property value ... 2005, 22). If these companies want to survive, they have to take actions to lower the production costs or to enhance their productivity. Thus, they consider piracy and reverse engineering, the two forms of counterfeiting, as valid options (Redefining intellectual property value ... 2005, 35).

The majority of studies on IP focus on the overall IP environment in China and cover legal (e.g. Liu 2005; Wang 2004; Yang & Clarke 2005), economic (e.g. Stevenson-Yang & DeWoskin 2005) and socio-cultural perspective (e.g. Berrell & Wrathall 2007; Shultz & Nill 2002). Other studies generally discuss on IP protection strategies of international companies to respond IP abuses, no matter what kind of operation model the companies have and what the companies' target country is. As Chaudhry, Zimmerman, Peters and Cordell (2009, 62-63) have summarized, the strategies suggested in existing literature are ranging from differentiating products by packaging and authentication technology to educating channel members about counterfeits; from developing relations with distribution channel to offering reduced price; from acquiring counterfeiters to cooperation with the local authorities (e.g. Berman 2008; Keupp, Beckenbauer & Gassmann 2009; Shultz & Saporito 1996; Yang, Fryxell & Sie 2008; Yang, Sonmez & Bosworth 2004). Mostly, these strategies are rather suitable for the foreign MNCs which have physical presence and distribution channels of the consumer market in China (e.g. Shultz & Saporito 1996; Yang, Fryxell & Sie 2008; Yang, Sonmez & Bosworth 2004). Thus, at the moment there seems to be lack of studies on IP protection in China from the foreign SMEs point of view.

However, recent studies have proposed that instead of litigating on IP issues, it is more effective to take proactive IP measures[1] before these problems even occur (c.f. Dietz, Lin & Yang 2005; Shen 2005, 195; Stevenson-Yang & DeWoskin 2005, 18; Toloken 2008; Yang et al. 2004, 471). Based on the constraints SMEs usually have, the idea of the proactive IP measures is rather

[1] Proactive measures refer to using a series of strategic and operational actions to tighten IP controls and procedures before IP is stolen (cf. Dietz et al. 2005, Toloken 2008). The measures includes consulting professionals about IP protection in China, developing IP protection strategies, stipulating IP protection in contracts, keeping core competencies in house, conducting a thorough due diligence, registering all the relevant rights in China, monitoring the business frequently etc. (Australian Business Limited Incorporating the State Chamber of Commerce 2007, 9).

suitable for foreign SMEs doing business in China's IP environment. In reality, according to Kitching and Blackburn (1999), SMEs prefer informal methods over formal legal methods in IP protection. Therefore, the purpose of this study is to discuss *how IP can be protected in Chinese markets in the case of outsourcing and in the case of own manufacturing*. This purpose is approached from the SME perspective.

The comparison will consider the process of outsourcing and own manufacturing consisting two *stages: preparation stage* and *operation stage*. The preparation stage is a planning stage, which deploy strategies and try to prevent the possible IP risks beforehand. In the following chapters, the steps belonging to this stage are numbered as one to four. The operation stage is a stage where foreign companies start manufacturing in China. It is an executive stage to implement the strategies by taking actions to minimize the IP infringement. In the text, the steps of operation stage are numbered from five to eight in order to illustrate the sequence of these steps.

1.2 Research design

The conceptual discussion in this paper is based on literature review of scientific articles and books. Based on this review, a model of IP protection in China was comprised. In addition to this, empirical data was collected from two companies and this data was utilized to improve and modify the formed model. This subchapter discusses the research design of this study and presents the data collection in detail.

In order to clarify the conceptual arguments, two illustrative case studies were studied. Illustrative cases were chosen, because they have the potential to show how the conceptual argument applies in real life situations (cf. Siggelkow 2007, Stake 1995). The cases were selected based on the following pre-determined criteria: SMEs which own IP and have relative high concern about IP protection and either have outsourced to or have own manufacturing [2] in China. The companies chosen were Uudenkaupungin Rautavalimo (later: URV) and Oilon. URV is established in 1949 and Oilon in 1961. Both of the companies have their headquarters in Finland and operations in China. URV has outsourced its operations in China and has done cooperation with Chinese foundries since 2003, and Oilon serves as an example of a company which has own manufacturing in China. URV is offering all kind of iron and steel castings for machine building

[2] Excluding contract manufacturing

industry. As a Meehanite [3] licensee, URV is allowed to install Meehanite processes into the production, obtain technology supports from Meehanite and use Meehanite trademark for marketing. The obligation of licensee is to protect the knowledge obtained from Meehanite.

Oilon is specializing in manufacturing and marketing heat pumps, burners and solar heat collectors for heating of houses. It started marketing its burners in China in 1993. In 2000, Oilon's sales started to be boosted by the strong desire from Chinese authorities to clean up Beijing's air before the 2008 Olympic Games. After two years of tremendous sales increase, Oilon decided to launch a burner production plant in China in order to respond to the fierce competition in Chinese market, because the goal of Oilon's sales in China was to become the market leader in its field. The Oilon's factory assembles small-scale classes of burners mainly used by industry and power plants. The factory is a joint venture (JV), in which Oilon has a majority holding alongside Finnfund and Hong Kong-based Charter Technical Services Ltd[4].

The case data bases on two semi-structured interviews of the managing directors of the case companies, field notes and online archival documents. In the semi-structured interview, the research may always have chances to change sequence and forms of questions and to follow up the answer or probe the questions deeper. (Kvale 1996, 124) The questions for the semi-structured interviews were designed based on the model formed from literature (See figure 6). The aim was to collect data in order to evaluate the feasibility of the model in real-life. The interviews were conducted in English. Both, the face-to-face interview with the managing director of URV and the telephone interview with managing director of Oilon were tape-recorded and then transcribed. The transcribed interview data was supported with the field notes. In addition to this, the online archival documents were used as complementary data to the interviews.

The case analysis combined within-case analysis and cross-cases analysis. The overall idea of within-case analysis involving writing case descriptions is to insight each case as a stand-alone entity (Eisenhardt 1989, 540). The case was compared with the theory to find out the similarity and the difference between the case and the model (See figure 6). Cross-case analysis targets for similarities and differences across cases and in contrast to theory (Eriksson & Kovalainen 2008, 130). After the first round of analysis, preliminary results were reached. In

[3] Meehanite has specialized in foundry technology transfer and distribution as well as licensing Meehanite trademark to about 120 foundries all over the world. Meehanite has its own internationally registered trademark also in China as a label of quality.

[4] Finnfund is a Finnish development finance company. Hong Kong-based Charter Technical Services Ltd. is Oilon's long-term business associate in the Far East. In the JV, Finnfund is an important shareholder and a Hong Kong person owns a very small share.

the second round of comparison, the analysis concentrated on the aspects which were dissimilar to the theoretical aspects of this study. The model was very useful for making the comparisons in within-case analysis and cross-case analysis. From such comparisons, researchers can know how well a theory fits with the case data (Eisenhardt 1989, 541). The similarities in the comparisons are the evidence to verify the theory, while the differences provide opportunities to refine and extend the theory.

In every research, the trustworthiness of the research needs to be evaluated. The concepts of validity and reliability are commonly used in evaluating quantitative research (Riege 2003, 81). However, Lincoln and Guba (1985) claim that the evaluation criteria for qualitative research should be different from those meant for quantitative research. They suggest that four criteria credibility, transferability, dependability and confirmability should be used for assessing the trustworthiness of qualitative research (Lincoln & Guba 1985, 300).

Credibility is a parallel concept to internal validity and refers to how well the researcher is able to provide data that corresponds to reality (Lincoln & Guba 1985, 296, Guba & Lincoln 1989, 236). Several ways to establish credibility have been applied in this study. First of all, in the research, the interview questions were derived from theoretical framework (cf. Lincoln & Guba 1985, 302). Before conducting the interviews, several contacts to the interviewees were made by email and by phone in order to build trust (Lincoln & Guba 1985, 303) and thus, increase credibility. The interviews were recorded and field notes were made on key issues (e.g. Meehanite's three different levels of information and URV supply chain management system in China). During the interviews, the researcher summarized what the interviewees told and followed up the discussion to avoid misunderstandings. Besides, comments from the interviewees on the overall IP protection model (See figure 6) brought the insights from the practitioners. After the interviews, few additional inquiries were made by emails concerning some unclear issues.

Transferability is correspondent to external validity and it explains whether the findings of the research can be applied to another situation which is sufficiently similar to permit the generalization (Collins & Hussey 2003, 278). Transferability is achieved when the result can be transferred to other empirical and theoretical contexts. (Lincoln & Guba 1985, 297) The use of two illustrative case studies allowed analytical generalization of the theoretical framework. The illustrative case companies were both in traditional manufacturing industry, but the results of the study are applicable to any company in any industry, where the company either has own manufacturing or outsources the production to a Chinese partner.

Dependability shows that the research processes are systematic, rigorous and well documented (Collins & Hussey 2003, 278). It is parallel to the conventional criterion of reliability used in quantitative research. Dependability can show the stability and consistency of the research (Riege 2003, 81). The underlying issue in dependability is whether the process of the research is consistent, reasonably stable over time and across researchers and methods (Miles & Huberman 1994, 278). The research questions of this study were carefully formed to fit the purpose of the research and the whole research process was described in detail. The selected approach, i.e. case study approach was an appropriate approach according to the nature of the research problem. In order to guarantee that the cases would be representative, the illustrative case companies were carefully selected based on the pre-determined criteria. The whole research process was documented in detail for others to review.

Confirmability has a close connection to construct validity (Riege 2003, 81). Confirmability means that same kind of findings could be corroborated by other researchers. Some researchers conduct a so called “audit” to ensure confirmability and that the data and interpretations of the study are not based on the researcher’s personal constructions but on the events (Lincoln & Guba 1985, 319). For the purposes of this study, self confirmability audit was conducted. Raw data, findings, interpretations and recommendations were examined carefully during and after the research process. In particular, the logic between inferences and the data was checked. Nevertheless, the biggest weakness in this study is that the research was conducted in English which is the second language of the researchers and interviewees. It might not be easy for interviewees to give answers in their second language concerning the interview themes. The accuracy of the understanding could have been enhanced if the both parties were communicating in their native language. However, in order to diminish the risk of misunderstandings, the interviewees had the chance to check the transcript interviews.

