Ex-ante Control Mechanisms against Opportunistic Behavior regarding Knowledge Sensitivity of Product
Comparative Case Study

Kamila Magdalena Grabowska
Shideh Tabe Mohammadi

Tutor: Jonas Söderlund

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Authors:
Kamila Magdalena Grabowska and Shideh Tabe Mohammadi

Advisor:
Jonas Söderlund

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Abstract

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Authors: Kamila Magdalena Grabowska and Shideh Tabe Mohammadi

Supervisor: Jonas Söderlund

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Institution: Linköping University

Background: There is an increasing interest for business organizations to engage into the global inter-firm alliance nowadays. The companies are striving for accessing the opportunities created by emerging markets, diversification of the products’ offer or the access to lower cost inputs (Barnes, et al., 2010). However, along with the benefits, there are also risks that the inter-firm alliances are challenged with. Those risks are represented by various forms of opportunistic behavior, which might be further caused by business partners (Williamson, 1975). The companies that decide to engage into inter-firm alliance need to invest in the implementation of control mechanisms that will protect them against opportunistic behavior. The preventing ex-ante mechanisms can be implemented prior to the official start of cooperation while the cause ex-post mechanisms are applied during further stage of the collaboration. However, due to the cost of these implementations, companies cannot afford employing every available control mechanism. They need to select only the ones that their benefits exceed their costs. One of the main factors that influence the selection process of control mechanisms is the level of knowledge sensitivity of a product. The main objective of this master thesis is to determine how the level of knowledge sensitivity of a product influences the selection of ex-ante control mechanisms.

Methodology: The study was based on a qualitative approach through multiple comparative case study. The empirical part of the study was conducted by data collection through interviews, archives searches, and partially through personal observations from February to April 2013. The subjects of this study were four companies: High-Tech A, High-Tech B, Low-Tech C and Low-Tech D. The subjects were not randomly selected, but picked based on their especial features. For the purpose of confidentiality, real names of the companies are not used.

Completion and results: The results of this research suggest that the knowledge sensitive nature of a product influences the selection of ex-ante control mechanisms in the form of formal incentives and during the formal monitoring process.

Search terms: Opportunistic behavior, Ex-ante control mechanisms, Knowledge-sensitive products.
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CHAPTER I. Introduction

I.1 Background and previous study

The current business world is surrounded by congested number of companies operating in different industries, cultures, and countries offering various services and products. The markets are characterized by rapid changes, increasing clients’ expectations, and high pace of technological developments (Barnes, et al., 2010). It creates very competitive environment in which organizations are striving to beat the competition and survive the market tension. Due to the limited financial resources, skills, and knowledge, many companies are engaging into the business cooperation with others, both locally and more and more often internationally. This is due to the fact that many companies around the world have reached the limits of their expansion opportunities locally, so there is increasing interests to operate internationally to access the new market opportunities, diversify their product, and having access to lower cost inputs. As McGarvey (2008) describes, some industries have realized the significant cost savings by cooperating with manufacturers in countries with low-cost labor like India and China (McGarvey, 2008). Although, these relationships might occur to be very beneficial for both sides, they are also subjected to high risk of failure. Close relationship between partners or suppliers and customers do not always result in good relationships. The statistic shows that 30 to 50 percent of inter-firm alliances fail (Dyer, Kale and Singh, 2004) and opportunistic behavior plays one of the central roles in being responsible for this failure (Williamson, 1975).

The opportunistic behavior is defined by Williamson (1975) as the “lack of candor or honesty in transactions, to include self-interest seeking with guile” (p.9). It can be manifested in very diverse forms, as well as leading to various consequences, from relatively restorable, such as loss of profit, to very serious ones, such as business failure and bankruptcy of one or more of the partners (Williamson, 1975; Wathne and Heide, 2000). This phenomenon of the opportunistic behavior has been analyzed differently by various researchers; however the theoretical foundation in the academic literature is guided by the transaction cost theory proposed by Williamson (1975). One of the main assumptions underlying the transaction cost theory is the belief that the risk of opportunism is the characteristic of many transactions (Hill, 1990). Hill (1990) describes: “The costs of negotiating, monitoring, and enforcing a contingent claims contract to ensure against this possibility are called transaction costs” (p.501). Opportunism plays a very important role in the transaction costs. In the absent of opportunistic behavior there
would be no need for monitoring or control mechanisms, and cooperation and trust will be the norm to safeguarding market transactions (Williamson, 1975).

However, Williamson (1975) assumes that the companies would behave opportunistically whenever such behavior is possible and expected to generate some benefits, even though it may cause losses to the other partners. The partners may act opportunistically in order to gain short-term benefits (Cavusgil, Deligonul and Zhang, 2004). Therefore, more and more organizations have started to pay attention to establishing more intense control mechanisms against opportunism (Turnbull, Oliver and Wilkinson, 1992).

In shaping the approach to protection against opportunistic behavior, the transaction cost theory of Williamson (1975) is supported by the relational exchange theory proposed by Dwyer and Oh (1987). Both of these theories aim to reduce the cost of the trading in business dealings. However, transaction cost theory indicates that the opportunism can be minimalized mainly through formal control mechanisms, while relational exchange theory focuses on the importance of informal control mechanisms. As Bijlsma-Frankema and Costa (2005) explain, the main difference between formal and informal control is in the manner of prior specification. The formal control has to be stated at the beginning of the cooperation in the form of contracts and legal statements, while informal control is based on the social approval and relationships.

Another differentiation of control mechanisms is based on the time frame of the relationship. The breaking point in this process is signing the contract. The control mechanisms applied before signing the contract are categorized as the preventive, ex-ante control mechanisms and the mechanisms applied after signing the contract are categorized as cause, ex-post control mechanisms. Final categorization of the control mechanisms can be applied between: during the process of partner’s selection, as the form of incentive, as the monitoring mechanisms or during the process of socialization (Williamson, 1975; Wathne and Heide, 2000). Each control mechanism can be characterized therefore as formal or informal, ex-ante or ex-post and belong to the group of partner’s selection, incentives, monitoring or socialization (Williamson, 1975; Dwyer and Oh, 1987; Bijlsma-Frankema and Costa, 2005; Wathne and Heide, 2000).

Finally, as establishing control mechanisms is a time and cost consuming process and many organizations face the problem of limited resources, it is important to choose only those control mechanisms that will generate more benefits than the costs. The type of opportunism and further its outcome depend on the context and circumstances of the cooperation, such as the cultures, the characteristic of the product, different intellectual property (IP) laws, enforcing governmental control, required standard of product and manufacturing, etc. (Philip, 2011). Therefore, each organization need to pay attention while selecting appropriate control mechanisms and do
researches to examine which control measures should be used according to its certain circumstances. As Barnes et al. (2010) mention, specific control mechanism should agree with the context of analyzed situation with regard to existing or possible forms of opportunism. For the analysis where the influential factor of inter-firm cooperation is the characteristic of a product, the focus can be guided by the knowledge-sensitive nature of the product. The products can be differentiated based on the technology used in their developing and manufacturing process (Gardner, 1990; Fagerberg, et al., 1997), which indicates the level of the product’s sensitivity towards knowledge. According to Fagerberg et al. (1997) the products can be categorized in high-, medium- or low-tech industry. The dissimilarities between the product of different industries are unequal in terms of: the amount of investments in R&D, the technology, the pace of changes in the environment, the product life cycle, the length of process of the development or the barriers of entry (Gardner, 1990; Johnson, 2004; Solberg, Sundal and Thoresen, 2008). Those various features of products of high-, medium-, and low-tech industry influence further their sensitivity towards the knowledge, which increases with the complexity of more advanced, innovative technologies or longer process of development.

The knowledge-sensitive nature of the product influences the presence of specific types of opportunistic behaviors to occur or to be expected to occur in the business cooperation (Hurmelinna-Laukkanen and Puumalainen, 2007; Balganesh, 2011; Bamett, 2011; Burstein, 2012; Lemley, 2012). Therefore, in this context only specific control mechanisms should be implemented (Barnes, et al., 2010).

I.2 Problem statement

The academic literature agrees that the opportunistic behavior occurs frequently in the inter-firm alliance and is subjected to the negative consequences (Williamson, 1975; Wathne and Heide, 2000). Therefore it is advised to the companies that engage into inter-firm alliance to protect themselves by implementing control mechanisms against opportunistic behavior (Williamson, 1975; Dwyer and Oh, 1987; Bijlsma-Frankema and Costa, 2005; Wathne and Heide, 2000). However, due to the limited financial resources, the companies cannot afford employing all available control mechanisms, but they need to select only the most beneficial ones (Barnes, et al., 2010). They need to guide the selection process of the control mechanisms in accordance with the context of their business, such as the knowledge sensitive nature of the product (Gardner, 1990).

There are several studies conducted on opportunistic behavior suggesting that the high knowledge-sensitive nature of a product contributes to the acceleration of opportunism and
therefore require special control mechanisms (Hurmelinna-Laukkanen and Puumalainen, 2007; Balganesh, 2011; Bamett, 2011; Burstein, 2012; Lemley, 2012). However, those studies are mostly unilateral by referring to matters associated with the high knowledge-sensitive products and excluding the ones relevant to low knowledge-sensitive products. Therefore, they only target a segment of the market and are not comprehensive enough in determining if a particular control mechanism is linked only to the high knowledge-sensitive product or it can also be suitable for the low knowledge-sensitive products. It is not clear how the variables of different levels of knowledge sensitivity of a product differ from each other and how they affect the selection of control mechanisms. It cannot be easily determined whether specific control mechanisms are implemented based on the knowledge-sensitive nature of the product or they are selected independently from this characteristic.

I.3 Purpose of study and research question

The main purpose of this study is to determine how knowledge sensitivity of products determines the selection of specific control mechanisms for preventing or minimizing opportunistic behaviors. To do so, we compare different levels of knowledge sensitivity of products with the selection of specific control mechanisms.

In our study we would like to investigate if the link between the knowledge sensitive nature of the product and the selection of control mechanisms truly exists and how it can be perceived. Given the time constraints of this project and the need to conduct an in-depth study with valid analysis, we only focus on the ex-ante control mechanisms and does not investigate the ex-post control mechanisms. As it is hypothesized that products of different knowledge sensitivity levels will require different control mechanisms against opportunism, it is relevant to conduct a research comparing business cooperation where the subject is a high knowledge-sensitive product with business cooperation where the subject is a low knowledge-sensitive product.

More specifically, the goal of this study is to determine the ex-ante control mechanisms against opportunistic behavior that can be applied when the product is of high, low knowledge sensitivity or both.

In our study we would compare the differences between situations within the particular settings with regard to product nature. Moreover, we try to describe the links between products’ nature with regard to their sensitivity to knowledge, and different control mechanisms suitable for them.
Therefore, we propose the following research question for this master thesis:

*How does the knowledge sensitivity of a product affect the selection of ex-ante control mechanisms against opportunistic behavior?*

### I.4 Research design and methodology

We have decided to use qualitative approach through multiple comparative case studies in order to conduct our investigation. The comparative case study approach is appropriate to address our research question, as it offers collecting details to unravel the complexity of studied phenomenon and explains why certain results are achieved for particular real-life situations rather than creating a general oriented investigation. Through this approach, we can achieve a holistic view of the phenomenon rather than analysis of isolated factors. It is relevant for this study, as the focus is on relationship and processes within the settings for selecting control mechanisms against opportunistic behavior with the comparative influence of the high and low product's knowledge-sensitive nature.

Another strength of a multiple case study valuable for our research is the possibility of using different sources and types of data (Denscombe, 2007) from real-world cases rather than from artificial situation. We collected the data from interviews, archives, and personal observations. After writing our analysis, we contacted the companies in order to confirm our understandings.

In this thesis, the existing theories about the opportunism and its control mechanisms will be complemented with the real-world case studies. Different approaches on preventing or minimizing opportunism will be analyzed based on the nature of the product that is the subject of the business cooperation. In addition to practical aspects, this research also includes the aspects of theory building. The models are applied to specific context and serve as the foundation to develop new theories. This knowledge has been gathered and applied to the specific case under the analyzed circumstances, as presented in Figure I.1. The orange color in the figure is associated with the high knowledge sensitivity and the green color with the low knowledge sensitivity. This coloristic will be respectively used throughout the whole thesis.
I.4.1 Selection Criteria for Industries and Companies

For our case studies we conducted a comprehensive search and picked four companies based on their unique features. These companies were selected carefully based on their attributes to guarantee that they represent particular factors relevant to variables analyzed in this study. The samplings were also chosen as per the criteria defined by Eisenhardt and Greabner (2007) as Polar type, which are the most extreme samples including very high and very low performing cases in order to more easily observe contrasting patterns in the data. According to Denscombe (2007) “A case study should be chosen deliberately on the basis of specific attributes to be found in the case – attributes that are particularly significant in terms of a practical problem or a theoretical issue that the researcher wants to investigate” (p.39).

The criteria used to choose particular companies are:

- Two companies belong to high-tech industry and two belong to low-tech industry, according to the model of Fagerberge et al. (1997).
- All companies belong to the group of SME as per their local definitions.
- They are representative of Western companies, e.g. American, Canadian, and European, and all do or did business with Chinese and / or Indian partners.

The first characteristic of belonging either to high or low-tech industry allows categorizing the four companies into two groups of different levels of knowledge-sensitive products and builds the foundation for the comparison. Both companies from high-tech industry belong to the pharmaceutical industry and possess the products that are of high knowledge-sensitive nature. The two remaining companies belong to the low-tech industry: furniture and textile and eyewear.
industries and their products are of low knowledge-sensitive nature according to the definitions provided in this thesis. The remaining three other characteristics are shared by all analyzed companies and therefore create a united setting for the business cooperation. Furthermore, the particular cases represent a broad group of companies that could have been selected, therefore the outcome of this study can be applied to other situations, and findings can be further generalized, reaching wider audiences. Finally, all companies subjected to this study have required us not to disclose their names for confidentiality purposes, therefore in the thesis the companies will be respectively referred to as: High-tech A, High-tech B, Low-tech C and Low-tech D.

I.5 Chapter structure

The structure of the thesis has been divided into seven chapters: Introduction, Literature Review, Analytical Framework, Methodology, Empirics, Analysis, and Conclusion.

Chapter I. Introduction - In the Introduction the reader is introduced to the analyzed phenomenon and its background from the previous studies, the problem statement, the purpose of the study, and the research question, as well as a brief description to the methodology and research design.

Chapter II. Literature review - Literature review chapter analyze the phenomena of opportunism and its control mechanism comprising the theoretical background for the study.

Chapter III. Analytical framework – In this chapter the framework of our study is explained and defined. We provide the definition of the product and the knowledge sensitivity of the product, as well as the characteristics of SME and cross-border alliance, which play an important role for the analyzed setting.

Chapter IV. Methodology – The Methodology chapter explains the reasons for the selection of qualitative study through multiple comparative case study approach and guides the reader in details through the design of the research.

Chapter V. Empirics – This chapter provides the data gathered through interviews, archives, and personal observations that were analyzed to reach the results. It includes the background of the companies, the motivations for engaging into inter-firm alliance, negative experiences, and risks related to inter-firm alliance, as well as the protective precautions they have implemented against opportunism.

Chapter VI. Analysis - The Analysis chapter summarizes the outcomes of the study and the results obtained. In this chapter we analyze the empirical data and determine the level of knowledge sensitivity for the product, which types of opportunistic behavior occur and which
ex-ante control mechanisms are selected for specific company separately. We further compare all those findings and answer the research question.

**Chapter VII. Conclusion** - The final chapter – Conclusion summarize the whole thesis and the main and final results.
CHAPTER II. Literature review

The following chapter creates the theoretical foundation for this master thesis. The reader will be introduced to the knowledge gathered from the academic literature. Firstly, the definitions of opportunistic behavior will be provided. Further it will be followed by the motivations for acting opportunistically supported by the literature. Finally, the detailed explanation of different control mechanisms will be included. This chapter presents the views of different authors about analyzed context of opportunistic behavior.

II.1 Opportunistic behavior

II.1.1 The definition of opportunistic behavior

Opportunistic behavior has been analyzed by several researchers and can be broadly found in the academic literature nowadays. One of the first authors that have defined this term and brought the attention to the problem of opportunism is Williamson (1975). According to Williamson (1975) opportunism influences the increase of trading difficulties between partners and therefore is perceived as a significant threat and one of the key attribute against successful business cooperation.

Williamson (1975) defines opportunism as the “lack of candor or honesty in transactions, to include self-interest seeking with guile” (p.9). The ‘guile’ refers to “lying, stealing, cheating, and calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse” (Williamson, 1985, p.47 cited in Wathne and Heide, 2000, p.38). The aim of opportunism is to realize the individual advantage.

Over the years, the term of opportunism has evolved, and nowadays it refers to a broad range of behaviors that are potentially different. For example opportunism refers to any action of misleading the partner (Crosno and Dahlstrom 2008). Among this understanding, the opportunism occurs as failure to meet the promises and responsibilities, shirking of fulfilling the obligations unless supervised, as well as manipulating data and falsifying facts (John, 1984; Anderson, 1988; Yilmaz and Hunt, 2001; Wathne and Heide, 2000). Other terms included with the opportunism can be:

- Strategic manipulation of information, “fundamental paradox” (Arrow, 1962; Das, 2005);
- Misrepresentation of intentions, shirking and avoidance of responsibilities (Wathne and
Perseverance and rejection to adopt (Wathne and Heide, 2000);
Falsification of expanse reports (Phillips, 1982);
Violation of implicit and explicit criterions included in contract (Wathne and Heide, 2000);
Breach of distribution contracts (Dutta, Bergen and John, 1994);
Quality shirking (Hadfield, 1990);
Violation of promotion agreements (Murry Jr. and Heide, 1998; Das, 2005; Wathne and Heide, 2000);
Compulsory repeated negotiation in order to achieve concession (Wathne and Heide, 2000).

Unique form of opportunistic behavior can take place when the subject of cooperation is knowledge sensitive. Arrow (1962) identified a “fundamental paradox” as the phenomena that exists when two parties engage into the cooperation, where the product to be exchanged is the information or knowledge-sensitive. According to the transaction where the information is traded, the buyer need to be able to judge the value of the information in order to estimate the appropriate amount of money that should be spent (Arrow, 1962). However, this need might put the inventor into the risk, as once the information is revealed, the buyer possesses the trading product and might not see the reason to make the payment or make regular purchases. Balganesh (2011), Barnett (2011), Lemley (2012) and Burstein (2012) refer to this problem as the “disclosure” or the “information paradox”.

The opportunism can be further distinguished between temporal and formality (Williamson, 1975; Williamson, 1991; Wathne and Heide, 2000). The differences between them are presented in Table II.1 below. The division that will be used further in the thesis is the focus on ex-ante, blatant and lawful opportunism. Blatant and lawful opportunism will be referred respectively as formal and informal opportunism. The blue color will be associated with the ex-ante control mechanisms and red color with ex-post control mechanisms. The same coloristic will be applied throughout the whole thesis.
Table II.1 Opportunistic behavior’s division

<table>
<thead>
<tr>
<th>Type of Opportunistic behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temporal</strong></td>
</tr>
<tr>
<td>Ex ante - determine if there is intentional misleading that occurs already during primary phase of cooperation (Williamson, 1975);</td>
</tr>
<tr>
<td>Ex post - several abuses of the partnership during further stages (Williamson, 1975).</td>
</tr>
<tr>
<td><strong>Formality</strong></td>
</tr>
<tr>
<td>Blatant opportunism - if the violation of relationships is through breaking formal contract agreement (Wathne and Heide, 2000; Williamson, 1991)</td>
</tr>
<tr>
<td>Lawful opportunism - the one that concerns social contract (Wathne and Heide, 2000; Williamson, 1991)</td>
</tr>
</tbody>
</table>


However, regardless of nature and reason, opportunism can sabotage long-term business relationship (Kirmani and Rao 2000).

II.1.2 The motivations for opportunistic behavior

Williamson (1975) in the transactional cost theory assumes that the partners of inter-firm cooperation have a tendency to act opportunistically when such act will contribute to the generation of their own economic benefit, although it can put the other partner into difficulties. This view of Williamson (1975), according to which a partner will act opportunistically if given such an occasion, is shared by Ghoshal and Moran (1996) and John (1984). Brown, Dev and Lee (2000) acknowledge that the organization is eager to commit to opportunism in order to gain unilateral benefits in short term, although it could influence its cooperation negatively in long term. Moreover, if an organization believes that its partner is unable to detect the opportunistic behavior it might take an advantage of him by withholding the resources or reducing the investments. Such opportunism is known under the term of shirking (Handley and Benton, 2012).

Through the transaction cost analysis, Williamson (1975) has created the foundation for studies focused on solving inter-firm relationship management issues (Anderson and Weitz, 1992; Dwyer and Oh, 1987; Heide and John, 1992; John, 1984). The authors are analyzing different types of opportunistic behavior, the level of risk depending on circumstances under which the cooperation takes place, the influence of risk of opportunism on cooperation, and they conclude the different protective measures and the outcomes of opportunism. Perceived risk of opportunistic behavior has significant impact for the creation of the trading relations. The higher the risk of opportunism in specific cooperation, the bigger resources have to be spent on protection, control and monitoring. In the absence of opportunism the company could have spent those resources in more productive way for other purposes (Wathne and Heide, 2000). Also Jap
and Anderson (2003) and Liu, Luo and Liu (2009) indicate that the higher level of risk of opportunism perceived, the higher resource expenses on control and monitoring of the other party have to be accepted.

Das and Kumar (2011) and Barnes et al. (2010) suggest that the opportunism can occur under any circumstances and it should never be fully neglected. However they also claim that in certain situations the risk of opportunism can be significantly higher. Among the variables that increase the risk of opportunism are:

- Information asymmetry - If the level of information asymmetry is high, the opportunism is harder to detect and the situation favorable for breaking the contract is more likely to occur (Das and Kumar, 2011; Barnes, et al., 2010);
- Lock-in conditions (Das and Kumar, 2011; Barnes, et al., 2010);
- Lack of trust (Das and Bing-Sheng Teng, 1998);
- Differences in national and corporate culture (Gould, Ebers and McVicker Clinchy 1999; Kumar and Nti, 2004);
- Ineffectiveness in achieving inter-firm legitimacy (Kumar and Das, 2007);
- Management complexity (Das and Bing-Sheng Teng, 2000);
- Cross-border cooperation (Dutta, Bergen and John, 1994; Barnes, et al., 2010; Wathne and Heide, 2000; Anvuur and Kumaraswamy, 2007; Zhang, Cavusgil and Roath, 2003).

