Outsourcing R&D in the Defense Industry:
Developing Strategies for Collaborating with Indian Suppliers

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Master Thesis LIU-IEI-TEK-A—14/01809—SE
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Executive Summary
An important step in making an impact on the Indian market, Saab India Technology Center, SITC, was inaugurated on October 21, 2011. SITC is a collaboration with the Indian company Tech Mahindra, and supplies all of Saab’s Business Areas with skilled engineers. The growing interest for SITC has spread to TDH, the department for Human Machine Interface and Avionics. Possible benefits, but also challenges, of utilizing SITC have been discussed. This thesis attempts to address challenges and maximize benefits for TDH by exploring how a Swedish R&D organization in the defense industry, that has a tradition of performing most work in-house, can initiate outsourcing to a supplier in India. In order to do this, a literature study was performed. Since gaps in the literature regarding outsourcing in the defense industry were identified, a combination of a descriptive and exploratory research approach was chosen. Following the literature study, interviews were conducted to collect experience from working with external partners at TDH, experience from working with SITC, experience from other companies that have outsourced R&D to India and experience of working with Saab from SITC. Empirical data was also gathered via informal meetings and observations during the researchers’ 5 month stay at TDH in Sweden and SITC in India.

The outcome of this study shows that drivers and risks for outsourcing R&D, as well as the characteristics of the outsourcer and the supplier, will influence how the strategy for initiating outsourcing should be built. TDH’s main drivers in deciding to use SITC are mainly cost reduction goals, the possibility to access the Indian defense market and the opportunity to gain knowledge from collaborating with international suppliers. The type of risk that is most urgent for TDH is operational risk. Risks in this category, like overestimating cost reduction and risks associated with not understanding cultural differences are all highly relevant for any organization with limited experience in outsourcing.

Strategy wise, the main finding is that an R&D organization in the defense industry will benefit from working in a more collaborative manner than traditional outsourcing entails. In an R&D organization, tasks are often complex and highly integrated with each other which, combined with a limited level of outsourcing experience, requires a tighter collaboration. With a high level of involvement from the outsourcer, problems can be detected early and insufficient requirements can be handled. Close collaboration also enhances knowledge sharing, which is important to ensure that the goal of gaining knowledge from international collaboration is achieved. Furthermore, organizational acceptance can be improved by a collaboration that enables close contact between outsourcer and supplier. Improving acceptance in the organization for collaborating with the supplier should be prioritized in order to strengthen the positive effects of outsourcing.
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1. Introduction

This chapter introduces Saab, Combitech and the distributed development center Saab India Technology Center (SITC). It further describes the topic of outsourcing R&D and the purpose and limitations of this study.

1.1 Collaboration between Saab, Combitech and SITC

Saab AB was founded in 1937 with the mission to secure the Swedish supply of military aircraft (Saab AB, 2013a). Today Saab operates in the divisions of military defense and civil security and delivers products, services and solutions to governments, authorities and corporations worldwide (Saab AB, 2013b). Combitech AB is an independent company within the Saab group that was founded in 2006. They offer consultancy services, combining technology, environment and security. (Combitech AB, 2013) Combitech is one of Saab’s six business areas (Saab AB, 2013c), and many of the consultants at Saab are from Combitech. In some divisions, work is also outsourced in work packages to Combitech from Saab. (Rydh, 2013)

As an important step of making an impact on the Indian market (Knutsson, 2013), Saab India Technology Center (SITC) was inaugurated on October 21, 2011 (Saab AB, 2011) on initiative from Saab CEO Håkan Buskhe (Saab AB, 2012). SITC is a Research and Development Center, in partnership with Tech Mahindra in Hyderabad (Saab AB, 2011). In addition to expanding Saab’s presence in the Indian market, the aim of the center is to gain access to skills that Saab does not possess internally and thereby broadening Saab’s offer to customers. Furthermore, it serves as an important part of being able to offer cheaper solutions to customers via cost savings for outsourced work. (Knutsson, 2013)

In March 2012, Saab started outsourcing work to SITC and as of September 2013, SITC employs approximately 100 people. All Business Areas (BA) can use the center and the orders from any BA are made through Combitech. Combitech thereby acts as the commercial interface towards SITC. Communication wise, the BA:s decide whether Combitech should handle all communication with SITC or if communication should be handled between coworkers from SITC and Saab. (Rydh, 2013)

1.2 Internal Challenges and Unexploited Opportunities

Specified in the SITC contract between Saab and Tech Mahindra is a certain number of hours that are to be outsourced every year (a year in this context is March - February). Internally at Saab, these hours are split up and assigned the Business Areas. (Rydh, 2013) The responsibility for achieving a certain number of hours thereby lies with the line organization (Lorentzon, 2013). During SITC’s first year of operation, approximately 45 000 hours were outsourced which did not meet the goal of 65 000 hours. The goal for

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1 SITC was started as a partnership between Saab and Mahindra Satyam. (Saab AB, 2012) In 2013, Mahindra Satyam merged with Tech Mahindra. The new name of the merger is Tech Mahindra Ltd. (Tech Mahindra Ltd, 2013a) Tech Mahindra is a leading provider of solutions and services in the Information, Communications and Technology industry. The company employs 83 000 people, is present in 49 countries and has a yearly revenue of 2.83 billion USD. (Tech Mahindra Ltd, 2013b)
the second year (ongoing) is 160,000 hours and for the third year, the goal is set even higher at 260,000 hours. (Rydh, 2013)

There is inconsistency in how the hours are distributed within the business areas. Some functions and projects contribute many hours to the business area’s total while other functions and projects have yet to get started with outsourcing to SITC. TD, the Research and Development (R&D) department of the Business Area Aeronautics, is one example where no work has yet been outsourced to SITC. (Knutsson, 2013) At TDH, the Human Machine Interface (HMI) and Avionics division of TD, the line management recognizes the possibilities connected to SITC and the need to start researching how to best utilize them. (Lorentzon, 2013) Assigning part of the development work to SITC could hopefully contribute to major cost savings for TDH (Thomassen, 2013) and more cost efficient development is crucial in winning affairs and stressed by management. (Isoz, 2013) Apart from cost benefits, it is also possible that working with SITC could help satisfying future staffing needs (Lorentzon, 2013).

Possible benefits of working with SITC are perceived high by the TDH management but there are also challenges to address before an outsourcing relationship can be established. There is limited experience of dealing with outsourcing in general at TD and traditionally most development work is performed in-house. This is partly due to the fact that the projects that are being undertaken are complex projects where tasks are highly integrated with each other and hard to separate. Except from this, a lot of the material contains defense secrets which cannot be shared with any external party. It is thereby difficult to outsource any work that requires domain knowledge and strict control over the information flow is required. The fact that there is a limited level of outsourcing experience and that not much preparatory work for SITC has yet been done is reflected in the projects opinions of using SITC. The benefits that the line management believes can come from outsourcing to SITC is agreed upon but the fact that there is still limited knowledge of how to work with SITC results in a high perceived risk of delayed deliveries and increasing costs. This is an obstacle to overcome since the resources that could potentially be outsourced lie within the projects. (Saab AB, 2013d)

As a first step of overcoming the obstacles with outsourcing, TD has defined a type of work that they think could be outsourced as a good starting point. It includes tasks that are reoccurring amongst several different project teams. Therefore, no single large work package needs to be taken from one team but work can be collected from several sources and assembled into a larger total package. The risk for a single team is thereby minimized which could help in overcoming the fear of delayed deliveries. The tasks in the identified work are not core development tasks but less complex tasks where the integration with other tasks is low. The tasks are also not time critical and could therefore be a good first task for SITC in working with TDH. (Saab AB, 2013d)

TD thinks that the identified work could be a good starting point in establishing a relationship with SITC but they do not know how to best initiate and handle this work. They are also unsure about how they should continue the journey toward ultimately achieving the goal of being able to outsource more complex development work in larger
scale to SITC and thereby benefit from more significant cost savings and other advantages of outsourcing. (Lorentzon, 2013)

1.3 The Increasing Importance and Challenge of Outsourcing R&D

The question of how to best handle outsourcing is a key issue for many of today’s companies. Benefits such as cost savings, performance improvements and strategic development drive the process of companies focusing on certain areas and outsourcing other. While traditional outsourcing has been focused on peripheral business activities, outsourcing today also involves activities that are critical to the business and that contribute to competitive advantage. (McIvor, 2005) Outsourcing of R&D for example has existed for a long time but it is only in recent years that it has grown to a larger scale. (Rosenthal, 2010)

With increasing complexity of the tasks that are being outsourced, the problem of how to manage and evaluate the outsourcing process has also become increasingly complex (McIvor, 2005). As outsourcing evolves to include core business functions like R&D, companies must have “a change in mindset” regarding how the outsourcing process should be handled. The buyer/service provider relationship does not work. Instead, the relationship could be viewed as an alliance where the buyer must invest more time and effort into coordination, collaboration and communication. It must also be regarded that building up these relationships will take time and that they must be developed by starting with easy, peripheral activities and then moving towards the core. (Rosenthal, 2010)

Limited experience and knowledge about outsourcing are factors that are often a problem in firms that have experienced poor results with outsourcing. (McIvor, 2005) When experience has firstly been gained by outsourcing less critical activities, companies may increase profit opportunities greatly when moving on to outsourcing more critical activities (Quinn and Hilmer, 1995). A study described by Goolsby (2009) found that limited experience is also commonly a contributing factor to organizational resistance and that executives are generally well aware of the negative impact organizational resistance can have on outsourcing success. Apart from general outsourcing experience, the study also found that providing motive for the company’s choice of outsourcing supplier and examples of previous successful projects at the supplier was essential to winning organizational acceptance.

1.4 Purpose

Following the challenges and opportunities described above, the purpose of this thesis is as follows:

*The purpose of this thesis is to explore how a Swedish R&D organization in the defense industry, that has a tradition of performing most work in-house, can initiate outsourcing to a supplier in India.*
1.5 Thesis Structure
The thesis is structured into a few main chapters. Directly following this introduction is the extended background description which explains in more detail how the collaboration with SITC is handled today. The theoretical framework is then presented in 3 main headlines. In chapter 4, the theoretical framework is summarized and a model of analysis is developed. Succeeding this is the methodology chapter which presents how the study was conducted and the basic approaches and methods. The chapter on empirical data summarizes empirical finding with the main headlines following the structure of the model of analysis. An analysis of the present situation at TDH and SITC is also presented. After presenting the empirical data, it is analyzed together with the theoretical framework and conclusions are drawn. Lastly, recommendations for TDH are made and suggestions for future research are presented.
2. Theoretical Framework

The following section provides a theoretical framework for analyzing the purpose of the thesis. It introduces the concept of and drivers for outsourcing R&D, the risks associated with it and strategies for handling outsourcing of R&D.

In the early history of outsourcing, companies subcontracted their supporting activities such as the facility ownership, cleaning, catering, and other non-critical activities for the organization (Lonsdale and Cox, 2000). The decision of whether to outsource or not was then a financial decision, but has shifted to become a strategic decision for creating competitive advantages (Enarsson, 2008; McIvor, 2008). This trend started in the 1990s with companies beginning to outsource primary activities within the value-adding supply chain, however, outsourcing of support services and products was more common (Lonsdale and Cox, 2000). It has become impossible to remain competitive in all value-adding activities, and therefore companies have been forced to focus their resources within limited key areas (Lonsdale and Cox, 2000; McIvor, 2005; Nagendra, 2013). This applies particularly well to the IT sector where innovation is constantly present and demands in-depth knowledge (Lonsdale and Cox, 2000).

The issue of outsourcing has become more important for businesses, but also more complex (McIvor, 2005), which means that there is no guarantee for success. In a study done by Compass Consulting, where experiences from more than 8000 customer projects in 32 different countries concerning IT and business processes were taken into account, 58% of the cases were considered to be unsuccessful (Svenska Dagbladet, 2005). The reason for failure is often that the sourcing organization bases its decision regarding which activities to outsource on what will save most on overhead costs, instead of how the decision will impact the core competence of the organization (McIvor, 2008).