This research paper is structured as follows: first, the context, the Chinese business and intellectual property environments are introduced. Then the two-*stage* model of intellectual property protection is discussed and reflected to the two selected cases of own manufacturing and outsourcing. Thereafter, concluding remarks are provided.

2 INTELLECTUAL PROPERTY IN CHINA

2.1 Intellectual property

Intellectual property (IP) covers creations of human intellect, such as musical, literary, scientific and artistic works; inventions; and symbols, names, images, and designs used in commerce (What is intellectual property? 2008). In brief, IP refers to *the legal rights which result from intellectual activity in the industrial, scientific, literary and artistic field* (WIPO 2004, 3). It is *an intangible subject matter emanating from the human intellect in respect of which a legal right of exclusivity may be granted* (Christie 2006, 26). IP as an intangible subject matter is part of intellectual capital. Intellectual capital as a non-financial and none-physical resource can be generally classified into four categories: human assets, organization capital, customer assets and IP. Intellectual capital is a valuable resource in the organization, with which the company is able to generate a great amount of revenue. (Skyrme 2002, 70)

IP is seen to be crucial to a company's core business activity, because IP provides the company a unique competitive advantage in the market place (Hunter 2006, 77; Verloop 2004, 112-113), new solutions for money generation (cf. Verloop 2004, 112-113), and new strategies of maintaining its core competences (Gollin 2008, 163-183). The birth of IP laws made it possible to companies' legally secure intangible assets against the unauthorized access (Christie 2006, 27-29). Under national and international IP laws, after the *IP legal rights* (*IPRs*) are granted, the IP holder, who produced the creations of his mind, will have an exclusive right over the use of his creation for a certain period of time (Blackburn 2003, 6; TRIPS: What are IPRs … 2008).

IP can be protected accordingly when *IP infringement* occurs, i.e. IP is misused by others. The most common terms used for the cases of IP infringement are "counterfeiting" and "piracy" (Are there internationally accepted definitions… 2008). "Counterfeiting" typically relates to trademark and patent infringement and "piracy" is usually associates with infringement of copyright or related rights, e.g. counterfeit watches and pirated CDs (Are there internationally accepted definitions… 2008; Trott & Hoecht 2007, 130). The purpose of *IP protection* addressed in IP law is to give the recognition to the creators, to ensure fair competition and to protect consumers as well as to give incentives for

producing the creations. Without protection there are no incentives for legally producing creative work. (TRIPS: What are IPRs…? 2008)

Haley (2000, 275) has been suggesting that there would be a strong likelihood of IP infringement in countries where the concept of privately held IP do not exist. Normally, those countries are technologically laggard but appreciate technology and its benefits. Whereas, in countries, where innovations are their strength, the government will use IP protection as a mechanism to promote creative works. (cf. Haley 2000, 275)

The different forms of IP can be divided into two main categories: first one is copyright and rights related to it and the second one is the industrial property. The industrial property can be divided further into two categories namely the distinctive signs such as trademarks and innovations, which includes patents, industrial designs and trade secrets (TRIPS: What are IPRs….? 2008). The different forms of IP share the common feature of intangibility, exclusivity, legality and territoriality in term of their legal rights and value (Yang 2003, 47-51).

2.2 Intellectual property environment in China

The short history of the Chinese private sector and the private-owned small and medium sized enterprises (SMEs) has led to the difficulty of getting the intellectual property rights recognized (Li & Matlay 2006). The absence of the property rights in China is a multifaceted problem caused by economic, legal and socio-cultural environment. Chinese IP system, which has existed approximately three decades, is much younger than that of developed countries, such as in the UK and USA, which are considered as the pioneers in IP advancement. The Chinese IP environment is rather unprotected (Yang et al. 2004, 471), reflecting the problematic enforcement of both statutory and contractual protection (Greguras 2007, 450).

The Chinese social environment fosters the IP infringement. With the development and opening, China has been manufacturing the products for all over the world. It brings more chances for IP thieves to cultivate a maturing piracy market when the current IP legal system is relatively loose (Swike et al. 2008, 493; cf. Wang 2004, 258). Another social factor is the current transition stage from labor-intensive production to technology-intensive production (cf. Liu 2005, 341-342; Xinhua perspective: … 2006). Although China's national innovation system is short of incentives to technology development at the moment (cf. Liu 2005, 341-342; Liu & Lundin 2006, 11; Xinhua perspective: … 2006), China will become an innovation-oriented country by 2020 according to

the “National Plan 2006-2020 for the Development of Science and Technology in the medium and long term” (Liu & Lundin 2006, 11).

Even so, the biggest challenges for China to become an innovation-oriented country are the insufficient R&D expenditure, over-reliance on foreign technology and a lack of highly qualified human resources (Liu 2005, 342; Xinhua perspective: … 2006). China's dependence on foreign technology is as high as 50%, while this rate in United States and Japan is only about 5%. Many fields such as the national defense in particular are dependent on foreign technology, which has brought serious challenges to national security. (Xinhua perspective: … 2006) Without the corresponding supportive or intensive policy, the Chinese domestic companies are not motivated to develop state-of-art innovation for the fear of IP violation (Stevenson-Yang & DeWoskin 2005, 10; Swike et al. 2008, 4). It is hard for the indigenous innovations to win the fierce competition against the foreign products in the domestic market, as consumers used to have loyalty to these products. Although China has the highest number of science and engineering degrees in the world, it has the shortage of skilled workers in science and technology area. Also the rank of scientific papers in well-known publications is low. (Xinhua perspective: … 2006)

Owing to the Chinese cultural values, China is suffering the vague concept of IPRs. Above all, Chinese often take it for granted that property rights are almost equivalent to IPRs, meaning once they own the products, they can do whatever they like (cf. Gollin 2008, 268). Thus, it is extremely hard for Chinese to accept copyright. Traditionally, according to the social norm, copying is not regarded as an improper behavior, rather, as a method of showing respect for the past (Kumar & Ellingson 2007, 141). Also, Berrell and Wrathall (2007, 66) argue:

> *“The Chinese rationale for copying famous art works, for example, affirms the pervasiveness of the philosophical notion of social sharing and serves to highlight the aspirations of society.”*

Thus, IP infringement cannot be merely ascribed to IP legal enforcement. In China, IP infringement should not be simply treated as a legal issue. Many executives believe that IP theft cannot be stopped by law (Swike et al. 494-495). Rather, it is a social issue. Nevertheless, when the society has established popular support for IP protection, the problematic IP legal enforcement will change completely (cf. Shen 2005, 191).

The complexity and confusion of the current Chinese IP law is one of the pitfalls of the legal framework. Foreign businesses are treated differently from local businesses (Wang 2004, 259.) and due to the size of the country, different

local government bureaucracies are involved in IP law implementation (cf. Yang et al. 2004, 461). Lacking the coordination between the national, provincial and local governments, the two-tier legislative system [5] inevitably causes the disconnection and contradiction of the rules and regulations at the different tiers or even at the same tier (Liu 2005, 346). The ambiguities in law have led to the different interpretations in judicial judgments and actions (Yang et al. 2008, 327).

The IP dispute process in China is long-lasting (Han & Bader 2007, 2). It takes about 4–7 years for a lawsuit to be in the legal procedure and the probable monetary recovery for the damages is small. An IP owner should not expect any significant monetary recovery in a court case in China. (Greguras 2007, 450) For example, the maximum statutory compensation for the infringed party is USD 60,000 (Han & Bader 2007, 2). The disadvantage for the plaintiff is also that after the case is over, the technology is already out of the date (Han & Bader 2007, 2). Thus, *"monetary remedies do not provide a meaningful deterrent because of the time to recover and the relatively low amounts of recovery."* (Greguras 2007, 450.)

Furthermore, in IP law field, there is a large gap between the capable persons in positions and in need. China has a significant demand for qualified judges, lawyers and professionals specializing in IP protection which is a relatively new and unfamiliar issue to Chinese legal system. (cf. Wang 2004, 259) It takes time for the lawyers and judges in IP law field to accumulate their experience (Yang et al. 2008, 325).

In the following chapter, the two-*stage* model of intellectual property protection in China is discussed. This model comprises of two *stage*s; *preparation stage and operation stage*. These *stage*s are described in the cases when a company has own manufacturing in China and when a company outsources to China. The discussion is carried out through the four steps of preparation stage and the four steps of operation stage. Based on this discussion, a model of IP protection in China is formed.

[5]The first tier is the legislative power from the National People's Congress (NPC). The second tier legislature is made up of local people's congress and the committees in provinces, autonomous regions, municipalities, and ministries. (Yang & Clarke 2005, 545)

3 TWO-STAGE MODEL OF INTELLECTUAL PROPERTY PROTECTION

3.1 The four steps of intellectual property protection in preparation stage

In this study, the entry process to Chinese market is divided into two *stage*s; *preparation stage* and *operation stages* and these two are described in detail in the following sub chapters. Preparation *stage* is an irreplaceable *stage* before entering any business relation and it involves an analysis techniques composed of a series of articulated *step*s such as evaluating, planning and examining in the decision making process. Each of the *step* is carried out as specified in sequence but integrated together to produce synthesis (Mintzberg 1994).

In the preparation *stage*, foreign managers need to be aware of the existing uncertainties in Chinese markets and they need to achieve a thorough understanding of China's IP environment and potential Chinese business partners (Han & Bader 2007, 5). For a thorough understanding, examination of the internal and external IP environment in order to identify the potential risks of IP loss and investigation of potential business partners needs to be carried out. Besides, the foreign managers should ponder the risks involved in various forms of contract manufacturing relationships and put appropriate contractual protections in place (Australian Business Limited Incorporating the State Chamber of Commerce 2007, 9; cf. Redefining intellectual property value ... 2005, 45). In the preparation *stage*, the tasks related to both outsourcing and own manufacturing can be divided into the four separate *step*s**,** namely evaluation of internal and external IP environment, choice of manufacturing model, due diligence and negotiating agreements. These *step*s are further illustrated in figure 1.