Hagedoorn (1993) explains that one of the motives in entering an inter-firm alliance can be to capture other partners' superior knowledge and technology. He also argues that one of the main risks to a partner of inter-firm alliances is to unintentionally lose control of their technology through poorly conceived contractual arrangements. According to Pisano and Teece (2007) besides a technology transfer agreement, firms may use joint activities as a cover for secretly capturing other partners' technology. They also argue that the largest transactional risks for the seller of a new technology are linked with the buyer's using the technology in ways not expected by the contract, or which was expected but cannot be easily prevented (Pisano and Teece 2007).

Yaqub (2009) have concluded that many alliances eventually lead to an unplanned transfer of ownership, a process in which one or more partners take advantage of the other partner or partners.

Das and Kumar (2011) claim that the attitude of partner and the purpose to engage into cooperation is also meaningful. Depending on the attitude each partner possesses, the approach for selecting protective measures and extent of tolerance for opportunism would differ. Such attitudes can be dictated by the position of a company, its size, the knowledge of market that it enters, the purpose for cooperation, its length or the nature of the product or service it is willing to purchase.
II.1.3 Control mechanisms against opportunistic behavior

Control plays an active role in order to influence partner’s behavior and assures that the result will not be undesirable or the negative outcome will occur less likely. Lejfer and Mills (1996) perceive control as “regulatory process by which the elements of a system are made more predictable through the establishment of standards in the pursuit of some desired objective or state” (p. 117).

Control can be applied through various mechanisms and the selection of specific control mechanism should be done in strict accordance with the context of analyzed situation, existing or likely to appear form of opportunism, as well as potential influence of the undertaken control method (Barnes, et al., 2010). The phenomenon of opportunism that is present in exchange relationship is analyzed differently by researchers (Wathne and Heide, 2000; Crosno and Dahlstrom, 2008). However, transaction cost theory (Williamson, 1975) and relational exchange theory (Dwyer and Oh, 1987) serve us superior paradigms in describing the phenomenon of opportunism and further appropriate control mechanisms. The aim of both theories is to reduce the cost of the trading (Brown, Dev and Lee, 2000). However, transaction cost theory indicates that opportunism can be minimalized mainly through usage of specific form of governance that belongs to the formal control. On the other hand, relational exchange theory focuses on the importance of informal, relational dimensions such as trust in reducing opportunism and securing the cooperation (Lado, Dant and Tekleab, 2008). Therefore, there are two main perceived forms of mechanisms protecting companies against negative influence of partner’s opportunism (Laan, Voordijk and Dewulf, 2011). They are divided into broad range of formal and informal control.

Formal control

Bijlsma-Frankema and Costa (2005) find the main difference between informal and formal control in the manner of prior specification. The formal control has to be stated at the beginning of the cooperation. The type of formal control highlights “the establishment and utilization of formal rules, procedures, and policies to monitor and reward desirable performance” (Das and Teng, 2001, p.259).

In the frame of formal control, the most obvious form of protection is the specification of the contract that can be structure to different models of cooperation. Formal control is believed further to depend on three main principles (Bijlsma-Frankema and Costa, 2005):

1. Codification,
2. Monitoring and
Codification suggests that the tasks, behavior and outcomes’ measurement should be prior determine to some extent in the form of specific rules and requirements enclosed in the contract agreement in order to secure the cooperation (Bijlsma-Frankema and Costa, 2005). Monitoring describes the steps that analyze whether the agreed requirements are met and a partner does not depart from the contract conditions. Das and Teng (2001) claim further that the companies try to control the partners by either estimating their behavior or the outcomes of it. In order to ensure the efficiency of monitoring, partners are expected to be either in close relations or posses intelligent monitoring system, which provide possibilities for from-distance supervision (Das and Teng, 2001).

The principal in order to assure effective implementation of formal control is to be able to punish opportunism and recover the losses, referred as the safeguarding. This demands the juridical structure that will support and allow the contract to be fully executed. Laan, Voordijk and Dewulf (2011) suggest that this part of formal control commits significantly to hinder the opportunism and drift the incentives.

Although formal control seems in theory as a certain form of protection, in practice it might be very difficult to specify. It is due to the intangible nature of some resources and results. Moreover there are problems with foreseeing partner’s behavior prior to the cooperation due to lack of being acquainted with one another and inability to predict endogenous and exogenous changes (Bijlsma-Frankema and Costa, 2005).

**Informal control**

Contrary to formal control, informal control is not structured based on the legal statements and explicit threat, but is on social approval. Informal control according to Das and Teng (2001) encloses formation of culture, norms and values that should be shared between partners and can lead to achievement of common goals and mutually beneficial outcomes. When the partners of an inter-firm alliance develop a sense of trust with each other, the scope for and the concern over opportunistic behavior tend to decrease quickly (Yaqub, 2009). Developing trust among inter firms partner can act as if the future were more certain (Zajac and Olsen, 1993). It has been noted that detailed contracts and strategic trust between inter firm partners are two ways to make the behavior of the partners predictable (Gulati, 1995).

Another differentiation of control mechanisms can be made based on the time frame of the relationship (Wathne and Heide, 2000; Williamson, 1975). Different mechanisms are appropriate to be applied at different stages of cooperation. The main difference can be perceived between the following stages:
1) When a company decides to look for the partner;
2) When it enters into negotiations with specific, potential future partner;
3) When the contract is signed and the partners become legally bonded;
4) During the cooperation, e.g. during the stage of manufacturing the product or transferring the knowledge;
5) When results of the cooperation, such as receiving the manufactured product, can be evaluated;
6) If the violation of contract can be perceived in ex-post results, what actions should be undertaken at this stage?

Moreover, the above-presented stages can also be divided according to usage of preventing, ex-ante and cause, ex-post mechanisms (see Figure II.1). The breaking point in the whole process is signing the contract and becoming legally bonded partners to start the cooperation. All control mechanisms, which can be applied before that event, are believed to be ex-ante actions with the aim of preventing opportunism. They will also be the focus of the analysis in this thesis. All control mechanisms that are applied after the event of signing the contract are described as ex-post actions. They serve the role of control mechanisms taken when the opportunistic behavior has already been committed or detected. However, they can also be preventing, as the opportunism is believed to appear during any stage of business relationship between two partners. Nevertheless, those mechanisms are not the focus of analysis in this thesis and will not be described in details.

Williamson (1975) claims that opportunism can be controlled through different forms of monitoring and incentive arrangements. Stump and Heide (1996) add to effective protective measures also proper partner’s selection and improved socialization efforts. Furthermore, each group: selecting, incentives, monitoring and socialization as the control mechanisms can be assigned to different stages of relationship, as well as classified as preventive, cause or mechanism that possesses binary nature. Finally each group is represented by several measures of protection that can belong to formal and / or informal control. Finally, formal and informal
forms of control, as well as selecting partner, incentives, monitoring and socialization can be complementary to each other. Figure II.2 presents the interdependency between time, different stages of relationship, preventive and cause nature and control mechanisms differentiated according to the groups of: selecting, incentives, monitoring and socialization and further formal and informal nature.

Due to the limitation of this thesis, the focus will be on the preventive control mechanisms that can be applied till the moment the contracts between two partners are signed, they become
legally bonded and start the business cooperation. As presented in the Figure II.2 the selection process plays very important role as preventive control mechanism, however some forms of incentives and monitoring can also be applied. Socialization, as control mechanism is adapted mostly after the contract is signed, when two partners develop and cultivate the relationship. It also takes nature mostly of informal control. Each step: selecting, incentives, monitoring and socialization will be described below with the assignment of specific control mechanism within the group to formal or informal control mechanism. The focus will be on preventive mechanisms, therefore the socialization process will be described more general.

II.1.3.1 Selection of the partner as control mechanism

At the first stage of any inter-firm cooperation is the model of choosing a partner. The main purpose of selection is to choose a partner for cooperation who is trust worthy in doing business with and not aiming for acting opportunistically and will properly behave to fulfill the specific task (Orbell and Dawes, 1993).

In order to assure the higher probability of choosing proper partner and reduce the risk of opportunism, it is very important to consider how to approach appropriate process of partner’s selection. Anvuur and Kumaraswamy (2007) suggest that members should be selected based on parallel technical and functional knowledge and personality traits. The studies of Anvuur and Kumaraswamy (2007), Anderson and West (1998), Chow, Then and Skitmore (2005) and Katzenbach and Smith (1993) define the following characteristics that assure the appropriate cooperation between the partners:

1. Integrated focus and mutual aims;
2. Interdependence - the partners should respect each other, posses equal status and opportunities from cooperation;
3. Respective responsibility – the partners should share fate and implement ‘no blame’ culture;
4. Confluence - mutual operation.

Although these characteristics have the intangible nature and can be mostly detected through informal form, there are also control mechanisms that are formal and can be applied already during the selection process.

II.1.3.1.1 Selecting the partner by using formal control mechanisms

Formal control mechanisms that could be applied during the stage of selecting a partner are especially important when the subject of cooperation is knowledge-sensitive. The form of opportunism that is faced with the inventor is called “fundamental paradox” and has been
defined previously. The conventional approach towards this problem is the usage of intellectual property rights (Merges, 2005) among which it is possible to identify: patents, copyrights, confidential disclosure agreement (CDA), term sheet or due diligence. The research of Merges (2005) suggests that if the information that is meant to be traded is protected by patents or copyright, the partner that invented the product should not face the risk of opportunism through loosing the compensation. In case of opportunist behavior applied by the other party as making use of information without the permission, the inventor can engage into legal process against buyer. EU directive (European Parliament, 2004) stays that a person that without authorization or against its term of distributing someone else’s work shall be subjected to a fine, restriction of liberty or even imprisonment. The patents are however very costly, complex, time consuming, and are granted according to the geographical location. Therefore, Burstein (2012) suggests that need for using patent should be analyzed for each particular situation separately. If it is reasonable to make use of the patent, the company usually should engage in the process of application in advance.

When the company finds a potential future partner, it engages in the negotiations. The initial negotiations consist of presenting the product that takes informal form, however it can be supported by formal mechanisms. If this informal presentation would catch the attention of both parties and their interest into engaging in potential cooperation, CDA should be signed (Burstein, 2012). It allows the inventor to reveal more confidential information so the other party can better estimate the value of the cooperation. The inventor is protected through the restrictions of the agreement; however even at this stage full disclosure is not recommended. If the parties decided to proceed further, they can sign “term sheet” which specifies the frames of potential contract. It is suggested for both parties to conduct due diligence, as the disclosure is more advanced.

However, Burstein (2012) claims that in some situations, the intellectual property rights will not be an effective tool of controlling opportunism and protecting the seller. For example the costs of establishing the patents can exceed the benefits from the protection and many inventors do not possess sufficient resources. However, many companies especially in small and medium enterprises sector face the problem of limited resources and therefore they need to engage in the relationship with other party in order to develop, manufacture, and commercialize their product. They need to access the capital and skills from outside to be able to bring their product into the market. As the opportunist behavior of illegal usage of the know-how is significant and pose the risk that should not be neglected or minimized, the inventors of the products can use CDA, term sheet or due diligence as an alternative control mechanism (Burstein, 2012).
II.1.3.1.2 Selecting the partner by using informal control mechanisms

To the informal control mechanisms that can be applied in order to identify the potential partner, belong different screening methods and qualification programs. To assure the effectiveness of those methods, they should be chosen in dependence for specific situation, purpose and nature of relationship (Wathne and Heide, 2000). The aim of them is to recognize current attributes and criteria of the companies taken into the consideration of becoming the suitable partner. It is believed that choosing the organizations that already possess the desired attributes and criteria as a business partner may lead to reducing risk of opportunism (Wathne and Heide, 2000). To the desired attributes may belong common company’s culture, values, industry, size, geographical location, years of experience and reputation. The screening methods that are used to identify those qualities can be e.g. checking the websites of the organizations, the annual reports, and statistics conducted by auditing companies or visiting the fairs. Some of those attributes might be however very subjective and therefore not fully reliable. The reputation for example can play an important role to guide the companies when choosing a partner. However, due to the information asymmetry, lack of credibility or right of secrecy, reputation can be manipulated by opportunistically focused partners and not displayed fully by the once that are trustworthy (Wathne and Heide, 2000).

When specific partner is selected, the company engages into the negotiations. Prior each party will decide to engage legally by signing a contract; it has to learn about the other party’s skills to estimate the cooperation’s value and find if the product would be mutually beneficial. Burstein (2012) suggests that in this initial stage of negotiations, a company in order to attract the partner has to provide an informal introducing presentation about the product and its characteristics. However, for partnering where knowledge-sensitive product is a subject of cooperation, the core structure, such as e.g. chemical structure in the case of pharmaceutical products can still remain unknown to the buyer. The inventor can make use of not fully disclosure. The summary of formal and informal control mechanisms for selecting a partner is enclosed in Figure II.3.
It is important to structure the process of selection in the way that the initial costs bear to secure the cooperation will not exceed future outcomes of honest disclosure (Farrell and Gibbons, 1995). Therefore, good approach to selection process should be guided by e.g. the nature of the product, the form of cooperation or the duration of it. Moreover, the organizations, due to limited resources, cannot make use of all available tools for secure selection. They have to choose the most suitable and effective mechanisms, which are affordable for them. Also, following the requirements and effects of opportunism that are believed to appear for certain relationships do not guarantee that the developing relationship would be effective and secured (Mishra, Heide and Cort, 1998). Due to mentioned obstacles, it is very important for every company to commit time and effort during the stage of partner selection so that the final results of the cooperation have a better chance of success.

II.1.3.2 Incentives as control mechanism

Research shows that incentives influence the behavior and therefore can also be perceived as another control mechanism against opportunistic behavior (Kohn, 1993; Anvuur and Kumaraswamy, 2007). The general purpose of incentives is to align different involved parties’ interests by creating an incentive structure. This structure shows that the long-term profit expectations from a cooperative relation can exceed the short-term profit from opportunistic
behavior. If each party expects to receive more profit by being cooperative then there is less risk of them behaving opportunistic. Incentive arrangements possess several prerequisites as well as structures, and their aim is to reduce the payoffs from opportunism. Most of the conditions based on which the payoffs will be arranged are determine ex-ante and they prevent opportunism by making it undesirable and unprofitable.

II.1.3.2.1 Incentives as the formal control mechanism

The conditions of the incentives are usually enclosed in the contracts and therefore have mostly the formal nature. The form of contract influences the incentives’ structure. First of all, the inter-firm alliances are determined by the form of cooperation that is created between parties (Murray Jr. and Mahon, 1993; Das and Bing-Sheng Teng, 1996). Inter-firm alliances can take various forms of cooperative arrangements. They can include direct investments, joint ventures, technology licensing, technology exchange, supplier relationships or research and development agreements (Das and Bing-Sheng Teng, 1996). Those can be further divided into equity and non-equity alliance. The cooperation can involve long and short term contracting. It can be established by the companies themselves, or with the mediation of third party.

Equity alliances refer to the transfer of formation of shared equity ownership, such as joint ventures or direct investments. Das and Bing-Sheng Teng (1996) argue that equity alliances reduce the transaction costs through the control of opportunism. However, they are believed to increase the governance costs because the company has to make an investment that is non-recoverable in case of failure. Moreover, the decision making process is shared between partners, which can increase the complexity and duration of time needed to reach final agreements, which further forms extra costs. The overall balance between transactions and governance costs can only be judged based on specific situation. Non-equity alliances, on the other hand, do not include any equity transfer. They can refer e.g. to buyer-supplier contractual arrangements (Das and Bing-Sheng Teng, 1996).

The parties can exchange the ownership, as well as other resources such as knowledge or employees. Das and Rahman (2010) refer to such an exchange as the mutual hostage. Mutual hostage is an ex-ante bargaining power. As Das and Rahman (2010) describes: “Mutual hostages serve as a guarantee against defection. Alliance firms can hold mutual hostages by exchanging their respective critical resources with counterparts. The type, amount, or value of resources to be used as hostages (e.g., equity, know how, personnel) can be explicitly stated as contractual provisions” (p.65). In this structure, the hostages could be monetary or equity based or symmetric investments in specialized or co-specialized assets. The investment asymmetry could
be based on the know-how, technology or monetary investments, which create a visible collateral bond between exchanging parties to align their economic incentives. Das and Rahman (2010) also argue that the mutual hostages strengthen the inter-firm relationship commitment while paving the way for credible commitments. Also, if one of the partners acts opportunistically, it would lose the assets held hostage. Therefore mutual hostages would decrease the potential risk for partner opportunism. Extracting a hostage from another party may require however a certain degree of bargaining power (Wathne and Heide, 2000).

The contracts can be further differentiated as long or short term. The equity alliances, due to the nature of shared ownership, would be assigned to long-term contracts. Non-equity alliances can be both short and long term. According to Williamson (1975) the high risk of opportunism can influence stronger long-term contracting compared to short-term relations. Although, both short and long-term contracting are subjected to the risk of opportunism, due to bounded rationality and uncertainty, the risk in case of long-term relation is believed to be higher. Therefore, it can create more trading difficulties and at the end it could be harder to control and also more costly. Bounded rationality impedes to higher extended long-term contracts. It is connected with higher level of uncertainty for future events, costs of adaptations and need for repeated negotiations.

Short-term contracting can therefore be seen as an alternative. However, although the uncertainty of the future event does not pose such a high risk in short term contracts, the uncertainty of a specific partner can be higher, as there is no sufficient time and reason to invest in closer relationship between partners. Moreover, there is a risk that the partner will start supplying the same product to the competition after the contract ends. Finally, Williamson (1975) claims that the incomplete long-term contracts that leave room for adaptation to constantly changing external and internal conditions can create conflict of interests between parties and harshen the business relations.

The contracts can be enforced only by the companies themselves or with the help of third party, e.g. the bank. Self-enforcing agreements can take a variety of forms. It is however structured by the parties themselves and third party can neither enforces nor interferes with it. Thus, the self-enforcing range of the original agreement may change and subsequently increase the risk of opportunism (Klein, 1996). The companies can also use a third party as the mediator and the securer of the cooperation (Das and Rahman, 2010). For example banks can play a role of such mediator, and arranged contracts can take form of e.g. letter of credit (LC). LC implies that the price agreed by the partners is kept in the bank and it cannot be paid to the partner till the work is complete with expected standard.

Finally, the contracts can include extra incentives that can decrease the attractiveness of opportunism, for example bonus payoffs that are distributed if the job is completely satisfactory.
II.1.3.2.2   Incentives as informal control mechanisms

Although incentives have mostly adopted the formal structure, there is also an informal style of approaching a partner with communicating possible future contracts and profits. Promise of future contracts or products could be used as a good incentive for keeping cooperating partners loyal and responsible in the long-term relationships. The expectations of gaining profit in the long-term relationship usually keep the involved parties acting according to the agreement. As Das and Rahman (2010) mentions: “Players may cooperate in the present because they anticipate possible reciprocal future responses. Or they may cooperate in the present because they know that they can retaliate for a defection by defecting later themselves” (p.59).

The summary of incentives as the formal and informal control mechanisms is enclosed in Figure II.4.

Figure II.4 Incentives as formal and informal control mechanisms

However, researches also show that the use of incentives can be problematic and sometimes even counterproductive. Das and Rahman (2010) mention that many business relationships die prematurely when they are under pressure for quick returns. An alliance partner that evaluates the relationship’s performance within insufficient time will not be satisfied with the results. A dissatisfied partner will be unwilling to continue in the joint venture, perhaps causing premature
termination of the partnership.

II.1.3.3 Monitoring as control mechanism

The principal objective of monitoring is decreasing the level of information asymmetry. Wathne and Heide (2000) suggest that reduced information asymmetry might discourage opportunistic behavior. If the information asymmetry is present in the relationship between partners, the risk that the opportunism will not be detected is respectively higher. Monitoring allows, therefore, the partners to supervise and control the actions of one another. It can be mostly implemented as the ex-post mechanism and applied after the organizations become legal partners and the cooperation has already started. However, there are few control mechanisms of monitoring that can influence the opportunism prior to signing the contract. Only them will be further analyzed with the division on formal and informal mechanisms.

II.1.3.3.1 Monitoring as formal control mechanisms

There is a risk that monitoring would harshen the relationship between partners due to the creation of belief of lack of credibility. Therefore, Wathne and Heide (2000) indicate that for achieving effective outcomes from monitoring, it is essential that partners create ‘zone of difference’ that assure that monitoring is mutually accepted. The approval for specific form of monitoring can be included in the implicit contract. If the monitoring is permitted it can play a role of opportunism’s controller. Such argumentation is in the line with transaction cost theory, which claims that the superior monitoring capability leads to better possibilities for reduction of opportunism (Williamson, 1975).

II.1.3.3.2 Monitoring as informal control mechanisms

Monitoring can influence the behavioral perspective, as it creates the social pressure on the partner who is being controlled. The organization that is verified is believed to be more compliant and obedient to act in accordance with agreed terms (Murry Jr. and Heide, 1998). From economic perspective, the possibility of exposure to opportunism creates the founding for recapture the losses and implementing the sanctions (Wathne and Heide, 2000). For the ex-ante mechanisms, monitoring may be perceived as a supportive selection tool. If the organization is recognized with the reputation of using efficient monitoring, it can discourage opportunistically oriented companies from engaging in the cooperation in the first place (Wathne and Heide, 2000).

The summary of monitoring mechanisms as the formal and informal control mechanisms is enclosed in Figure II.5.
However, monitoring that is aiming to reduce information asymmetry in the situations where opportunism was not information related could only expose company to unnecessary costs. Therefore, it is essential to identify in the first place what kind of opportunistic behavior threatens specific situation and further implement appropriate measures of protection.

### II.1.3.4 Socialization as informal control mechanism

The last group of control mechanisms is socialization. It might be perceived as the prolongation of the process of selection that facilitates finding a partner that would share the same goals. As Anvuur and Kumaraswamy (2007) claims, this indicator does not emerge easily. This process requires long time dedication and efforts to reduce the difficulties in interaction between new partners. Moreover, it evolves during the actual duration of the cooperation, after the parties become legal partners. It is referred, therefore, as ex-post mechanism and will not be analyzed in this thesis. However, the importance of socialization in reducing risk of opportunism cannot be neglected. Therefore the short description of this phenomenon is provided below.
Although, the purpose for cooperation often is not fully consistent between parties in the first place, it can be internalize during further stage of partnering (Wathne, Heide 2000). This process is referred as socialization. Granovetter (1985) includes in the context of socialization the implementation of social relationships that can informally decrease the risk of opportunism. The partners focus on the development of shared values, aims and beliefs to ensure and encourage the appropriate behavior and create the rewards if needed. It is necessary, first of all, to reach the mutual understanding of the participation and the tasks’ nature, and further to negotiate and format the goal in respect with demand and challenges. This commitment-formulation eventually processes result in the implementation of social contract, through which the partners share a mutual goal and approach to reach it (Katzenbach and Smith, 1993; Anvuur and Kumaraswamy, 2007). Hauck et al. (2004) argue that such an effective establishment of informal control can be done only through simultaneous connections on personal, business and operational level. Only this would ensure the reduction of goal incongruence and preference discrepancy between organizations involved in business cooperation. Holt and Love (2000) suggest that the usage of informal control is responsible for shaping climate of mutual learning and trust. Socialization can be especially effective when vulnerability, limited resources for control, high complexity, and uncertainty are present. It can secure the cooperation from the perspective where the formal control fails. Efficient use of socialization could allow partners to accept vulnerability when they are facing the information asymmetry and cooperation involves the lock-in situations (Wathne and Heide, 2000). Socialization is believed to be an effective supportive tool that can complement formal control and save some costs. The organizations that succeeded in building effective relationships further transform the general mutual purpose into specific performance goals and targets and regularly confront their united performance against these targets. Both products of individual and joint effort are taken into the consideration (Katzenbach and Smith, 1993).