Traditionally, many companies only consider outsourcing activities that they do not think are core (Rosenthal, 2010). According to Mol (2005), companies in the Netherlands in the beginning of the 1990s considered being R&D intensive an impediment to outsourcing. However, that view has now changed. The trend can be observed in both raised levels of outsourcing amongst R&D intensive companies (Mol, 2005) and in a growing number of companies that offer R&D related services, such as laboratory testing, technology consulting, industrial design and engineering (Chiesa et al., 2004). The European Association of Research and Technology Organizations (EARTO) have also observed that R&D outsourcing is growing. One amongst several examples in Europe is Sweden, where manufacturing companies, already in 1995, spent 33% of their outsourcing budget on external R&D performers, which was a fivefold increase from 1991 (EARTO, 2003). Companies are broadening their span of sources for innovation and seek help from customers and universities (Linder et al., 2003). They are also starting to rely on partnership relations in their striving for new inventions and knowledge (Mol, 2005). However, this does not entail complete outsourcing of the R&D function in the future. Arora and Gambardella state that “external collaboration of research is complementary to, rather than a replacement for, in-house research activity” (Howells, 1999, p. 22).
2.1 Defining Outsourcing of R&D

The concept of outsourcing is well used, and there are various definitions depending on the business situation (Enarsson, 2008). Van Weele (2010) defines outsourcing as a company refraining from a certain activity and assigning it to another company in order to focus more effectively on the company’s core competence. He further adds that outsourcing distinguishes itself slightly from subcontracting in terms of waiver of assets, infrastructure, staff and skills. Similarly, Quélin and Duhamel (2003, p. 648) define outsourcing as “the operation of shifting a transaction previously governed internally to an external supplier through a long-term contract, and involving the transfer of staff to the vendor”. Lankford and Parsa (1999, p. 310) describe outsourcing as: “the procurement of services from sources that are external to the organization”. When they further discuss what activities to outsource they suggests that “any skill or knowledge that allows you to serve your customer base better, that deals directly with the product or service you are trying to put out of the door, is one that must remain in-house.”. Outsourcing is thereby the transfer of an activity rather than simply procuring an activity. Barthélémy (2003, p. 87) states that outsourcing includes “turning over […] part of an organizational activity to an outside vendor”. Following these various definitions of outsourcing, the definition of outsourcing in this report is: The transfer of an entire activity or part of an activity from the organization to an outside vendor.

The purpose of this report is to provide insight into the outsourcing of R&D exclusively and it is therefore of great importance to define this. OECD (2003) defines R&D as: “any creative systematic activity undertaken in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this knowledge to devise new applications. Includes fundamental research, applied research [...] leading to new devices, products or processes”. Concluding the above reasoning, the definition of outsourcing of R&D in this report is: The transfer of an entire R&D activity or part of an R&D activity from the organization to an outside vendor.

2.2 Drivers of Outsourcing R&D

The literature on R&D outsourcing suggests different reasons why companies should outsource R&D or innovation. Below, the internal drivers for an organization to outsource entire activities or parts of them will be described.

Cost Reduction

One of the most common reasons to implement outsourcing is to reduce costs (Lonsdale and Cox, 2000; Enarsson, 2008). Cost reduction can be achieved by letting a specialist supplier, that has economies of scale or other cost efficiencies, perform the activity at a lower cost relative to the sourcing organization (Enarsson, 2008; McIvor, 2005). Suppliers that are already performing the activity for other customers to a large extent will have economies of scale (Enarsson, 2008). This does not necessarily imply that the activity will be performed with reduced quality; McIvor (2005) states that the quality should be the same or even higher when outsourcing an activity to a specialist supplier.
Concentrating on Core Competence

Every company has limited resources and should concentrate these on their own internal core competence that creates competitive advantage (McIvor, 2008; Lonsdale and Cox, 2000; Quinn and Hilmer, 1995). Core competencies provide deterrent barriers to competitors, which protects the advantages of market share (Quinn and Hilmer, 1995). In areas where the company is lacking resources, it is more efficient to use a specialist supplier with greater capabilities to perform the activity. Suppliers often have the ability to learn from upstream sources, customer problems and solutions (Quinn, 2000). By letting other companies perform non-core tasks, a company can free resources and invest them in core areas (Enarsson, 2008).

Accessing Competence

There are several reasons why companies have a hard time finding sufficient human resources to keep an activity in-house. Quinn (2000) suggests that a company can have problems to attract specialist talents for non-core activities. He means that these workers tend to seek employers where they can get the most recognition and get rewarded for their competence. Sometimes it can also be hard for a growing company to find qualified employees locally and it could thereby be appropriate to consider outsourcing parts of their business to another country (Dr. Chaudhuri in Rosenthal, 2010). By outsourcing activities in areas that lack sufficiently skilled workers, a company can gain access to technology and performance that would have been impossible to create in-house. (Enarsson, 2008)

Managing Development Cycles

During development cycles there are often variations in demand of resources (Rosenthal, 2010). Companies that have a fixed set of employees can have a hard time occupying all workers. Therefore, they tend to have a base of employees for normal demand, and hire staff temporarily from different consultancy agencies for peaks in demand (Enarsson, 2008). Companies can also manage these peaks by outsourcing parts of their R&D activities (Rosenthal, 2010). By doing this, companies can convert fixed costs for internal employees into variable costs, which is a major driver for outsourcing according to managers (Lonsdale and Cox, 2000).

Decreasing Innovation Risk

Innovation is associated with financial risks. A single company cannot afford to do everything in-house, especially if a new product development is dependant on many different innovations. Instead, by using suppliers, the company can spread this risk (Quinn, 2000) and benefit from the suppliers’ innovations and investments (Lonsdale and Cox, 2000; Quinn and Hilmer, 1995). Suppliers can achieve results that would have been difficult for the sourcing company to produce on their own (Quinn and Hilmer, 1995). The suppliers can afford to take this risk since they have the opportunity to spread the risk across multiple present or future customers (Quinn, 2000).

Speed to Market

Speed to market is an important factor of success since it lowers the risk of competitors launching their product or service first and gaining acceptance from customers (Özer and
Uncu, 2013). Both Quinn (2000) and Lonsdale and Cox (2000) suggest that a company can lower and avoid time delays through outsourcing. By outsourcing upstream the company does not have to hire specialists, develop infrastructure and manage the internal resistance to new ideas. Quinn (2000) further means that small companies are more flexible and open to new ideas since they have a greater sense of urgency.

**Internationalization**

Another reason for outsourcing is to gain access to new markets and to accelerate expansion internationally (Enarsson, 2008). While outsourcing, a company can collect knowledge, identify business opportunities (Johanson et al, 2002; Enarsson, 2008) and enhance credibility and image (Enarsson, 2008). Johanson et al. (2002) suggest that there is certain knowledge linked to internationalization that can only be learned by experience; market knowledge and internationalization knowledge. Market knowledge includes knowledge about customers, suppliers, authorities and their relationship. The market knowledge is attached to the market itself and can not be used when accessing another market. The internationalization knowledge on the other hand can be seized in order to build and operate international businesses. (Johanson et al., 2002)

**2.3 Risks of Outsourcing R&D**

While outsourcing can act as a means of lowering for example development risk (Quinn, 2000), there are also several risks to consider before engaging in outsourcing and it is crucial that the decision makers do so (Bragg, 2006). Failing to consider the risks can have severe consequences, both for the outsourcer and the supplier (Enarsson, 2008). Outsourcing of complex business activities is a relatively new phenomenon and therefore the risks and complexity associated with it are seldom fully understood by companies and providers. When the risks are not fully understood, organizations tend to judge the performance of outsourcing based solely on the results in the first year (Aron et al., 2005). Outsourcing could be of great benefit but it can also be dangerous when not properly implemented (Barthélemy, 2003). When risks are not managed properly, they can result in undesirable consequences such as increased costs, unsatisfactory quality, loss of skills internally (McIvor, 2005) or loss of confidential information to competitors (Bragg, 2006).

To get a grip on outsourcing risks, Aron et al. (2005) categorize them into four different categories; Strategic risks, operational risks, long-term intrinsic risks of atrophy and intrinsic risks of location.

**2.3.1 Strategic Risks**

"Strategic risks are caused by deliberate activities of vendors to exploit clients. [...] These risks are caused by actions that vendors might take deliberately as part of a profit-maximizing strategy". (Aron et al., 2005, p. 41)

It is important that outsourcing companies monitor the development of their supply market and gather information (McIvor, 2005). Where a supplier has unique information capabilities, outsourcing companies run a risk of becoming dependant on this single supplier (Quinn and Hilmer, 1995). This poses a risk since having no alternative
providers inevitably implies loss of bargaining power (Aron et al., 2005). The bargaining power of the supplier may also be enhanced if a high level of physical and human resources has been invested into the particular outsourcing relationship and switching supplier is connected to significant costs (McIvor, 2008). When the information available to the outsourcing company at the market place is limited, suppliers may benefit from hiding problems that they are having until it is too late to terminate the outsourcing agreement (Quinn and Hilmer, 1995). It is important to consider that managing external suppliers differs a lot from managing internal processes. In many areas, suppliers exploit outsourcing companies’ naiveté and inexperience. (McIvor, 2005) The mistake that many outsourcing companies make is assuming that suppliers will always act in a way that maximizes the interests of both parties (Aron and Singh, 2005).

The principal-agent problem occurs when an agent, who has been selected to perform a task, has different objectives than the principal who delegated the task and when information about the agent is imperfect (Laffont and Martimort, 2001). In outsourcing, the principal-agent problem often results in under-performance. When the supplier has no incentive for working hard and the outsourcer has no means of detecting under-performance this can become a problem. The supplier can benefit from under-performing if critical resources can be better used elsewhere, if underperformance triggers a higher commission or if the supplier is in some way competing with the outsourcing company. (Aron et al., 2005)

Another implication that different objectives can have is the loss of business critical skills and potential for innovation (McIvor, 2005). Losing skills internally is really part of the long-term intrinsic risks of atrophy (Aron et al., 2005) which will be described later but it can be deliberately caused by the supplier and it must thereby also be viewed as a strategic risk. If an outsourcing company has established a short-term outsourcing contract with a supplier in order to make quick cost savings, there is no incentive for the supplier to pass on any knowledge or benefit associated with the innovation. The outsourcing company thereby misses out on important information and it is also possible that the supplier obtains sufficient knowledge to become a competitor. (McIvor, 2005) By poaching, the misuse of information provided by the outsourcer, a supplier can also become a competitor or share information with competitors. The problem of poaching has grown larger with the development of our high-tech economy. As the value of information increases, as information is more easily codified and as the use of outsourcing increases, incentives for poaching increase. Suppliers primarily benefit from poaching by it creating a parallel revenue stream. (Aron et al., 2005) In the case when the outsourcer acts in the defense industry, information is of a very sensitive nature and the incentive for, or rather possible gains from, poaching is presumably very high.

The first step towards mitigating strategic risks is anticipating vendor actions and learning to recognize them as strategic deeds. (Aron, Clemens and Reddi, 2005) Aron, Clemens and Reddi (2005) define Chunkification as a means to deal with different types of strategic risks. Horizontal chunkification entails splitting a process into subtasks or dividing the volume of a process and distributing these chunks amongst alternative suppliers. This should be used to reduce under-performance and enhance outsourcer
bargaining power. To reduce the risk for poaching, *vertical chunkification* can be used. This is done by dividing a process into sequential activities not overlapping each other. It reduces the risk for poaching by reducing the knowledge transfer needed. *Chunkification* enhances the bargaining power of the outsourcer since there are alternative suppliers available.

### 2.3.2 Operational Risks

“Operational risks are caused by the breakdown in operations at the vendor location. These risks are not caused by deliberate actions by the vendor or by unethical behavior of the vendor. Rather, they are a by-product of the complexity of operations, the geographic separation between client and vendor, the cultural gap between the environments of the client and the vendor, or the limitations of the communications and transmission systems between the two”. (Aron et al., 2005, p. 41)

What many organizations fail to account for, or underestimate, is the magnitude of the costs of managing the outsourcing process (McIvor, 2005). As Barthélemy (2003, p. 92) states, “Outsourcing does not mean abdicating!”. Underestimating management costs could lead to that the cost reductions anticipated are not achieved (McIvor, 2005) and that the supplier fails to deliver with satisfying results (Bragg, 2006). The risk of receiving unsatisfying results is often heaviest in major corporate functions, such as for example engineering (Bragg, 2006). Aron and Singh (2005, p.137) state that “Smart companies start off assuming that service providers won’t be able to execute business processes as well as their employees perform them in-house – at least not for a long time”. It is crucial that the outsourcing organization maintains control over the outsourced process or activities via internal employees managing the relationship. It should also be noted that outsourcing an activity to achieve performance improvements might be a smart decision when the bad internal performance is due to lack of expertise or insufficient scale economies. However, if bad management is the root cause of the performance issues, outsourcing the affected activity will most likely not solve the problem. (Barthélemy, 2003)

Operational risks decrease with the organization’s ability to codify work to be outsourced. If a company can describe all work that its employees do, all possible scenarios and how to react to them, then any provider can perform these tasks. If not, then the provider will need more company and task specific knowledge. *Noncodifiable processes*, where there is broad variation in business events and no standard responses can be defined for situations, pose especially high operational risks. (Aron and Singh, 2005) Since R&D is a constant process of tackling new problems, it can be assumed that the operational risks associated with outsourcing R&D is high.