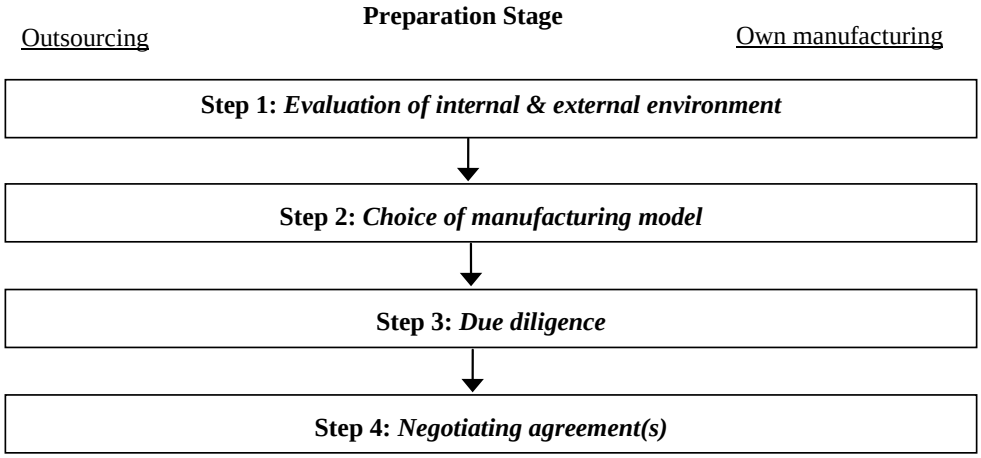

Figure 1: Four steps of IP protection in the preparation stage

The first *step*, evaluation of internal and external IP environment, is somewhat the same in the case of outsourcing and manufacturing. However, in *step*s two to four, some differences occur. In order to illustrate these differences and commonalities, the four *step*s of IP protection in the preparation stage are discussed in the following subchapters.

3.1.1 Evaluating internal and external intellectual property environment

Evaluating internal and external IP environment, the first *step* in the preparation *stage*, assists the company to form a relevant IP strategy for China. *Internal analysis* gives information on company's strategy so that the company will be able to adjust their IP strategy[6] to fit the situation of existing IP, while the *external analysis* gives the information on IP environment in China, so that the company will have an overall view on potential IP risks (cf. Technology transfer to China … 2008, 2). F*urther internal analysis* is used to gather the updated information of existing IP portfolio for strategic planning of IP in China. (cf. Technology transfer to China … 2008, 2).

Internal analysis is used to analyze the company's business strategy together with IP strategy. An effective IP strategy enables all company's departments including production, human resources, sales and distribution, finance, and legal to have intensive interdepartmental coordination required for company-wide IPRs (Firth 2006 19). For an innovative company, the IP strategy, in a long run,

[6] IP strategy is a plan and a ploy for managing IP (cf. Gollin 2008, 227).

is one of the most important components of the business strategy (Barrett et al. 2008, 49-50). An adequate IP strategy maintains the competitive advantages of the company in the markets. In a company, business strategy considers how to achieve the business goals of the company alongside with IP portfolio management and IP protection. (Barrett et al. 2008, 49-50) In addition to this, IP strategy should also include the exit strategy (Finnie 2007, 321). For example, a startup company whose business strategy is to cash out by selling the company in three to five years may only like to invest the necessary amount of the cradle-to-grave costs[7] into IP protection (Barrett et al. 2008, 125). In this sense, the company may focus on short-period, high return of IP and medium-leveled IP protection (Barrett et al. 2008, 49-50).

External analysis is used to analyze pros and cons of China's IP environment within the business environment. Foreign managers should not only have awareness of the existing uncertainties, but also to keep track of the on-going development in China (Han & Bader 2007, 5). A well-known framework for analyzing business environment, namely the PESTLE[8] analysis, examines the political, economic, socio-cultural, technological, legal and environmental conditions in particular country markets (Rugman, Collinson & Hodgetts 2006, 373-375). Based on PESTLE, Haley (2000) proposes cross-environmental technology audit. The cross-environmental technology audit is very useful tool for a company to consider a foreign country's IP environment by scanning the foreign country's or region's legal, economic, political, social-cultural, competitive, technological and labor environments before taking a further *step* of strategic planning, so as to minimize the risk. (cf. Haley 2000, 274-276)

In the *further internal analysis*, two essential strategic planning issues to consider are what to protect and how to protect (cf. Technology transfer to China … 2008, 2). Foreign managers must ponder the useful way of protecting IP and preventing competitors from gaining market access (Matthews, Pickering & Kirkland 2003, 37). After the analysis, the company should have an overall idea of what kind of IP-related products to manufacture in China. Also, the company must have a budget for implementing the strategy (Berman 2008, 195, 197; Chaudhry et al. 2009, 64).

As stated before, this *step* of preparation *stage* is similar both in case of own manufacturing and outsourcing. However, the following *step*s introduced have certain differences and commonalities depending on whether the company decides to manufacture self in China or to outsource there.

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[7] Cradle-to-grave costs include the cost to obtain the IP and maintain IP during the whole life span of IP (cf. Barrett et al. 2008, 103 & 124)

[8] The original idea of PESTLE appeared in Aguilar, Francis J. (1967) *Scanning the business environment.* MacMillan: USA.

3.1.2 Choice of manufacturing model

After evaluating the internal and external IP environment, the company should evaluate the benefits and risks of the existing supplier models or legal entity models. For outsourcing, the company must choose between two supplier models: the single-supplier model and multiple-supplier model. Companies having own manufacturing make the choice between two legal entity models: a joint venture (JV) and wholly foreign-owned enterprise (WFOE). (See figure 2)

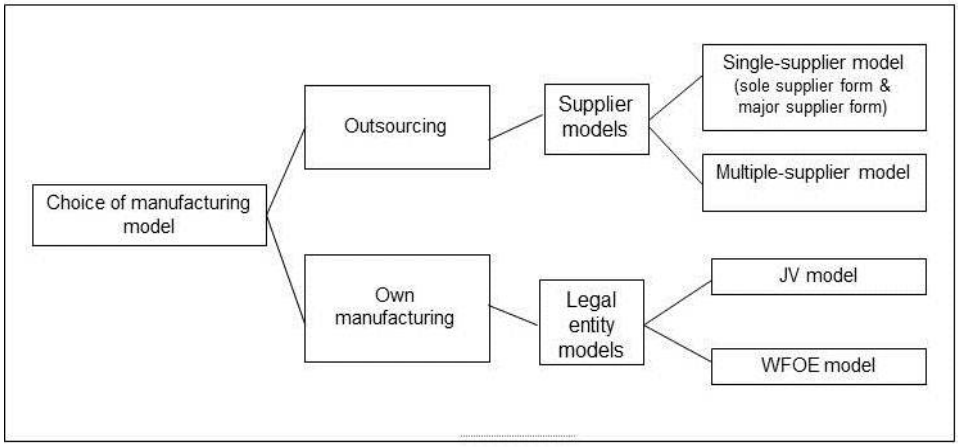

Figure 2: Choice of manufacturing model

The single-supplier model can be divided further into sole supplier form and major supplier form. In the sole supplier form only one supplier is involved in the whole process of the manufacturing (cf. Bravard & Morgan 2006, 40-43). The other option is major supplier form. In this form, the major supplier (prime contractor) can have certain flexibility to decide whether or when subcontractors are needed to do part of the project or to provide necessary components of the product (See figure 3). The major supplier can be e.g. an outsourcing service agent who is in charge of providing qualified suppliers for the customers. (cf. Bravard & Morgan 2006, 40-43)

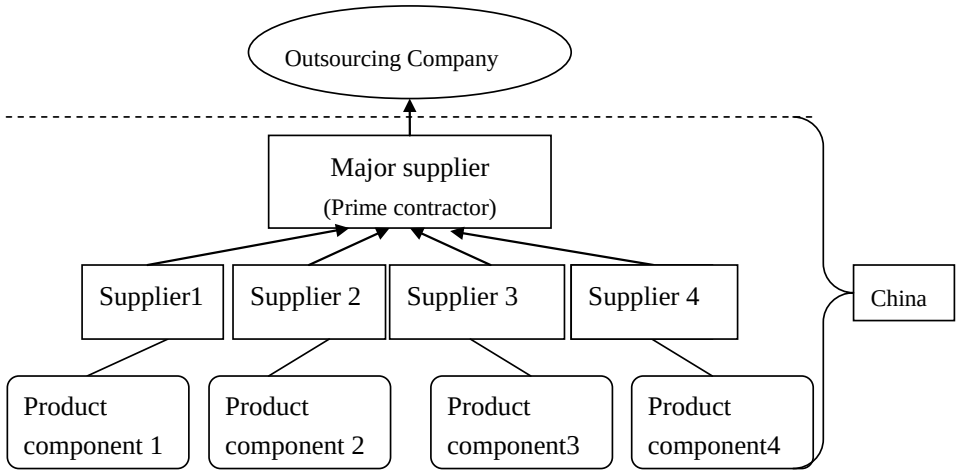

Figure 3: Single-supplier model: major supplier form

Multiple-supplier model is the model where the project is contracted by more than one supplier. Each supplier does one part of the project or one component of the product decided by the customer. When comparing to the single-supplier model, the difference is that in multiple-supplier model clients are directly sourcing from several suppliers. (Bravard & Morgan 2006, 40-43) This model is presented in figure 4.

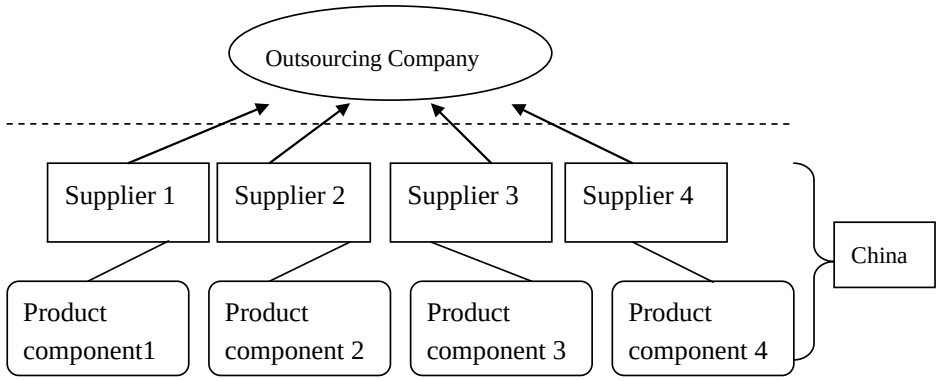

Figure 4: Multiple-supplier model

The single-supplier model is less costly and less time-consuming than the multiple-supplier model and it enables the company to build tighter relationship with the supplier. Nevertheless, it is quite risky in case the company connects with a supplier who infringes the company's IP. In this situation, the company will be under the time and money pressure to switch to another one. (Ordish & Adcock 2008, 78)

From the IP protection point of view, the single-supplier model is a very problematic. As the supplier must be in charge of the whole production process, it is not possible for customers to keep the critical production process confidential. In addition, when the subcontract decision is only taken by the supplier without the confirmation from the client, it is hard for clients to know the qualification of the subcontractors involved (Bravard & Morgan 2006, 42). Consequently, one of the risks of single-supplier outsourcing is that the subcontractors as third parties may leak confidential information.