Table II.2 inserted below presents the summary of the characteristics of selection, incentives, monitoring and socializing process and its influence on opportunistic behavior that have been already described in details.
Table II.2 Control mechanisms

<table>
<thead>
<tr>
<th>Governance Strategy</th>
<th>General Purpose</th>
<th>Prerequisites</th>
<th>Primary Effect of Opportunism</th>
</tr>
</thead>
</table>
| **Selection**       | - Reducing information asymmetry  
|                     | - Allowing for self-selection     | - Relevance of criteria      | - Effectiveness depends on relevance of selection criteria |
|                     |                 | - Imposing selection costs on partner |                       |
|                     |                 | - Risk of self-selection biases   |                       |
|                     |                 | - Information availability (reputation) |                       |
| **Incentives**      | - Reducing payoffs from opportunism  
|                     | - Aligning interests              | - Ex ante bargaining power (hostages) | - Effectiveness under new circumstances is limited by range of self-enforcing contract |
|                     |                 | - Direct costs (price premiums)   |                       |
|                     |                 | - Information availability        |                       |
| **Monitoring**      | - Reducing information asymmetry  
|                     | - Facilitating the deployment of incentives | - Identification of relevant criteria | - Limited to information-based opportunism |
|                     |                 | - Implicit or explicit contract that legitimizes monitoring | - Most effective under existing circumstances |
| **Socialization**   | - Promoting goal convergence    | - Completeness of socialization efforts | - Effectiveness depends on applicability of role across situation |


Figure II.6 presents the completed interdependency between ex-ante controls mechanisms diversified between selecting, incentive and monitoring process and distinguished between formal and informal nature.
The control mechanisms presented above can be used by organizations in order to protect themselves against opportunism by preventing it. However, as already stated in the Table II.2, the selection of methods often depends on the specific context and criteria. It is important not only to pay attention to positive outcome of control mechanism on opportunism, but also on the costs generated by implementing those methods. The costs cannot exceed the benefits of controlling (Wathne and Heide, 2000). In opposite situation it might be advice to an organization to tolerate opportunism rather than remove it entirely (Dutta, Bergen and John, 1994). Therefore, in this master thesis we will determine the usage of control mechanism based on the nature of product. The following part of the thesis will explain the criteria the product will be characterized based on. This differentiation will further serve as the structure and base for comparative empirical case study, and as the final result will allow determining appropriate control mechanisms.
CHAPTER III. Analytical framework

In the following chapter, the reader will be provided with the definition of the product and the models of its differentiation. In this master thesis the products are compared based on their level of knowledge sensitiveness. Therefore the understanding of how to define product’s knowledge sensitivity is the key point, which the reader should gain after completing this chapter. Moreover, the level of the knowledge sensitiveness of the product is closely related to and depends on the technology it is based on. Therefore, before introducing the actual definition of the product’s knowledge sensivity, the classification of the product based on the technology will be described in details. This categorization will focus on different characteristics of the products of high and low-tech industries.

At the end of the first part of this chapter, which refers to the product, the completed model of analytical framework that combines the information about opportunistic behavior, the ex-ante control mechanisms against opportunistic behavior and the differentiation of the product based on its level of knowledge sensitiveness is presented.

Although the comparison of the analyzed companies in this master thesis is focused on the level of the knowledge sensitivity of their product and its influence on the selection of ex-ante control mechanisms, we also notice two others factors that could have impact on the choice of control mechanisms. Those two factors are the belonging to SME sector and being engaged in the cross-border alliance with Chinese and / or Indian partners. Those characteristics are shared by all of analyzed companies; therefore we have excluded their detailed impact on the comparative study. However, those two factors along with the knowledge-sensitive nature of the product create the setting for the analyzed companies. Therefore, in the second part of this chapter, the important characterizations of SME and partnering with China and / or India and its vulnerability with regard to opportunistic behavior are presented.

III.1 Product

III.1.1 Product definition and differentiation

According to the Oxford Dictionaries (2013) product is “an article or substance that is manufactured or refined for sale” or “a thing or person that is the result of an action or process”. In the context of business, Kotler (Proven Models, 2013) defines product as more than just a
physical object and suggests that anything that is offered on the market and is meeting the needs and wants of customers can serve a role of a product. According to Kotler (Proven Models, 2013) product is “a physical good, a service, a retail store, a person, an organization, a place or even an idea” (p.1). Parish and Moore (1996) cited in Floren and Frishammar (2012) follow in the steps of Kotler (Proven Models, 2013) and define the product concept as the idea for the design of the product, its primary attributes and the benefits it can bring to customers. Bacn et al. (1994) and Khurana and Rosenthal (1998) add to the definition of product the information regarding target market, customers’ requirements, the product features and product positioning. Floren and Frishammar (2012) notice also the importance of the time needed for development, costs, technical expertise, opportunities, and the risk offered by market, as well as the organizational fit.

The above definitions of a product might be perceived as very general. They provide an explanation of the term of product; however it is not specified in details. The definition for each and single product is different and it should be defined by each company for its own product and enclosed in the product portfolio planning (Khurana and Rosenthal, 1998). Moreover, such definition evolves during the whole life cycle of a product, when it is developed, changed, upgraded or enriched with new functions (Kim and Wilemon, 2002). Each product definition will emphasize specific features, functions, and markets, and base on those characteristics the development team would analyze the priorities guiding the strategic decisions for design, development and tradeoffs between them (Bacn, et al., 1994). Bacn et al. (1994) divide the guidance for strategic decision that shape product definition into four categories: customer and users’ needs, competitor’s information, technology risks and opportunities, and regulatory and standards environment (see Figure III.1). “The output of the product definition activity typically comprises a broad set of descriptive parameters covering target market segments and channels to reach those segments; product’s price, functionality, and features; technologies on which the product will rely; and an allocation of resources to complete product development” (Bacn, et al., 1994, p. 33).
As stated above, due to the fact that no detailed definition for product could be designed, in order to create the pattern for differentiation of product to further classify it to certain group and compare products, it is necessary to narrow the concept of product and focus on only specific features of it.

Each product requires the planning on different stages and operational departments of the organization. Floren and Frishammar (2012) argue that although the inter-cooperation between research and development (R&D) and marketing department might be believed to be the most crucial for the success of a product, the importance of manufacturing, distribution or finance department should not be neglected. The competences of diverse organizational functions from internal as well as from external sources need to be incorporated in each product, however based on various classifications of products their influence might differ (Bacn, et al., 1994; Verganti, 1997; Fleming and Marx 2006). The products might be differentiated based on their strategy, which if properly applied, can decide about the product success (Murry Jr. and Heide, 1998; Song and Parry, 1997). Bacn et al. (1994) argue that successful products represent the proper use of company’s core competences and therefor the products should be a result of connecting the product ideas with the resources and capabilities of the company (Verganti, 1997; Murphy and
Kumar, 1997). Furthermore, products differ among themselves based on the specific criteria, which means that some products are based on technology and greater engagement of R&D and investments in R&D, while others will answer first to the market requirements.

Table III.1 below will present various possibilities of how products can be differentiated.

**Table III.1 Product differentiation models**

<table>
<thead>
<tr>
<th>Product differentiated on</th>
<th>Description</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tangible and Intangible Features</strong></td>
<td>Tangible products – physical, able to touch e.g. building</td>
<td>(Zheng Zhou, Yim and Tse, 2005)</td>
</tr>
<tr>
<td></td>
<td>Intangible product – no physical form e.g. insurance policy.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Most products possess both tangible and intangible features.</td>
<td></td>
</tr>
<tr>
<td><strong>Functions</strong></td>
<td>What do customers need those product for; functional, symbolic and aesthetic meaning</td>
<td>(Kohli and Jaworski 1990; Slater and Narver, 1998; Grant, 2010)</td>
</tr>
<tr>
<td><strong>Market strategy</strong></td>
<td>Market oriented (outside-in) or Technology oriented (inside-out); Cost advantage vs. differentiation</td>
<td>(Day, 1994; Murphy and Kumar, 1997; Song and Parry, 1997; Grant, 2010)</td>
</tr>
<tr>
<td><strong>Resources and Capabilities</strong></td>
<td>The importance of certain resources and capabilities needed to develop a product.</td>
<td>(Barney, 1991; Verganti, 1997; Murphy and Kumar, 1997)</td>
</tr>
<tr>
<td><strong>Internal and External resources</strong></td>
<td>The importance of internal vs. external resources in developing a product</td>
<td>(Bacn, et al., 1994, Verganti, 1997; Fleming and Marx, 2006)</td>
</tr>
<tr>
<td><strong>Stage in life-cycle</strong></td>
<td>Introduction, Growth, Maturity, Decline</td>
<td>(Vernon, 1966; Grant, 2010)</td>
</tr>
<tr>
<td><strong>Technology used</strong></td>
<td>Product of high-, medium- and low-tech.</td>
<td>(Fagerberg, et al., 1997; Gatignon and Xuereb, 1997)</td>
</tr>
<tr>
<td><strong>Type of knowledge</strong></td>
<td>Simple vs. complex, Tacit vs. explicit</td>
<td>(Gupta and Govindarajan, 1991, Kogut and Zander, 1992; Grant, 1996)</td>
</tr>
</tbody>
</table>

As displayed in Table II.3 above, products are so different from each other and include various features, attributes or serve different needs of customers; therefore the differentiation between them might be conducted with the use of very diverse variables. For comparison analysis of certain products, the classification method can be chosen in accordance with the characteristics of those products. Certain variables might be more important in differentiating those products and therefore lead to exposing more meaningful results. In this thesis, analyzed products mainly belong to pharmaceutical, furniture and textile and other manufacturing industries. According to Fagerberg et al. (1997) the products of different industries can be differentiated based on the technology that was used in order to develop them. Furthermore, Fagerberg et al. (1997) classify those industries into two different technology groups that present meaningful distinctions among
their products. Therefore, the classification of products used for the purpose of this thesis will be made base on the technology the product is based on.

### III.1.1.1 Product classification based on technology

Gardner (1990) defines technology as know-how or information that is required in order to design, manufacture and sell the product or the service. Several researchers analyzed the influence of technology and innovation on the competitiveness of a product (Dosi, 1982; Fagerberg, et al., 1997; Solberg, Sundal and Thoresen, 2008). They all notice the importance of R&D and innovations in the certain industries. Tripathi, Guin and De (2012) suggest that there are differences between products based on the investments in R&D that are made in a particular industry and therefore the product based on its technology can belong to high- or low-tech industries. Wong (1990) cited in Solberg, Sundal and Thoresen (2008) suggests however, that the common agreement of classifying product to either high- or low-tech industries is hard to achieve due to “the very nature of the industry itself, with changing characteristics, influenced by market forces, public policy or technology itself” (p.3). Gardner (1990) claims that it is very difficult to classify products into high- and low-tech groups, as some differences between them might be too small and insignificant, while others may present themselves as very visible and distinguishable. Moreover, those differences might differ between various products preventing designing one common pattern of high- and low-tech industry differentiation. Furthermore, the belonging to the specific group changes over time, as many of ‘yesterday’s’ high-tech products are perceived nowadays as low-tech (Gardner, 1990). However, for the purpose of this thesis we will use the classification made by Fagerberg et al. (1997), as it refers to the products of pharmaceutical, furniture and textile and other manufacturing industries that are empirical example for analyzed case study.

The differentiation of the product based on the technology used in the process of development and manufacturing, used in this thesis is divided into three groups of high, medium and low technology products (Fagerberg, et al., 1997). Fagerberg et al. (1997) conducted a study to analyze the relationship between technology and competitiveness in international context by examining 10 countries and 22 industries. Fagerberg et al. (1997) refer to international competitiveness of the industry as “the ability to sell products in international markets in competition with suppliers from other countries” (p.41). Based on the intensity of R&D investment Fagerberg et al. (1997) classify the industries into three categories from the most to the least intensive: high-tech, medium-tech and low-tech industries as presented in Table III.2.
Table III.2 Industry differentiation based on technology

<table>
<thead>
<tr>
<th>High-tech</th>
<th>Medium-tech</th>
<th>Low-tech</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace</td>
<td>Electrical machinery</td>
<td>Stone, clay and glass</td>
</tr>
<tr>
<td>Office machinery and Computers</td>
<td>Other transport equipment</td>
<td>Rubber and plastics products</td>
</tr>
<tr>
<td><strong>Pharmaceuticals</strong></td>
<td>Motor vehicles</td>
<td>Non-ferrous metals</td>
</tr>
<tr>
<td>Electronic equipment and</td>
<td>Industrial chemicals</td>
<td>Petroleum refining</td>
</tr>
<tr>
<td>components</td>
<td>Non-electrical machinery</td>
<td>Fabricated metal products</td>
</tr>
<tr>
<td>Instruments</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Fagerberg et al. (1997, p.44)

For a meaningful comparison, companies studied in this thesis were selected based on their pronounced differences in terms of high- and low-tech industries. As a result, the medium-tech industries will not be considered in this work. Our analyzed industries are pharmaceutical belonging to high-tech and furniture and textile and other manufacturing belonging to low-tech. We suggest that the model of classification based on different technologies reveals significant dissimilarities between analyzed products and will serve as the valuable structure for comparison. This comparison will further allow us to determine the types of opportunism present in the business relationship where the product of trading belongs either to high- or low-tech industry and match the ex-ante control mechanisms that are used in analyzed contexts.

III.1.1.1.1 High-tech industry

Solberg, Sundal and Thoresen (2008) suggest that high-tech industries are in general characterized by significant investments in R&D and because of this strong focus on intellectual capital, the companies from these sector employ scientists, technicians and engineers. Gardner (1990) characterized high-tech companies as with high population of engineers and suggests that knowledge-intensive companies are one of the characteristics of high-tech industry. Rexroad (1983) cited in Gardner (1990) describes high technology as: “the segment of technology considered to be nearer to the leading edge or the state of the art of a particular field. It is that technology inherent in today’s newest products. It is that technology emerging from the laboratory into practical application” (p.3). Grunenwald and Vernon (1988) refer to high-tech
products as follows: “those devises, procedures, processes, techniques, or science that is characterized by state-of-the-art development and have typically short and volatile lives” (p.61). The innovations are defined as “technology actually being used or applied for the first time” (Gardner 1990, p.8), “a prescription for a new product or process that was not obvious to one skilled in the relevant art at the time the idea was generated” (Wyatt, 1986, p.19) and “innovation involves welding marketplace opportunities with inventive technology and new technical knowledge” (Burgelman and Sayles, 1986, p.31). Moreover, the high-tech companies introduce more often innovative products the results of which are uncertain and tough to predict in terms of achieving success and profitability (Solberg, Sundal and Thoresen, 2008).

Gardner (1990) and Kim, Im and Slater (2013) suggest that the products classification into high- and low-tech can be also based on the pace of changes in the environment and the length of product cycle. Based on the pace of changes in the environment of the product, the environment of high-tech products is characterized as turbulent and increasingly changing (Yang, et al., 2009). The environment in which high-tech companies operate is very dynamic and susceptible to changes in global trends (Saarenketo, et al., 2004). Due to those phenomena, the product life cycle of high-tech is believed to constantly shorten and exposed to rapid growth and decline (Coviello and Munro, 1995; Solberg, Sundal and Thoresen, 2008).

Because of the importance of innovations and high pace of changes in the environment of high-tech industries, the entry barriers are assumed to be rather low (Gardner, 1990). However, the high needs of investments into R&D and long process of development a product hinder joining high-tech industry in short term (Yang, et al., 2009; Solberg, Sundal and Thoresen, 2008).

III.1.1.2 Low-tech industry

The characteristics of successful companies of low-tech industry are based more on cost efficiency or effective logistic systems, rather than on high investments in R&D. Low-tech industries are generally founded on existing, mature technology, which can be accessed through recognized market channels (Haahti, Hall and Donckles, 1998 cited in Solber, Sundal and Thoresen, 2008). Therefore, also the environment of change in the low-tech industries is rather stable, with most of the products in the mature or decline stage of their life cycle. Due to the fact that the technology used in developing process is known, the process of development is relatively shorter than for high-tech products.

Relatively easy access to the market through e.g. Internet or low cost transport and minor investments in R&D might create low barriers of entry. However, products of low-tech industry compete more on price and brand image and not on innovations. Therefore, it might be more
difficult for new low-tech companies to establish stable position on the market in comparison with high-tech industry (Solberg, Sundal and Thoresen, 2008).

Table III.3 attached below summarizes the main differences between high- and low-tech industries and their products.

**Table III.3 The main differences between High- and Low-Tech products**

<table>
<thead>
<tr>
<th>Variable</th>
<th>High-Tech Industry</th>
<th>Low-Tech Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investments in R&amp;D</td>
<td>High; intellectual capital: scientists, technicians and engineers, knowledge-intensive.</td>
<td>Low investments in R&amp;D.</td>
</tr>
<tr>
<td>Technology</td>
<td>In today’s newest products; used or applied for the first time, inventive.</td>
<td>Founded on existing, mature technology.</td>
</tr>
<tr>
<td>The pace of changes in the environment</td>
<td>Turbulent and increasingly changing, dynamic environment, susceptible to changes in global trends.</td>
<td>Rather stable.</td>
</tr>
<tr>
<td>Product Life Cycle</td>
<td>Shorten, volatile lives, rapid growth and decline.</td>
<td>Longer, most product belong to the mature and decline stage.</td>
</tr>
<tr>
<td>Barriers of entry</td>
<td>High in short term due to high investment in R&amp;D, low in long term due to possibility of redefining the structure of industry.</td>
<td>High, due to usage of traditional marketing channels.</td>
</tr>
</tbody>
</table>

III.1.2  **Knowledge sensitivity of the product**

In this master thesis we compare the analyzed products based on their level of knowledge sensitivity. We define that the knowledge sensitivity of a product is judged based on:

- The industry the product belongs to;
- The technology the product is based on;
- The length and the intensity of the development process of the product;
- The level of investments in R&D.

Based on the academic literature we have used as the foundation for this master thesis, we suggest that the four mentioned factors have impact on determining the knowledge-sensitive nature of a product. The high- or low–tech nature of an industry is related to and significantly influenced by: technology, process of development, and investments in R&D. Based on the differences in those four factors, we can divide, the knowledge sensitiveness of a product into two groups of high knowledge-sensitive products and low knowledge-sensitive products.

The products of high-tech industry are based on innovative, inventive and complex technologies that are frequently applied to commercialized product for the first time. Often a company is responsible for developing that technology independently. Through that process, the organization is creating the knowledge as its valuable asset. This knowledge is directly related to the product
and becomes its valued part. The value of a product is high for a company when its know-how maintains being confidential. The more innovative the technology used the more valued and precious is the know-how of the product and the higher level of its knowledge sensitivity.

On the other hand, the products of low-tech industry are based on mature and accessible technologies that already exist on the market. Because the technology is broadly available on the market it does not possess the confidential knowledge. The know-how of developing the product of low-tech industry does not increase meaningfully the value of the product by itself. The value of a product for a specific company would not change if its competitors would gain the knowledge of how to manufacture the subjected product. Therefore, the products embedded with mature and accessible technology belong to the group of low level of knowledge sensitivity.

The products of high-tech industries that are embedded with innovative and complex technology require also extended time for the development. The longer the development process of the product the more resources need to be invested. Those extensive resources, which include time, employees, finance, and other costs, increase the value of the product and the level of its knowledge sensitivity.

Alternatively, the companies, which offer the low-tech products to the end customers frequently do not manufacture the product individually, but purchase it from the external producers. Moreover, as those products are based on existing technologies, the time of developing them is shorter and involves mainly the negotiations about the adjustments and minor changes, the manufacturing process and the delivery time, if the product is manufactured externally. The process of development low-tech products requires fewer resources and therefore does not increase the value of the product and further its knowledge sensitiveness significantly. Its level of knowledge sensitivity based on the short length of the process of development is low.

Finally an innovative and complex technology involves extended process of development that requires higher investments in R&D. The company needs to employee the researchers and scientists, frequently for the permanent positions, purchase special machinery, rent or build development facilities, or invest in the laboratory and safety trials. The costly investments in R&D, guided by the complex technology developed over years contribute to the creation of a new product, which value is determined by its uniqueness. The unique character of the product determines its competitive advantage and will be maintained as long as the knowledge of how to develop it is protected and remains confidential. Therefore, the level of knowledge sensitivity of those products is referred as high.

Opposite to high-tech products, the low-tech products require low investments in R&D, due to the lack of need for developing the technology and shortened process of development of the
product. Because many companies depend on external or contract manufacturers, the investments in R&D might refer only to the expenses made in order to find those producers. Moreover, because the technology is generally available, many companies offer the products that fulfill the same functions. The value of the product is not build based on its know-how, but more often on the competitiveness of its price, accessibility or brand. Therefore, the level of the knowledge sensitivity of those products is referred as low.

Table III.4 attached below represents the differences between products that belong to the group of high or low knowledge sensitiveness. Based on the features displayed in this table, the specific product can be categorized as high or low knowledge-sensitive.

Table III.4 Differentiation between High and Low knowledge-sensitive products

<table>
<thead>
<tr>
<th>Industry Type</th>
<th>High knowledge-sensitive products</th>
<th>Low knowledge-sensitive products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High-tech</td>
<td>Low-tech</td>
</tr>
<tr>
<td>Technology</td>
<td>Innovative; Complex; Applied for the first time; Developed by the company individually.</td>
<td>Mature; Existing on the market</td>
</tr>
<tr>
<td>The length of process of development</td>
<td>Long: Over two years. Intensive: Involving the development of the entire technology.</td>
<td>Short: Up to two years. Not intensive: Does not involve the development of technology.</td>
</tr>
<tr>
<td>Investments in R&amp;D</td>
<td>High: Employing scientist and researchers; Purchase special machinery; Rent or build development facilities; Invest in the laboratory and safety trials.</td>
<td>Low: Expenses made to find the external manufacturers.</td>
</tr>
</tbody>
</table>

The provided theory in the literature review section and analytical framework chapter will guide the development of empirical case studies (see Figure III.2). First, the analyzed products will be compared based on the theoretical structure for differentiation between high and low knowledge sensitiveness. Secondly, the specific types of opportunistic behavior, described in the literature review, will be selected due to the accuracy of their presence in the analyzed context. Finally, the appropriate ex-ante control mechanisms will be matched with the certain high or / and low knowledge-sensitive products and their respective type of opportunism. The comparison of the attachment of ex-ante control mechanisms to the specific group of products will allow us to answer the research question.
III.2 Other factors influencing opportunistic behavior

As mentioned previously, there are three main factors that impact the opportunistic behavior and further the selection the control mechanisms. Although the focus of this thesis is on knowledge sensitivity of the product, in this section the reader will be provided with a short
explanation of how belonging to SME sector and being engaged in cross-border alliance with China or / and India can increase the vulnerability to opportunistic behavior.