Operational risks also decrease when there is a proper way of measuring the quality of a process with predefined metrics. When a company has no means of measuring their internal performance, it becomes hard to correctly evaluate the provider’s performance. Unfortunately many organizations lack these metrics or formulate them just before engaging in outsourcing. (Aron and Singh, 2005)
Culture
The cultural gap between outsourcer and supplier is important to assess since the culture in many countries affect the way business is being done (Kleen et al., 2006) and since differences in what is considered to be appropriate behavior can cause conflict (Walsham, 2002). In their article, Herath and Kishore (2009) state that cultural differences in the form of language, customs and the pace of daily life must be considered in outsourcing relationships. Walsham (2002) discusses the need for being sensitive to cultural differences but also stresses that it is not about changing the attitudes and values but that it is rather a matter of having empathy for others. Cultural gaps are often seen from a national point of view but it should be noted that culture is not only a phenomenon at a national level but stems from different levels, such as gender, generation and corporate (Hofstede et al., 2010). However, if focus is put on culture at a national level, there are several models and indexes that assess the cultural difference between countries. One frequently referred to model is the Hofstede dimensions of national culture. Hofstede originally described four dimensions of cultural differences; power distance (PDI), collectivism versus individualism (IDV), femininity versus masculinity (MAS) and uncertainty avoidance (UAI). To assess the culture of a certain country, every country gets a score on each of the four dimensions. Later, the model was extended with a fifth dimension following the research of Michael Bond; long-term versus short-term orientation (LTO) and a sixth dimension following the research of Misho Minkov; indulgence versus restraint (IVR). (Hofstede et al., 2010) Below, cultural differences between India and Sweden are assessed according to these six dimensions (see Figure 2.1).

![Cultural differences between India and Sweden](image_url)

**Figure 2.1 Cultural differences between India and Sweden.**
Based on (Hofstede et al., 2010, pp. 57, 59, 95, 96, 142, 143, 194, 256, 282 and 284)

“Power Distance can be defined as the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally.” (Hofstede et al., 2010, p. 61) India scores higher in PDI-ranking
than Sweden which implies larger power distance. In large-power-distance countries, bosses tend to be autocratic or paternalistic rather than consulting which is either preferred or rejected by the subordinates. Emotional distance in large-power-distance countries is high and it is unlikely that subordinates approach and contradict their bosses. (Hofstede et al., 2010)

“Individualism pertains to societies in which the ties between individuals are loose: everyone is expected to look after him- or herself and his or her immediate family. Collectivism as its opposite pertains to societies in which people from birth onward are integrated into strong, cohesive in-groups, which throughout people’s lifetime continue to protect them in exchange for unquestioning loyalty.” (Hofstede et al., 2010, p. 92)

According to the dimension-scores, Sweden scores a high degree of individualism compared to India. The degree of individualism is to a high extent reflected in people’s work goals. For people in individualist societies, personal time, freedom and personal challenges are important to distinguish the individual from the organization. In collectivist societies, factors such as training, physical conditions and use of skills are important work goals. (Hofstede et al., 2010)

”A society is called masculine when emotional gender roles are clearly distinct: men are supposed to be assertive, tough and focused on material success, whereas women are supposed to be more modest, tender, and concerned with the quality of life. A society is called feminine when emotional gender roles overlap: both men and women are supposed to be modest, tender, and concerned with the quality of life.” (Hofstede et al., 2010, p. 140) Sweden scores the lowest ranking of all countries evaluated in the study. Except from gender roles, the level of masculinity also defines if assertive or modest behavior is favored. (Hofstede et al., 2010) In outsourcing to India, the assertive culture must therefore be regarded and the true skills of the supplier must be evaluated differently than a Swedish supplier’s skills would have been evaluated.

“Uncertainty avoidance is the extent to which the members of a culture feel threatened by ambiguous or unknown situations”. (Hofstede et al., 2010, p. 191) A high level of uncertainty avoidance is characterized by the need for written and unwritten rules. Sweden and India both score relatively low in this dimension, indicating that the level of emotionality and anxiety is low at the same time as risks and lack of rules is accepted. (Hofstede et al., 2010)

“Long-term orientation stands for the fostering of virtues oriented toward future rewards – in particular, perseverance and thrift. Its opposite pole, short-term orientation, stands for the fostering of virtues related to the past and present – in particular respect for tradition, preservation of ‘face’, and fulfilling social obligations.” (Hofstede et al., 2010, p. 239) India and Sweden differ very little in this dimension (Hofstede et al., 2010) but in outsourcing relationships it could be important to consider this dimension when aligning incentives to minimize strategic risks.

“Indulgence stands for a tendency to allow relatively free gratification of basic and natural human desires related to enjoying life and having fun. Its opposite pole, restraint,
reflects a conviction that such gratification needs to be curbed and regulated by strict social norms”. (Hofstede et al., 2010, p. 281) India scores significantly lower than Sweden in this dimension indicating amongst others higher pessimism, lower importance of leisure and a higher level of moral discipline. (Hofstede et al., 2010)

Concluding the above reasoning, it can be seen that there are vital differences between Swedish and Indian culture. It is however important to recognize that the above mentioned model is merely a model of national culture and should not be used for stereotyping. As stated above, there are several levels of culture and although the dimensions of national culture can be used to understand cultural differences it is not necessarily correlated to individual behavior. As Hofstede et al. (2010, p. 40) state: “National scores are not about individuals, but about national societies”. Personal contacts are very important in order to get to know the supplier, both at a professional and personal level (Kleen et al., 2006).

2.3.3 Long-term Intrinsic Risks of Atrophy

“Long term intrinsic risks of atrophy are not caused by anything the vendor does but are an inevitable by-product of the process of outsourcing. Over time, if a company outsources an activity completely, it loses the core group of people who were familiar with it. They retire, they leave for employment where their skills are more valued, or they simply become less technically competent and become progressively more out of date”. (Aron et al., 2005, p. 41)

Complete outsourcing of entire activities that are key to the business can lead to loss of skills. Losing business critical skills and thereby the ability to innovate in the long run diminishes the possibility for the organization to exploit new opportunities. (McIvor, 2005) According to Earl (1996) innovation requires slack resources, organic and fluid organizational processes, and experimental and intrapreneurial competencies. Losing important know-how could also mean that the outsourcer loses the possibility to control and direct the evolution of the outsourced process or activity. If the process is not understood it can not be analyzed and thereby it can not be controlled. (Quélin and Duhamel, 2003)

A central paradox in outsourcing is the one of knowledge sharing. Knowledge sharing between outsourcer and supplier is essential for the outsourcing relationship succeeding. (Herath and Kishore, 2009) Johanson et al. (2002) stress the importance of interorganizational learning since it is one of the most important mechanisms in developing a company’s competence. They mean that not only does learning from partners benefit the specific relationship but it can also be applied to many various business situations. According to them, a company that is involved in different relationships meets many various obstacles and is thereby forced to revise and further develop its processes. Long-term offshoring projects pose a particular risk in knowledge loss and deskilling of the outsourcer. Managing the knowledge supply chain is crucial in avoiding these risks. The possibility to invest in knowledge management systems should be evaluated. (Cha et al., 2008)
2.3.4 Intrinsic Risks of Location

“Intrinsic risks of location are simply caused by moving activities to remote locations. Some of these are geopolitical risks; moving activities to India creates an exposure to the potential of violent escalation of conflict between India and Pakistan. The other forms of intrinsic risk of location are equally familiar, such as sovereign risk or exchange-rate risk”. (Aron et al., 2005, p. 41)

Herath and Kishore (2009) state that political instability, labor unrest, power shortage, and infrastructure status can pose a geopolitical risk. When assessing the political risk in India based on factors such as political stability, political representation, democratic accountability, freedom of expression, security and crime, risk of conflict, human development, jurisprudence and regulatory transparency, economic risk, and corruption, India scores an 8 on a zero to ten scale where a score of 10 indicates the least risk. In comparison, Sweden scores a 9.5. (Political Risk Index, 2013) Important to consider is that India is a large, diverse country where political risks differ significantly between regions.

2.4 Strategies for Outsourcing R&D

Underestimating the effort involved in implementing an outsourcing strategy is a common mistake amongst organizations (McIvor, 2005) and the success rate of offshore outsourcing has not reached its expected levels (Herath and Kishore, 2009). Poor outsourcing results often occur in companies that have limited knowledge and experience of outsourcing (McIvor, 2005). Below, an attempt is made at assessing best practices and sort out some of the most common pitfalls.

2.4.1 Choosing the Right Activities to Outsource

Not every activity within the company is suitable for outsourcing. A company should not outsource their core competence (McIvor, 2005) but all non-core activities are candidates for outsourcing (Lankford and Parsa, 1999). Therefore a company needs good understanding of which resources and capabilities that contribute to competitive advantage, in order to exclude them from outsourcing and thus minimize the risk of losing them (Barthélemy, 2003). Core competence can not be found and restricted to any special function or business area. According to Prahalad and Hamel’s (1990, p. 82) well cited article, The Core competence of the organization, “Core competencies are the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies. [...] core competence is communication, involvement, and a deep commitment to working across organization boundaries. It involves many levels of people and all functions”.

Facing an outsourcing decision, identifying the core competence should be done on an activity level, since most functions and business areas have parts that belong to the core competence (Barthélemy, 2003). Prahalad and Hamel (1990, pp. 83 - 84) suggest three questions to be answered to determine if a competence is a core competence or not:

1. Does the competence provide potential access to a wide variety of markets?
2. Does the competence make a significant contribution to the perceived customer benefits of the end product?
3. Is the competence difficult to copy for competitors?

If an activity is identified as not contributing to the core competence, the question remains, should it be outsourced or not?

**The Sourcing Strategies**

McIvor (2008) tries to answer this question with his model – *The Sourcing Strategies* (see Figure 2.2). He divides the activities into 4 quadrants depending on contribution to competitive advantage and relative capability position and together with the activity’s properties, a decision can be made whether to outsource or keep the activity.

Activities within quadrant one are critical to competitive advantage, but the company is less capable than other companies in performing them. The company should first consider whether it is possible to invest internally and replicate others to achieve leadership in performance. If this is considered impossible, the company should evaluate whether there is any risk of opportunism from suppliers if the activity is outsourced (McIvor, 2008).

Activities in quadrant two contribute to competitive advantage and the company is more capable of performing the activity than competitors and suppliers. In most cases it is preferable to maintain the activity in-house, since it contributes to competitive advantage.
However, since all companies have limited resources, superior performance can not be maintained in all activities (McIvor, 2008; Lonsdale and Cox, 2000; Nagendra, 2013) and companies have to prioritize. Therefore, it may be appropriate to outsource lower priority activities to vendors (McIvor, 2008)

In quadrant three, competitors are more capable of performing the activity than the sourcing company and the activity does not contribute to competitive advantage. When it is possible, these types of activities should be outsourced. (McIvor, 2008) One possible restricting condition could be that the transaction cost of moving the activity to a vendor is larger than keeping it in-house.

In quadrant four, the sourcing company is more capable of performing the activities than its competitors, but the activities are not considered to be critical to competitive advantage. A company should consider outsourcing these activities when it is possible and focus its resources on improving performance of activities that are more critical to competitive advantage. When there is a risk of opportunism that can not be managed, the activity should be kept in-house. (McIvor, 2008)

**Level of Experience**

When choosing which activities to outsource, a company should consider experience as an important factor. Quinn and Hilmer (1995) suggest that starting with less critical activities is beneficial. As the company gains experience, more profitable opportunities will arise, and it will become more beneficial to outsource critical activities, such as R&D, to specialist suppliers that can perform them efficiently. (Quinn and Hilmer, 1995) This sequential learning process can be seen in Maskell et al.’s (2007) study of Danish firms that were outsourcing to low-cost countries. The Danish firms started by outsourcing small production packages and continued to raise the volume. As they gained experience, they broadened the variation of tasks to include innovation. The company’s focus was first on cost reduction but as they realized that a vendor in a low-cost country does not only offer cost-reduction, but may also improve the quality and contribute with innovation, they saw more opportunities. Like Maskell et al. (2007), Dr. Chaudhuri has observed that “the projects go from the easiest, most peripheral activities and move closer to the core”. Outsourcing R&D includes interdependencies and close coordination between the souring company and the supplier, which takes time to build. (Rosenthal, 2010)

### 2.4.2 Managing the Supplier-Outsourcer Relationship

Appropriate means of managing the outsourcing relationship are key for succeeding in outsourcing. Kaplan et al. (2010) mean that the main reason why alliances between companies fail is the traditional way in which they are being organized and managed. According to a study conducted by Capgemini and CFO Research Services, over 80 % of companies that had terminated their outsourcing arrangements did not have a formal process for overseeing the outsourcing relationship and only 10 % audited their suppliers. (Rosenthal, 2007) Dr. Chaudhuri, cited in Rosenthal (2010), says that companies that
want to outsource R&D need to have a change in mindset. More time and effort must be invested into coordination, collaboration and communication.