In contrast, multiple-supplier model, though expensive to manage, introduces the competitive mechanism between suppliers (Bravard & Morgan 2006, 41-42; Ordish & Adcock 2008, 78). It allows the company to arrange the whole production process by sourcing each component of a product from a single supplier which has expertise in the certain area. The whole production process is made up of two or more single suppliers. (Bravard & Morgan 2006, 41-42) In this way, the critical IP can be protected, because none of the single suppliers is able to have access to the whole production process (Barrett et al. 2008, 210; Firth 2006, 21; Rugman et al. 2006, 288; Staying ahead of … 2005, 19; Technology transfer to China … 2008, 4). However, the multiple-supplier model requires the company to invest more time in each separate relationship and in monitoring all the suppliers (Ordish & Adcock 2008, 78).

Companies choosing own manufacturing in China, have to do decisions regarding to the legal entity of the company. The choice of *legal entity model* has two options: a Joint Venture (JV) and a Wholly-foreign Owned Enterprise (WFOE). For SMEs, JV is a good option in terms of having a quick start in the foreign markets. This option is especially valid, if the local partner chosen already has a good reputation and the partner can give guidance on how to adapt to the new business environment (Luo 1997, 48; Ordish & Adcock 2008, 32). From IP protection aspect, the foreign companies can utilize JV as a political strategy to share the burden of combating piracy with their local partners (Shen 2005, 193).

The greatest risk in establishing a JV is the leakage of technology transferred and developed by the JV to the Chinese partner and its parent company, especially if the Chinese JV partner is a state-owned enterprise (Kennedy & Clark 2006, 251). Therefore, in JV model, the foreign company should always

check if the local partner has fulfilled its responsibilities required in the JV agreement (Ordish & Adcock 2008, 33).

Under WFOE model foreign investors can have full control over the day-to-day operations (Kennedy & Clark 2006, 251; Lieberthal & Lieberthal 2003, 80; Ordish & Adcock 2008, 32), so they do not need to be worried whether the Chinese partner is the right one (Ordish & Adcock 2008, 32). Berrell and Wrathall (2007, 59, 70) state that ownership structure of WFOE can enhance IP protection by restricting access to sensitive information by outsiders. Foreign investors who are going to transfer advanced technology to China should take WFOE into consideration (Ordish & Adcock 2008, 32).

Nevertheless, setting up a manufacturing WFOE is more time-consuming and expensive than setting up a manufacturing JV. Also in some industries or for commercial reasons, it is sometimes necessary to establish a JV (Kennedy & Clark 2006, 251). In recent years, the valuation of IP as a non-cash equity contribution to a Sino-foreign JV has been successfully used in several business cases (Kumar & Ellingson 2007, 154).

3.1.3 Due diligence

After the choice of manufacturing model, and before making any agreements with Chinese partners, foreign companies should conduct a comprehensive *due diligence* to assess the weak points through which counterfeiting problems can occur (cf. Firth 2006, 21). Due diligence can be defined as *an investigation of a business or a person for obtaining appropriate partners who fit well with the company's expectation on IP protection* (Ordish & Adcock 2008, 72-73). It is a process of setting the controls in advance to secure the company's rights (Before sourcing in China … 2009).

For own manufacturing, scanning business environment of specific regions is the first thing that should be done in due diligence. The importance of location has been recognized by many foreign companies which want to localize their operation in China (Rugman et al. 2006, 291). In China's case, location scanning is rather dispensable, due to the fact that China is like a continent rather than a country. Localities differ e.g. in legal, economic, political, social-cultural, competitive, technological and labor environment (Lieberthal & Lieberthal 2003, 79).

Since outsourcing is a business activity which depends a lot on suppliers, the outsourcing companies should investigate whether the candidates are eligible to be partners (e.g. major suppliers or manufacturing companies) (Bravard &

Morgan 2006, 35). In comparison with outsourcing, setting up an own manufacturing abroad is a long term oriented decision, requiring a large amount of investment – both money and time. A right location is fundamentally important for own manufacturing in term of achieving the company's goal and protecting IP (Ordish & Adcock 2008, 28). The common feature between outsourcing and own manufacturing in due diligence process is investigation of candidates.

In the due diligence process, several issues on candidates should be carefully checked: do they really exist; are they located in counterfeiting hot spots; do they have the qualifications mentioned on their homepages; who are their business partners, e.g. subcontractors; and do they have IP protection measures in place (cf. Ordish & Adcock 2008, 75). Besides, the managers should track the record to screen the potential candidates of prospective business partners on the basis of the IP protection and contract performance (Greguras 2007, 450).

Internet is usually the most useful tool when searching the potential candidates. It is an easy way to get quick results, whereas the reliability of the internet pages is more or less questionable, as in the virtual world information can be made up rather easily (c.f. Ordish & Adcock 2008, 91). Counterfeiters can have fine websites which show that they belong to a formal and large corporation by making stories of trademarks of legitimate manufacturers, distributors and where the goods are purchased (Berman 2008, 193). [9] Therefore, when investigating suitable candidates one cannot be too cautious.

Foreign companies should obtain as much information as possible from different sources e.g. by reviewing documentation, asking questions and visiting candidates (Luo 1998, 162). According to the law, every legal entity must have authorized business license and business registration certificate by local government. These documents will uncover the Chinese company's legal capacity such as registered capital, business scope and legal representative. The company can ask for financial information and the original certificates from the candidates. (Luo 1998, 162; cf. Ordish & Adcock 2008, 75-76) The most practical way to get an overall picture of the candidates is a site visit (Luo 1998, 162; Ordish & Adcock 2008, 74), even though it is the most expensive way. A site visit enables foreign companies to get a sense of candidates' reliability (Ordish & Adcock 2008, 74) and to obtain more accurate information such as the factory's size, capabilities, facilities and surroundings. (Luo 1998, 162)

[9] In China, there are illegal companies called "Pi Bao Gong Si". These are companies with no funding, no operating site, no business operation and no regular workers, but with a company's stamp and few contracts they engage in fictitious transaction to deceive money. They change their contact information often, so that they will not be easily caught. In the virtual world, they also use internet as a modern tool to hunt the quarry. (New words 2008.)

Due diligence process is one of the measures to diminish IP risks. Conducting due diligence can save SMEs a great deal of trouble and expenditure prior to negotiations with a potential partner and in this way, companies can find out with whom they are dealing with (Before sourcing in China … 2009). Even so, foreign managers should still not relax vigilance during the *step* of negotiating agreements.

3.1.4 Negotiating agreements

After the due diligence process has been carried out, the companies move into the next *step* of the preparation stage, i.e. negotiating agreements. In China, face-to-face meetings are very common for building up the initial relationship (Ordish & Adcock 2008, 79). Before the negotiation, the agenda should be approved by the both negotiating parties. During the negotiations, foreign managers should be aware of what to or not to reveal. After every negotiation, a memo should be made and confirmed by the signatures of both parties. (Carrell & Heavrin 2008) In principle, the information revealed should be on a "need to know" basis. (Collins & Block 2007, 105-106; Soetendorp 2006, 84; Technology transfer to China … 2008, 4) For outsourcing, foreign managers should negotiate with the Chinese business partners. Whereas, for own manufacturing, foreign managers should negotiate with the Chinese government as well, as the government has the power to approve a joint venture and a wholly foreign-owned enterprise (Ordish and Adcock 2008, 151).

A well-specified agreement or contract between a foreign company and its Chinese partners can increase the likelihood of IP protection. A tight contract should explicitly define the rights and responsibilities of each party as well as the consequences violating the contract. (Yang et al. 2004, 465) For example, it is very likely that a licensee believes that the right to make a particular product is granted by the licenser, but instead, the licenser is granting the licensee a limited monopoly right within a certain scope and time under the licenser's IP (Sandford 2007, 137). In order to avoid misunderstandings, the foreign managers should check each item with the contractual partners to make sure that the counterparts understand their rights and obligations (cf. Firth 2006, 21). For Chinese, a contract is only a general guideline for cooperation rather than a legally binding document (Before sourcing in China … 2009; Yang et al. 2004, 465), so the function of contract is more like a relationship manual (Before sourcing in China … 2009).

The combination of the general contract and the specific contract is recommendable. The general contract is a contract with general terms in a built-in structure. The specific contract contains specific terms used for non-regular-based obligations or for contingencies. It can be signed when needed. (Clark & Kennedy 2005, 68-69) The specific contract can actually be used as a complement to the general contract. In all contracts and agreements IP protection clauses should be included (Firth 2006, 21). One important issue in IP protection clauses is to define ownership of IP and obligations in an unambiguous manner (Collins & Block 2007, 327; Fentress 2008, 15). The contract should state that IP is owned by the foreign company which has rights of IP transfer and transactions. Besides the foreign IP owner, everyone else is prohibited to carry out any IP related transfers and transactions. (Fentress 2008 16)

The ownership of other assets regarding to a company's product development should also be stated clearly in the contract. These assets include any know-how, discovery, invention, design, drawing, computer program, photograph, plan or record. (Manufacturing 2008) Another issue to consider is the specific level of performance. For example, as suppliers are not allowed to sell the overruns without the permission (Technology transfer to China … 2008, 5), the special performance clause can require the supplier to provide an inventory report of extra production of IP ownership before a new order is placed (cf. Fentress 2008 16).

The role of confidentiality should be emphasized as well. In order to protect the important information, including the other party's technology and IP, trade secrets and business information, confidentiality is necessary. (Greguras 2007, 451; Ordish & Adcock 2008, 37, 82; Soetendorp 2006, 84; Technology transfer to China … 2008, 2) The company should also add non-competition clause in case the partners will intentionally divert or sell the products containing technology to others. (Collins & Block 2007, 327; Ordish & Adcock 2008, 85; Technology transfer to China … 2008, 2) Both confidentiality and non-competition clause can minimize the risk of crucial information being disclosed (Manufacturing 2008). Termination is also an important issue, and in the contract, the conditions for terminating the relationship should be listed. (Ordish & Adcock 2008, 37, 99, 100)

However, owing to the differences in business models between outsourcing and own manufacturing, the key IP provisions in the outsourcing agreement differ from those in the joint venture agreement (for own manufacturing) when the company negotiates with the Chinese business partners. The points listed in Table 1 indicate that the key IP provisions in the manufacturing agreement mainly consider the unauthorized use of the IP, whereas the joint venture

agreement pays attention to obtaining proper management powers for the control of IP.