III.2.1 SME

According to Philip (2011), SME is a vibrant sector in the market and principle driving force of the economy all around the world. While SMEs are flexible, they stimulate private entrepreneurial skills, and have major contribution to the exports and trade, achieving economic growth as well as employment creation in every country (Philip, 2011). SME is worth paying attention due to the large number of companies in this category among businesses in the market all around the world. Lucky (2012) argues that in the European Union member states alone, they accommodate above 99 percent of all enterprises and 91 percent of these enterprises are micro-firms having less than 10 employees. According to Headd (2000) small firms are a dynamic force in the economy that brings new ideas, and processes, while they give strength to the marketplace. SMEs fill niche markets and locations, which have not been served by large businesses. Small firms are usually younger, even recent startups, more suitable to be in industries with lower economies of scale, such as services and more likely to be in rural areas (Headd, 2000).

While SME plays very important role in the global economy, there is no common definition for SMEs. Arowomole (2000) acknowledges in his article that a single, universally accepted definition of SMEs has not been made due to the fact that different countries have different criteria for defining SMEs such as in terms of manpower, management structure or capital investment limits. Baumback (1983) defines SMEs in terms of employment, asset value and dollar sales, which are the most commonly used criteria to define SMEs in general. However, one characteristic that all SMEs share is their limited financial and human resources. Gilmore, Carson and Grant (2001) summarizing the SME limitations as:

- Limited resources, such as finance, time, marketing knowledge;
- Lack of specialist expertise, owner-managers tend to be generalists rather than specialists;
- Limited impact in the marketplace.

The authors argue the above-mentioned limitations will significantly influence the marketing characteristics of an SME.

Those limitations make SMEs more vulnerable to the opportunistic behavior especially by their international partners. This is especially true for start-up companies with innovative product. The limited financial and / or human resources make them more vulnerable to opportunistic behavior if their key knowledge is copied (Cordes, et al., 2011). Those aspects of opportunistic behavior
put SME, especially the ones with innovative products, at higher risks than larger companies because of limited resources of SME’s. Finally, due to having fewer resources, it is harder for SMEs to prevent risk of opportunistic behavior, monitor, control and protect themselves from internal or external risk of opportunistic behavior.

### III.2.2 Cross-border alliance

A cross-border alliance is defined by Doz (1996) as a strategic partnership that is shaped between two or more firms from different countries that share goals and interests through sharing their resources and capabilities. The companies in cross-border relationships are very often exposed to opportunism that they cannot avoid and have to tolerate. It is due to the presence of various operating systems, organizations’ aims, risk preferences, and performance of trading partner (Dutta, Bergen and John, 1994). The situation is more challenging because of different approaches for doing business (Barnes, et al., 2010) and the existence of significant geographical and psychological distance disconnecting suppliers and buyers in cross-border cooperation (Wathne and Heide, 2000). Cross-border business cooperation imposes new challenges that may not be observed within semi country or culture business cooperation. Anvuur and Kumaraswamy (2007) claim that cross-border partnering increases the complexity and uncertainty, and eventually deepens the interdependence between partners. The risk becomes more significant when the R&D activities are involved (Hennart, 1988; Kogut and Singh, 1988; Shan, 1991; Hagedoorn, 1993). Teece (1992) emphasizes that the uncertainty is the highest for developing and commercializing a new technology or product. Similarly, Miller (1992) explains that the cross-border alliances are exposed to so-called 'international risk’, which includes dealing with a new competitive environment characterized by a different legal system, market structure, consumer behavior, and customs.

As McGarvey (2008) explains China and India are among the lowest labor cost countries. Traditionally there were some factors that prevented organization from operating and moving their high knowledge-sensitive operations to these countries. However, the new improvement in both Indian and Chinese patent system has caused an increase in investments in both domestic research and co-operation with manufacturers in those countries. Indian companies have realized more benefit in developing in house R&D operations and then emerging into innovation-based firms. This evolvement has been aided with the alliances of western-based companies and has been beneficial for both sides by utilizing their resources. Considering the well-established technology and the large market in both India and China, the Western companies are more interested in operating in or cooperating with local businesses in those countries especially
because of the huge costs savings in R&D and better and cheaper access to human capital (McGarvey, 2008).

Zhang, Cavusgil and Roath (2003) claim that the trust is harder to achieve in the cross-border cooperation where partners arise from contrasting cultures. Trust had been for example recognized as one of the main groundings for successful relationship with Chinese entrepreneurs (Mavondo and Rodrigo, 2001). The Chines culture is based on the philosophy of Confucianism, where trust plays a central role for forming successful partnering; it is very important and valued (Tsang, 1998) and usually achieved through networking (Barnes, et al., 2010). Due to the fact that building trust is time taking activity, Barnes et al. (2010) argue that Chinese prefer to commit time and acquainted with their partners initially and they try to avoid doing business with strangers. Child and Möllering (2003) and Huff and Kelley (2003) suggest that Chinese entrepreneurs bestow trust to non-Chinese partners with greater distance due to more influential insider connections originating from historic political policy and still developing jurisdiction in China.

Furthermore, Barnes et al. (2010) suggest that that Western and Chinese entrepreneurs might identify different components of commitment as more important. The Western partners are more likely to pay an attention to economic dimension, while Chinese will emphasize more on the affective aspects as factors that strengthen the relationship. Chinese partner in long-term business relationship will attempt to fulfill the aims, interests, and hopes of the other side (Rodríguez and Wilson, 2002).
CHAPTER IV. Methodology

Research methodology describes how the research is done and what steps the researchers have taken in order to provide better understanding and clarifying the issue at hand. Research focuses on investigation about the facts. It is a process of finding answers to a question in order to provide a better understanding of the unclear and usually complex phenomenon. In this chapter the method chosen for our research is described as well as the reasoning behind the choices we have made. Then, an overview of the research design is explained. Later we describe the process of selecting the cases explaining why and how we choose the four participating companies. Following that, the methods and details of data gathering are discussed.

IV.1 Chosen Method

As Bryman and Bell (2007) claim that research can be done by using qualitative, quantitative or mixed methods. They provide comparative arguments about qualitative and quantitative methods in regard to their use in different situations. For example, Bryman and Bell (2007) argue that the qualitative method is associated more with descriptive, even ambiguous presentation, where quantitative method is concerned with direct and unequivocal description. Also, Firestone (1987) explains that qualitative research is based on a phenomenological paradigm while quantitative studies are usually based on a positivist one. Newman (1998) explain that qualitative research reflects individual perspective related to a phenomenon regardless of their theoretical differences; while quantitative method tends to emphasize that there is a common reality on which people can agree. There are the differences between the presented methods. The selection of the best method should be made based on the research area and the question.

IV.1.1 Qualitative research

The research question in this master thesis is to determine how the knowledge sensitivity of a product affects ex-ante control mechanisms against opportunistic behavior. To achieve that, we found that the best approach would be to use a qualitative method and focus on real-world scenarios including experiences of real companies that had encountered or are at risk of encountering opportunism and comparing those cases to the norms and methods suggested in the scientific literature.
As Strauss and Corbin (1998) explain that a qualitative research refers to studies about person's lives, personal experiences, behaviours, emotions, and feelings, as well as about organizational functioning, social movements, cultural phenomena, and interactions between nations. Gephart Jr. (2004) argues that the important value of qualitative research is the description and understanding of the actual human interactions, meanings, and processes that constitute real life organizational settings. These authors also emphasize that in comparison to quantitative research, qualitative research can better concentrate on contextual understanding of the people who are being investigated instead of generalizing. They suggest that one of the advantages of qualitative approach is the possibility of gaining better understanding of subjects by exemplifying people’s real lives experiences to explain them in a deeper and more detailed manner. However, Gephart Jr. (2004) suggests the disadvantage of qualitative method is the fact that it could be subjective, looking at how people perceive the situation in reality.

Another reason behind choosing qualitative method was the exploratory and revelatory nature of the study. There have not been enough studies conducted on the specific context of the researched phenomenon of opportunistic behavior and its control mechanisms that are influenced by the knowledge-sensitive nature of a product. Yin (2009) describes this type of inquiry as a phenomenon that has not been investigated or analyzed in a scientific way before. The academic literature provides extensive number of articles about different aspects of opportunistic behavior, such as the motivations, the consequences or the control mechanism. However, during our research we found that the articles do not describe the control mechanism to prevent opportunistic behavior based on the products sensitivity to knowledge comprehensively.

IV.1.1.1 Multiple Comparative Case Study

We have chosen to conduct the qualitative research in the form of case study. We suggest that the case study approach is the best channel matching the characteristic nature of our research area. This was due to the fact that case study could define the presence of new ideas and help building theory. Eisenhardt and Graebner (2007) explain: “The major reason for the popularity and relevance of theory building from case studies is that it is one of the best (if not the best) of the bridges from rich qualitative evidence to mainstream deductive research. Its emphasis on developing constructs, measures, and testable theoretical propositions makes inductive case research consistent with the emphasis on testable theory within mainstream deductive research” (p. 25).

The study follows both a deductive logic of testing the existing theory of opportunism and its control mechanisms and an inductive logic of discovering new information of adopting those measures to particular case of high and low knowledge-sensitive products. Eisenhardt and
Graebner (2007) define the deductive theory testing as: “completing the cycle by using data to test theory” (p. 25). Also those authors refer to the fact that theory-building approach is deeply embedded in rich empirical data; building theory from cases is likely to produce theory that is accurate, interesting and testable. Moreover, the study follows an inductive logic of discovering new information and adopting them to particular case of high and low knowledge-sensitive products.

In order to better understand the different conditions and situations that could affect the research area we were interested in, as Eisenhardt and Graebner (2007) describe in their article, we found that comparative case study would be the most appropriate for this study. Eisenhardt and Graebner (2007) compare the advantages of single case with multiple case studies by saying: “While single-case studies can richly describe the existence of a phenomenon, multiple-case studies typically provide a stronger base for theory building” (p. 27). The Authors argue that multiple comparative cases also create stronger theory because the propositions are more deeply grounded in varied empirical evidence. Moreover, constructs and relationships are more precisely delineated because it facilitates determining accurate definitions and appropriate levels of construct abstraction from multiple cases (Eisenhardt and Graebner, 2007). Also, Boddewyn (1965) argues: “The comparative approach goes beyond uncovering similarities and differences, or establishing what is ‘universal, related and unique.’ It provides interpretations that lead to the establishment of logical relationships between instances and principles, as in all true sciences. It aims at demonstrating the invariable agreement or disagreement between the presence, the absence or the change of a phenomenon and the circumstances where it appears, disappears or changes” (p.262).

IV.2 Research design

During conducting a project for the Marketing Course a year before we cooperated with the biotech company that we found very interesting due to its international nature and innovative product. Through analyzing the business situations and challenges that the company was facing, our attention was pointed to the problem of opportunistic behavior and company’s vulnerability toward it. At that time the company was planning to expand its business into developing countries such as India and China to be closer to the target markets as well as minimizing its costs due to its startup nature. We became interested in the detailed investigation of the topic, especially that this phenomenon had a strong international component and many multinational companies would need to face it at some point in their life-span. Therefore, in February 2013 we have contacted the company again and asked for the approval for the cooperation, which was
fortunately granted. Following Eisenhardt (1989) step-by-step process of building theory from multiple case study, we have defined first the research question as:

*How does the knowledge sensitivity of a product affect the selection of ex-ante control mechanisms against opportunistic behavior?*

We contacted the company and some others that met the criteria for our project. Fortunately, four of the companies agreed to work with us on this topic.

Our study would follow both a deductive logic of testing the existing theory of opportunism and its control mechanisms and an inductive logic of discovering new information of adopting those measures to particular case of high and low knowledge-sensitive products.

**IV.2.1 Selecting**

After conducting additional research and study we have selected four companies, including the one that we had previously worked with – High Tech A. The companies were carefully chosen based on their unique features. The companies have not been randomly selected but based on their attributes to guarantee that they represent particular factors relating them to variables that are analyzed in this study. All of the analyzed four companies belong to the Small and Medium Enterprises (SME) category and are based in Western countries: Sweden, USA, Canada and Poland, while they cooperate internationally manufacturing or producing their products in China and/or India.

Moreover, the samplings were chosen in the way that Eisenhardt and Greabner (2007) define it as a *Polar type*: “in which a researcher samples extreme (e.g., very high and very low performing) cases in order to more easily observe contrasting patterns in the data” (p.27). Two of our companies belong to high-tech and two belong to the low-tech industry (Fagerberg, et al., 1997).

We have chosen particular key representatives for the interviews; assured that they possess relevant knowledge and unique insight into the company’s business with decision-making power due to their position in the company. These selection criteria were necessary for us to ensure we could gather valid data to developed in-depth knowledge for optimum analysis.

For confidentiality purpose and to ensure that the data shared with us would not put these companies at risk, we were asked to not use the real names of the companies but rather use meaningful codes that to some extend identifies the nature of their business. The two companies that are associated with pharmaceutical industry are presented as High-Tech A and High-Tech B. The other two companies were named as: Low-Tech C and Low-Tech D due to the low-tech
nature of their product, e.g. furniture, textile and other manufacturing industries. The detailed background of the companies and their product is presented in the following chapter - Empirics.

**IV.2.2 Gathering Data**

The empirical data analyzed in this master thesis are primary and secondary data, gathered from four companies through the channels of: interviews, archives, and personal observations. The main advantage of primary data is the fact that they are gathered to match the specific project of interest (Ghauri, 2005).

The majority of data were collected through interviews. Interview is a flexible method for collecting data for qualitative study (Gephart Jr., 2004; Bell, 2005; Bryman and Bell, 2007). The employment of interviews as the research’s method is justified through its usefulness in complex, controversial phenomena that require detailed exploration with the high response rate. Through this method, we have gained an access not only to the facts, but also to the opinions, feelings, and experiences of our interviewees. Moreover, as the topic of this thesis – the opportunistic behavior carries with itself negative influence for the company; the discussed issues were very sensitive and personal. By choosing interviews we have approached companies carefully to ensure they could trust us and encouraged them to share the experience in an open and honest manner. Finally, the nature of some of the data was privileged and confidential. Through the interviews we were assured that the actual provider of the information was a competent person with the insight knowledge. It increased the validity of the empirical data.

The form of interviews was both unstructured and semi structured. Zhang and Wildemuth (2009) explain: “The intention of an unstructured interview is to expose the researcher to unanticipated themes and to help him or her to develop a better understanding of the interviewees ‘social reality from the interviewees’ perspectives” (p.223). The first interviews we have conducted were mainly unstructured with the use of open-ended questions (Bryman and Bell, 2007), which allowed us to detailed analyze further in extent the phenomenon in particular case. We had introduced our topic to the interviewee, however as we were not aware at that stage of actual presence and nature of opportunism occurred in the company and the implemented control mechanisms, we wanted the interviewees to develop the topic and their thoughts. It allowed us to gain better understanding of the special conditions and situations the analyzed companies are challenged by. When the interviewees were mentioning the experienced that could be relevant and useful specifically for our study, we were asking ‘pop up’ questions to achieve detailed description. This gave us the possibility to ask follow-up questions (Bell, 2005) and create the real interaction with an interviewee (Ghauri, 2005).
Further in our investigation, when we had broader knowledge about opportunism in analyzed situations, we came back to our previous interviewees and other representatives of the company with semi-structured interviews. As Rose (n.d.) defines: “Semi-structured interviews allow the interviewer to focus on issues of particular importance to the research question, to probe and clarify comments made by the informant and to use prior knowledge to help him or her in this process. At the same time, the informant is still given the freedom to address the issues, which he or she deems important and to talk about them in the way he or she chooses. The role of the interviewer in this instance, therefore, is one of gentle guidance rather than firm control” (p.1).

We presented the other side with the specific questions on the topic but leaving them with flexibility to address the question in an open way.

The interviews were conducted during face-to-face meetings, by the phone and online by exchanging Emails and through Skype, however always with the vision. Some interviews were conducted on one-to-one basis, with the presence of one researcher and the interviewer. It was due to the fact that the interviews with representatives of Low-Tech D were carried out in polish language and only one of the interviewers is able to speak polish. Also during the interview with Low-Tech C that was conducted over the phone only one researcher was present. Moreover, as analyzed companies are SME, there is usually one person responsible for specific operational tasks. Talking with only one representative at the time allowed us to narrow the questions to particular sub-issue.

We audio recorded each of the interviews. It allowed us to have a full focus on our discussion and being able to review them later. We transcribed all of the interviews. If they were conducted in polish, they were translated into English so the other researcher could have a full insight into the conversation and analyzed it from the other perspective. Transcriptions made it easier to understand the gathered data and facilitated the process of analyzing of each case.

We were able to analyze the data on the companies’ websites, brochures, and have access to some of their contracts with their international partners and observe what type of control mechanism they had considered in their contract. Finally, we were able to participate in some group meetings of High-Tech A.

Table IV.1 attached below provides the detailed information of how the data have been collected for each analyzed company.
Table IV.1 Channels for collecting data from High-Tech A, High-Tech B, Low-Tech C and Low-Tech D

<table>
<thead>
<tr>
<th>Interviews</th>
<th>High-Tech A</th>
<th>High-Tech B</th>
<th>Low-Tech C</th>
<th>Low-Tech D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✅ Personal interview with CEO and Chief scientist – February 12th 2013; 80 min;</td>
<td>✅ Skype interview with the former CEO – February 18th 2013; 70 min;</td>
<td>✅ Phone interview with the owner of the business – April 1st 2013; 30 min;</td>
<td>✅ Skype interview with the Product Manager – March 11th 2013; 60 min;</td>
</tr>
<tr>
<td></td>
<td>✅ Personal interview with the Manager of Production – March 27th; 50 min.</td>
<td>✅ Personal interview with the former CEO – March 22nd 2013; 60 min.</td>
<td>✅ Skype interview with the owner of the business – April 5th 2013; 45 min.</td>
<td>✅ Skype interview with the Creative Product Manager – March 14th 2013; 45 min;</td>
</tr>
<tr>
<td>Archives</td>
<td>Access to:</td>
<td>Access to:</td>
<td>Access to:</td>
<td>Access to:</td>
</tr>
<tr>
<td></td>
<td>✅ The expected expense report for the first three years in R&amp;D;</td>
<td>✅ The expected expense report for the first three years in R&amp;D;</td>
<td>✅ The Internet website.</td>
<td>✅ The Internet website.</td>
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<tr>
<td></td>
<td>✅ Copy of the contract with the investor.</td>
<td>✅ Copy of the contract with the investor.</td>
<td>✅ Copy of the contract with the investor.</td>
<td>✅ Copy of the contract with the investor.</td>
</tr>
<tr>
<td>Personal</td>
<td>✅ 2 meetings with the investor – March 20th 2013 &amp; March 21st 2013.</td>
<td></td>
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<tr>
<td>observation</td>
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</tbody>
</table>

Upon data collection, a comparison was made to find the key points and areas of overlap. This key information could change or add to our research data collection during the study. After gathering data, by analyzing the information and matching them with the theoretical aspects of the project, the pattern and the frameworks were observed and developed. There were areas of similarities among these cases that validated our assumptions but also areas suggesting redefine the existing theory. At the end, we were able to develop conclusions, recommendations and the implication of the newfound information.

The empirical data are presented in the fifth chapter – Empirics and analyzed in the sixth chapter – Analysis.
IV.2.3. Analyzing Data

Strauss and Corbin (1998) state: “Analysis is the interplay between researchers and data” (p.13). During analysis, the data is taken apart and work with every piece of information. This task would help to discover and sort through the information to group them based on their properties and scope to be able to discover the relationships among them and possibly filling out the gaps in existing information and verifying their relationships. To be able to do this we found open coding as an important step to develop theory from the grouped and organized data. Strauss and Corbin (1998) define open coding as “The analytic process through which concepts are identified and their properties and dimensions are discovered in data” (p.101). This explains the process that researchers use to interpret and organize the raw data gathered through different sources such as interview, observations or documents. Strauss and Corbin (1998) explain: “These procedure usually consist of conceptualizing and reducing data, elaborating categories in terms of their properties and dimensions, and relating through a series of prepositional statements” (p.12). These procedures of conceptualizing, reducing, elaborating, and relating the data are referred as coding by different researchers (Becker, 1970; Bryman and Bell, 2007; Miles and Huberman, 1994). We carefully examined the data gathered mostly by interviews which we had transcript, line by line, sentence by sentence and paragraph by paragraph to uncover the new concepts and relationships between them. The coding procedure that we follow is suggested by Strauss and Corbin (1998):

1. Build the theory rather than testing one.
2. Use analytic tools and former research and studies on the topic of opportunism to be able to manage comprehensive amount of raw data, which we gathered through interview, observation and documentations.
3. Aim to understand the alternative meanings of phenomenon of opportunistic behavior.
4. Try to be systematic and creative simultaneously.
5. Identify, develop, and relate the concept of knowledge sensitivity of the product and opportunistic behavior and ex-ante control mechanism to build the theory.

IV.3 Validity of the data

The particular cases analyzed in this thesis represent a broad group of companies that would make the results of this study applicable to a broad range of companies and situations reaching a wider audience. “The extent to which findings from the case study can be generalized to other examples in the class depends on how far the case study example is similar to others of its type” (Denscombe, 2007, p.43).
Firstly, each company belongs to the SME sector, which currently is a vibrant sector in the market and principle driving force of the economy all around the world (Philip, 2011). Two of the analyzed companied: Hight-Tech A and Low-Tech D are established in the European Union countries, respectively in Sweden and Poland. Lucky (2012) identifies that in the European Union alone, SME accommodate above 99 percent of all enterprises and 91 percent of these enterprises are micro-firms having below 10 employees. The other two analyzed companies: High-Tech B and Low-Tech C have been registered respectively in USA and Canada. “The SME market represents 99.8% of all employers in Canada and 99.7% of all employers in the U.S.” (Montazemi, 2006, p.110).

We have interviewed representatives of the participating companies that were directly in charge of the cooperation with the Chinese and / or Indian partner. In case of High-Tech A and Low-Tech D we were able to interview more than one person to make sure that the data is consistent and valid. Due to the small size of Low-Tech C and the current non-existence of High-Tech B, it was sufficient to interview only one representative.