**Measuring Performance**

The previously mentioned study by Capgemini and CFO Research Services elaborates that amongst failed outsourcing relationships, only 20% of the outsourcing companies bothered to “define, document, capture, and report operational and financial performance metrics” (Rosenthal, 2007). Measuring performance is important in mitigating strategic risks since deliberate actions taken by the supplier to exploit clients is enabled by the client’s inability to detect these actions (Aron et al., 2005). According to Aron and Singh (2005) it is also important to measure performance as a means of reducing the operational risks associated with outsourcing a process. They mean that objective metrics need to be defined with concrete tolerance limits, completion times and productivity norms in order to continuously measure employee performance. According to Quinn (2000, p.23), performance targets should be “fair, few in number, easy to understand and readily usable by the people doing the work”. Measuring the performance not only allows the outsourcing company to control the work being done by the supplier but it also enables easier control of work that flows between the company’s internal employees and the supplier. (Aron and Singh, 2005)

A means of measuring performance is the balanced scorecard approach. It is well suited for outsourcing performance measurement and focuses not only on financial metrics, but on non-financial metrics as well. (Herath and Kishore, 2009) Kaplan et al. (2010) have conducted research on the theme of balanced scorecards in a strategic alliance perspective. To make an alliance a strategic success, operational performance metrics in Service Level Agreements (SLA:s) are often not sufficient. Metrics in SLA:s are easily outdated with a rapidly changing business environment and they also do not translate well into genuine strategic benefits. A collaboration themed scorecard enables work to be conducted over organizational boundaries. To create a scorecard, strategic objectives for the partnership need to be defined and sorted according to themes. Metrics must then be created for each theme and initiatives to drive improvements in the themes must be defined. The creation process itself also contributes to the success of the partnership by fostering a discussion that increases transparency and builds trust. After creating the scorecard, it needs to be integrated into the companies and governed appropriately. Interestingly, this approach is already being used by Infosys, an Indian IT service provider, to collaborate with customers. (Kaplan et al., 2010)

However important it is to measure performance, it should be noted that the nature of innovation is complex and tumultuous. It is therefore important to not constrain innovation by creating overly detailed goals with too much effort put into controlling the how rather than the what. Innovation can also be improved by developing figures of merit, targets that are feasible but sufficiently high set to drive innovation by creating an exciting vision of outperforming benchmark targets. To draw benefits from this, incentive models must be developed that allow the supplier to share the benefits of outperforming targets. (Quinn, 2000) Aligning incentives actively prevents under-performance by the supplier (Aron et al., 2005).
Incentive Modeling

In the failed outsourcing relationships studied by Capgemini and CFO Research Services, 90% of companies did not create supplier incentives or penalties (Rosenthal, 2007). The importance of aligning incentives to mitigate strategic and operational risks has been previously discussed. Since every company behaves in a way that maximizes their own value, it is important to create incentives that maximize value for both parties.

Narayanan and Raman (2004) have developed a step-by-step framework for aligning incentives in supply chains. First, companies must acknowledge that incentive issues exist, then determine the cause of them and then create or redesign incentives. The causes for misaligned incentives can be hidden actions by partner firms, hidden information (data that only some of the firms in the supply chain possess) or badly designed incentives that do not reward partners for what is actually creating value. Solutions to the problem of misaligned incentives can be of three types – contract based, information based or trust based. A contract based solution is necessary when incentives are badly designed and it aligns incentives by redesigning contract to reward partners for acting in the supply chain’s best interest. An information based solution tackles the problem of hidden information and actions by gathering or sharing information that was previously hidden. The best way to do so is by measuring more variables. A trust based solution uses intermediaries or personal relationships to develop trust within supply chain partners.

The benefit of the different solutions must however be discussed. It should be considered that contracts can be hard to enforce (Narayanan and Raman, 2004) which implies that being totally dependent on contractual solutions might be suboptimal. Regarding information based solutions, strategic risks must be considered before sharing information. Trust based solutions can be beneficial but outsourcing companies must keep in mind what McIvor (2005) says about suppliers being extremely adept at exploiting any naïveté on the part of the outsourcer.

The central thing to keep in mind when aligning incentives is that risks, costs and rewards must be distributed fairly between the parties (Narayanan and Raman, 2004). Also bear in mind that all incentives might not be tangible and consider Quinn’s (2000, p. 19) statement “At the core of successfully managing outsourced innovation is an exciting vision that inspires internal and external people to work together with energy. Such visions are essential in outsourcing because daily line contact is impossible and technical people feel free to jump to wherever the action and rewards look most exciting”.

Organizational Form

The degree of involvement between supplier and outsourcer is highly dependent on the tasks being outsourced. Lakemond et al. (2006) discuss situations when suppliers are involved in product development that requires different coordination approaches. They distinguish three general types of coordination approaches determining the organizational arrangements. In the Project Integration Coordination, the supplier becomes part of the product development project and tasks are carried out in close cooperation with the developing company. This type of coordination facilitates the development of common
expectations and understanding. The *Direct Ad-Hoc Coordination* describes a situation where contact with the supplier occurs on an incidental basis in certain situations. This type of coordination requires well established relationships with suppliers and is not well suited for new relationships since it is a rather informal way of doing business. The *Disconnected Sub-Project Coordination* refers to a situation when a task is carried out independently by a supplier. A prerequisite for controlling projects this way is a low degree of dependence between tasks in a project.

Also Aron and Singh (2005) have studied three ways of organizing outsourcing; *The Captive Center, the Supplier* and *the Extended Organization*. Their research showed that *The Extended Organization* was the best choice in a complex offshore outsourcing environment. *The Extended Organization* is a hybrid organizational form where companies specify the quality of services they want and work closely alongside providers to achieve that quality. Aron and Singh (2005) mean that this organizational form enables a move from command-and-control to sense-and-respond. They conclude their research by stating that “Clearly, offshoring isn’t just about companies moving across geographical boundaries; it’s also about companies redrawing organizational boundaries to achieve collaborative supply chains of information, expertise and knowledge” (p.143).

When managing offshore outsourcing of complex R&D tasks, certain aspects must be taken into consideration. As described in the risk chapter, operational risk increases with cultural differences between supplier and provider. As a means of overcoming cultural differences, a common understanding and respect for the counterpart’s culture is important. Close collaboration aids cultural understanding. It is also helpful when tasks are complex, which is often the case in R&D, and need to be discussed. Complex R&D tasks are also often characterized by high dependence of tasks which makes isolating tasks difficult.

**2.4.3 Optimizing Internal Processes**

**Communication within the Organization**

When a company is undergoing a major change such as outsourcing parts of their R&D, a vision is essential in “helping to direct, align, and inspire actions on the part of large numbers of people” (Kotter, 1996, p. 7). An appropriate vision reduces the risk that an effort is made in the wrong direction, and that resources are not wasted on projects that do not lead anywhere. (Kotter, 1996) Aron et al. (2005) adds that an organization needs to communicate the purpose and goals of outsourcing, because people have a stereotypical view of outsourcing. Most people do not understand that it is not only about cost cutting measures but about long term investment, that may not necessary provide any short term revenues, and about creating strategic advantage. (Aron et al., 2005)

Nahavandi (2000) states that a clear and common vision among people involved is the key to lead a change effectively and can empower people to act on their own, independent from the leader. Even though creating a vision is important it is not enough for the implementation to be successful. Employees feel powerless and uncertain when facing huge obstacles, real and imagined, which creates lack of commitment and
therefore it is important to encourage and convince them that they are possible to overcome (Kotter, 1996). Communication is the key factor to avoid this lack of commitment among employees, which can do severe damage to outsourcing efforts (Barthélemy, 2003).

Rumors spreading and counterproductive action is what occurs when outsourcing information is not properly communicated to those affected. What is needed is open communication to those employees who would be affected by outsourcing and informing them about the benefits and reasons for outsourcing as most people have the view that the company is trying to cut costs when outsourcing, and that their job is the next to get cut. (Barthélemy, 2003) Kotter (1996) also states that a company must communicate in such a way that the potential benefits of a change, such as outsourcing, become obvious for the people involved, and create a sense of urgency that something has to be done. A company should never make an internal change, such as outsourcing, without a sense of urgency. Without a sense of urgency, people will not make the necessary short-term sacrifices to achieve long term benefits. (Kotter, 1996)

It is difficult to implement an innovative idea, such as outsourcing R&D, in a company where there is a traditional mind-set of keeping projects within the company. It is important to change this traditional mind-set and create a new way of thinking where people implement outsourcing on their own. This can be done by rewarding those that act according to the new vision. (Quinn, 2000) The promotion criteria should also be reshaped to reward those that act according to the vision (Kotter, 1996).

Quinn (2000) suggests that a company should have process masters – skilled specialists that act as knowledge centers for all divisions within the organization. “The people who create true change are inside the firm, not outside or solely at the top. They are employees at all levels”. (Klein, 2004, p. 2) They constantly seek new innovative solutions to problems and innovative processes which they then communicate to the affected divisions. Process masters “help stimulate and facilitate the adoption of new solutions” (Quinn, 2000, p. 21). Similarly to Quinn (2000), Klein (2004) describes so called outsiders on the inside; people within the company that are open to new ideas from outside the company and are not limited to the traditional way of problem solving. It is easier for these people to gain the credibility that is impossible for consultants to achieve when they make recommendations. It is important to create an environment in all levels of the organization where outsiders on the inside are welcome and do not only meet resistance. (Klein, 2004) Kotter (1996) states that it is important to have a powerful group that guides and serves as support for those involved when facing resistance against initiatives. This supporting group could facilitate outsiders on the inside or process masters.

It is important that actions from decision makers are consistent with the verbal communication. If not, the actions are contradicting the message, the change is undermining the message (Kotter, 1996), and the outsourcing efforts are done in vain. It is also important to complement verbal communication with evidence of that the change is successful, otherwise people may lose spirit and may even begin to resist the change.
To keep the transformation vital a company should create short-term goals, meet and celebrate them. Further, these short-term wins should be actively planned, and not only hoped for. The people involved in creating these short-term wins should be recognized with promotion, or money. (Kotter, 1996) Matta and Ashkenas (2003) have a similar approach with rapid-results initiatives; miniprojects with a small group of staff working to deliver fast results in order to create a higher level of confidence that the larger project is going to be successful. Further they argue that these rapid-results initiatives can act as pilot projects, where lessons can be learned before making a larger change.

Even though celebration of a win is favorable, an organization that suggests that the job is almost done is generally making a large mistake. People can then lose the sense of urgency that is essential for change and old work patterns may reemerge. (Kotter, 1996) The change is not final until new ideas become tacit and rooted in the organizational culture and norms. Then the ideas are no longer dependent on support from change leaders, or recalled as soon as pressure emerges. (Kotter 1996; Klein 2004)

**Knowledge Management**

Apart from the direct benefits associated with outsourcing R&D, the indirect benefits of absorbing external knowledge must be considered (Bertrand and Mol, 2013). Outsourcing is not merely about gaining access to knowledge but to assimilate learning benefits. Outsourcing is inseparable from Knowledge Management (Quelin and Duhamel, 2003) and the obtention and utilization of knowledge gained from outsourcing is crucial in building a competitive strategy (Bertrand and Mol, 2013). When considering outsourcing a process or activity, the impact of Knowledge Transfer is often underestimated by managers. If knowledge is not handled properly, the future costs associated with degradation of internal firm knowledge might outweigh short term cost reductions of outsourcing. The other way around, if knowledge is handled properly, the long-term gains of obtaining outside knowledge are often not accounted for. (Cha et al., 2008)

To support knowledge transfer from the supplier to the outsourcer, investments in monitoring applications, communication systems, group decision support systems, and negotiation systems are well suited. To lower the rate that knowledge is depreciated, technologies that codify organizational learning, such as knowledge management systems, are useful. (Cha et al., 2008) It is also important to create a culture of knowledge sharing within the organization since without this, any investment in knowledge management systems will have been done in vain (Christopher and Tanwar, 2012). The way the outsourcing relationship is organized also determines the resulting level of knowledge transfer. If individual roles are too narrowly defined and separated from each other, this will impede help seeking, help giving and reflective reframing and thereby knowledge sharing (Werr and Runsten, 2013). Christopher and Tanwar (2012) underline the importance of organizing work around teams rather than individuals to promote effective knowledge sharing. Knowledge is not the only key for maintaining the outsourcer’s competitiveness but also for the success of the outsourcing relationship. Lee (2001) performed a study that suggests that the higher the degree of knowledge sharing is, the more positive effect it has on outsourcing success.
2.5 Summary of the Theory and a Model for Analysis

This chapter will sum up the theoretical framework and connect it to the purpose of the thesis. A model for analysis and research questions will also be presented.