Table 1: Key issues of IP provisions in manufacturing agreement vs. joint venture agreement

Manufacturing agreement for outsourcing	**Joint venture agreement for own manufacturing**
Use of customer's brands or names	Establishment
Subcontracting	Investment and registered capital
Ownership of tooling	Technological services
Handling extra products	Selling and exporting products
Insurance	The board
Audit rights	Purchase of equipment and materials
Indemnification	Labor management
Product recalls	

In order to maximize the protection of its IPRs, a foreign company should familiarize itself with all the related issues including, for example, the applicable limitations under Chinese technology licensing regime before the contracting procedure (cf. Kennedy & Clark 2006, 251) Before signing the contract, foreign managers should carefully review the clauses to ensure that the contract complies with the Chinese law (Fentress 2008 16). After the four *step*s are well-done in the preparation stage, the company can enter into the operation stage, which in discussed in more detail in the following subchapters.

3.2 The four steps of intellectual property protection in operation stage

Operation stage is the stage to implement all the planed measures in practice and enforce the contract. Probably, the foreign companies will think that everything is well settled after the contract is signed, but in reality the contract is only the guideline of the business, i.e. in some cases contract is only viewed by Chinese company as an establishment of initial relationship with the foreign company (cf. IP risks while… 2009).

In the operation stage, the IP protection should go through the following *step*s: registering IP, managing supply chains, managing human resources and building relationship with main actors. Figure 5 illustrates these four *step*s. *Step* 7,

"managing human resources" concerns only companies which have own manufacturing in China, due to the fact that the foreign companies have total management control over the own manufacturing. Moreover, *step* 8 "building relationships" is not always separated from *steps* 6 and 7, but instead, it could be integrated to these steps.

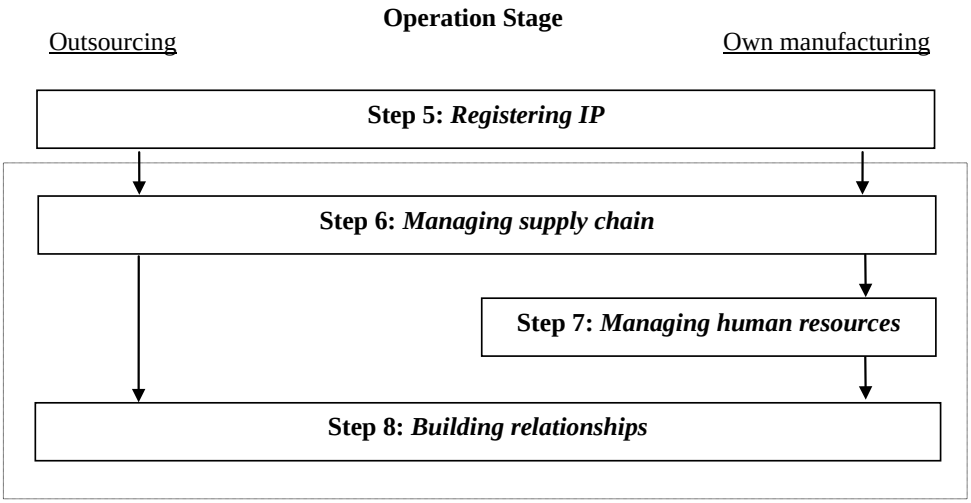

Figure 5**:** Four steps of outsourcing and own manufacturing in the operation stage

In the operation stage, the *step*s of registering IP and building relationships with main actors are exactly the same no matter the operation mode. The difference between outsourcing and own manufacturing in terms of IP protection occurs in the *steps* 6 and the *7*. During the step 6, managing supply chains, the essential measure for outsourcing is to conduct regular audit while for own manufacturing it is to establish a quality control system. Managing human resources does not directly relate to outsourcing, but it is one of the determinant *step*s of manufacturing companies' IP protection. In the following subchapters, the four *step*s of operation stage are discussed more in detail.

3.2.1 Registering intellectual property

The first *step* (i.e. step 5) in the operation stage is registering IP, either as a trademark or a patent. These should be registered before they are put in use (DeSouza & Cheong 2008; Redefining intellectual property value ... 2005, 51).

The registered IP grants the IP owner legal protection rights to defend against unauthorized use by a third party (Hunter 2006, 67). Foreign companies which have a legal entity in China can directly file a trademark application to China Trade Mark Office. Other foreign companies must select a trademark agent for filing the application as the application needs to be in Chinese language. In reality, the registered trademark in roman letters is not very well protected against the sound-alike marks in Chinese trademarks.

Foreign companies should also find a sound-alike Chinese name for their trademarks registration either by translation or transliteration. Some Chinese companies which register trademarks with a suitable translation of the manes of foreign products gain competitive advantage over the foreign companies which are the originators of the products. (Reid & MacKinnon 2008) Registered trademarks are protected for renewable 10 years. (Ordish & Adcock 2008, 109-112; 116-123; Patent and trademark protection in China … 2008.)

As to patent registrations, three types of patents are available in China: invention patents, utility model patents and design patents. The duration of registration procedure for invention patents is three to five years. The procedure for utility patents and design patents takes about one year from filing. Inventions are protected for 20 years. Utility models and designs are protected for 10 years. (Ordish & Adcock 2008, 109-112; Patent and trademark protection in China … 2008; Road map for intellectual property protection in China… 2009, 8-10)

Instead of using the first-to-use system like, for example United States does, China's national IP law is in accordance with TRIPs first-to-file system (Cohen 2009, 22-23; DeSouza & Cheong 2008; Firth 2006, 19; Redefining intellectual property value ... 2005, 51). Infringers try to take advantages of the first-to-file system, and sometimes, foreign companies planning to register their IP are surprised to find out that someone else in China has already filed patents or trademarks on key elements of their products or technologies (Reid & MacKinnon 2008). Due to this, foreign companies must register their IP in China as early as possible and use IP registration as a basic measure for getting legal protection in China (Berman 2008, 195; Cohen 2009, 24-25; DeSouza & Cheong 2008; Firth 2006, 19; Reid & MacKinnon 2008; Swike et al. 2008, 499). The IP registration should be filled in several geographic regions or destinations not only where companies are going to sell and use their technology, but also where companies potentially would enter later (Bielski 2009, 1).

Nevertheless, registering IP does not mean that all IP is protected in the operation stage. Foreign managers should still take practical precautions in their daily operations in order to guard against infringement. One of the practical precautions is the management of supply chains, which is discussed next.

3.2.2 Managing supply chain in China

There are several means to manage a supply chain. The starting point for both, companies either outsourcing and having own manufacturing in China, is to decide what and how should be manufactured in China as well as what kind of provision measures should be attached to the product. Supply chain management includes controllable issues which are absolutely up to the company and uncontrollable issues which need to be collaborated with the Chinese partners. For companies outsourcing there are mainly uncontrollable issues to deal with, while for companies having own manufacturing the main concern are the controllable issues. When outsourcing to China, foreign managers should conduct regular audits to tighten the contractual relationship with suppliers (No trades in fakes … 2006, 8; Ordish & Adcock 2008, 87; Technology transfer to China … 2008, 4) and when manufacturing in China a quality control system should be established (Collins & Block 2007, 249).

When thinking about what could be manufactured in China, first of all, foreign companies should draw a dividing line between what should be kept in house and what can be shared with their Chinese partners in order to ensure that the company's core competencies will not be lost. It is very risky for companies to manufacture in China components which require a lot of confidential information (cf. Ordish & Adcock 2008, 89). Companies should keep their key technologies, procedures and vital designs or latest-generation technologies in their home countries, especially in the situation where there is a risk of IP violation (Firth 2006, 21; Lieberthal & Lieberthal 2003, 80). Key functions and key components should be always developed and manufactured in-house. Likewise, integration and testing of modules in the overall system should be carried out in house. (Ordish & Adcock 2008, 89; Technology transfer to China … 2008, 4) Also, when the foreign company communicates with Chinese partners about know-how, documents, customer relations, designs, strategies, update plans, the information should be restricted on "need-to-know" level (Barrett et al. 2008, 210).

After the starting point, for outsourcing, the foreign companies should activate their audit rights. The purpose of conducting audit control is to supervise and monitor the suppliers' ongoing performance (Bravard & Morgan 2006, 35; Dietz et al. 2005). Normally those factories which are subject to checks will do according to controls, procedures and standards; whereas those factories which are not subject to checks will go the opposite direction (IP risks while… 2009). The scope of audit covers all that IP provisions defined in the contract (Technology transfer to China … 2008, 4), but the main focuses are usually on

the overruns and the producing procedures. There are different ways to do audits, depending on the company's capacity.

Low quality of products is one of the problems which foreign companies face in China (Collins & Block 2007, 224; cf. Ordish & Adcock 2008, 91; Trott & Hoecht 2007, 136). Thus, quality checking is one of the tasks in audit control (Ordish & Adcock 2008, 91). Foreign companies that do not have offices in China can send personnel to China to do quality checks when the suppliers start to run the production (Collins & Block 2007, 225; Ordish & Adcock 2008, 91-92). Quality inspection should be made before shipment to the customers (Collins & Block 2007, 224).

For companies having own manufacturing, one of the key differences which foreign manufacturers face is the skill gap of factory workers in China (Collins & Block 2007, 249). Due to this, the dilemma faced by foreign companies is that need to either expose their production tools, know-how and blue prints to the Chinese suppliers or accept low quality products and long delays (Trott & Hoecht 2007, 136). However, this gap can be overcome by quality controls. Managing supply chains is one of the practical precautions for both outsourcing and own manufacturing in IP protection. Next, another practical precaution which can significantly contribute to IP protection, managing human resources, will be discussed.

3.2.3 Managing human resources

Human resource management is central to IP management, because employees are the biggest source of IP out flow in the organizations (Gollin 2008, 150; Reid & MacKinnon 2008). Since companies having own manufacturing have control over internal management, integrating IP protection measures into human resource management is more crucial for these companies than for the ones outsourcing.