Moreover, Denscombe (2007) suggests that the personal identity of the researchers have an influence on interviewee and the data provided. We had personal ties with each company and we believed it had positively influenced our investigation, as the interviewers were willing to reveal detailed and honest information. Furthermore, we have used document as support for verification of our data for High-Tech A and Low-Tech D.

Finally, after analyzing the data, we have provided each participating company a copy of the background and analysis of their product to assure the accuracy of the information.
CHAPTER V. Empirics

The following chapter is structured in four parts that describe the background of each participating company. The companies are characterized in terms of their product, the motivations for engaging in inter-firm alliance, the risks of opportunism they particularly are vulnerable to, and taken protective precautions. All information are taken from the interviews conducted with the representatives of the company, presented achieves, Internet website, and personal observations.

V.1 Background of the company High-Tech A

High-Tech A is a start-up company committed to develop bioengineered material to meet large market demand and humanitarian needs in pharmaceutical industry. The company was registered in Sweden in late 2011 as a spin off from Linköping University. The company belongs to SME category under European definition (Commission Recommendation, 2003). Currently the team of High-Tech A consists of the inventor (as CEO and Chief Scientist), production manager, marketing manager, and a new manufacturing partner in India who is an owner of a large company in pharmaceutical industry.

High-Tech A has its R&D office established in Linköping. The company has finalized the process of developing its product and is currently preparing to start the production on July 1st, 2013 as well as marketing in India (Internal document).

V.1.1 The product of High-Tech A

The main product of High-Tech A, referred in this thesis as product A, is unique and resembles its natural counterpart. This product has all the characteristic of the human version, and superior in quality to human versions that are available for implantation, due to prolonus, aging population and other environmental factors. The Production Manager of High-Tech A (2013) admits:

“\textit{There is a large demand for our product around the world by people suffering from the related diseases at different levels of severity. Moreover, our product can be custom-made depending on specific needs of a patient. It can be implanted using the existing standard technique for human donor version, therefore there is no special training required for its implantation.}”
The technology used in the product A has been developed for over ten years in a research laboratory environment. It has involved a multidisciplinary team and approach to develop the product. Finally, in order to be granted the permission for commercialization, the High-Tech A had to conduct clinical trials that are very costly and time-consuming. The company addresses a disease, for which up until now, the only cure has been human donated transplants for which there are a huge shortage.

“At this moment there is no close substitute in the artificial form on the market for our product. The only substitutes that fulfill the same function, as our product is the human donor version, which however has lower quality due to the environmental factors and aging population.”

(CEO and Chief Scientist at High-Tech A, 2013)

In order to develop the product A, High-Tech A had to use innovative biopolymer technology. The technology was developed by a group of scientists, from whom one is the founder of later established company High-Tech A. The technology was initially developed in an academic setting and patents were filed. The product A is new to the market and there is no viable alternative for the product.

Although, product A has been already developed to a great extent, the High-Tech A continues the process of developing the technology prior to mass production.

There have been other groups of scientists around the world working on developing similar product, but none of them have been tested in human through clinical trials. The CEO and Chief Scientist at High-Tech A (2013) says:

“The various stages of clinical trial are the requirement for the products for transplantation in human body to be permitted to enter the market for general application. During the clinical trials of our product, it has passed 100% with regard to safety requirements and 60% on average with regard to efficiency. This result is considered as very good in pharmaceutical industry.”

The process of developing the product was very long; however after this successful accomplishment, the process of manufacturing on the big scale requires a shorter period of time. It is also due to the fact that the technology has already passed the proof of concept stage and it is mostly the matter of process up scaling and mass manufacturing before product A enter the market.
V.1.2 The motivations for engaging in Inter-firm alliance

High-Tech A is a start-up company and belongs to SME category. The company possesses valuable resources in the form of information and know-how, however its financial resources are very limited and not sufficient to manufacture and commercialize the product. The main reason for High-Tech A to engage into inter-firm alliance was to access the capital. Moreover, High-Tech A does not possess any manufacturing facilities. Therefore, in order to produce the product, it has to collaborate with other companies. High-Tech A has decided to engage with a partner from India. This decision was guided by the fact that the company has a registered patent in India. Moreover, according to ASA (2012), India is the third largest manufacturer in pharmaceutical industry. Therefore, High-Tech A decided to find a manufacturer in India in similar industry to collaborate with and start the production.

Furthermore, the first market, the High-Tech A will enter with its product is India. According to the market research conducted by High-Tech A, there is the highest demand for the product A in India.

“There are close to two million patients with this disease in India. Therefore it is more beneficial for us to have the product made in the same country as it is going to be sold.”

(CEO and Chief Scientist at High-Tech A, 2013)

Finally, the Production Manager of High-Tech A claims that the costs of manufacturing are considerably lower compare to producing it in Europe or North America.

V.1.3 Negative experience and risks related to engaging in Inter-firm alliance

The interviewed Production Manager of High-Tech A (2013) has mentioned that the company is most concerned about loosing the confidentiality of the know-how of product A:

“When we start cooperating with our manufacturing partner we need to share the secret of how we develop the product, especially with the production team. This puts us at high risk that our partner may use that knowledge in the way we did not agree on. He can just take our ‘recipe’ and start the production without our involvement. That would significantly harm our company and may even lead to business failure. We try then not to reveal the completed formula for our product, but then we are afraid that our partner would eventually find out the formulation and technology by reverse engineering the product.”

The other risk mentioned by the Production Manager of High-Tech A is the situation when the quality and the standard would not be maintained during the production.
“Due to the nature of our product, it is very important that the manufacturing facilities keep very high sanitary standards. If our product reaches the market in the contaminated condition, it will not only damage the reputation of our company, but most of all it can put our customers at risk.”
(Production Manager of High-Tech A, 2013)

V.1.4  The protective precautions taken by High-Tech A

Analyzing the High-Tech A’s inter-firm alliance, we have focused on the cooperation between the company and its Indian manufacturer. Therefore, the described actions taken in order to protect High-Tech A refer to that collaboration. The company has been granted a patent for its product in India and its intellectual property is protected by the Indian law. For the confidential information that has been already revealed, the manufacturer has signed the CDA prior to signing the contract. The Indian partner is legally obliged not to misuse the information. However, would such situation occur, the manufacturer could be prosecuted.

First of all, High-Tech A did the market research in order to gain a better understanding of the Indian manufacturing environment specializing in pharmaceutical industry. The company has hired a consultant, who has many years of experience in the field. Furthermore, it took High-Tech A almost two years to look for potential trust worthy partner and do their due diligence. The chosen partner is a well-known manufacturer in the same industry in India with a large company and more than one thousands employees. As the Production Manager of High-Tech A (2013) describes:

“This have been working on finding manufacturing partners for two years, so we look at everything, we have looked at venture capitals, individual investors, bankers, and we finally decided to look for somebody who has all the infrastructure and can do the production. In order to limit company’s dilution, we didn’t want to go with VCs as well as investing in an infrastructure at early life of the company.”

Finally, according to the Production Manager of High-Tech A (2013) reputation is very important in the pharmaceutical industry:

“In my opinion India is an emerging market with good reputation in contract manufacturing in pharmaceutical industry, big names and huge exports at good quality. In that regard they cannot have a bad name or bad reputation.”

The Production Manager of High-Tech A believes that the manufacturers with good reputation, who have been in the market for few years, have less motivation to act opportunistically and
damage their reputation. Therefore, it was also one of the High-Tech A’s main criteria during the selection process. The chosen manufacturing partner is believed to possess good reputation and is trust-worthy in the industry.

High-Tech A has apply for a special grant from government of both Sweden and India which is for the purpose of motivating collaboration between SME companies in Sweden and India. As the CEO and Chief Scientist (2013) argues:

“If this grant is approved then both governments expect a collaboration between our companies for the period of at least one year, which obliges both parties to work together and produce results.”

This grant if approved by both governments would give this alliance more official and secured form because of governments expectation for result. This grant has been applied for, however has not been granted yet.

The Indian manufacturer is 50 percent owner of the High-Tech A through investment and providing manufacturing facility. The revenue of Indian manufacturer is correlated with the profit made by the High-Tech A. From the copy of the contract signed between two parties we learned the specific responsibilities of both sides. The manufacturing partner is obliged to finance R&D and production and commercialization. The investments in R&D that is located in Sweden are specified to last for minimum three years for the amount of close to one and half million dollar which obligates the investor to pay in three stages after meeting specific milestones set in the contract. The document specifies that High-Tech A is responsible for the product formulation, technology, and know-how part of the production, as well as doing research on new products they could produce later. (Internal Document)

Through the observation of two meetings occurred on March 20th and 21st, we witnessed the product presentation by High-Tech A to the investor and the offered services from each sides. Although, both parties had several meetings in India and over teleconferencing, these two meetings were the first time that investor traveled to Sweden. His trip was for the purpose of serious negotiation for signing contract, which was finalized in beginning of April (Observation on March 20th and 21st).

High-Tech A has at this moment only the product A that is ready for commercialization. However, the company has also other new projects and new products in the pipeline. High-Tech A has shared very general information about this fact with its manufacturer to use as motivation for investing in R&D for future products they have in the pipeline.
The High-Tech A has added a condition to the contract that specifies the rights to monitor. According to the agreement and signed contract, High-Tech A has the right to regular meetings with the manufacturer in India. Moreover, they can conduct the unexpected audit on the accounting documents and other paperwork of the manufacturer that refer to product A (Internal Document). The product A will be made as it is ordered for special patients with features that will meet the certain requirements.

V.2 Background of the company High-Tech B

High-Tech B was a start-up company, established and registered in the United States in 1999. Unfortunately, due to the opportunistic behavior from its manufacturer partner, it had to withdraw from the market in 2004. High-Tech-B was a company with a special designed product and technology committed to develop high index progressive and spatial lens. This company was categorized as SME from pharmaceutical industry. The founders of the High-Tech B have designed the product at their garage. However, they had no means to start the process of mass production and commercialization. Therefore, High-Tech B decided to search for a partner to engage into the inter-firm alliance with.

V.2.1 The product of High-Tech B

The main product of High-Tech-B, referred to as the product B, was a specially designed high index progressive and spatial lens. The founders of High-Tech B have spent two years on developing the prototype for the product B. In order to be able to support the investments in R&D, the founders have resigned from receiving any salary. The developing of product B required the purchased of expensive materials and chemicals, as well as the tolls and devices. Moreover, the development process was conducted on the small scale, in the private facilities of the founders. Although, there is a high supply of lenses on the market, the product B differed from its substitutes.

“The uniqueness of our product was based on spatial lens that was much thinner in comparison to the product provided by the competitors. It could be applied even to very progressive and high vision defect.”

(Former CEO of High-Tech B, 2013b)
The founders of High-Tech B had to improve the existing and known technology used in the production of lens. This technology is very complex and threatened as the confidential information in the companies, which are engaged in the production of lenses.

“There was only couple of well-known brand companies, which were able to produce lens with similar high quality while it was very expensive due to their brand name and all the expenses in relate to advertising. Only small percentage of consumers was able to afford those brands. Therefore we decided to invent and design the formula and produce in a way that the cost was eventually less than 1/10th of the existing brands in the market.”

(Former CEO of High-Tech B, 2013b)

V.2.2 The motivations for engaging in Inter-firm alliance

High-Tech B decided to develop high-end lens because there was a demand on the market. The version of similar lenses that was considered as a close substitute to the product B was very expensive and only affordable for small group of consumers. High-Tech B could make the same quality as the well-known brands with significantly lower price, and introduce it to the market for mass consumers. However, after they were able to develop such a product, High-Tech B was in need of financial capital and investment for the production and commercialization.

The company chose the partner from China because of the lower costs of production in comparison with the United States. Moreover, the founders of High-Tech B knew that specific investor through personal connection. They found it easier to do business with someone who was introduced to them through one of the founder’s personal contacts.

V.2.3 Negative experience and risks related to engaging in Inter-firm alliance

High-Tech B believes that they have faced the most negative experience through the inter-firm alliance they were involved in. The former CEO of High-Tech B says that the misfortune started at the very beginning when the company decided on specific partner.

“One of the founders of our company has recommended a manufacturer from China, who was willing to invest in our project to start mass production in order to export it around the world. Because our colleague personally knew him we believed that this investor was trust worthy and reliable. Therefore we decided to engage into the inter-firm alliance with him without any research or questions asked.”

(Former CEO of High-Tech B, 2013b)
Soon after the agreement was signed, one of the founders of High-Tech B moved to China to supervise the cooperation locally for the period of one and a half year. He was responsible for coordinating the process of building the manufacturing facilities and the production line. Everything was constructed from the ‘ground zero’. The company was granted the International Standard Organization (ISO) certificate and allowed to start the production.

“The process of manufacturing was very successful and we were building a huge inventory of the products. At that time, we needed to market and advertise the product and we required the investments for that. However, our Chinese partner stopped financing the project.”

(Former CEO of High-Tech B, 2013b)

Lacking the financial support, the founders of High-Tech B could not afford further production and marketing. The initial owners had to leave China, which was equal to withdrawing from the business. The Chinese partner has illegally acquired the remaining assets of High-Tech B, dismantled the factory, moved the machinery to a different location and restarted the production under unrelated brand name.

Chinese manufacturer has violated the agreement and therefore could have been subjected to the legal actions against him. No such actions have been however taken.

“We have decided not to follow through this breach of contract in China since we were not familiar with the Chinese law system. Moreover, we knew that Chinese government doesn’t support IP rights’ protection or breach of contracts, especially when the foreign SME is involved. We couldn’t also take this matter to court in the US. The investment to start the legal proceedings was $200,000. Moreover, this case would last two to three years and require further financial investments. None of us was able to afford it.”

(Former CEO of High-Tech B, 2013b)

The founders of High-Tech B have resigned from receiving their own salary during the first period of cooperation with Chinese manufacturer to cut the costs. They were awaiting the future profits from selling the product that would recompense those losses, which they never received.

The founders of High-Tech B mentioned that they tried to prevent or decrease the risk of opportunism they were challenged with. First of all, the product was not protected by IP rights. The founders did not have sufficient financial resources for patent procedure. Eventually, it took only one year for the Chinese manufacturer to find the chemical formula of the product through reverse engineering. The former CEO of High-Tech B also mentions the lack of knowledge and experience in the management field that could have harshen their position. The founders were unfamiliar with the process of marketing the lenses and the level of competitiveness on the
market. Finally, they did not know the Chinese culture and approach to the ethical issues. Our interviewee from High-Tech B claimed that they were very surprised when Chinese partner openly discussed the plan for copying the chemicals and formula and starting the production of lens on his own. The Chinese partner was interested in the High-Tech B’s special lenses because of having competitive advantage of low cost, therefore being able to export them worldwide. The important lesson High-Tech B inventors learned was that the real cost of their product was not in the manufacturing and technology, but in the marketing their product. The Former CEO of High-Tech B (2013a) who we interviewed said:

“Marketing specially in pharmaceutical industry is very expensive. The investor who is new to the field, they wouldn’t know that. At the beginning the engineers and inventors are very important, but as the process get closer to marketing the product, then they become nonsense because everybody else has learned what they know so the marketing becomes more important. When we have built an inventory and the production team learned the routine there was no need for our involvements anymore.”

V.2.4 The protective precautions taken by High-Tech B

According to the former CEO of High-Tech B, the company could have protected its technology and knowledge with the IP rights. However, they did not do that due to the large expenses related with the establishment of IP rights.

The selection was processed based on connection to the investor by one of the inventor’s networks. The founders chose the first investor who was interested in cooperation with High-Tech B in an inter-firm alliance. The investor was introduced to them through personal contact of one of the founders and was selected. High-Tech B believed that this selection process would be secure enough, as the networks are considered very important to Chinese culture.

The cooperation between High-Tech B and its Chinese manufacturer was structured in the form of the equity alliance. According to their contract, 50 percent of the High-Tech B belonged to the investor while the other 50 percent belonged to initial founders of the product B and its technology. The Chinese manufacturer acquired its share of the company through making the capital investment.

Moreover, according to the contract each partner, High-tech B as one partner and investor as the other, were entitled to collect their share of profit after one full year of commercialization and introduction to the market.

High-Tech B did not have any plans for developing a new product. The company was focused only of manufacturing and commercializing the product B.
Moreover, the High-Tech B’s former CEO, who was responsible for supervising the manufacturing and production in China, admit that he neither initiate nor motivate any contact or personal relationship with the Chinese partner. There were no private meetings before engaging into the alliance that would allow the partners to get to know each other. During one year and half that our interviewee was living in China, he met with the investor partner only three times.

According to the contract signed between High-Tech B and its Chinese partner, one of the initial founders of High-Tech B would be physically present at the factory to supervise and formally monitor the production.

Also the inventors of High-Tech B established the R&D in San Diego to protect their key knowledge. In regard with the chemicals and their formula, they had decided to have a third company who was premixing the chemicals, repackaging it under different name and send to China. There was no chemist hired in the Chinese production team as a precaution as well.

“Our partner in China was not aware of the chemicals and formula of the product in that mix at the beginning. However, during the first year of the production, we had to reveal the formulation and chemicals because of the import companies and government agency started asking for Material Safety Data Sheet (MSDS). And this includes the details about the product and the suppliers of premixed material.”

(Former CEO of High-Tech B, 2013a)

V.3 Background of the company Low-Tech C

The Low-Tech C is a Canadian store selling glasses since early 2010. Low-Tech C has rented small space as an office in a pharmacy to sell prescription and non-prescription glasses for different ages and styles. The owner of the store has a degree in ophthalmology and has a permission to examine people’s sites and prescribe glasses if necessary. However, the owner is not allowed to prescribe medications or discuss any eye disease other than vision impairment. Besides the owner, there are two part time employees working for the company.

Low-Tech C orders all material, plastic lenses and frames, from China and India through separate suppliers.

V.3.1 The product of Low-Tech C

The main product of Low-Tech C, referred as the product C, is the prescription and non-prescription glasses. The prescriptive glasses consist of two different parts: lens and frame. The two parts of prescriptive glasses are ordered through different suppliers and have different
characteristics. The non-prescriptive are sold as a complete package. Low-Tech C does not manufacture or design its product. They are purchased from Chinese and Indian producers. To the investments in R&D made by Low-Tech C can be therefore included the expenses related to the research of specific supplier and later ordered products. Low-Tech C cuts those costs through engaging in the collaboration with other shop providing similar products and being personally related with the owner of Low-Tech C.

The regular lens is a part that is made in a mature industry with very similar quality. As the owner of Low-Tech C (2013b) describes:

“The important point for a good regular lens is its clarity and the degree of vision defect which is the basic quality of the lenses in the market. Finding a good lens supplier is the easiest part, specially that the quality and the prices are very similar and usually do not make a difference in selection process.”

The products are produced with the use of special machines, with small assembly of handwork.

The products are influenced by the changes in the trends and fashion, however those adjustments are minor and do not result in the full withdrawal of products.

The process of development of the product C lasts only couple of months. It includes the time needed for traveling to China and Indian, placing the order and shipping it to Canada. Moreover, the amount of products and the size and the weight of them do not take extensive room.

According to the owner of Low-Tech C, there are many substitutes to the product C that offers the same features with similar quality and for the same price.

V.3.2 The motivations for engaging in Inter-firm alliance

Low-Tech C is a Micro enterprise that belongs to SME category. The company has very limited financial resources. Therefore it is very important for Low-Tech C to keep its cost low. The fact that there are a lot of competitors with very similar products in the market makes the cost saving even more crucial for Low-Tech C. Therefore the main motivation for engaging in Inter-firm alliance for Low-Tech C is the cost saving through finding a low cost product. Low-Tech C profits from imposing the higher margins on its products’ price.

The company claims that the most competitive prices for the products it purchases are offered by the Chinese producers. According to the interview with the owner of Low-Tech C (2013a):
“There are large groups of suppliers of different type of lenses in China and India. For example there is a city called Venzo in China that lens making is the main occupation of the population in that city. The manufacturers employ farm workers seasonally and pay them between $80-90 per month and provide basic food and shelter for them, and when the season is over they send the workers home. Because of this reason the competition is very high, therefore the suppliers have to keep the price close to cost to be able to compete in the market. This gives our company an advantage of benefiting from low prices. This means even if a supplier does not follow through with what was promised in the contract the deposit payment is usually small and limits the losses, also the loss is so small that does not put the company in huge financial risks.”

V.3.3 Negative experience and risks related to engaging in Inter-firm alliance

The main negative risk threatening Low-Tech C would be losing the deposit money.

“We usually pay 30 percent of the total cost of the invoice in advance. There is always a risk that we would loose that money.”

(Owner of Low-Tech C, 2013b)

Another risk that can damage the performance of Low-Tech C is the delay in delivery, especially for the items from seasonal collections.

“There are different style for winter glasses and summer glasses. And you can sell them only during the proper time in the year. Moreover we sell them with different prices. For example at the beginning of spring, when the clients start looking for sunglasses we sell them with the full price. The demand is also the highest during the first weeks. But in the middle of summer we have to lower the prices and most of the assortment goes on sale. It is very important for us that the product is delivered on time.”

(Owner of Low-Tech C, 2013b)

V.3.4 The protective precautions taken by Low-Tech C

Low-Tech C believes that the reputation of the supplier in the industry is very important. Low-Tech C usually orders its material through a well-known supplier with several years of experience in doing international business.

Low-Tech C finds a well-known supplier with a good reputation through network of businesses in the same industry.
“We use the information we receive from the network in ophthalmology and our colleagues to be able to find a trustworthy supplier with good reputation.”

(Owner of Low-Tech C, 2013b)

This method is mainly used for ordering plastic lenses since there is a large number of suppliers and similarity of the quality and price of the product in both China and India.

However, Low-Tech C has a different way of finding suppliers for the frames ordering since the trend and style of frames changes based on season and fashion. An alternative for this company is to order the frames from North American suppliers where it is more accessible.

“But US suppliers usually have prices much higher than the Chinese or Indian. So we only orders about ten percent of our frames supply through well-known US brands for high end users and the rest are ordered from overseas.”

(Owner of Low-Tech C, 2013b)

Finding a supplier with desirable products in style and quality is more difficult for frames than for lens. For this reason, it is important for Low-Tech C to be able to find good suppliers with good quality frames and desirable styles. Low-Tech C usually chooses repeated suppliers with good reputation for having trendy styles and good quality. The fashion in frames and their characteristic, such as size, shape, and color changes based of season or trend. The owner of Low-Tech C (2013a) explains:

“The choice of frames, like any other fashion item, is very much dependent on the age, class, income and personal style of the customer.”

One alternative for them is to order through the Internet, but as our interviewee mentioned, they cannot make sure if the quality is good till the product reaches the store and end users. There is a need for a period of time for customers who buy those frames and try them and give feedback to the company if they were satisfy with the frame’s quality. This period could take anytime between few months to two years, which is usually too long for making any lose recovery from the supplier. For this reason, Low-Tech C has entered collaboration with another colleague to limit their expenses while they are still able to have personal control over the selection of producers and products.