Drivers of Outsourcing R&D

There are seven reasons, presented in chapter 2.1.1, why R&D should be outsourced. This chapter gives a brief review in the forms of why a company should outsource linked to each driver, and how optimal benefits can be achieved. See table 2.1.

Table 2.1 Drivers of outsourcing R&D

| Why          | Cost Reduction | Concentrate on Core Competence | Access human resources | Managing development cycles | Decrease innovation risk | Speed to market | International-  
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<tbody>
<tr>
<td>General cost reduction</td>
<td>Gain competitive advantages against competitors</td>
<td>Access skilled human resources in non-core areas.</td>
<td>Manage variations in demand of resources</td>
<td>Decrease innovation risk</td>
<td>Reduce time to market</td>
<td>Increase revenue</td>
<td></td>
</tr>
<tr>
<td>By outsourcing to suppliers that have economies of scale or other cost efficiencies.</td>
<td>By letting other companies do non-core tasks more efficiently a company can free resources and invest them in core areas.</td>
<td>By outsourcing activities in areas that lack sufficiently skilled workers, a company can gain access to technology and performance that would be impossible to create in-house.</td>
<td>By outsourcing parts of the development process, the in-house resources can be used more efficiently.</td>
<td>Use specialist suppliers that have the ability to spread risk amongst multiple present or future customers.</td>
<td>By outsourcing upstream, the company does not have to hire specialists, develop infrastructure and manage internal resistance to new ideas and thereby saves time.</td>
<td>By outsourcing to a new market a company can identify business opportunities, enhance credibility and image at this market.</td>
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</table>
Risks of Outsourcing R&D

This chapter summarizes the risks associated with outsourcing R&D, presented in section 2.2. Risks, that are labeled under the four types of risks: strategic risk, operational risk, long-term intrinsic risk of atrophy and intrinsic risk of location, are described as when they occur and what the risk implies. The summary is presented in table 2.2 below.

<table>
<thead>
<tr>
<th>Strategic Risks</th>
<th>Operational Risks</th>
<th>Long-term intrinsic risks of atrophy</th>
<th>Intrinsic risk of location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Few or one vendor</td>
<td>Vendor may exploit sourcing company’s dependency</td>
<td>Underestimating management cost</td>
<td>Desired cost reductions not achieved</td>
</tr>
<tr>
<td>High cost associated with changing vendor</td>
<td>Vendor may exploit the situation</td>
<td>Overestimating supplier capabilities or inability of control from the outsourcer</td>
<td>Supplier fail to deliver satisfying result</td>
</tr>
<tr>
<td>Information to sourcing company is limited</td>
<td>Vendor may hide problems until it is too late to change supplier</td>
<td>The reason for outsourcing an activity is bad in-house management</td>
<td>The problem remains when managing the outsourcing process</td>
</tr>
<tr>
<td>Naïveté and inexperience in sourcing company</td>
<td>Vendor may exploit the situation</td>
<td>The work is complex and hard to describe</td>
<td>The supplier needs more company and task specific knowledge</td>
</tr>
</tbody>
</table>
Lack of incentives for supplier and inability to identify underperformance

Vendor may benefit from underperforming

Inability to measure the supplier’s performance

The quality of the work may not be sufficient

Supplier access critical information from sourcing company

Vendor may use the knowledge to become a competitor

Inability to understand cultural differences

May affect estimated benefits of outsourcing

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<tr>
<th>Strategies for Outsourcing R&amp;D</th>
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<tr>
<td>This section attempts to summarize the essential parts from chapter 2.3 Strategies for outsourcing R&amp;D. It is structured around what should be done under each activity of how to outsource, and what the action implies. See Table 2.3.</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Table 2.3 Strategies for outsourcing R&amp;D</th>
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<td><strong>Choosing the right activities to outsource</strong></td>
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<tr>
<td><strong>What</strong></td>
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<tr>
<td>Identify core competencies</td>
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<td>Consider the activity’s <em>contribution to competitive</em></td>
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<td>Advantage and relative capability position</td>
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Developing a Model for Analysis
Risks connected to outsourcing R&D, drivers for outsourcing R&D and best practices regarding outsourcing R&D are extensively discussed in existing literature. What is however lacking from the current reasoning is the connection between these separate parts. Risks at hand could impact the way outsourcing of R&D is implemented and so could the drivers. Discussing these connections becomes important for the case of TDH since outsourcing R&D activities in the defense industry could be especially prone to risks and since it is crucial that the outsourcing strategy handles these risks. Also, the decision to outsource from TDH has many dimensions and implementing a strategy that ensures successful achievement of goals connected to different drivers is important.

Risks could impact strategy in different ways. Great risks for opportunism might prohibit outsourcing certain sensitive and knowledge-dense activities. The same risk might also require thorough alignment of incentives with well-designed penalties. High risks of losing critical skills internally will call for more efforts put into knowledge management and an outsourcing organization that supports organizational learning.

Also the drivers for outsourcing could affect strategy. If the main driver for outsourcing is short-term cost reductions, then the organization might benefit from outsourcing activities that are more repetitive and involve less innovation than they would have if the driver was to access external competence. Also, if short-term cost reduction is the main driver, performance might mainly be measured in financial metrics and investing in knowledge management might be out of the question.

In the coming research, the three areas risks, drivers and strategy are of interest. It is also of great interest to research their interdependence. Therefore the analyzing model, see Figure 2.3, consists of risks and drivers and their effect on strategy. Strategy is divided into deciding on what to outsource, managing the supplier-outsourcer relationship and optimizing internal processes.
Research Questions
The research questions resulting from the theoretical framework are defined below. These should however not be seen as a limiting factor for researching areas not included in the questions.

1. What risks should be considered when outsourcing R&D to India?
2. What drivers for outsourcing R&D to India are there?
3. What strategies are efficient when outsourcing R&D to India?
   3a. How should an organization decide on what to outsource?
   3b. How should the supplier-outsourcer relationship be managed?
   3c. How should internal processes be handled to maximize the benefit of outsourcing R&D?
4. How should the identified risks and drivers influence outsourcing strategy?

![Figure 2.3 Analyzing model](image-url)
3. Methodology

This section presents an overview of the methodology used when conducting this study. It explains the basic approaches and methods for the study, how the study was performed and contains a discussion of methodology criticism.

3.1 Basic Research Approaches and Methods

This study was a qualitative, exploratory case study. Below it will be explained why these approaches were chosen.

3.1.1 Research Approach

An exploratory approach is appropriate when there is not enough expertise within a problem area to define what knowledge that needs to be gained to analyze the problem. It should also be used when in doubt that it is even possible to find sufficient knowledge and identify what questions are relevant for investigation. The purpose of an exploratory approach is to gain basic knowledge and understanding within the subject area (Lekvall and Wahlbin, 2009), to understand what needs further investigation, and to determine which variables and concepts are relevant (Wallén, 1996).

A descriptive research approach is used when there are well specified questions to be answered (Lekvall and Wahlbin, 2009) and when the purpose is to describe properties of the research object and its environment (Wallén, 1996). An example of this approach could be describing a market in terms of market size, structure, products available, competitors and their market share, the consumers’ purchases and consumption habits, opinions, values and more.

Research in existing theories from the knowledge area of outsourcing confirmed that there are major gaps in the literature regarding outsourcing of R&D in the defense industry. Since this is a relatively unexplored area, the research was not restricted to merely answering the pre-defined research questions, but it was expanded to include unexpected results from unforeseen approaches. Risks and drivers were identified as important factors when outsourcing R&D in the literature and a descriptive approach was considered appropriate in order to study them. Considering strategies for outsourcing R&D, an exploratory approach have been used, since it was difficult to identify all areas that were relevant for the research. Following the above reasoning, the research in this study was conducted with a mixture between a descriptive and an exploratory approach.

3.1.2 Qualitative Research

This study was performed as a qualitative study since quantifiable data was not sufficient to answer the complex research questions posed. Qualitative studies can provide deep and comprehensive knowledge about a subject, whereas quantitative studies often provide more fragmented knowledge (Patel and Davidson, 2011). Qualitative research is characterized by the features interpretivism, constructionism and inductive reasoning (Bryman, 2012).
Interpretivism states that the social world must be understood through examination and interpretation of the participants of the world. Differences between people must be respected and ultimately, the subjective meaning of social actions must be grasped. Constructivism represents the view that social properties are outcomes of the interaction between individuals. (Bryman, 2012) According to constructivism, the world is relative rather than absolute, meaning that it is built up by the person observing and reporting about it (Yin, 2013). Constructionism also asserts that social phenomena are under constant revision and are not to be regarded as definite (Bryman, 2012). Both interpretivism and constructionism were central points of view in this study.

Inductive reasoning is a way of viewing the relationship between theory and research. It represents a view where theory is the outcome of research. (Bryman, 2012) In practice, this means starting with impartially observing reality and then creating theories from these collective observations (Wallén, 1996). Its opposite, a deductive approach represents a view where theory guides research (Bryman, 2012). Practically, this entails starting off in existing theories, developing hypotheses from these and then empirically testing the hypotheses (Patel and Davidson, 2011). Qualitative research is mainly inductively conducted but can also employ a deductive approach (Yin, 2013). Abduction is a third form of viewing the relationship between theory and research. It is a mixture between induction and deduction and advises shifting between theories and research to ultimately arrive at a conclusion. (Patel and Davidson, 2011) This study had elements of both inductive and deductive reasoning making it abductive. It employed a deductive approach when creating a theoretical framework and developing a model for analysis. However, it was also inductive since the model of analysis was used as a guiding framework for the empirical studies but the goal of the empirical studies was to also collect data from other aspects beyond the model of analysis. Empirical findings from interviews were also allowed to add to the base for later interviews.

3.1.3 Case Study versus Survey Method

According to Yin (2009, p. 8) there are three different conditions to consider when choosing the research method type: “(a) the type of research question posed, b) the extent of control an investigator has over actual behavioral events, and c) the degree of focus on contemporary as opposed to historical events.” Since the questions posed in this study were in the form of how, since the investigators did not have any control over behavioral events, and since the study focused on contemporary events, a case study method was, in accordance with Yin’s (2009) reasoning, most appropriate. It could be argued that Yin (2009) deems a survey to also be an appropriate research method as it also does not require control over behavioral events, focuses on contemporary issues and has research questions in the form of how. However, one important distinction between the case study and the survey method is the distinction between the answering of the research question how. The survey’s approach to answering how is numerical and statistical, how much or how many, whereas the case study’s approach is advantageous when only answering how. Therefore, this thesis was conducted as a case study.

The advantage of the case study approach is that it examines what occurs under real conditions. Conclusions can be drawn that a phenomenon observed indeed exists. On the
contrary, there is no evidence that the phenomenon is common and it is impossible to know much about the conditions for a similar phenomenon to occur under other conditions. (Lekvall and Wahlbin, 2009) A case study is performed in-depth on single research objects without any attempts of comparison between individual research objects or ambitions to make any overly generalized conclusions (Lekvall and Wahlbin, 2009). Case studies focus on one or a few occurrences of a specific phenomenon in the purpose of providing detailed descriptions of events, relationships, experiences or processes that have occurred in these particular cases. (Denscombe, 2009)

3.2 Performing the Study
The work started off with the writing of an introduction and a thorough analysis of what the purpose of the thesis should be. The needs of the main stakeholders, TDH and Combitech, were analyzed and the purpose was reiterated until it posed the questions most relevant to the stakeholders. After this a literature review was done and methodology regarding how to collect empirical data was written. Following this, the empirical data was collected in Sweden and in India for three weeks and compiled to the chapter of empirical evidence. The empirical evidence was analyzed together with theories from the literature review which resulted in conclusions and recommendations.

3.2.1 Literature Review
A literature review was the first thing that was done in this thesis after setting a purpose. In the beginning of any thesis it is essential to have a review of the material that already exists on the topic in question. Such a literature review uncovers what things are worthy of inclusion in the study and allows prioritization of subjects. The review should demonstrate how the study relates to previous research. (Denscombe, 2007) The literature review in this thesis is presented in the theoretical framework and based on articles, books, websites related to outsourcing, newspaper articles and online statistics. To find material, searches for words and phrases related to the subject of the thesis were done and the reference lists in interesting articles and books were scanned.