In countries where IP protection has not been traditionally strong, managers and employees rarely have training or experience concerning IP protection. Managers often lack critical skills to recognize the potential value of IP and develop strategies for protecting IP. (Barrett et al. 2008, 35) Sometimes Chinese employees may by oversight leak some sensitive information to business partners, as they cannot make difference between sensitive and non-sensitive information. To avoid this kind of information leakage, companies should add IP protection mechanisms into their human resource management.

Contractual mechanism should always be in place as a legal form to tighten security (Reid & MacKinnon 2008). When the company starts running recruiting process, human resource department should conduct background checks on key hires (Firth 2006, 21). Nondisclosure agreements and non-compete agreements, together with the employment contract containing personnel practices with good IP management, should be signed on the first working day of the new employees, because IP leaks commonly occur after an employee leaves a company and it is unpredictable when he/she will resign (Collins & Block 2007, 327; Firth 2006, 21; Gollin 2008, 150; Reid & MacKinnon 2008).

Once such agreements are in place, foreign companies should educate their employees about these terms defined in the contract and make them understand the firm's confidentiality requirements to maintain the contract enforceable. (Firth 2006, 21) Education is extremely critical in the context of Chinese IP environment in which IP remains as a young concept and the cultural customs are different (Reid & MacKinnon 2008; Yu 2006, 956). Further, Norman (2000, 53) suggests that rewards and incentives can be implemented for protecting critical knowledge. Likewise, it might be beneficiary for companies to use the similar kind of manner to encourage the protection of IP, e.g. launch IP protection campaigns.

Physical access control means that all the employees should have access only to the information relevant to their work. In most cases, to achieve this, the company should control the physical access to databases or printed documents. For example, it should be possible for no one to access the production facilities and to get the essential information such as line speed, production procedure and techniques. (Reid & MacKinnon 2008) Physical access can be restricted e.g. with the use of security card and fingerprint scanners. Every company should have a system to control the movement in and out of the company's premises. (cf. Clark & Kennedy 2005, 69)

Establishing a system in order to integrate IP protection into human resource management is not a simple task (cf. Yu 2006, 958). In the short run, putting up such a system will add costs of the company; but in the long run it will pay off (cf. Yu 2006, 958). Thus, instead of being short-sighted, foreign SMEs should be positive, patient and persistent to the slow progress. Working hard for securing trade secrets and IP related confidential information can reduce the internal risks of IP loss. In the following sub chapter, the fourth step of the operation stage, building relationships with main actors, is introduced. Here, this step is treated as an individual step, but it can be also integrated into the steps of supply chain management and human resource management.

3.2.4 Building relationships with main actors

Building relationship with the main actors in the business, organizations and authorities is parallel to managing supply chains and human resources. It can pave the way for IP protection. Thus, it is crucial for western companies to build relationships with the main actors in the Chinese markets.

The essential part of Chinese business culture is the concept of guanxi, i.e. the personal connection and loyalty which can be far above legal standards (Luo 1997, 45, 46, 48; Staying ahead of… 2005, 18). Although most managers coming from the western countries may have trouble getting used to this concept, it seems unlikely that foreign companies will make a successful business if they pay no attention to construction and maintenance of good guanxi (Staying ahead of… 2005, 18). Guanxi is based on trust, and Hoecht and Trott (2006, 675) stress the importance of trust in the management of outsourcing relationship. They propose that trust-enabling approach and relationship management should be incorporated into management control approach. (Hoecht & Trott 2006, 675) The local partners' existing guanxi network with the government, suppliers, customers and competitors can supply indispensable support to foreign companies' IP protection especially in the beginning when foreign companies have not yet built relationships (cf. Luo 1997, 48-49).

Networking with the government has vital importance in IP enforcement. It is the government who takes the leading role in conveying the message of IPRs and IP enforcement. (Shultz & Saporito 1996, 23; Swike et al. 2008, 499) To a certain degree, a healthy relationship with authorities can be a compensation measure to the inefficiency in IP protection framework (Han & Bader 2007, 5). Lobbying and cooperating are two ways to network with government. Those interactions enable foreign companies to have dialogues with authorities about their concerns and problems (Han & Bader 2007, 5). The weakness in the court system leads companies to lobby more frequently with government at all levels to implement IP law enforcement (Lieberthal & Lieberthal 2003, 79). Consequently, by providing detailed evidence, the company can persuade and assist the government to take essential action against the vast geographical spread of counterfeit products (Yang et al. 2004, 470; Wise et al. 2006, 515).

Networking with other companies or organizations operating in China, which have similar IPR interests, can lead to shared experiences and collective actions to exert pressure both on pirates and on relevant organizations (Shultz & Saporito 1996, 26; Yang et al. 2004, 469). This strategy enables companies or organizations to learn from one another and undertake joint activities, such as

educating consumers, retailers and government and monitoring and investigating suspected regions (Shultz & Saporito 1996, 26; Yang et al. 2004, 469).

After many foreign companies started to recognize that legal approaches in China are not effective, they have joined an IPR lobby group to send the right signals to business partners and customers (Berrell & Wrathall 2007, 70; Staying ahead of… 2005, 18). Companies which have been in China for several years understand the importance of developing relationship with four main enforcement agencies in charge of IP infringement: the Administration for Industry and Commerce (AIC); the Administration for Quality Supervision, Inspection and Quarantine; the General Administration of Customs; and the Public Security Bureau (police) (Staying ahead of… 2005, 18). Collective actions generate the firms' persuasive powers with governments. Collective sharing not only save the cost but also reinforce the measures to fight against counterfeiting. (Yang et al. 2004, 469) Therefore building relationships with all the actors concerned can be regarded as one of the IP protection measures in China.

3.3 Commonalities and differences of IP protection in outsourcing and own manufacturing

The IP protection process can be divided into the two stages – preparation stage and operation stage. Both of these stages include four *step*s, which are applicable no matter whether the company is planning to outsource or to set up own manufacturing in China. The IP protection process is further illustrated in figure 6.

The IP protection *step*s with common protection measures in outsourcing and own manufacturing are *step* 1 (evaluating internal and external IP environment), *step* 5 (registering IP) and *step* 8 (building relationship with main actors). The first *step* occurs in the preparation stage and the latter ones in the operation stage. In the preparation stage, a systematic analysis model (*Step* 1) can provide the company a comprehensive picture of the business environment and the IP uncertainties in China. In the operation stage, the registering IP *step* (*Step* 5) is the most important one. As China has adopted the first-to-file system, registering IP as early as possible is crucial. Putting effort to the relationship (*Step* 8) formation with main actors in the business, such as partners, organizations and authorities, can pave the way for IP protection. However, there are also differences between outsourcing and own manufacturing in IP protection. These differences occur in the *step*s 2-4, 6 and 7, and they result from the characteristics of outsourcing and own manufacturing.

Generally speaking, as own manufacturing is a long-time strategy and outsourcing is a short-time strategy, more consideration should be given to IP protection in own manufacturing than in outsourcing. The most obvious considerations determined by legal and tax presence are choosing a supply model versus choosing an entity model in *step* 2, and negotiating with Chinese partners versus negotiating with Chinese partners and Chinese government authorities in *step* 4.

Furthermore, as short-time strategy requiring no heavy investments, no legal and tax presence and no operational control power, outsourcing gives the maximum flexibility for the company, and does not require as critically conducted due diligence (*Step* 3) as having own manufacturing does. Besides, without management power, in outsourcing case foreign managers cannot totally control all the activities in China. All what they can do is to conduct audit in the supply chain (*Step* 6). Whereas in own manufacturing case, legal and tax presence together with operational control power make it possible for companies to have stronger management power to control IP risks in the day-to-day business, such as conducting total quality control (*Step* 6) and managing human resources (*Step* 7). Managing human resources is the most distinctive difference between outsourcing and own manufacturing. Managing human resources is one of the keys to ensure that IP and know-how will not leak. Foreign managers should put the security measures into human resource management not only to restrict irrelevant employees from the valuable information, but also to control the knowledge flow especially in subsequent activities of recruiting or transferring employees. In the following chapter, the whole IP protection process in China is described with the help of two illustrative case studies.