Moreover, once a year the company sends its representative to China or India in order to meet the producers and make the orders in person. However, due to the limited financial resources it collaborates with another store offering the same products. They share the expenses of traveling to China or India to choose their desired product and import it to Canada. Each owner travels
every other year, in different seasons, and makes the order for both companies. The inefficiency of this method is in the fact that their products do not differentiate from one another and the companies carry the same items in their stores. Another issue with this method is the chance of each collaborating partner ordering special styles or better quality for itself and not for both. However, the collaboration between these two companies is based on personal relationship and trust.

The supplier is chosen based on good references from the owners of similar business in the market. When Low-Tech C is satisfied with a supplier, it does repeating business under short contracts with it. The detailed requirements, such as the delivery date, expected quality and quantity are attached with the contract.

Low-Tech C pays usually 30 percent of the total cost of the invoice in advance. The remaining amount is provided as LC and withdraws to the supplier when the product leaves the departing port. This amount may be reduced if there is a delay compare to the agreed date attached with the contract.

Low-Tech C promises repeating business if it is satisfied with all aspects of doing business with the supplier.

Low-Tech C shares good and bad experiences with a supplier and other owners of similar businesses in its network. As the owner of Low-Tech C (2013a) explains:

“*Reputation for suppliers means everything so they cannot afford to have unhappy customers since it may ruin their reputation so much that they go out of business.*”

**V.4 Background of the company Low-Tech D**

Low-Tech D is a growing Polish company in the furniture industry, specializing in the house-decorating sector. The company has been established in 1989 and initially functioned as a warehouse that was supplying various stores with garden furniture and modest accessories designed for home, such as: candles, serviettes or artificial flowers. In the 1991 Low-Tech D added to its offer of products also home furniture; however the company was still operating as the warehouse. In 1999 Low-Tech D opened its first shop and started selling the products directly to the end-customers. Currently, Low-Tech D possesses its stores in major Polish cities and has expanded from employing ten workers in 1989 to over 200 in 2013, which puts it under SME category as it is defined in European Union (The Commission of the European Communities, 2003).
Low-Tech D is purchasing all the goods and sells them later under its logo. At the beginning the products were acquired from European producer, however since 1991 Low-Tech D started importing the goods from China and in 1996 from India, and later also from Taiwan, Indonesia and Thailand. Nowadays, 70 percent of all purchases are made in Asia, mostly from China and India. The producers range from single manufacturer that is operating as a ‘garage sale’ to large factories (Interview with Product Manager, 2013).

V.4.1 The product of Low-Tech D

Currently Low-Tech D includes in its offer wide variety of home décor products. The products are divided into three thematic groups: Home, Décor and Table. The detailed classification of sub products to each group is presented in Table V.1 attached below.

Table V.1 Classification of Low-Tech D products

<table>
<thead>
<tr>
<th>Group</th>
<th>Products</th>
</tr>
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| **Home** | ✓ Wood furniture;  
| | ✓ Upholstered furniture;  
| | ✓ Fabrics: hangings, tablecloths, quilts, serviettes and bedclothes;  
| | ✓ Lighting.  |
| **Décor** | ✓ Frames;  
| | ✓ Clocks;  
| | ✓ Candles;  
| | ✓ Candlesticks;  
| | ✓ Flowerpots;  
| | ✓ Artificial flowers;  
| | ✓ Accessories, sculptures.  |
| **Table** | ✓ Utility glass, crystal;  
| | ✓ Utility ceramics;  
| | ✓ Cutlery;  
| | ✓ Napkins;  
| | ✓ Kitchenware.  |

Source: Low-Tech D Internet website.

All products of Low-Tech D are purchased from suppliers. The company does not design or manufacture them; however it negotiates the changes to the original design if necessary. Among the functional departments of Low-Tech D there are: Finance and Administration, Logistics, Human Resources, Information Technology, Business Development and Marketing and Creation. The employees from the Creation Department are responsible for creating the ideas for collections and finding the suppliers. In order to do that, they travel to different furniture fair. The goods purchased by Low-Tech D are mainly made by hands to reach the unique character of the designed.
The trends in the industry change seasonally, however they include mostly minor adjustments, such as color or shape. Moreover, Low-Tech D orders short series of products; therefore the company can change the collections in the shops. However, the character of those collections are maintained within the same stylization, inspired by different cultures.

“For the Christmas Offer for the year 2012, we have visited the first fair to determine the collection already in April 2011. The orders were made in October 2011. Those products have arrived to us in September 2012.”

(Product Manager of Low-Tech D, 2013)

There is variety of products on the market that meet the same functional requirements. This situation might decrease the competitive position of Low-Tech D in comparison with its rivals. However, in reference to the cooperation between Low-Tech D and its supplier, it assures the company being independent from a single producer.

V.4.2 The motivations for engaging in Inter-firm alliance

The most important feature in assuring the competitiveness of Low-Tech D is to offer a product that is of a unique design and character in European market. The company claims that in order to achieve this goal it has to collaborate with the external producers.

“The highest variety of goods from furniture industry with affordable prices for average customer can be found in the Asian market. The finest solution for us is reaching this source. We used to purchase goods from European distributors; however this always posed the risk of very similar offers by our competition. Moreover, the variety proposed by single distributor is very limited, as they usually focus on one specific product or style. Therefore, nowadays we cooperate mainly with the different producers, who can be found on the fairs.”

(Creative Product Manager of Low-Tech D, 2013)

Furthermore, the products that are offered by the Asian manufacturer, very often cannot be accessed on European market.

“For example the upholstered furniture offered in China that combines in its construction good leather with metal are extremely hard to find in Europe. And if, their quality is much lower.”

(Product Manager of Low-Tech D, 2013)

Finally, Low-Tech D claims that the prices for the same products offered in Europe are higher from the once offered in Asian market.
“In China the variety of the products is more extensive, therefore it is possible to find very similar products but for better prices.”
(Product Manager of Low-Tech D, 2013)

V.4.3 Negative experience and risks related to engaging in Inter-firm alliance

“The delays in delivery occur frequently, however they have most negative influence for thematic collection, such as Christmas or Eastern collection. We have ordered the saltcellars and pepperboxes for Christmas 2012 collection, but the products have reached us with five months delay in February 2013 instead of October 2012. We could not sell that product and currently it has to be stored in our warehouse. This situation generates the extra costs of storage for us.”
(Product Manager of Low-Tech D, 2013)

In order to minimize the risk of delay, the orders are made seven months in advance. Some delays are due to the fact that the producers wait with ordering the containers for shipping the products till the very end.

“In the busy seasons, such as Christmas period, the transferring companies have more customers and receiving the container can take at least few weeks.”
(Product Manager of Low-Tech D, 2013)

Product Manager of Low-Tech D (2013) admits they sometimes have to sell their product with discounted price due to lower quality of the product than what was ordered:

“For example this Christmas we have order figures of cats in clothes. And when the product reached Poland we found that the figures were beautiful, but the clothes were just unpleasant. Those figures of cats had clothes and huts, and the quality of those clothes was really poor and our supplier said that he is manufacturing the molding of those cats, but his supplier sews the clothes.”

Due to the risk of low quality some products are ordered only from European producers, although the price for them is relatively high. Low-Tech D used to order glass and ceramics from China and India, however the quality was lower in comparison with those products offered in European market. Today, Low-Tech D purchases glass and ceramics only in Poland, Czech Republic, and Slovakia.

The Product Manager of Low-Tech D admits also that the supplier partner has defrauded the company. It happened four times through Indian and once through Chinese manufacturer.

Product Manager of Low-Tech D (2013) describes:
“In each situation we have met the producer during the furniture fair, we made the offer and the prepayment. However, we received neither money nor the goods later and we could not locate the supplier in order to recover the losses.”

The Brand Manager / Marketing Manager of Low-Tech D (2013) adds also:

“Recently, we have ordered the frames in big quantity from the Chinese supplier. In the frames there was a photo of a couple. The product has been displayed in several shops and shortly after, we have received complain from a man that claimed that the photo in the frame present him and his fiancé and has been unlawfully used. The man insisted that we should pay for the copyright and remove the photos from the whole chain. We decided to contact the manufacturer in China, as the photo is a part of the product and asked from which photos’ bank the manufacturer bought that photo. It occurred that Chinese manufacturer entered a random website, downloaded the photo and then print it. Chinese manufacturer has claimed that the photo was taken from the website that is available to general public. When we insisted on receiving the link to the bank of photos from which he had downloaded that photo, he ended the contact. The outcome of this behavior for us is not only financial loss due to the payment of the compensation, but mainly the damage to our brand’s reputation.”

V.4.4 The protective precautions taken by Low-Tech D

Low-Tech D obtains its producers mainly through the personal approach during furniture and décor accessories fair. The fair that the company attends are in Europe: Frankfurt and Paris Fair and in Asia: CIFF - Canton Fair (Guangzhou, China), IHGF (New Delhi, India), Shanghai Furniture Fair (Shanghai, China), Jinhan Fair (Guangzhou, China) or HKTDC (Hong Kong).

“If we decide to engage in the cooperation with particular producer, we ask if he is already supplying any company in Poland. If not we make the producer to sign the exclusive list so he can’t supply any other company in Poland.”

(Product Manager of Low-Tech D, 2013)

Each year, Low-Tech D visits in the first place the fair in Paris and Frankfurt. The company however does not place the order with any supplier during those European fairs, but is looking for the current trends. After those first fair, the representatives of Low-Tech D are creating a vision for the upcoming collection and with those ideas they go to Asian market. Low-Tech D believes that the producers presenting in Europe are trustworthy to higher extend. Therefore the
credibility of the Asian producer that displays his product during European fairs increases. It is also due to the fact that quality and intellectual property rights are controlled in European fairs.

“On the fair in Frankfurt there is so called ‘custom team’ which goes and control. They have uniforms and they control the producers. Also the representatives of famous brands have then the opportunity to look around and see if somebody is not copying their design. If they see that it is not their producer, but it is their design they can ask the ‘custom team’ to check and control – they do then specific investigations. But in China I have never seen such controlling teams.”

(Creative Product Manager of Low-Tech D, 2013)

The fair occupy very extensive space of thousands of square meters and in order to visit whole exhibition, the Low-Tech D’s representatives need to spend few days there. During the fair, the employees of Low-Tech D take photos, collect catalogues, compact discs, and make notes about the product, its design, and quality, and based on that information the decision about whom to cooperate with is made.

Very often Low-Tech D orders only the model of the product. This is one solution to check the quality of the product. It is however very subjective mechanism to judge the quality of the entire order based on a single product. The final outcome of the cooperation can only be judged ex-post, after the whole order has arrived.

Low-Tech D claims that sometimes it has to judge the security of cooperation with the producers based on the presentiment.

“Sometimes you may have a feeling that the producer is trustworthy, because there are many clients around him, but later the product is of really low quality. But as I have so many years of experience, based on the product I see I can tell in which condition the company is. But setbacks happen. We cannot fully foresee we need to take a risk.”

(Creative Product Manager of Low-Tech D, 2013)

According to Low-Tech D, the reputation or loyalty of suppliers does not have significant influence during the selection process. Frequently, the producers cannot reveal which companies they supply to, because that information is considered as confidential. On the other hand, some producers manipulate the reputation and lie about cooperating with famous brands, by placing their logos on the stand, for example. This is something very hard to detect, especially in Asian fair. Relaying on the visual presentation of the stand is also deceptive, especially in China where the stands are very characteristic.

“Some producers miss saying that they cooperate with specific companies. E.g. the producers of bags, or other products that are pro selling such as ribbons or packing bags – on their stands
they put many logos of different companies they are supposed to cooperate, but you can’t never tell if they really cooperate with them or not.”

(Creative Product Manager of Low-Tech D, 2013)

Low-Tech D purchases 70 percent of modest decoration accessories from new producers, with whom the cooperation last for the period of one to two contracts. The remaining 30 percent of modest decoration accessories are acquired from producer, with whom it has been collaborating for several years and repeat purchasing the same goods. The reason for such division is due to the fact that in order to stay innovative and competitive on the market, Low-Tech D needs to moderate its offer and this can be accomplished only through engaging in cooperation with new suppliers. The situation with furniture is however different. 80 percent of the suppliers are represented by permanent partners and only 20 percent by the new collaborators. The temporary suppliers of furniture are responsible for unique collections that are purchased only in short series.

Despite cooperating with both short- and long-term partners, Low-Tech D always signs short-term contracts. The company claims that long-term contracts would oblige it to purchase goods from certain producer and reduce it flexibility. The cooperation with temporary partners lasts usually the period of one or two contracts. The collaboration with permanent partners lasts several years, however each order is subjected to the new, short-term contract.

Moreover, the company never makes prepayments, but use the forms of financial settlements. Low-Tech D aims for specifications of the contract that encloses details of the products and the negotiated changes in it. In its past, the company has experienced the problems due to making only verbal specifications of requirements and it was very hard to prove to the supplier that the requirements have not been met. The documentation collected during the process of selection is very important to determine exact order.

Finally Low-Tech D places the order several months in advance in order to decrease the risk of delays. For example the Christmas collection is ordered already in the October the year before.

However, the contracts signed with new and known partners differ.

With the new partners, the LC is signed. This contract is supervised by the bank and guarantee that the supplier will receive the payment only when the goods pass the custom control in the country of production. This form of contract protects Low-Tech D against withdrawals unless its partner has met the conditions of the agreement. However, these conditions depend mainly on the date of delivery and the number of items. For example if the products reach the custom control after the deadline, the invoice payment is being decrease. This reduction ranges usually
between half percent to one percent of the invoice. The enclosure of those financial penalties is the most important for seasonal, thematic collection, such as Christmas collection and then it might even reach the level of five percentages.

With the suppliers that Low-Tech D is cooperating for several years, the company does not sign the LC. Although LC guarantees the security of the payment, it also generates economic costs as it freezes the financial assets and blocks the credit limit in the bank. Therefore, Low-Tech D signs the agreement of Payment Collection according to which the payment is transferred when the products reach its final destination of port in Poland. The Payment Collection is considered as less secured in comparison with LC and usually not advised to the companies that do not bestow each other with trust. However, based on the trust between Low-Tech D and its long-term partners, the company does not need to block their bank limit and can make the payment few months later than in the case of LC.

The partners that supply Low-Tech D for several years already are invited to visit the shops in Poland. During those visits, they have the opportunity to observe the selling process. They can gain the understanding of the ‘end line’ of the business and learn how to improve in order to receive more orders. If the products offered by the manufacturers will meet the expectations of Low-Tech D’s customers, the demand for them will grow.

Low-Tech D could have its own quality controller that would visit the factories or employee the local company that offers the quality control service. Unfortunately, due to the limitations of financial resources, Low-Tech D does not make a use of local quality control. Another possibility to protect the product D occurs during the process of transportation the products. The producers are usually responsible for the products till they reach the port in the country of departure. However sometimes they need also arrange the transporting company’s service. After the products pass through the custom control, the custom banderols are placed on them. The container can be open for the next time only in Poland by polish custom control. However, the container does not usually travel directly from the country of deport to Poland, but it is overloaded several times. The containers must therefore be insured. In the situations when the producer is responsible for arranging the transferor, Low-Tech D requires that the transfer will be insured. This condition is specified within the contract.

During the visits of long-term partners in the shops of Low-Tech D, if there were previously any problems concerning the final quality of their goods, Low-Tech D can present the defected products and discuss the matter. For example, the product might leave the factory of the supplier in the intact condition. However, during the shipment the goods might be damaged and they reach the Low-Tech D warehouse as destroyed. During those visits both sides have a chance
to examine those damages and find mutual solution. For example during one inspection both sides have concluded that e.g. the product should have been covered with the bubble wrap or paper during the time of transportation, because when the humidity reaches the product it influence it negatively by damaging it. On the other hand, when the product is covered with paper this humidity percolates the paper and not the product. Through those conversations both sides can solve some problems, which is beneficial for their future cooperation.
CHAPTER VI. Analysis

The research question for this thesis is:

*How does the knowledge sensitivity of a product affect the selection of ex-ante control mechanisms against opportunistic behavior?*

In order to answer the research question, we decided to analyze it through conducting the comparison of products that are sensitive to knowledge to various extend and further differentiate the ex-ante control mechanisms that are selected in accordance to those products. Through this study we will be able to determine the similarities, differences or patterns among various products and companies in choosing specific ex-ante control mechanisms in the context of this analyses. We would therefore be able to analyze the influence of the knowledge sensitivity of a product on ex-ante control mechanisms against opportunistic behavior. This would bring us to the final conclusion of this master thesis and enables us to answer the research question.

Our analysis will be conducted in the accordance to the framework presented and discussed in the third chapter – Analytical framework. Therefore, the sixth chapter will be structured as following.

Firstly, based on the data gathered from the interviews, archives, and personal observations, presented in the fifth chapter – Empirics, we will create the structure for the comparison between the products. We will divide our four products into two groups of high knowledge-sensitive and low knowledge-sensitive products. The products will be analyzed through the features provided in the theory chapter, such as: technology used, the level of investments in R&D, the pace of changes in the environment, the length of the process of development and the existence of substitute products and competitions. We will explain how we determine the results for each of those features for the analyzed products. Based on those results we will develop a framework for the classification of our products.

The second step would be to assign the occurring opportunistic behaviors to specific products. We will determine the existence of specific opportunistic behavior based on the experiences that the four companies have shared with us. We will use the terminology for the types of the opportunistic behavior already provided in the second chapter - Literature review. The classification of those opportunistic behaviors to the previously determined groups of high and low knowledge-sensitive products will present what types of opportunism are characteristic of
specific products and which ones occur regardless of those specifications. This would allow us to draw conclusions and make suggestions on the types of opportunism that is likely to be applicable to certain group of products. We assume that this step is influencing the process of selection of control mechanisms against opportunism. Although, in this master thesis we do not focus on explaining why certain types of opportunism are correlated with certain control mechanisms, in our opinion this brief and general analysis is important to understand the whole context of our study.

The following step in this chapter is the analysis of the ex-ante control mechanisms that are used by the companies investigated. If possible, we use the terminology provided in the second chapter - Literature review. Through this description we are creating the connection between the literature and the real-life cases. In the situation when the employed ex-ante control mechanism was not correlated or mentioned in the literature that we reviewed, we provide a clear commentary. We will also classify those mechanisms according to the two groups of products.

The final step of our analysis is creating the overall comparison of the ex-ante control mechanisms used for high and low knowledge-sensitive products. This allow us to define the answer to the research question of how does the knowledge sensitivity of the product influence the selection of the ex-ante control mechanisms against opportunism.

VI.1 Knowledge sensitivity of the product

In this section we provide the characteristics of each of the four products in separated tables. Some of the characteristics are brought directly from the findings presented in the fifth chapter – Empirics. In the situation when certain feature required our explanation, this analysis is provided above the specific table.

VI.1.1 The High-Tech A product

The product A belongs to the pharmaceutical industry, which is further, according to Fagerberg et al. (1997) referred as high-tech. This industry is characterized by the fast changing environment. It is due to the fact that the technology, on which the products are based, has to be constantly upgraded and improved (Gardner, 1990). According to the CEO and Chief Scientist of High-Tech A, the technology that was needed for developing the product was invented by one of the founders of the company. It is very complex technology that is applied for the first time as a commercialized product. Based on those facts we analyze it as an innovative technology. The process of inventing the technology and further developing the product has taken about ten years as it involved extensive testing of the product for safety and efficacy. However, after the
technology was developed, the production process of a single product is less-time consuming than its development. Also, there need to be assembled only small changes to the machines that are used in the production in the same industry. We define the process of developing product A as a long process due to the complex and innovative nature of the technology. Due to this long development process for product formulation we characterized the investments in R&D for product A as high. Finally, there are no readily available viable substitutes for product A. Product A belongs to high-tech industry and it is based on innovative technology that was developed for ten year with the high investments in R&D. It is unique product embedded with the know-how that determines its value. The confidentiality of the knowledge of how the product was developed and can be produced secures the success of the High-Tech A. In the situation when that knowledge is disclosed to unauthorized party, High-Tech A loses its competitive advantage as well as the uniqueness of the product A. Therefore, we characterize product A as high knowledge-sensitive.

The summary of the characteristics of the High-Tech A’s product is listed in Table VI.1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>High-Tech A product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>Pharmaceutical,</td>
</tr>
<tr>
<td></td>
<td>High-tech.</td>
</tr>
<tr>
<td>The pace of changes in the</td>
<td>Fast.</td>
</tr>
<tr>
<td>environment</td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td>Innovative biopolymer technology,</td>
</tr>
<tr>
<td></td>
<td>Applied and used for the first time as a commercialized product.</td>
</tr>
<tr>
<td>Process of development</td>
<td>Long:</td>
</tr>
<tr>
<td></td>
<td>Ten year of developing;</td>
</tr>
<tr>
<td></td>
<td>Very short production time;</td>
</tr>
<tr>
<td></td>
<td>Small changes to current machines producing product in the same industry.</td>
</tr>
<tr>
<td>Investments in R&amp;D</td>
<td>High:</td>
</tr>
<tr>
<td></td>
<td>Ten years work of scientist and researchers;</td>
</tr>
<tr>
<td></td>
<td>Cost of clinical trials;</td>
</tr>
<tr>
<td></td>
<td>Cost of material for research and study.</td>
</tr>
<tr>
<td>Substitutes</td>
<td>Non in artificial form;</td>
</tr>
<tr>
<td></td>
<td>Only decreasing human donor version.</td>
</tr>
<tr>
<td>Knowledge sensitivity</td>
<td>High.</td>
</tr>
</tbody>
</table>

VI.1.2 The High-Tech B product

High-Tech B is a good example of the negative impacts of opportunistic behavior on a company’s status resulting in failure of an enterprise with its worst consequences.

The product B, similar to product A, belongs to pharmaceutical, high-tech industry (Fagerberg, et al., 1997) with the fast and turbulent environment (Gardner, 1990). The technology needed to
develop the product B required the knowledge and experience of engineers in the optical field. Moreover, although there are companies that possess the know-how of how to develop the products similar to product B, this knowledge is confidential and shared only within the companies. The High-Tech B had to develop the technology on which the product B is based on individually. Therefore, we characterized technology of the product B as complex and inventive. The process of development of the product B took two years of R&D. But the High-Tech B decided to build its own manufacturing facilities with the help of an investor partner in China and this process lasted additional one and a half year. The production time of the single item was however very short. Based on those facts, we characterized the length of process of development of product B as moderate. In order to develop product B, the founders of the High-Tech B were not financially supported and had to develop the product with no compensation. Moreover, developing product B required the purchase of expensive materials, chemicals, and devices that were self-funded by the founders. The development facility was placed in the garage of one of the researchers. The project was conducted on a very small scale, therefore the High-Tech B could not benefit from the economics of scale and the investments in R&D took the biggest share in the overall investments. We therefore characterized the investments in R&D as high. Finally, our interviewee recognized only two companies at the market that were providing products with the similar quality as product B, serve the same function, but their products were of the higher price.