3.2.2 Data Collection Method
When performing qualitative research, there are four main methods for collecting data; interviewing, observing, collecting and examining (materials), and feeling (Yin, 2013). Interviewing provides data in the form of another person’s explanation of behavior and actions (Yin, 2013) which was the desired form of data in this study and hence, the data collection method chosen was interviewing. Interviewing is probably the most common method for collecting data in qualitative research (Bryman, 2012) and the two extremes are structured interviews and qualitative interviews (Yin, 2013). Qualitative interviews support the purpose of qualitative research; to describe a complex social world from the perspective of the participants (Yin, 2013). In qualitative interviewing, unstructured interviews and semi-structured interviews are the two main methods (Bryman, 2012). Bryman (2012) notes that if the research has a fairly clear focus, if more than one person is to carry out the fieldwork and if multiple cases are studied, the interviews will be semi-structured. Despite the fact that this thesis was carried out as a single case study, the
interviews were conducted in a semi-structured way to ensure that relevant topics were covered and to ensure cross-case comparability.

A bit into the research it was discovered that much interesting and relevant information could be drawn from simply observing people in their natural environment. In the environment at TDH, interesting opinions of SITC and collaborating externally in general could be found. In the environment of SITC, interesting finding could be done regarding the opinions of Saab, the everyday work and communication techniques and how they differ from the Swedish ways of working and communicating. The resulting data from observations are human gestures, social interaction, settings and physical environment (Yin, 2013). According to Yin (2013), observations can be an invaluable tool for collecting data since the outcomes of observations have not been modified by another person. He also says that observations are thereby primary data and should be valued as such. In this thesis, the value from observations was a great complement to the interview data.

### 3.2.3 Sampling

In qualitative research, the most common sampling method is purposive sampling. Probability sampling is often not employed in qualitative research unless certain conditions apply. (Bryman, 2012) This study used purposive sampling, which means that the sample is hand-picked for the research and the respondents are chosen because they are likely to produce the most valuable data (Denscombe, 2007). More specifically, generic purpose sampling is used which means starting by establishing criteria concerning the cases needed to answer the research questions (Bryman, 2012). The purpose of this thesis suggested four different categories of respondents to be selected for interviews, see Table 3.1.

<table>
<thead>
<tr>
<th>Information Category</th>
<th>Number of Respondents</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience of outsourcing at TDH</td>
<td>3</td>
<td>People that are working at TDH and have outsourced work to other parties than SITC, for example to Combitech. These respondents are of interest to investigate the internal conditions at TDH and the outsourcing maturity of the organization.</td>
</tr>
<tr>
<td>Experience of outsourcing to SITC at Saab</td>
<td>8</td>
<td>People that are working in other departments of Saab and that are outsourcing or have previously outsourced work to SITC. This category also includes people that have other business with SITC. These cases are of interest to investigate experiences from the relationship between Saab and SITC and to evaluate performance depending on outsourcing strategy.</td>
</tr>
<tr>
<td>Experience of outsourcing to India outside Saab</td>
<td>3</td>
<td>People from other Swedish companies that have been involved in outsourcing R&amp;D to India. This is of interest to gain knowledge about outsourcing R&amp;D to India and assess the risks, drivers and strategy concerns.</td>
</tr>
<tr>
<td>Project managers at SITC</td>
<td>9</td>
<td>It is of interest to investigate how previous projects from Saab have been carried out, what capabilities exist and different actions are perceived.</td>
</tr>
</tbody>
</table>
Informal meetings and observations

In addition to the formal interviews, the writers of this thesis have been working on-site at the TDH department for four months and at SITC for three weeks. During this time, there have been several informal meetings where for example the topic of the study has been discussed and observations both at TDH and SITC have been made.

When a selection criteria has been established, the generic purpose sampling method suggests identifying appropriate cases and sampling from them (Bryman, 2012), which was also done in this study.

### 3.2.4 Conducting the Interviews

The interviews were carried out as semi-structured interviews with a clear list of topics to be covered but with open-ended answers (See Appendix A and B for an Interviewing Guide). The focus was put on letting the respondents speak freely and control the interview as little as possible. The interviews lasted between 30 minutes and 2 hours. Both researchers were present at all interviews, enabling one researcher to conduct the interview and one researcher to take notes. Interviews with Swedish respondents were conducted in Swedish and other interviews were conducted in English. Two interviews were conducted with each Indian respondent. The first interview was about getting to know each other and the Indian respondent got to hold a presentation of the work they had been conducting for Saab. The researchers also held a thorough presentation of themselves and the purpose of the study which built confidence in the intent of the interviews. The first interview was held with all respondents before holding any second interview with any respondent. In this way, the focus areas for the second interviews could be adjusted according to the findings in the first interviews. Also, the first interview enabled the researchers to understand the respondents’ dialect and the nature of their behavior. It also built trust between the researchers and respondents which consequently led to more valuable findings from the second interview. After the interviews, the researchers reviewed the notes as soon as possible to ensure that they agreed upon the content and that the notes were understandable. This was especially important since the interviews were not recorded due to security restrictions.

### 3.2.5 Method of Analysis

The problem with qualitative data is that methods for analysis are not well formulated which lowers the confidence in findings (Miles and Huberman, 1994). However, the data collected in empirical studies must be processed in order to answer the research questions. Miles and Huberman (1994) define analysis as three concurrent flows of activity; data reduction, data display and conclusions drawing/verification. Data reduction occurs continuously throughout the entire research process and entails the process of selecting, focusing, simplifying abstracting and transforming data. Data display is an organized, compressed assembly of information that permits conclusions drawing and action. The most common form of display is extended text. Conclusions drawing and verification means deciding what things mean, note regulators, patterns, explanations, possible configurations, casual flows and propositions.

In this thesis, all three flows of activity subconsciously went on simultaneously but formally they followed each other sequentially. The formal data reduction began during
the interviews when notes were taken. These were later clarified and sorted into the categories. The data display process entailed writing a text with the material from each category and checking if other categories contained information valuable for the current category. The conclusions drawing and verification started by analyzing the empirical data together with the theories from the theoretical framework. This was done with the help of categorization and mind maps. After this analysis, conclusions were drawn.

### 3.3 Methodology Criticism

In order to judge the quality of the methodology used in this thesis, four tests that are common in any empirical social research, such as a case study, could be used. One of them, *internal validity*, tries to explain in an explanatory manner why and how one event leads to another. As a result, internal validity is inapplicable to exploratory and descriptive studies and not considered in this thesis. The tests that remain and will be used are: *Construct validity, external validity and reliability.* (Yin, 2009)

#### 3.3.1 Construct Validity

The first test is *construct validity*, which answers to the criticism that case studies fail to develop a sufficient operational method for measuring social phenomenon and that subjective judgment is used. In order to pass this test, Yin (2009) suggests three tactics to increase construct validity: *use multiple sources of evidence, establish chain of evidence and have key informants to review draft case study report.*

According to Yin (2009) using many different sources of evidence enhances the construct validity. The sources can be of the same sort, for example three interviewees could be used to verify a phenomenon. In this study, multiple sources have been used as often as possible in order to increase the validity of the findings. Even though this tactic has been used, there are examples where only one source has been used. In these cases it has however often been clarified by writing something like “according to one respondent”, to make the reader aware of the situation. Also Denscombe (2011) speaks of practicing triangulation, the use of multiple sources, as a means to increase validity.

The purpose of the principal of *establishing chain of evidence* is to allow the reader of the report to derive all steps of the case study from the initial research questions to the final conclusions (Yin, 2009) Concerning the thesis, this tactic has not been followed thoroughly since the interviews were anonymous, and therefore it is impossible to connect a statement to a specific respondent. Aside from this, all empirical data perceived relevant by the researchers has been summarized in the empirical chapter.

*Having key informants review draft case study report* will further improve the overall quality of the report. By letting key informants read the draft of the report, they can correct misinterpretations and enhance the construct validity of the report (Yin, 2009). In some cases of this thesis, the respondents have reviewed notes taken from their interviews to confirm correct interpretation. This has however, due to lack of time, not been done for all respondents and not with a draft of the report.
3.3.2 External Validity

External validity concerns the problem of knowing whether any generalizable conclusions can be drawn from the case study (Yin, 2009). Similarly, Denscombe (2009) refer to external validity as the possibility of applying the findings on other examples of the phenomena. He adds that this regards the finding’s ability to explain, or be part of, other phenomena on a universal level rather than being unique for the certain case studied. As opposed to a survey research, where statistical data from a sample is the basis for generalization regarding a larger population, a case study relies on analytic generalization. With this method, the researcher strives to generalize a specific set of results to a broader theory. (Yin, 2009) This report used analytic generalization. By reviewing the theoretical framework, critical characteristics of respondents or organizations could be identified that allows them to be classified into a broader group of respondents or organizations that have similar characteristics. These characteristics were when necessary expressed in the empirical data to allow the reader to understand what group the conclusions apply for.

3.3.3 Reliability

The ability to withstand influence from contingency factors during the interview process is called reliability. If it is possible to repeat a measurement over and over again with the same results, the test has high reliability. If this is not possible and the results are scattered, the test has low reliability. (Lekvall and Wahlbin, 2009) Patel and Davidson (2011) describe that in order to increase reliability, several tactics can be used. Firstly, when conducting an interview, standardized interviews and structured observations can be used (Denscombe, 2011). In this study, semi-structured interviews were used and follow-up questions in areas that were perceived as particularly relevant were made. Part of this technique, the follow-up questions, reduces the reliability of the data derived from these interviews as the interviewers steered the respondents into specific areas and the data from this might be difficult to replicate. Secondly, Denscombe (2011) suggests that another person apart from the interviewer can be present at interviews to register the respondent’s answers and behavior. These registrations can improve the reliability. During the interviews in this thesis, there was always one interviewer and one extra observer. This proved helpful since the interviewer and the observer sometimes registered different things. Thirdly, Denscombe (2011) recommends recording the interviews in order to allow the investigators to return to the interview as many times as needed to ensure that interpretations are correct. The interviews for this thesis were not recorded due to security restrictions, which may decrease the reliability of the conclusions since there is a risk that interpretations were incorrectly made. What could have furthermore decreased the reliability are incorrect interpretations of interviews with Indian respondents due to language barriers and cultural barriers. However, measures were taken to decrease this risk. The investigators had two interviews with each Indian respondent instead of one interview as with the Swedish respondents, as described in the chapter conducting the interviews. This probably reduced misinterpretations due to language and cultural misunderstandings. It also gave the interviewers plenty of time to clarify any confusion. However, it could also be argued that this could negatively affect the objectivity, since the researchers got to know the respondents more.
4. Empirical Data
This chapter presents empirical data collected in interviews and observations. It is presented in the same structure as the theoretical framework for readability purposes.

4.1 Assessment of the Present Situation
In order to adapt conclusions to the present situation in the thesis case, observations about conditions at TDH and SITC have been made.

4.1.1 Situation at TDH
A Sense of Urgency
Observations have been made that the sense of urgency regarding use of SITC has increased. In the beginning of SITC’s existence, collaboration with SITC was mostly on a voluntary basis. TDH have not yet collaborated with SITC, but are feeling a rising pressure from higher up in the organization. The budgets for 2014 in different Business Areas are now taking SITC into account to achieve cost reductions. This affects the divisions further down in the organization and increases the incentives for TDH to utilize SITC.

Growing Curiosity amongst Managers and Employees
It has been observed that the awareness of SITC could be improved amongst employees at TDH. Many employees have only heard about it briefly and some only know it by name. However, the curiosity of SITC amongst managers is growing. Requests have been made within TDH to be given more information about SITC. One employee said that “Everything I know about SITC I have read on the Saab intranet” The employee thinks that more information would be both interesting and of good use.

Acceptance in the Organization
At TDH it has been observed that the acceptance of SITC could be improved and it is possible that lack of information is one cause of this. It has been pointed out by THD employees that the communication about SITC from top management is not applicable to the employees’ situation and that top management does not consider the complexity of work in the lower organization. The information about SITC is also considered too general and according to the interviews, employees want more information about SITC’s skill sets, education and examples of previous successful projects. As it is now, it can be noted that some employees have preconceptions about SITC’s skills not being at the same level as the skills of the employees in the home organization. It is in some cases also the notion that the benefit of SITC is lower cost per hour at the expense of lower quality. Employees sometimes do not believe that working with SITC will contribute to cost efficiency until they see concrete proof of this and not only hypothetical calculations. A detected reaction when talking about SITC is “Are we going to outsource my job now?” Although SITC is a part of Saab, a feeling of “us and them” can be perceived in the TDH organization.
Limited Experience of External Collaboration
TDH has a tradition of performing most work in-house. In interviews with TDH employees, it was said that the way of working is dependent on ad-hoc contact and availability of people on-site. An attitude that collaborating internationally is difficult can be perceived. According to a TDH employee, even giving work to local consultancy firms has been difficult. It is mentioned in several interviews with people from both Saab and other organizations that Swedish people in general have a hard time defining requirements and exactly what should be achieved. Interviews with SITC employees have confirmed that it can be hard to communicate between Sweden and India. Some teams handle the communication well but especially for immature relationships, communicating is difficult. When on-site in Sweden, one SITC employee stated, the communication was simple and fast but as soon as they were back at SITC again it became difficult to communicate with people in Sweden.