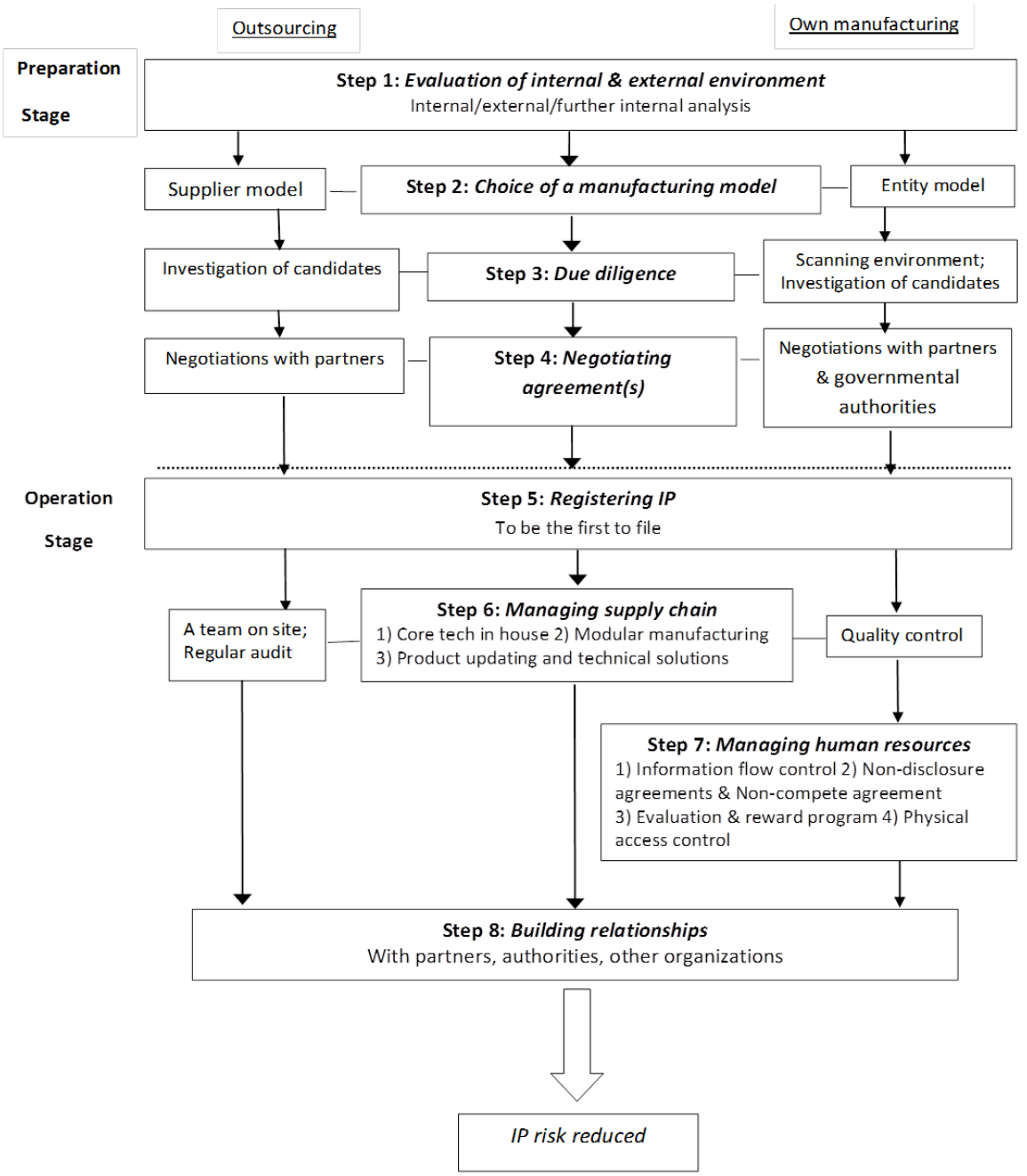

Figure 6: Outsourcing versus own manufacturing in IP protection

4 PROTECTING INTELLECTUAL PROPERTY IN CHINA

4.1 Intellectual property protection in preparation stage

Like presented in the previous chapter, a comparative model of IP protection in the cases of outsourcing and own manufacturing was formed. This chapter discusses the connection of this literature-based model and the data collected from the case companies. The aim of the case data is to provide verification and modification for the presented model and to show, how the two stage model applies in the real-life situations of own manufacturing and outsourcing in China. The illustrative case company, Uudenkaupungin Rautavalimo, URV, has outsourced production to China and Oilon has own manufacturing in China.

First *step* of intellectual property protection in preparation stage is the evaluation of internal and external IP environment. This *step* involves careful analysis of the business environment, as well as the internal environment of the company and it is exactly the same no matter if the company goes for own manufacturing or outsourcing.

Managing Director of URV indicates that *step* 1 is a determinant *step* in IP protection. IP is the form of the company's know-how and core competence and companies should make strategic planning in order to protect them. However, many companies do not understand what to protect, because intellectual property seems to be too abstract concept to them. As the Managing Director of URV states:

> *"You have to build a system to control your own important knowledge. But the very important part of the thing is that you have to understand yourself which is the most important thing for your own company and product. However, many companies don't even understand what the most important thing is. We need to protect only the most important thing. If we think everything in our product is so important and we try to protect everything, it will fail."*

In the preparation *stage*, both of the case companies had evaluated prevailing environment and gained more in-depth knowledge of the opportunities and challenges in China. After this through analysis, the companies move on to *step* 2; choosing the manufacturing model and thereafter choosing the entity or supplier model. The choice is made between own manufacturing and outsourcing.

The three main benefits of establishing own manufacturing in China that Managing Director of Oilon brought up were shortened delivery time, reduced production costs and improved customer service by being physically closer to the customer. The lead time from Finland to China is approximately five weeks by boat and this long time often causes extra costs to companies. Moreover, the production costs are much lower in China than in Finland. However, despite the obvious advantages of producing in China, the decision making process is challenging and time consuming process, which usually includes several feasibility studies and investigations.

In the case of Oilon, the top management team arranged several meetings to discuss this project from every aspect. In the meetings, they tried to cover and consider all the related issues, such as how to protect IP, what could be produced in China, the legal entity model of the factory, and where the factory could be located. After these considerations Oilon ended up choosing joint venture instead of any other options. The advantages of JV model are a quick start, low costs, operational synergies and risk-sharing. In May 2002, Oilon's assembly plant was launched in Wuxi National High-tech Industrial Development Zone which is an area hosting many European, American and Japanese industrial companies. One of the reasons for the choice of location was that the development zone offered convenient facilities, modern developed infrastructure, rich human resources and efficient management and services. Another reason for this choice was the partners Oilon had in Wuxi.

URV, instead, decided to choose outsourcing instead of own manufacturing, and they selected the multiple-supplier model. Thus, the different components of the products are sourced from different suppliers. One of the strengths of multiple-supplier model in production management process is that it gives companies full independence to organize the production process. With this model, URV can put all customers' similar products to the same process.

After the selection of manufacturing model, the companies move on to the due diligence. At this *step (Step 3)*, both of the case companies had conducted a thorough investigation. In URV's case, the investigation included a real audit on site, technical audit, management audit and financial audit to get to know the partners and sites better. At this point, URV has been also benefited from the network of Meehanite in China.

> *"Meehanite's knowledge is extremely important in China. And in the future Meehanite's trademark would also be an important marketing tool."* (Managing Director of URV)

In Oilon's case, the due diligence *step* was simpler, because Oilon had Chinese partners already in Wuxi before it planned to have own manufacturing there.

In the following *step* (*Step* 4), both of the companies were able to utilize their existing relationships. For Oilon, local people from Wuxi National High-tech Industrial Development Zone organized all the negotiations with the Chinese officials. URV instead had a local lady, who assisted in the negotiations. After the negotiations, Oilon made the agreements with their partners and the Chinese officials. Just like URV, also Oilon included IP provision clauses in their agreements.

4.2 Intellectual property protection in operation stage

The preparation stage in international market entry is followed by the operation stage. Also this stage includes four steps; namely registering IP, managing supply chains, managing human resources and building relationships with main actors. The operation stage starts with *step* 5 registering the company's IP. According to Managing Director of URV, the advantage of trademark registration is that it is much easier to tell the customers that these castings are made by Meehanite. As a symbol of the quality, the trademark is helping the sales of the castings. However, the disadvantage is that once the trademark is registered, several companies are trying to copy the registered trademark or product due to the market power this trademark has. Also Oilon's patent was registered in China before Oilon entered the Chinese markets. Managing Director of Oilon states that the advantage of IP registration is that it protects those contributions and investments on R&D which Oilon has made. After the IP has been registered, companies need to move on to *Step* 6, i.e. managing supply chains.

In order to manage their supply chains, URV and Oilon have kept their core technology in house and controlled the quality. For example, URV has a team on site to take the responsibility for the supply chain management. The team contains Meehanite's engineers, URV's engineers and Chinese engineers who act in three different roles in order to fulfill all the tasks in the supply chain management, such as processes up-dating, ramp up quality in products and continuous improvement. URV's engineers will train the Chinese engineers to

control the quality of products. And Meehanite's engineers make surveillance visits to install the new process or to do troubleshooting, so as to ensure that everything is running according to Meehanite's practices.

The supply chain management has brought at least two advantages of protecting the company's know-how and key competence. First of all, based on the existing knowledge management system, the leakage of important know-how can be diminished almost to zero, because URV does not need to tell the content of the technology to the foundries. The foundries can just follow the instructions about the process control. Thus, they cannot directly work with URV's customers. And also it is impossible for them to copy and make the similar products to URV's, because they do not have the detailed information about the technology. Second, with the team on site, the quality of the products can be guaranteed to meet the Meehanite's standards. The Chinese engineers are all the time on site, controlling the quality in the foundries. The high standardized quality products can let the customers easily recognize the Meehanite products from the counterfeiting ones in the market.

Due to the situation of the foundries in China, URV cannot buy good castings from China, but URV can manufacture with subcontractors. Of course, in the case of outsourcing, for the quality reason, having the company's own personnel on site to do quality control is the best (Collins & Block 2007, 225). Thus, in the revised IP protection model in *Step* 6, having a team on site is regarded as the additional IP measure indicating the difference between outsourcing case and own manufacturing (see figure 7).

As to the supply chain management (Step 6), Oilon made a clear plan of what could and what could not be manufactured in China. For IP protection reason, Oilon's Wuxi factory was designated only as an assembly plant. Oilon manufactures key components in-house and ships to China. Oilon‘s own purchasing organization is responsible for purchasing the spare parts from the different suppliers. This way the production process can be divided into many small parts and it is more demanding for violators to copy the whole product. The approach that Oilon used in the supply chain management is modular manufacturing. Modular manufacturing enables the company to secure the core technology in the supply chain. Besides modular manufacturing, Oilon controls the supply chain based on the written agreements with all the suppliers. In order to check the suppliers' commitments and guarantee the quality, each spare part is carefully examined before delivery.

The next *step (Step* 7), managing human resources, is only relevant for companies like Oilon, i.e. companies having own manufacturing in China. Besides controlling information flow, signing confidentiality agreements with the employees and controlling physical access to database, the case example, Oilon,

motivates the employees to retain their loyalty to the employer, and thus to minimize the possibility of the employees' willfully leaking IP information. As Han and Bader (2003, 5) point out "loyalty building with employees will be the key to prevent internal leakages", and motivating employees can also be a reasonable measure for IP protection.

Oilon's philosophy of human resource management from IP perspective is to keep the employees motivated enough, so that they would like to work for the company. Therefore Oilon tries to treat the personnel in China as well as it does in Finland. Furthermore, Oilon works a lot for protecting the company's secrets and core competence. Explicit rules and policies are set, and for example, the documents sent to China are limited to very small amount. The key persons are required to sign a confidentiality agreement with the company. The market is followed all the time and all discrepancies are reported. The shared access to database is only to the departments which have the regular use of the data. Like the managing director of Oilon stated:

> *"The main and the most important way is to motivate people, so they like to work for the company. People who are well motivated like to work hard for the company. If people are not happy, they can do things which bring more troubles in a long run and also violate the IP rights."*

However, Oilon should have made efforts to keep the critical information (e.g. company's know-how) in-house in order to decrease the possibility of the reverse engineering happened. Therefore, from human resource management side, the problem is not only the internal knowledge management system of Oilon's Wuxi factory in China, but also Oilon's headquarter in Finland.