The product B is embedded with complex and inventive technology, high investments in R&D and required two years of intense research to be developed. Through that process the High-Tech B has gained the know-how that became the most important and valued asset for the company. In order to retain that competitive advantage it became necessary for the High-Tech B to protect its knowledge. Because the know-how played a very important role for the creation of the product B’s and the High-Tech B’s value, we characterized product B as a high knowledge-sensitive product.

The summary of the characteristics of the High-Tech B’s product is shown in Table VI.2 below.
### Table VI.2 Characteristics of High-Tech B product

<table>
<thead>
<tr>
<th>Variable</th>
<th>High-Tech B product</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Industry</strong></td>
<td>Pharmaceutical,</td>
</tr>
<tr>
<td></td>
<td>High – tech.</td>
</tr>
<tr>
<td><strong>The pace of changes in the</strong></td>
<td>Fast.</td>
</tr>
<tr>
<td><strong>environment</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td>Complex: Required specialty knowledge of engineers and researcher in pharmaceutical and optical field;</td>
</tr>
<tr>
<td></td>
<td>Inventive - The existing technology is confidential, the High-Tech B needed to develop it by itself.</td>
</tr>
<tr>
<td><strong>Process of development</strong></td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Two year of developing</td>
</tr>
<tr>
<td></td>
<td>Building the manufacturing from ground zero – one and a half year</td>
</tr>
<tr>
<td></td>
<td>Very short production time,</td>
</tr>
<tr>
<td><strong>Investments in R&amp;D</strong></td>
<td>High:</td>
</tr>
<tr>
<td></td>
<td>Two years of engineers’ work and researchers with no salary;</td>
</tr>
<tr>
<td></td>
<td>The purchase of expensive materials, chemicals and devices;</td>
</tr>
<tr>
<td></td>
<td>No benefits from the economics of scale.</td>
</tr>
<tr>
<td><strong>Substitutes</strong></td>
<td>Few with same quality;</td>
</tr>
<tr>
<td></td>
<td>A lot in lower quality.</td>
</tr>
<tr>
<td><strong>Knowledge sensitivity</strong></td>
<td>High.</td>
</tr>
</tbody>
</table>

### VI.1.3 The Low-Tech C product

The product C belongs to the eyewear and fashion industry, which we characterize as other manufacturing using Fagerberg et al.’s (1997) model. The eyewear industry is exposed to constant changes in the fashion industry. However, those transformations do not establish radical changes, but only minor adjustments. The Low-Tech C does not face the risk of withdrawing the whole collection from its store. The pace of changes in the environment of Low-Tech C is called therefore as rather stable. The technology to develop the frames and lenses that represent the product C is well known in the industry. The product C is manufactured with the use of machines and small assemblies by hand at the end stage of production. This technology is characterized as mature. Because of the small size and the low weight of the product, it does not take extensive room and the process of its development is not complex and not very time-consuming. It lasts only few months, less than a year. Therefore, the process of development of product C is referred as short. The product C is purchased from external suppliers. We define the only investment in R&D made by Low-Tech C as the investments in travelling to China and India in order to find the suppliers. Moreover, those investments are shared with another company. The investments in R&D made by Low-Tech C are therefore categorized as low. Finally there are many substitutes to product C.

Low-Tech C depends on external suppliers with developing the product C. However, as it cooperates with various and many supplier this dependency is very limited and does not create a
negative influence. Moreover, the product C is embedded with mature and accessible technology. Low-Tech C makes only low investments in R&D. The competitive advantage on the company is not based on the know-how of the product C, but depends more on the successful marketing and costs’ management. We therefore classified product C as low knowledge-sensitive.

The summary of the characteristics of the Low-Tech C’s product is listed in Table VI.3 below.

Table VI.3 Characteristics of Low-Tech C product

<table>
<thead>
<tr>
<th>Variable</th>
<th>Low-Tech C product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>Eyewear / Fashion – Other Manufacturing</td>
</tr>
<tr>
<td></td>
<td>Low – tech.</td>
</tr>
<tr>
<td>The pace of changes in the environment</td>
<td>Rather stable</td>
</tr>
<tr>
<td>Technology</td>
<td>Mature, the products mostly made by machine and small assembly by hand.</td>
</tr>
<tr>
<td>Process of development</td>
<td>Short:</td>
</tr>
<tr>
<td></td>
<td>For lens: couple of months;</td>
</tr>
<tr>
<td></td>
<td>For Frames: 2-6 months.</td>
</tr>
<tr>
<td>Investments in R&amp;D</td>
<td>Low:</td>
</tr>
<tr>
<td></td>
<td>Travel expenses to Asia, shared with other company.</td>
</tr>
<tr>
<td>Substitutes</td>
<td>Many – independency from single supplier.</td>
</tr>
<tr>
<td>Knowledge sensitivity</td>
<td>Low.</td>
</tr>
</tbody>
</table>

VI.1.4 The Low-Tech D product

The product D belongs to furniture and textile industry that according to Fagerberg et al. (1997) is classified as low-tech industry. The pace of changes in the environment of furniture and textile, home décor industry in accordance with its product is rather stable. The modifications do not cause the complete withdrawal of the product from the market (Wiktorski, 2012). Developing product in furniture, home décor industry require a mature and existing technology. Many products are also made with the handwork. We divide the process of the product development of Low-Tech D into two periods of time. The first period considers the time from the moment when the company visits the first fair to gain the inspiration for the specific collection till the moment the partner is chosen, the negotiations about the design of the product are finalized and the manufacturing process can start. This first part lasts about eight months. Another part of the process of developing the product D starts with the moment of signing a contract. It covers the time of manufacturing and transferring the product and ends when the goods reach the warehouse of Low-Tech D. This period lasts about eleven months. Although the entire developing process of the product D can last even up to two years, a big part of that time is consumed by shipping and transferring the product D from local factory to the
Low-Tech D’s warehouse. The Low-Tech D is not directly involved in that process. We therefore characterized the process of development of product D as short. The company does not possess a separated department for Research and Development. To the investments in R&D in the case of Low-Tech D we include travel expenses for visiting different furniture and décor accessories fair. Another investment in R&D is therefore the costs of employment the Creation Department’s team that consists of four workers, who are directly responsible for visiting fairs. Because the other investments made by Low-Tech D, such as marketing or logistics, exceed significantly the investments in R&D, we classified the investments in R&D as low. Finally, there are many products on the market that are the substitutes to the product D in terms of the quality, the function and the price.

The product D is not embedded with a know-how that would define its value. The competitive advantage for the Low-Tech D is founded on the brand positioning and the know-how of the management strategy of how to select the suppliers, the products, and create the collection in the stores. It is not however related directly to the specific product that could not be replaced. In the situations when Low-Tech D is challenged with opportunism it has the opportunity to switch from one supplier to another and would not face problems with finding a replacement. We characterized therefore the product D as low knowledge-sensitive. Table VI.4 below summarizes the characteristics of the Low-Tech D product.

Table VI.4 Characteristics of Low-Tech D product

<table>
<thead>
<tr>
<th>Variable</th>
<th>Product D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>ü Textile and Furniture, ü Low – tech.</td>
</tr>
<tr>
<td>The pace of changes in the</td>
<td>ü Rather stable.</td>
</tr>
<tr>
<td>environment</td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td>ü Mature, mainly hand-made.</td>
</tr>
<tr>
<td>Process of development</td>
<td>ü Part I ~ eight months, ü Part II ~ eleven months.</td>
</tr>
<tr>
<td>Investments in R&amp;D</td>
<td>ü Fair’s travel expenses; ü Cost of employment of Creation Department.</td>
</tr>
<tr>
<td>Substitutes</td>
<td>ü Many – independency from single supplier.</td>
</tr>
<tr>
<td>Knowledge sensitivity</td>
<td>ü Low</td>
</tr>
</tbody>
</table>

The characterizing of each product allowed us to separately classify the four products analyzed in this master thesis into two groups of high and low knowledge sensitivity. This completed classification is summarized in Table VI. 5 below.
Table VI.5 Classification of product A, B, C and D based on knowledge sensitivity’s level

<table>
<thead>
<tr>
<th>High knowledge sensitivity</th>
<th>Low knowledge sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Product A</td>
<td>✓ Product B</td>
</tr>
<tr>
<td>✓ Product C</td>
<td>✓ Product D</td>
</tr>
</tbody>
</table>

VI.2   Types of opportunistic behavior

During the interviews with the representatives of each company we have asked about their undesirable experiences and concerns in reference to cooperation with their partners. We have provided those examples in the fifth chapter – Empirics. In this section we match those examples with the types of opportunistic behavior that is used in the literature that was provided in the second chapter – Literature review. After analyzing each company separately we provide a complete summary of all companies together.

VI.2.1   Types of Opportunistic Behavior for High-Tech A

The main Type of opportunistic behavior threatening High-Tech A is the risk of losing the key information on the product’s formula and know-how of the production. It is referred as the ‘fundamental paradox’ (Arrow, 1962). The product A has a unique formula and production technology, which is confidential. However, it cannot be kept confidential when the process of manufacturing starts.

Another significant opportunistic behavior for High-Tech A is quality shirking. As quoted by the CEO and Chief Scientist of the High-Tech A meeting with the appropriate standards to ensure the quality and safety of the product is very important.

Figure VI.1 summarizes the interdependence between features of the product, the motivations for engaging in inter-firm alliance and type of opportunistic behavior for High-Tech A. In this master thesis the analysis focuses on interdependence between features of products and ex-ante control mechanisms to approach opportunistic behaviors that accompany them. Therefore, the influence of motivations to engage in inter firm alliance and matching specific type of opportunistic behavior with specific ex-ante control mechanism would not be investigated in details and has been displayed in the figure only to create the context. The motivations related to the specific company have been described sufficiently in the previous chapter and did not require an additional analysis here.
VI.2.2 Types of Opportunistic Behavior for High-Tech B

The product B was based on complex technology and know-how. The knowledge of developing the product B was the most valuable asset the High-Tech B had. The losing of that asset represented the most negative consequence of opportunistic behavior that the company was eventually challenged with. The High-Tech B has lost the exclusiveness of the formula of their product as well as its production technology.

Another, opportunistic behavior High-Tech B was challenged with was the misrepresentation of intentions. The Chinese company was believed to be a partner of High-Tech B that was responsible for investing in the manufacturing as well as commercialization process. However, the real reason for Chinese investor to engage into the cooperation occurred to be stealing the formula for producing the product.

The previous action leads to next form of opportunistic behaviors the High-Tech B has faced: shirking and avoidance of responsibilities, falsification of expanse reports and violation of implicit and explicit criterions included in contract. According to the contract signed between the High-Tech B and its Chinese manufacturer, High-Tech B was in charge of the technology, scaling up and running the operation while the Chinese partner was in charge of financing the whole production and marketing. Chinese partner had fulfilled the financial documents, which indicated its inability to further support financially the project. However, after the founders of High-Tech B have withdrawn from the cooperation, the Chinese investor relocated the manufacturing facilities and started commercializing the product B under the different brand name.
Figure VI.2 attached below summarizes the interdependence between features of the product, the motivations for engaging in inter-firm alliance and type of opportunistic behavior for High-Tech B.

**Types of opportunistic behavior for High-Tech B:**
1. Loss of key information, ‘Fundamental paradox’;
2. Misrepresentation of intentions;
3. Shirking and avoidance of responsibilities;
4. Falsification of expense reports;
5. Violation of implicit and explicit criterions included in contract.

**Motivations for High-Tech B for engaging in inter firm alliance:**
1. Access to the financial capital;
2. Lower costs of production in China.

**Features of High-Tech B Product:**
1. High investments in R&D;
2. Complex technology;
3. Turbulent environment;
4. Moderate length of process of development (around 2 years);
5. Few substitute with the same quality;
6. High knowledge sensitivity.

**Figure VI.2 Influence of features of product on motives for inter-firm alliance and types of opportunistic behavior for High-Tech B**

**VI.2.3 Types of Opportunistic Behavior for Low-Tech C**

Based on the information provided by the Low-Tech C, we analyze that the main types of opportunistic behavior for this company are financial frauds and violations of contracts agreements regarding the dates of delivery.

The Figure VI.3 attached below summarizes the interdependence between features of the product, the motivations for engaging in inter-firm alliance and type of opportunistic behavior for Low-Tech C.

**Types of opportunistic behavior for Low-Tech C:**
1. Financial frauds;
2. Delays in delivery.

**Motivations for Low-Tech C for engaging in inter firm alliance:**
1. Access to the financial capital;
2. Lower costs of production in China.

**Features of Low-Tech C Product:**
1. Low investments in R&D;
2. Mature technology;
3. Stable environment;
4. Short process of development (up to 6 months);
5. Many substitute;

**Figure VI.3 Influence of features of product on motives for inter-firm alliance and types of opportunistic behavior for Low-Tech C**
## VI.2.4 Types of Opportunistic Behavior for Low-Tech D

The most frequently appearing types of opportunistic behavior that were observed in the case of Low-Tech D are: violations of contracts agreements regarding the dates of delivery, quality shirking, and financial frauds.

The delays with the delivery happen frequently, but their negative influence is the highest for seasonal collections. The opportunistic behavior that refers to quality shirking arises for example when the final product that arrives to the shop does not completely reflect the model presented during the furniture fair. Occasionally, it can occur because the producer of Low-Tech D has outsourced the manufacturing to subcontractor and that has resulted in the variations in product quality. Low-Tech D had also been a victim of financial fraud through making the prepayment for products / services that were never delivered by the partner. Low-Tech D has also been challenged with the unauthorized usage of other peoples belonging (e.g. photos) by the supplier / manufacturer. The Chinese partner did use a photo without the permission of the owners as part of the product.

Figure VI.4 summarizes the dependency between features of the product, motives for engaging in inter-firm alliance and types of opportunistic for Low-Tech D.

Table VI.6 summarizes the types of opportunistic behavior that we detected while analyzing the four companies.
Table VI.6 Classification of product A, B, C and D based on knowledge sensitivity’s level

<table>
<thead>
<tr>
<th>Types of Opportunistic behavior</th>
<th>High knowledge sensitivity</th>
<th>Low knowledge sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Loss of IP, ‘Fundamental paradox’;</td>
<td>Loss of key information, ‘Fundamental paradox’;</td>
</tr>
<tr>
<td>Quality shirking.</td>
<td>Falsification of expense reports;</td>
<td>Financial frauds;</td>
</tr>
<tr>
<td></td>
<td>Violation of implicit and explicit criterions included in contract;</td>
<td>Delays in delivery.</td>
</tr>
<tr>
<td></td>
<td>Misrepresentation of intentions;</td>
<td>Financial frauds;</td>
</tr>
<tr>
<td></td>
<td>Shirking and avoidance of responsibilities.</td>
<td>Financial frauds;</td>
</tr>
</tbody>
</table>

As displayed in Table VI.6, the only pattern and similarity between two analyzed groups of products is the presence of losing their IPs in case of high knowledge-sensitive products. We suggest that this is the result of possessing know-how of the product that are the most valuable assets of the companies High-Tech A and B. The other types of detected opportunistic behavior did not create the pattern of belonging only to high or low knowledge-sensitive products. We have discovered quality shirking, financial frauds, and violation of contracts in both groups. However, we suggest that the same type of opportunism has different influence on high knowledge-sensitive products and it is more negative and harmful. Based on the experience that our interviewees have shared with us, we think that the company with low knowledge-sensitive product can recover much faster and without significant negative influence after facing single experience of opportunism. The company will bear the losses, but they will not endanger it with losing the whole business. Moreover, they can learn from their mistake and make improved decisions for the future. On the other hand, the companies with high knowledge-sensitive products can lose the entire business based on one opportunistic act from their partner. There is no recovery if the IP was used inappropriately. The impacts of quality shirking can be more damaging. However, this can be due to the fact that the High-Tech A belongs to the pharmaceutical industry. Finally, all types of opportunistic behavior faced by High-Tech B were correlated with one another and were the result of no IP.

To conclude this part, we define two patterns in differences between high and low knowledge-sensitive products. First, we evaluate that the type of opportunism corresponding to IP lose or
misuse is a characteristic of high knowledge-sensitive products. Secondly, we suggest that the single opportunistic act, regardless of its type, has more severe negative impact on the high knowledge-sensitive products.

VI.3 Ex-ante control mechanisms

During the interviews with the four companies we have asked their representatives about any kind of measures that they take and they believe that might protect them against opportunistic behavior of their partners. Their responses are included in the fifth chapter – Empirics. In the following section we analyze those measures in more detail. We classify them to ex-ante control mechanisms of selection, incentives and monitoring, and formal and informal. Firstly, the companies are analyzed separately. At the beginning of the next section there is enclosed the table (Table VI.7) with concluded information from all companies together that allows the comparison.

VI.3.1 Ex-ante control mechanisms used by High-Tech A

VI.3.1.1 Selection process

A. Formal

The product A is very complex; technology is advanced and is entitled to confidential knowledge. Therefore, it was very important for the High-Tech A to undertake all available precaution, in order to protect its IP. The High-Tech A has used the patent protection and CDA that we classified as their formal ex-ante control mechanism during the selection process. This categorization is made with accordance to the assumption of Merges (2005) described in the Literature review.

Another ex-ante protective control mechanism during the selection process of partner that could reduce the risk of opportunistic behavior could be the grant from government of both Sweden and India. However this grant has only been applied for, but not granted yet. Therefore, we do not consider it as ex-ante control mechanisms used by High-Tech A. However, we acknowledge that if the grant was approved, it would be another ex-ante formal protective measure used by High-Tech A.

B. Informal

Due to the high risk of ‘fundamental paradox’ and the knowledge-sensitive nature of product A, it was very important for High-Tech A to approach the selection process very carefully (Wathne and Heide, 2000). Cautious attitude towards choosing a manufacturing partner
is perceived by the company as a tool of preventing or reducing the risk of opportunism. The company has made a market research about Indian manufacturing environment in pharmaceutical industry prior to selecting a specific partner. Another important feature that has influenced the selection’s decision of specific partner was reputation. We categories those market research and checking the reputation of manufacturer as screening methods mentioned by Wathne and Heide (2000).

We have also detected ex-ante informal control mechanisms used in the selection process that were not found in the academic literature. To those belongs: hiring a consultant and extending the period of selection.

VI.3.1.2 Incentives

A. Formal

From the action taken by the High-Tech A we analyze the form of cooperation – equity alliance (Das and Bing-Sheng Teng, 1996), long term contract (Williamson, 1975), and mutual hostage (Das and Rahman, 2010) as formal incentives mechanisms. High-Tech A believes that creating equity alliance and giving the percentage of the company to the Indian manufacturer assure that the appropriate behavior is more beneficial for the manufacturer rather than acting opportunistically.

The contract’s conditions that force three-year investment in R&D are believed to create the interdependence character of the cooperation. The opportunistic behavior will have direct negative influence on both parties, therefore, the risk of opportunism is perceived to be lower under such conditions. Moreover, High-Tech A uses the confidentiality of the formula for the first three years. The manufacturer would put himself at risk of losing his investments, if any opportunistic behavior will occur, especially during the first three years. We define this as mutual hostage.

B. Informal

We classified the promise of future contracts as the informal incentive (Das and Rahman, 2010) used by the High-Tech A. This gives the partner the promise of long term benefits that decreases the attractiveness of acting opportunistically.

VI.3.1.3 Monitoring

A. Formal

High-Tech A reserves the right of unexpected audit of the facility and documents of its partner in their cooperation contract. We categorize this mechanism as the approval for monitoring stated in the contract (Williamson, 1975; Wathne and Heide, 2000).
**B. Informal**

High-Tech A is planning to use the form of Just in Time Production. We suggest that it would reduce the risk of its partner and competitors having access to the product to do reverse engineering. This method of control satisfies the need of the company to keep their product away from the opportunistically oriented parties.

Figure VI.5 summarizes the ex-ante control mechanisms used by High-Tech A. The ex-ante control mechanisms written in inclined font refer to the mechanisms that were not described in the Literature review.

<table>
<thead>
<tr>
<th>Time</th>
<th>Ex-ante Prevention</th>
<th>Formal form</th>
<th>Informal form</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Selecting:</td>
<td>Selecting:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Patent.</td>
<td>- Screening mechanisms (market research, reputation)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Hiring a consultant,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Extended period of looking for the partner – 2 years.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Incentives:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- CDA.</td>
<td>- Promise of future contracts for products.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Monitoring:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Just in Time Production.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Equity alliance,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Mutual hostage (investment in R&amp;D for the first 3 years, formula not released within first 3 years),</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Long-term contracts.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Monitoring:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Approval for monitoring stated in the contract.</td>
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</tbody>
</table>

Figure VI.5 Ex-ante control mechanisms used by High-Tech A
VI.3.2 Ex-ante control mechanisms used by High-Tech B

VI.3.2.1 Selection process

A. Formal
There were no formal selection ex-ant control mechanisms detected for choosing a partner.

B. Informal
Among the informal ex-ante control mechanisms for selection process, High-Tech B has used the personal connection of one of its founders. It could be perceived as a form of screening method; however, we perceive it as very subjective. Therefore we do not refer to it as a screening method mentioned by Wathne and Heide (2000), but as a new mechanism.

VI.3.2.2 Incentives

A. Formal
The High-Tech B has used the form of equity alliance (Das and Bing-Sheng Teng, 1996), long-term contract (Williamson, 1975), and mutual hostage (Das and Rahman, 2010) as the ex-ant control mechanism in the form of incentives. The equity alliance structure was believed to serve the role of an incentive to motivate and involve Chinese manufacturer in non-opportunistic approach towards the cooperation. The mutual hostage was secured through the right to collect the share in the profit only after the full year of commercialization and introduction of the product B to the market.

B. Informal
We determine no informal incentives considered for this partnership.

VI.3.2.3 Monitoring

A. Formal
High-Tech B has stated the approval for monitoring in the contract (Wathne and Heide, 2000; Williamson, 1975). They have agreed with the Chinese partner that one of the founders will be physically present at the local factory. Also as a provision for not revealing their secret with regard to the product, the inventors of High-Tech B established the R&D in San Diego and premixed the chemicals in the USA and exported them to China.

B. Informal
The representative of the High-Tech B that has moved to China was responsible for recruiting the production team. On purpose, he did not hire any additional chemist. He perceived
it as protecting the recipe of the product B. We classify it therefore as ex-ante control mechanism.

Figure VI.6 summarizes the ex-ante control mechanisms used by High-Tech B.