Level of Technical Readiness
The employees currently working in TDH have access to information in higher security classifications and with different export control restrictions than the SITC employees will be allowed to have access to. In order for information to be shared with SITC, the information will have to be reviewed and classified. Since there has been no previous need to perform a comprehensive classification, this has not been done yet. It has been expressed by TDH employees that the ways of working are not really set up for collaborating externally. Also, observations show that some TDH employees are unsure about how to classify information and about what export control regulations apply. It is therefore seen as a barrier towards working with SITC. However, interviews with people that have already worked with SITC show that these factors can be overcome. One person states that, regarding export control, it is a mere question of setting up routines and that people are more afraid of export control than necessary.

4.1.2 Situation at SITC

Success Stories
Collaboration with SITC has been successful for many projects or departments. Business cases have been developed that take into account direct and indirect costs for the collaboration and still display significant savings from working with SITC.

Technically Skilled Employees
The technical competence of the SITC employees is higher than some Saab employees expect and communicating the skills in detail can be positive for heightening the interest in SITC. Many SITC employees have selected to work explicitly with Saab since it fits their interests and education. Therefore, the skill sets of the SITC employees are in many cases particularly relevant for Saab.

Building New Competence
Tech Mahindra is a large company and has the necessary resources to access competence that does not yet exist within SITC. There is a resource pool where new employees with
relevant skill sets can be chosen from. There is also a learning center where the employees can develop new skills according to the customer’s requirements.

**Extensive Experience of External Collaboration**
Tech Mahindra as a company has great experience from building up collaborations like SITC with other customers. Also the single employees at SITC often have experience from similar situations and some have even worked with building up collaborations for companies in the defense industry before.

**4.2 Drivers of Outsourcing R&D**
There are many reasons to work with outsourcing and they all have different relevance for various levels of the organization. The main drivers for TDH using SITC are presented below. These are the collected driving forces from all organizational levels interviewed.

**Gaining Access to the Indian Defense Market**
Saab, thus TDH is operating on a global market and the customer is no longer only the Swedish Defense Material Administration (FMV). One major strategic driving force for Saab to outsource R&D to India is to make a footprint on the Indian market. According to a study done by Stockholm International Peace Research Institute (SIPRI), India is the world’s largest importer of arms, and stands for 9% of the total import of arms in the world. (BBC, 2011) By operating in India, Saab comes closer to a large customer with many opportunities for future business. If Saab was to sell defense arms to the Indian government, Saab would be obliged to contribute with offsets. An offset is a trade practice in the defense industry where the supplier agrees to buy products from the buyer up to a certain percentage of the deal’s worth. All work that is outsourced to SITC can be used as offsets in future business and outsourcing more work to SITC could be a part of a future offset offer.

**Cost Reduction**
One of the most common reasons communicated within both whole Saab and TDH for outsourcing work to SITC is to reduce costs and by that become more competitive. The lower salary levels in India enable TDH to cut costs when transferring a work package to SITC. After considering all associated costs such as the facility, infrastructure, management costs, administration and travels, it is in many cases still cheaper to let an engineer at SITC perform a work package than to have their Swedish counterpart do it. Empirical evidence from other departments at Saab shows that it is possible to achieve cost reductions within a year.

**Accessing Competence**
One respondent from Saab explained that scarce resources have a major impact on what activities they choose to outsource. In some knowledge areas it is hard to find competence in Sweden. NC- and ADA-programming are two areas where competence is scarce, with the latter being relevant for TDH. In India these competencies are easier to
find and cheaper to build than in Sweden. NC-programming for example is a competence area that has been growing rapidly at SITC to serve Saab’s needs.

**Managing Development Cycles**

In development cycles, peaks in resource demand occur at TDH. Today, to avoid recruiting temporary personnel, this is solved by borrowing employees from less prioritized projects which in turn often have to suffer the insufficiency. It is perceived that by developing relevant competence at SITC, especially for bulk jobs, these peaks in demand can be handled at a low cost, without letting other projects suffer.

**Concentrating on Core Competence**

Many of the engineers at TDH are daily dealing with what they describe as easier tasks that anybody could do with proper training. If these tasks were to be performed at SITC, money could be saved and the engineers at TDH could have more time to focus on value creating activities.

**4.3 Risks of Outsourcing R&D**

A thorough risk analysis should be conducted before any collaboration with an outside vendor is initiated. There are always risks and it is important to identify them early; sometimes there are risks so severe that any engagement should be refrained. Risk analysis should be done at different levels of the organization, both before and during projects. In this section, risks that have been brought up by respondents and that are associated with collaborating with the outsourcing center are considered.

**Political Risk**

Political risk associated with the geographical location of the center, such as terrorism, could permanently force operations at the outsourcing center to shut down. This risk is impossible to affect and can have major effects on monetary losses since capabilities within the company could be lost and operations could be severely delayed. A continuous risk analysis should be performed and a contingency plan should always be in place. This is taken care of by a higher level at Saab but should also be considered by the lower levels. It is important to have the ability to transfer or build up the capabilities again at any other location. However, it could be very costly to do so. As an example, one respondent outside Saab says that they have the competence, but not the ability to handle the volume if they had to close down their center. Another respondent says that to manage political risks they continuously define key employees at the supplier’s site and make sure that they always have valid Swedish visas in case of emergency.

**Overestimating Cost Reduction**

A common risk when outsourcing is to underestimate management costs associated with collaborating with an external partner. It is easy to be naïve and only compare the direct costs of internal and external resources when estimating cost saving potential for transferring an activity to an outside vendor. The cost of travel, communication, meetings, infrastructure and other costs can be overlooked which can lead to that the estimated cost reduction is not reached. One respondent said that their cost reductions
were not as extensive as expected since the efficiency of the engineers performing the outsourced work was not initially comparable to the engineers in Sweden. However, after a period of time this difference was not noticeable. Another respondent mentioned that the issue with efficiency differences did not necessarily lay in competence but rather in issues with infrastructure. Infrastructure which is taken for granted in Sweden cannot be taken for granted in India, as certain infrastructural conditions may not exist or may not be reliable. Developing this infrastructure at the supplier may be time consuming and may also burden on-going projects if not dealt with in time.

**Underestimating the Need for Home Organization Involvement**

Many companies underestimate the need for involvement in handling the outsourcing process. Some companies do not understand the need of having procurement skills or their responsibility in following up. It is important to understand that this kind of management is costly and that it is necessary. For one organization, half of the cost conducting an activity in India is still in-house. Because of scale advantages, this in-house cost decreased in proportion to the supplier cost as the number of people conducting the activity in India increased. It is important that the home organization shows that they are willing to invest in the supplier and adjust working processes at home in order to make the collaboration work. If this is not done there is a risk that obstacles, such as technical difficulties, cannot be overcome and the outsourced work has to be relocated back to Sweden. Furthermore, low involvement increases the risk for delays, misunderstandings and thereby the risk that the end result is not as desired. In the beginning of an outsourcing project, in particular, it is critical not to underestimate the need for engagement since it will have major effects on how efficiency will evolve.

**Risks Associated with Staff Turnover**

Risks associated with staff turnover were brought up by several respondents during the interviews. These risks are divided into two basic risk areas. The first risk was associated with information being leaked to competitors due to staff turnover. Two respondents that work with outsourcing on a strategic and contractual level expressed specifically high turnover rates being a risk in information leakage to competitors. Former employees could start acting as competitors by forming consultancy firms with skills acquired from their previous employment. One of the respondents mentioned that it is important to have information binding contracts and on-site managers with contacts who can enforce these contracts. The second risk mentioned was associated with information loss due to poor transfer of information between the leaving party and the new hire. A respondent mentioned that the resources that are invested in educating and developing supplier teams can be easily lost when the team members change employment. The respondent stressed the importance of investing in the transfer of information between the leaving party and the new hire. It is important that this transfer of information occurs on-site in India and does not fall on representatives from Sweden. The risk is that the Swedish counterpart is forced to educate engineers in India recurrently.

**Risk of Opportunism**

The main perception from people working with SITC is that the risk for opportunism is low, or insignificant. One respondent working daily with SITC says that there is no risk
for ending up in a situation where they are solely dependent on SITC. The type of competence needed for the work that is outsourced today or will be outsourced in the near future is not competence that makes the respondent’s department dependent on SITC. The same respondent cannot see any reason for engineers at SITC to underachieve, since their performance is measured on an individual basis by group leaders and their salary strongly correlates to personal output. Another respondent, also in close collaboration with engineers at SITC, has never felt a risk for any opportunism and has a positive impression of the SITC engineers. The information security at SITC is stricter than in Sweden. Employees are not allowed to carry bags in the working area and all USB out-puts are blocked. The risk of losing information is perceived low, possibly even lower than in Sweden.

Even if the general perception is that the risk for opportunism is low, a respondent well experienced in outsourcing explains that vulnerability within the own organization grows if the vendor’s involvement increases at the same time as the home organization’s own competence disappears. Knowledge is always shifting and there is a risk that the company ends up in a hostage situation. One respondent suggests that in order to avoid risks associated with knowledge sharing, part of an outsourced task could be performed in-house. Another reason to keep parts of a task in-house is to maintain the competence to order work packages. It is important to understand how much the ordered work package will cost, and thus how many man hours that is needed to perform it. If the competence in placing orders is lost, there is a risk for exploiting the situation and charging more man hours than needed.

Haggling as a phenomenon is more pronounced in the Indian culture than in the Swedish culture. This cultural difference can present itself in business situations and one respondent that has experienced this perceive it as opportunism and says, “In Sweden we are used to orderliness, and frown upon surprises”. The respondent has experienced difficulties in contract negotiations where the Swedish organization has wanted to pay for performance whereas the supplier wants to do business in hours of work conducted. This is perceived as unfavourable for the home organization, especially when there is no boundary for how much a task is allowed to exceed the estimated man-hours. Contracts without limitations for man-hours can result in opportunism but this can be prevented by clear boundaries. Furthermore, having people from the home organization on-site at the supplier is perceived to have a reducing effect on opportunism.

Not Understanding Cultural Differences
Some respondents see cultural differences as a risk and some merely see it as a fact that needs to be considered. Regardless, cultural differences pose a risk when they are not understood. Culture is of course perceived differently depending on the beholder, but many Swedish respondents have reflected around Indian culture in a similar way. Firstly, they state that there are many cultural differences and that it is important to understand them. Things that Swedish people might perceive as unimportant could have a significant impact on how things are handled in India. For example, one Swedish manager states that Swedish people often have a hard time understanding the importance of personal relationships in the Indian market. Understanding the human contact factor will definitely
affect the end result and might be more important than concrete business. Hierarchy is another factor that according to respondents differs distinctly between the cultures. India is, compared to Sweden, a hierarchical country where strict orders come from management and contradicting management is not common. This can lead to less initiative and fear of creativity from employees. It could have the effect that employees are dependant on somebody telling them what to do. It is also important to never admit to not knowing something which can lead to that the answer to if something can be done is always “yes”, questions are generally not raised and if there is a problem, this is not brought up. According to a Swedish respondent, it is also a mistake to say “do this when you have time”, since this lack of determination will be interpreted as that the task not being important. Swedish respondents speak fondly of that the Indian people they have encountered are very hard-working and flexible regarding their schedule which is in some aspects different than Sweden. They are also very well-educated, technically skilled and perform tasks that they are assigned regardless of their personal interests and opinions whereas a Swedish engineer might not always be good at following orders. Observations are that the SITC engineers are very proactive and keen on delivering. A respondent from SITC speaks of how they like to take up delivery critical work from Swedish engineers and ensure that it gets delivered on time. An interesting note made by a respondent from another organization than Saab is that the CV, and what competences are listed in it, is very important in India which creates a competitive environment. Even though work is performed in a group, working alone is preferred and information is shared reluctantly. This statement however contradicts many other respondents, especially from Saab, who speak of a friendly environment open to questions and collaborative problem solving.

When the SITC respondents reflected around cultural differences they spoke of similar things as the Swedish respondents did. One respondent from SITC said that the main thing to understand is that there actually are cultural differences. The respondent however said that Swedish and Indian business culture is more similar than German and Indian business culture is since there is a collaborative environment and people are helpful towards each other. One cultural difference that an SITC respondent talks about is that time criticality is more important in Sweden than in India. In India, a task can always be done tomorrow. Furthermore, some SITC respondents experience India as more hierarchical than Sweden and speak of the benefits with less hierarchy as being able to be more creative. Many SITC respondents talk about cultural differences but do not stop at that. They also talk about how they have actively tried to adjust their own attitude and their teams’ attitudes to fit better with the Swedish ways of working.