In contrast, Meehanite has systematic internal knowledge management. Owing to the special relation between Meehanite and URV, URV has been taking advantages of using such relation for IP protection in China. In both outsourcing case and own manufacturing case, a company's internal IP management will also influence the company's IP protection in China. Thus, it is beneficiary if the company tightens its internal IP management in the organization before outsourcing or setting up own manufacturing in China. This is one of the features of the *step* 7, which is not emphasized in the literature, but was brought up during the interviews.

In the *step* of building relationship *(Step* 8) with important actors, both URV and Oilon have been making efforts on building network with other companies. In addition to this, networks with the governmental bodies and other

organizations relevant in IP protection should be considered. In URV's case, establishing relationship with the reliable people and using them to find other reliable ones has saved URV big amount of time and work in the due diligence *step*. URV's approach is similar to the one recommended to the foreign companies, i.e. they should first utilize their business network to find the candidates in the due diligence *step*.

The important actors in China that URV targets in its business are owners, chairman of the board and top managers of the supplier foundries in China. The foundries which have been cooperating with URV do not belong to the old, most important government-owned companies. Rather, they are medium-sized private companies. The reason why the medium-sized private companies want to cooperate with URV is that they are interested in getting more business, new type of products and advanced foundry technology. URV also tries to get involved in the governmental projects, though it is difficult to negotiate with those big companies which are government-owned.

Building relationship with partners is necessary for Oilon in order to implement the agreements. Through hard work during many years, Oilon built the relationship with the important actors: the clients, energy production companies and boiler makers.

As, Managing Director of URV had concluded:

> *"The old saying in China is 'first to become friends and then to make business'. I really agree on that because how can you make business when you don't know so much of people you supposed to trust. That's why I think the most important thing in starting a business in China is to find reliable people first, because the reliable people will lead you to find other reliable ones."*

The managing directors of the case companies also brought up that giving and receiving feedback during the process is important. This allows the companies to evaluate their IP system, modify it and even, if necessary, to terminate the unsatisfactory business relationships. If a company modifies its IP protection process, it usually undergoes the steps 5-8 again. However, if the company decides to terminate its business relationships, it might end up starting the whole IP protection process from beginning. This is something the IP literature does not emphasize and it is, hence, one of the key findings of this study.

According to the findings above, the comparative model of IP protection (See figure 6) is developed further and a revised is presented in figure 7.

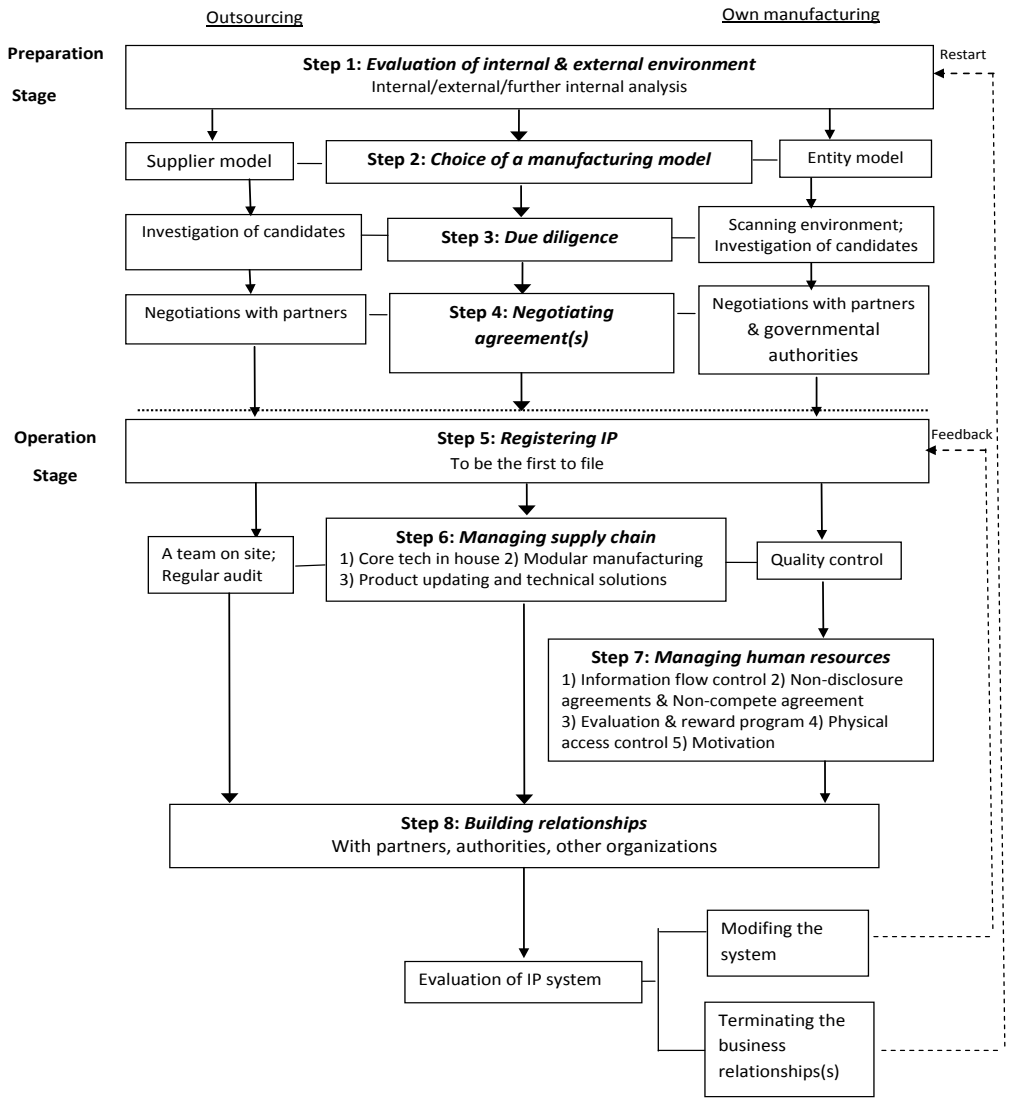

Figure 7**:** Outsourcing versus own manufacturing in IP protection (revised model)

5 CONCLUDING REMARKS

The overview of both URV and Oilon's cases indicates that many factors influence the company's IP protection measures, such as the history of the company; the characters of the company's product; whether the company already has business contacts in China; and the type of IP that the company owns. Therefore every company should establish the IP protection system according to the company's situation.

Through a series of analyses, strategic planning of IP can be made. Apart from how to protect the company's IP, the company should also know what to protect rather than just aiming at protecting everything. If the companies are trying to protect everything, probably some important matters which actually should be protected will be ignored. Although the companies think that careful selection which products and technologies to be manufactured in China can reduce the chance of IP loss (Dietz et al. 2005), they ignore the protection of their essential knowledge, know-how and core competence. Without essential knowledge, critical know-how or core competence, the companies may not have the capability to create any IP. However, the prior studies have not yet attached importance to what to protect. Also, unlike the prior studies, in this study IP protection measures are regarded as a whole. In the model, each step as the one component of the IP protection mechanism has been logically joined. Consequently, each step naturally paves the way for the next steps. For example, if foreign SMEs want to retain their audit rights in the *step* of managing supply chains (*Step* 6), then such issue should already be placed on the agenda in the *step* of negotiating agreements (*Step* 5). Later foreign managers can activate the rights in their supply chain management according to the agreement.

Moreover, the IP strategies previously studied are reactive strategies, which could merely be used when the IP infringement has occurred. Differently, this study stresses that SMEs should have own proactive IP strategies in order to avoid IP infringement, rather than all the time react to the damages. Thus, the IP protection model in this study starts with establishing an IP protection mechanism in the preparation *stage*. The findings also suggest that establishing an IP protection mechanism is of the utmost importance for both companies outsourcing and companies having own manufacturing in China, because it determines the direction of the following *step*s in advance.

The distinctive difference between outsourcing and own manufacturing in IP protection is in the operation *stage*. For outsourcing, attention has to be paid in the *step* of managing supply chains. In the offshore outsourcing, long distances make supply chain management more difficult. If possible, foreign SMEs should send a full-time team on site. For own manufacturing, both managing supply chains and managing human resources are important *step*s. In human resource management, the leading question is how to properly share the information internally and externally only on "need to know" basis. That is to say, on which extent the information can be shared outside and inside the company. Besides, motivating employees is a way to minimize employees' willful deeds of giving away the trade secrets of the company, as employees' loyalty to the company can be increased by motivators. The unexpected findings uncover that well-managed human resources in the companies' headquarters make sense to their IP protection in China too. In addition, how to improve the IP protection measures that has not yet been mentioned in the prior studies is proposed in the findings of this study.

Furthermore, IP protection is a constantly on-going process. In the revised IP protection model (See figure 7), the ongoing IP protection flow fills a gap of the prior studies. Foreign managers should establish an evaluation system to find out the problems in the IP protection process in China. Sometimes IP problems might exist even no problem has been seen. The worst thing is that the companies still take it for granted that they have high level of IP protection when infringers are attacking them. With an evaluation flow, unexpected problems in IP protection system can be exposed. The results from operation *stage* give valuable feedback on how to improve the current strategy. In the on-going IP protection process, the foreign managers' attitudes toward the IP environment in China will more or less affect the effectiveness of their IP management. The foreign managers who complain that China does not respect IPRs may not be able to find out the problems in their IP protection system even when infringements occur, because they think that the situation in China should change. Only with the proactive attitude, the company's on-going IP protection process can be put forward.

This study has a few obvious limitations. First, the study assumes that every product needs to get protection and every SME wants to have strict IP protection, so in this study IP protection has been set as a priority in every decision making situation. However, in real life, the companies would most likely consider multiple factors; for example, when deciding whether or not moving the production line to China.

Second, due to the limited number of suitable cases, the case examples of outsourcing and own manufacturing are not operating in the same industry. Besides, URV is the licensee of Meehanite, which gives URV strong support in

technologies and in IP protection. If the cases were in the same industry, the empirical data would be even more comparable and findings on IP protection in a specific industry could be acquired. Third, the two case examples in this study do not belong to high-tech companies. IP protection is more important to a high-tech or a research-based company than a pure manufacturing or a supply company.

Ideally, in further research, researchers could focus on comparable cases of outsourcing and own manufacturing in a certain industry; more comparable findings could be obtained. Also, in order to find out how to improve the company's IP protection system, researchers could test the value of the ongoing IP protection flow proposed in this study and complete the existing model of the company.

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