Figure VI.6 Ex-ante control mechanisms used by High-Tech B
VI.3.3 Ex-ante control mechanisms used by Low-Tech C

VI.3.3.1 Selection process

A. Formal

The product C is not entitled with confidential, complex technology or knowledge. Moreover, it is purchased from the external supplier and not developed internally. Therefore, we detected no formal ex-ante control mechanisms used in the process of selection of the partner.

B. Informal

Among the informal ex-ante control mechanisms used during the selection process by the Low-Tech C we have recognized the screening method (Wathne and Heide, 2000). The company cooperates with the business network in their industry to collect the information that might help it with choosing the right partner. Through this process they learn about the reputation of various suppliers and it facilitates the process of selecting. Another control mechanisms that we have detected are sending the representative of the company to the producers in Asia and placing the order locally. In order to decrease the costs of those business travels, the Low-Tech C collaborate with another store that provides the same offer. To protect itself, the company cooperates only with the store it has personal relationship and it trusts.

VI.3.3.2 Incentives

A. Formal

Low-Tech C uses as the form of cooperation short-term contracts (Williamson, 1975) in the form of LC that is arranged under the supervision of a third party (Das and Rahman, 2010) – the bank. Moreover, the company includes all specifications of the ordering, such as color shape or size in the contracts. We recognize this as another control mechanism aimed at protecting the company by proving if the supplier is not meeting e.g. the quality standards. Finally Low-Tech C claims in the contract the conditions of financial penalties. In their contract they have clearly indicated that in case of delivery delays, there will be penalties in place that will be implemented by decreasing the value of their invoices that are automatically performed by the bank through decrease in the value of the invoice.

B. Informal

Low-Tech C admits to the tendency of cooperating with other partners that meet their expectations in terms of products, and successful and trouble-less collaboration. The company promises therefore those partners that it is willing to purchase the items from them also for
extended period of time in the future. This method refers to the mechanism of promise of future contracts as an incentive protecting against opportunism mentioned by Das and Rahman (2010).

VI.3.3.3 Monitoring

A. Formal

Since the Low-Tech C is a small store with limited finance and employee resources, it cannot afford to send someone regularly to China or India and monitor the production locally. There was no ex-ant formal monitoring mechanism detected that was used by Low-Tech C.

B. Informal

We suggest that sharing bad and good experiences about the suppliers within the business network in the same industry is a form of informal monitoring. It shapes the reputation of the producers and influence positively the selection process by exposing the opportunistically oriented parties.

Figure VI.7 summarizes the ex-ante control mechanisms used by Low-Tech C.
VI.3.4 Ex-ante control mechanisms used by Low-Tech D

VI.3.4.1 Selection process

A. Formal

We detect one formal ex-ante control mechanisms used by Low-Tech D. It is the term sheet (Burstein, 2012), which appears in the form of exclusive list. One of the risks the Low-Tech D is afraid of is the situation when the other companies from the same sector in Poland would offer the same products as those of Low-Tech D. Therefore, by influencing the partners to
sign an exclusive list, Low-Tech D specifies that supplying to other Polish companies would be the violation of the contract and the opportunistic behavior.

B. Informal

We recognize that Low-Tech D is using the screening method as control mechanism for selecting a partner (Wathne and Heide, 2000). In the case of this company the screening method is performed by searching for the producers during the fairs and visiting the European fairs in the first place. Moreover, Low-Tech D does not take the urgent decision about the partner selection. The representatives of the company spend few days on the fairs. We claim it protects the company and decrease the risk of opportunistic behavior as Low-Tech D gains a better knowledge and understanding of the producers’ environment. Furthermore, the representatives of the company collect the comprehensive amount of documents during the fairs about various suppliers and their products. We suggest it is also the control mechanism because if the opportunistic behavior of e.g. shirking quality occurs later, this documentation is used as a support to justify that the received product does not meet the requirements of the model that was presented during the fair. Another control mechanism in the informal form is the presentiments and experience of Low-Tech D. The company only sends those expert employees to the fairs who are very familiar with the products and the suppliers. This is an effective tradition in the company that is based on many years of experience and has significantly helped with making appropriate judgments about the producers. Finally, the last mechanism that we detected is to order the model of the whole collection only. If the model fulfills the expected standards, the company is assured that the decision of placing the complete order is more secured.

VI.3.4.2 Incentives

A. Formal

Among the action taken by Low-Tech D we detect the following as the control mechanisms in the form of formal incentives: short-term contract (Williamson, 1975) and contract supervised by the mediator (Das and Rahman, 2010) – LC and Payment Collection. We suggest that the form of short-term contract is especially visible in the case of Low-Tech D as the control mechanism, because even with the long-term partners the company always signs a new contract. The cooperation with a temporary partner includes six stages: looking for a partner, negotiating with a potential partner, signing a contract, cooperation undergoing, evaluation of the results of cooperation, and if they are negative, taking the ex-post actions. Those steps are marked as one to six on Figure VI.8. Every partner that is currently a permanent partner of Low-Tech D was firstly a temporary partner and cooperated with the company according to those six stages. If the cooperation was successful it could developed to the long-
term relation. However, the structure of the period when both organizations are legally bounded follows the same mechanism, as the cooperation with the temporary partner, and cover the time of a single contract. This is marked as steps seven to twelve on Figure VI.8. That mechanism is shown in more details in Figure VI.8 representing the differences between cooperation with temporary and permanent partners.

**Figure VI.8 Model of cooperation with temporary and permanent partners**

Another formal control mechanism used as an incentive by Low-Tech D is to include all specification about the products in the contract, making no prepayment and placing financial penalties for contract violations. The last formal incentive we detect is placing the order few months in advance.
B. Informal

Due to the fact that the contracts between Low-Tech D and its permanent partners are still classified as short-term and can only be renewed upon satisfaction of Low-Tech D, the meeting with the partners possesses the nature of informal incentives. The meetings take place in the shops of Low-Tech D where the partners have the opportunity to better understand the business of Low-Tech D and its clients. The partners gain the idea of what kind of assortments Low-Tech D could be interested in ordering and can adopt their offer to better meet the expectation of Low-Tech D and receive more contracts in the future. We recognize that this is a form of mechanism of promise of future contracts (Das and Rahman, 2010) used by Low-Tech D.

VI.3.4.3 Monitoring

A. Formal

Inclusion of the requirement for an insured transporting company utilized by the partner in the contract can be considered as a formal ex-ante control mechanism in the monitoring process.

B. Informal

Because of the short-term nature of the contract with permanent partners, we assume that the informal control mechanism for monitoring is to present the defected products during the partners’ visits to the shops of Low-Tech D. Those visits may lead to the discussion about the defected products that may result in resolving the problems.

Figure VI.9 attached below presents the summary of all control mechanisms implemented by Low-Tech D as the ex-ante measures.
VI.4 The influence of knowledge sensitivity on the selection of ex-ante control mechanisms against opportunistic behavior

Our detailed analysis is divided into three sections of ex-ante control mechanisms used during selection process, as incentives and as monitoring mechanisms.

Table VI.7 represents a complete display of ex-ante control mechanisms used by all four analyzed companies.
<table>
<thead>
<tr>
<th>High knowledge sensitivity</th>
<th>Low knowledge sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product A</strong></td>
<td><strong>Product B</strong></td>
</tr>
<tr>
<td><strong>Formal</strong></td>
<td><strong>Informal</strong></td>
</tr>
<tr>
<td><strong>Selecting:</strong></td>
<td><strong>Selecting:</strong></td>
</tr>
<tr>
<td>- Patent.</td>
<td>- Screening mechanisms, - Hiring a consultant, - Extended period of looking for the partner – 2 years.</td>
</tr>
<tr>
<td><strong>Selecting:</strong></td>
<td><strong>Selecting:</strong></td>
</tr>
<tr>
<td>- CDA.</td>
<td>-</td>
</tr>
<tr>
<td><strong>Incentives:</strong></td>
<td><strong>Incentives:</strong></td>
</tr>
<tr>
<td>- Promise of future contracts.</td>
<td>- Equity alliance, - Mutual hostage, - Long-term contracts</td>
</tr>
<tr>
<td><strong>Incentives:</strong></td>
<td><strong>Monitoring:</strong></td>
</tr>
<tr>
<td>- Approval for monitoring stated in the contract.</td>
<td>- Just in Time Production</td>
</tr>
</tbody>
</table>
Based on the assumptions from the academic literature we have used in this master thesis, we expected that IP rights and copyrights would be used only for high knowledge-sensitive products (Merges, 2005; Burstein, 2012). We have however detected that IP rights are applied to the products A and unauthorized use of a personal article and copyright violation to the product D that belongs to two different categories of knowledge sensitivity. We have expected that product B would also be protected with IP rights. We suggest that because it was not, the company has not experienced successful inter-firm cooperation. Moreover in the detailed analysis, IP rights used in the case of product A and copyrights in the case of products D differ. IP rights applied by High-Tech A refer only to one product and protect its know-how. On the other hand exclusive lists imposed by Low-Tech D refer to many different products and aim for protecting the company against the competition. However, we conclude that for both high and low knowledge-sensitive products the usage of IP rights or copyrights during selection process is relevant.

Another similarity that we have recognized in the selection of ex-ante control mechanism in the first phase is the usage of screening mechanisms. We have detected that three analyzed companies: High-Tech A, Low-Tech C and Low-Tech D have applied some forms of screening mechanisms. All three companies have emphasized the importance of gaining the knowledge about the business environment in their specific field through conducting market research, visiting fairs or communicating within their business network and industry. Moreover, both High-Tech A and Low-Tech C draw their attention to the reputation of the producers, and High-Tech A and Low-Tech D invested extended amount of time to select the proper partner.

We therefore identify that IP rights and copyrights as a formal and screening mechanisms, good reputation and extended time for selecting the partner as informal mechanisms apply as ex-ante control mechanisms for both high and low knowledge-sensitive products.

Three of the analyzed companies admitted using the promise of future contracts as the informal incentive that can discourage their partner to act opportunistically. That was also the only similarity we have recognized in the usage of incentives for high and low knowledge-sensitive products.

Both of the companies with high knowledge-sensitive product used as the form of the cooperation the equity alliance. They have signed long-term bounding contracts. Moreover, both High-Tech A and B included in their contracts the conditions that created the mutual hostage between them and their partners. We claim that those choices are strictly made based on the product and their high knowledge-sensitive nature. We analyze that those specific formal mechanisms are applied for achieving higher protection against opportunistic behavior in the context of high knowledge-sensitive products.
On the other hand, both companies with low knowledge-sensitive products decided to only sign short-term contracts. Both use the form of LC and Low-Tech D additionally a form of Payment Collection. The contracts are therefore, due to their nature, supervised by an external party, in both our examples served by the bank. Moreover, both companies emphasize the detailed specification of the product to be included in their contracts and the usage of financial penalties. We suggest that because of the low knowledge sensitivity of the product, the relative independence between the company and its partner, served by short-term contract, is more beneficial in this context. Furthermore, because the products are not embedded in the complex and confidential knowledge it is possible to specify all of the features in the contract and use it as a formal ex-ante protective mechanism. On the other hand, this could not have been accomplished with the high knowledge-sensitive products.

Among the monitoring control mechanisms we have recognized that both of the companies with the high knowledge-sensitive products reserve the right to monitoring in their contracts. On the other hand we did not detect any mutual pattern for monitoring among the companies with low knowledge-sensitive products. We claim that it can be explained by the fact that single act of opportunistic behavior has bigger and more negative impact on the companies with high knowledge-sensitive products rather than the ones with low knowledge-sensitive products. Therefore the costs carried for monitoring would exceed the potential benefits in the context of low knowledge-sensitive products.

The above analysis has been summarized in Table VI.8 The grey color refers to the control mechanisms that are relevant for both high and low knowledge-sensitive products.

Table VI.8 Ex-ante control mechanisms used in accordance to the product A, B, C and D

<table>
<thead>
<tr>
<th>Ex-ante control mechanisms</th>
<th>High knowledge sensitive product</th>
<th>Low knowledge sensitive product</th>
<th>High and Low knowledge sensitive product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selecting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ IP rights</td>
<td>✓ Screening mechanisms,</td>
<td>✓ Good reputation,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ Good reputation,</td>
<td>✓ Extended time for selecting the partner</td>
</tr>
<tr>
<td></td>
<td>✓ Equity alliance,</td>
<td>✓ Short-term contracts,</td>
<td>✓ Promise of future contracts</td>
</tr>
<tr>
<td></td>
<td>✓ Long-term contracts,</td>
<td>✓ With mediator,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Mutual hostage.</td>
<td>✓ All specification in the</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>contract,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ Financial penalty.</td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td>✓ Approval for monitoring</td>
<td>✓ Approval for monitoring</td>
<td></td>
</tr>
<tr>
<td></td>
<td>stated in the contract.</td>
<td>stated in the contract.</td>
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</table>
Through our analysis we have firstly divided the products based on their knowledge sensitivity into two groups: high knowledge-sensitive products and low knowledge-sensitive products. Guided by this categorization and conducting empirical analysis we have answered our research question as follows:

- The level of knowledge sensitivity does not influence the selection of ex-ante control mechanisms against opportunistic behavior during the process of selecting the partner. However, those control mechanisms are important for both groups.

- The level of knowledge sensitivity influences the selection of the formal ex-ante control mechanism against opportunistic behavior in the form of incentives.
  - The high knowledge-sensitive products are subjected to equity alliance, long-term contracts and mutual hostage.
  - The low knowledge-sensitive products are subjected to short-term contracts supervised by the mediator, the inclusion of detailed specifications in the contract and financial penalties.

- The level of knowledge sensitivity influences the formal ex-ante control mechanism against opportunistic behavior in the form of monitoring mechanisms.
  - For the high knowledge-sensitive products there is the approval for monitoring included in the contract.
CHAPTER VII. Conclusion

The members of the business world today are facing very competitive environments. More and more markets open themselves; the technologies are developed at very high pace and customers’ expectations are on the rise. In order to survive in such environment, the companies need to be very innovative and always ahead of their competition. This task however is very difficult, especially for SMEs, who face greater problem of limited experience, knowledge, and financial resources. Therefore, many of them decide to seek for external help through alliances with other party.

The business environment of today is also driven by the trend of globalization, such as cross border inter-firm alliances. There are many benefits to these alliances. For example, they provide fast access to the foreign markets, financial capital, and lower labor costs with the attachment of local experience and knowledge. However, the inter-firm cross border alliance carries with themselves also different kinds of risks. The practice of taking advantage of circumstances by a partner or partners in an alliance is considered as opportunistic behavior.

According to Williamson (1975) every company given with the opportunity of achieving benefits through opportunistic behavior will decide to implement one. Moreover, not only the final negative result of opportunism can expose the company to additional financial loses, but also the implementation of the protective actions carry significant costs with them. Given the high chance of dealing with opportunistically oriented partners in inter-firm alliances, we claim that the selection of mechanisms against opportunistic behavior should be a crucial step for any company engaging in such alliances. This selection is driven by different features of the company, such as the context of business, the industry, and the products’ nature. In this master thesis we focus on the product and its nature with respect to knowledge sensitivity. Therefore, the aim of this master thesis is to evaluate the influence of the level of knowledge sensitiveness on the selection of ex-ante control mechanisms against opportunistic behavior.

During working with the company - High-Tech A on another project during studies at Linköping University we have noticed its vulnerability toward opportunistic behavior due to the sensitivity of its product toward knowledge. We found this matter very interesting and decided to investigate the academic literature and make correlation between theories and real-world scenarios. We decided to focus our master thesis on the relationship between the knowledge-sensitive nature of the product and the opportunistic behavior and its ex-ante control mechanism.
We assumed that the best approach to answer the research question would be to conduct the comparative case study. We followed the suggestion of Eisenhardt (1989) of investigating four to ten companies to achieve the validity of the research. We have found three other companies that were involved in inter-firm alliance and their products were embedded with different level of knowledge sensitivity. We collected empirical data and reviewed the academic literature alternately.

During writing this master thesis we faced several problems and challenges that we needed to overcome. After reviewing the academic literature about opportunistic behavior we found that there are many factors that can influence the opportunism and the selection of mechanisms against it. In the case of the companies analyzed in this study, we noticed that there are three main influential factors: the product, the cross-border nature, and the belonging to SME sector. However, in order to conduct the in-depth analysis we needed to narrow down or study to only one factor but not exclude factors that could be significant for our findings. We have overcome this problem by narrowing down our companies to SMEs with inter-firm alliances partners in China and/or Indian. We therefore suggest that the influence of those factors would be visible in each of four examples and the differences in our findings will be related to the nature of the products.

We have finally constructed the research question as follows:

**How does the knowledge sensitivity of a product affect the selection of ex-ante control mechanisms against opportunistic behavior?**

Our findings suggest:

- The knowledge sensitivity affects the selection of ex-ante control mechanisms in the form of incentives. Different levels of knowledge sensitivity require different formal mechanisms:
  - High knowledge sensitive-products ask for equity alliance, long-term contracts and mutual hostage.
  - That is opposed to low knowledge-sensitive products, which are more subjected to short-term contracts under the supervision of an external party and inclusion of complete list for product's specification.

- The knowledge sensitivity affects the selection of ex-ante control mechanisms during the monitoring process.
  - For the high knowledge-sensitive products there is the approval for monitoring included in the contract.
We recognize no influence of knowledge sensitivity on selecting ex-ante control mechanisms during the partner-selecting phase. Both high and low knowledge-sensitive products recognize similar control mechanisms for selecting partner as important.

We claim that our findings are valuable to both academia and companies. Our findings suggest areas of importance that need to be taken into consideration for high and low knowledge-sensitive products for protection against opportunistic behavior. This thesis has taken into the consideration existing theory and previous study results. We have followed the Williamson (1975) approach to the phenomenon of opportunistic behavior and focused specifically on the control mechanisms against opportunism suggested by Williamson (1975), Wathne and Heide (2000) and Turnbull and Oliver (1992). We recognized the need of selecting and applying control mechanisms to a specific context described by Barnes et al. (2010) and we decided to center the analysis on the knowledge sensitivity of a product. This influence was previously research by Hurmelinna-Laukkanen (2007), Bulganesh (2011), Barnett (2011), Burstain (2012) and Lemley (2012). However, all those authors analyze only the impact of high level of knowledge sensitivity of a product on the opportunism and its control mechanisms, which presents only the one side of argumentation. They do not include the case of low knowledge-sensitive product and their influence on the selection of control mechanisms. Therefore, it is inconclusive to link the specific control mechanisms to the influence of knowledge sensitivity of a product. We decided therefore to conduct the comparative case study of how the process of selecting control mechanisms against opportunistic behavior is influenced by knowledge sensitivity of a product distinguished between high and low knowledge-sensitive products. Due to the time limitation the analysis of control mechanisms was narrowed only to ex-ante control mechanisms. Therefore, the contribution of this thesis and its findings to previous researches in the same field of study is the appraisement whether specific ex-ante control mechanisms are indubitably attached to the knowledge sensitivity of a product, or their presence is not influenced by that nature.

The selection of the companies studied in this master thesis spans a broad spectrum of SMEs that decide to engage in inter-firm alliance with Chinese and/or Indian partners and who had faced or are facing potential opportunistic behaviors. The results can therefore be utilized for selection of ex-ante control mechanisms against opportunistic behavior based on the level of the product’s knowledge sensitiveness.
VII.1 Limitations

Although the research conducted for this master thesis has achieved its goal and served its purpose, there have been challenges that we faced through this research. First of all, the research has been conducted within the time frame of four months and it is assumed that it could have been improved if it could be investigated within a longer period of time. For example, we could elaborate further on the details the phenomenon of opportunism and its control mechanisms if we were not limited with such time constraints. Moreover, although the number of companies evaluated for achieving the results was four and according to Eisenhardt (1989) should be within the suggested scope of four to ten to assure the validity of data collected, it would have been preferred to investigate more companies to further enhance the credibility of the results.

VII.2 Suggestions for the future research

We suggest that our study lays a foundation for further in-depth research on the topic of opportunism and can benefit various organizations and companies. Therefore, there is a real need for further studies in this area given the emergence of globalization and the challenges that come with it.

Despite the fact that we dedicated a significant amount of time and effort to collecting data and putting this research work together, our investigation was limited to in-depth analysis of four companies only. In order to examine applicability of results to other scenarios, there is a need to conduct more comprehensive studies with more companies from different categories included.

Moreover, because of time constrains, we needed to narrow down our study and focus only on ex-ante control mechanisms. We however suggest that more researches that focus on ex-post control mechanisms against opportunistic behavior, as a function of knowledge sensitivity of the product would bring interesting and meaningful result that would supplement our findings.

Through the detailed investigation of ex-ante control mechanisms of each of analyzed companies, we have discovered that High-Tech B was lacking several protections that High-Tech A, Low-Tech C and Low-Tech D have in place. We did not detect any IP rights mechanism, screening process, good reputation, and extended time for selecting the partner or promise of future contract in the action taken by High-Tech B. However, as the results of the inter-firm alliance of High-Tech B were undesirable, we suggest that there might be a correlation
between those factors and the outcomes of cooperation. We suggest this as relevant topic for future research.

As final suggestion for future research in the area of opportunistic behavior is to conduct a systemic approach focusing on different features that influence the opportunism, e.g. comparing large companies to SMEs.


BRAND MANAGER / MARKETING DIRECTOR OF LOW-TECH D, 2013. Interview with the Product Manager of Low-Tech D Interviewed by Kamila Magdalena Grabowska [personal interview], 1 April 2013, 10:00.


CEO AND CHIEF SCIENTIST, 2013. Interview with the CEO and Chief scientist of High-Tech A Interviewed by Shideh Tabe Mohammadi [personal interview], 12 February 2013, 13:00.


CREATIVE PRODUCT MANAGER OF LOW-TECH D, 2013. Interview with the Creative Product Manager of Low-Tech D Interviewed by Kamila Magdalena Grabowska [Skype], 14 March 2013, 14:00.


FORMER CEO, 2013a. Interview with the former CEO of High-Tech B Interviewed by Kamila Magdalena Grabowska and Shideh Tabe Mohammadi [personal interview], 22 March 2013, 12:00.

FORMER CEO, 2013b. Interview with the former CEO of High-Tech B Interviewed by Kamila Magdalena Grabowska and Shideh Tabe Mohammadi [Skype], 18 February 2013, 06:00.


OWNER OF LOW-TECH C, 2013a. Interview with the owner of Low-Tech C Interviewed by Shideh Tabe Mohammadi [phone], 1 April 2013, 19:00.

OWNER OF LOW-TECH C, 2013b. Interview with the owner of Low-Tech C Interviewed by Shideh Tabe Mohammadi [Skype], 5 April 2013, 19:00.


PRODUCTION MANAGER OF HIGH-TECH A, 2013. Interview with the Production Manager of High-Tech A Interviewed by Shideh Tabe Mohammadi [personal interview], 27 March 2013, 10:00.