4.4 Strategies for Outsourcing R&D

This section is presented in the structure of the theoretical framework as mentioned above. How risks and drivers have affected strategy is integrated into the text.

4.4.1 Choosing the Right Activities to Outsource

Activities with material that contains defense secrets that cannot be eliminated from the material are naturally not in question when identifying activities to outsource. A common perception is that activities that contain parts restricted by American export control are difficult to outsource. Swedish export control however is manageable. There
are several examples within Saab where processes have been established to handle this. Outsourcing core competencies is not to be recommended but what the company’s core competencies are could be discussed. When identifying core competencies a discussion with line management could be held regarding what competencies to keep in-house. Respondents at Saab suggest that design and construction are core and typical things not to outsource, but code review, development, and verification are activities that could be considered for outsourcing.

Activities associated with person-dependent competence should not be outsourced because of the risk of losing the ability to perform the activity. Activities that require a more general competence are not as risky, since it is much easier to replace an engineer if necessary. Development that needs to be performed in close collaboration with the customer is another example of something that one respondent explains that they want full control over and therefore avoid outsourcing. The reason for this is to avoid misunderstandings between the external part and the customer because of cultural differences. Activities that are dependent on fast feedback-loops should be outsourced with caution. When outsourcing these activities the feedback-loop becomes slower, since the daily work becomes less transparent.

**Level of Experience**

A line manager, well experienced in outsourcing, described outsourcing as a “learning by doing” process. A notion from the interviews that can be made is also that the level of experience has affected how the organizations have started outsourcing R&D. Organizations with little experience of outsourcing have often started off in small scale with well defined, non-critical, isolated work packages. As experience and trust has been gained, the vendor’s responsibility has increased to perform more complex and critical work. It is a fact that it is hard for the parties to understand each other in the beginning and according to some respondents it could therefore be good to start off with smaller work packages that are less technically challenging. A few trial and errors are needed in the beginning since focus should be on establishing ways of working and communicating, not on technical difficulties. When starting off with something simple, where the technical questions are insignificant, focus can be on creating processes and building personal relationships, which should not be underestimated. The organization also needs to hear success stories and it is easier to achieve quick results when working in small work packages.

Starting off with less critical work has also been a strategy for the more experienced organizations in outsourcing. In these cases there has however been a thorough plan for how knowledge should be shared, how infrastructure should be built up, what functions should be outsourced etcetera. This process had been used in earlier outsourcing projects and had been proven successful.

**4.4.2 Managing the Supplier-Outsourcer Relationship**

**Creating a Common Working Culture**

The degree of involvement from Saab in different SITC projects varies but many employees at SITC, Saab and other Swedish organizations speak of close collaboration as
the key to successful outsourcing. In order to collaborate closely, a common culture needs to be created that takes cultural differences into account. One project manager at Saab states that 80% of managing projects is about creating a culture that is sustainable during rough times. It is important that the Swedish people understand the Indian people but the other way around is just as important.

Interesting to note is that most of the Swedish employees that have worked with Indian employees talk about cultural differences but there is a distinct difference in how they are perceived. Some Swedish employees talk about how an effort continuously has to be put on working with the differences to understand them and make the Indian people understand how things work in Sweden. These people have often achieved a working culture where cultural differences cause less disruption and misunderstandings than previously. Where the Swedish people have not been actively involved in setting a culture, it is talked about cultural differences as something that causes trouble and is an obstacle. Creating a culture is important and both Swedish and Indian respondents emphasize the importance of creating a common culture that incorporates both Swedish, Indian and new ways of working. As one Swedish manager puts it; “The greatest mistake that we can make is to think that we in Sweden are some kind of norm that everybody should simply accept”. It is important that the ways of working evolve from a discussion between the parties and that ways of working are selectively picked from the cultures. An Indian project manager says that “No culture is bad. Never say that anyone is wrong. We are talking about different cultures but we are all global and you have to adopt and change yourself. This is the only way to grow”. A Swedish respondent closely involved with India states that it is important to appreciate the Indian engineers for what they are good at and not try to transform them into Swedish engineers. Another Swedish respondent says that the organization could become much better in utilizing the fact that the Indian people are so hard working and flexible regarding their schedule.

Since Sweden is a non-hierarchical country compared to India and many others, differences in ways of working might be perceived as more challenging than they would have been perceived by for example Americans. However, culture can be affected to suit a Swedish – Indian collaboration better. Observations are that the SITC engineers are proud of being a part of Saab and some employees joined Tech Mahindra only because of Saab. One respondent says that “I feel more like a Saab employee than a Tech Mahindra employee”. It is also evident that SITC has been influenced by the Swedish ways of working. One respondent says that SITC is freer and less hierarchical than other workplaces in India and that it would be great to affect the development towards even lesser hierarchy. A project manager at SITC says that the first time for any new team member is spent on training in the working culture that the team has developed together with Saab in Sweden. The team member then learns about appreciating time, preparing meetings, talking slowly and about how the contact with Sweden can be handled less hierarchically than they are used to. Also respondents from Saab recount of how they have actively worked on affecting the culture and that it turned out to be successful.

Creating a good working culture can be done in different ways. One Saab manager has worked with affecting the culture to become more independent. When team members
asked questions regarding the work, the Swedish manager always responded with counter-questions in order to always keep the responsibility with the SITC engineers. When any problems arose, it was important to explain that problems cannot be blamed on bad instruction but that responsibility for the delivery needs to be taken. Another Swedish manager speaks of the importance to encourage bringing up problems and raising questions by praising this behavior. One Swedish respondent speaks particularly about how important it is to find allies at the supplier site that can project the culture on site. “You want site managers that drive the same culture as you advocate. You have to find allies and if they are not yet formal leaders, make them formal leaders.” Interesting to notice are teams at SITC where the project manager is active in setting the culture. There are many examples where it is talked about the importance of continuous improvement, less dependency on a leader, more independent work and an open environment for raising questions. When talking to team members in these teams it is also evident that they have a sense of personal responsibility and feel a freedom to deliver independently. These teams are also the teams where the Swedish managers have talked about the importance to continuously work with setting a good working culture.

**Mixed Teams**

Frequently brought up by respondents, both Swedish and Indian, are differences in how the definition of requirements and expectations is handled. It is said that Swedish people are not used to working with strict requirements since they keep in frequent contact with each other during the work and have most functional knowledge that is required for figuring out the scope themselves. One respondent stated that “Swedish people are more Scrum than Waterfall.” This mentality needs to change if Saab wants to transfer complete responsibility for tasks to SITC. Swedish people are reluctant to work in this way but the fact remains that the SITC engineers cannot work without instructions, functional knowledge or any way of accessing more information.

For some outsourced work, requirements and scope can be easily defined and the outsourcing can thereby be treated more like procurement than collaboration. There are examples amongst the respondents where this is the case. For work that is harder to define, expectations need to be aligned and attempting to solve all of this in requirements and contracts could take years. The key to solving this is frequent contact between Sweden and India and one constellation that could work is a mixed team. A mixed team is a team that works together on a daily basis and consists of both Swedish and Indian engineers and/or project managers. Swedish people who have worked in mixed teams say that one main advantage of working like this is that every work package does not have to be treated as a purchase and the effort of procurement can be spent on something more productive. When working in a mixed team, there is profitability to be found also in smaller work packages. It is also easier to handle failures since they are discovered earlier and therefore does not have as major of an impact as failures discovered later. By working as a mixed team, the entire “blame game” of who caused an error can be avoided and it can instead be focused on improving processes. Mixed teams could be especially beneficial in the initial stages of outsourcing when there are many obstacles to overcome.
What a mixed team is varies but the key thing is frequent contact between Swedish and Indian team members. One organization has teams with members from both countries that are self-governing. They have set goals for the team and divide tasks amongst themselves. Another example is a scrum team that had team members in India and the scrum master, architect and product owner in Sweden. A third example is a team that has the main work force in India but employees in Sweden that work with project management, packaging of the work etc.

A mixed team also has other beneficial effects. The risk of losing competence internally significantly diminishes when employees from the home organization are closely involved in daily operations. When people in the home organization have similar tasks, have to control results or make orders to the supplier, competence is retained in the home organization. It is important to understand that the company needs to keep the competence and have the structure to manage the outsourcing. Mixed teams are also beneficial for knowledge sharing. A SITC project manager that works in a mixed team says that “They learn from us and we learn from them”. It is evident in this team that their ways of working has evolved over time and that they are continuously learning and improving. Working in a mixed team also aids the home organization in utilizing the supplier optimally. With close contact, also highly prioritized tasks that are delivery critical can be done by the supplier and the result can be taken care of in the home organization. Last but not least, working in a mixed team gives a real improve to the feeling of belongingness with the home organization.

**Communication**

Communication costs and management costs in general is something that many respondents say that they underestimated. Respondents have underestimated the need for status meetings, communication, travelling and meeting in person. Emphasized by many of the respondents is the importance of meeting in person. It is important to create relationships and build trust between individuals. By presence from both partners, an emotional bond is created between people from the supplier and people from the outsourcer. Meeting in person is especially important to avoid misunderstandings, catch problems in an early stage, enhance knowledge sharing and via personal trust avoid that employees at the supplier site are viewed upon as a single entity rather than individuals. A respondent that has seen examples from an organization where everything was handled from a distance reports of lower motivation, lower quality, less job satisfaction and more misunderstandings. It is important to enable meetings between people from all levels of the organization. Engineers in Sweden need to meet engineers in India just as much as project managers need to meet each other. One Swedish project manager said that it is especially important to educate a certain critical mass of the supplier team in Sweden. Between 10 – 25 % of the team members should be brought to Sweden and educated.

Regarding communication, respondents agree that it is hard to get it up and running in the beginning. Communication technologies like emails, chats and video conferences are good tools but it can be hard for the team members to understand each other only via these tools. Interpreting messages the wrong way is very easy. One SITC project manager said that the most challenging part of the entire project was that the team members did
not sit next to each other. Working on improving the communication and being available every day via all possible communication technologies should be a priority. Video conference is a good tool according to many respondents but what is mentioned is that it is hard to communicate, especially in software development, without the possibility to draw and explain things on for example a whiteboard. A Swedish manager said that since communication is such a major issue, it is worth investing in all possible technologies that can ease communication. This team invested in a SMART Board (an interactive whiteboard) which was helpful in making the people in the team understand each other from a distance. For Saab, export control restriction is a major issue in using available communication technology. Screens cannot always be shared between Sweden and India and all communication regarding export controlled matters must be logged. The SMART Board for example could not be utilized to its full capability due to export control restrictions.

Some teams have solved communication problems by having a SITC person on-site in Sweden. This has improved the communication but is of course restricted to the teams that are large enough for this to be sustainable. A daily standup meeting is another means of ensuring good communication that has been used by both Saab and other organizations. It can be held as a short 15-minute meeting every day where all team members talk about what they have done since the day before, what they will be doing during the day and what problems they have encountered. A daily standup meeting ensures that problems are brought up and that the group can help solve problems. Respondents from SITC, that do not have frequent contact with assigned people in Sweden, say that it is sometimes hard for them to get in contact with the people in Sweden. They also say that this is only a problem when they are in India and not on-site in Sweden.

**Long-term Investment**

When it is hard to find or manage larger tasks to outsource, starting off with smaller work packages could be a strategy. It should however be noted that it is not about starting off at random. One project that started off with smaller packages strictly defined competence areas that they wanted to focus on, integrated the supplier into the line function and put up budget restrictions for the projects to ensure usage of the supplier. If a smaller work package is initiated as a single trial it is not likely that it will be successful. This is due to the previously mentioned fact that the startup costs and efforts are large. When the strategy is to outsource work in many smaller work packages it is important to define competence areas that should be built up at the supplier. A long term plan can then be established for how to develop these areas.

If the goal of outsourcing is a long-term collaboration, even starting off with a larger work package as a single trial is a waste of time if there is no plan for how to develop this further. The execution of this work package may succeed but if it is not followed by another work package, the next time a project is started it will be like starting from the beginning again. Departments less experienced in outsourcing that have started with larger tasks directly emphasize the importance of not rushing the outsourcing and focusing on good planning. However, it is a fact that the level of effort put into the
outsourcing relationship from the outsourcer varies. Some respondent have put up concrete long term goals of the outsourcing and some have used it as a one-time solution in a project. Not following up on the first work package is a waste of time if there is a desire to utilize the supplier for the same types of tasks later but if the drivers of outsourcing are not connected to a long-term goal, then it is probably not justifiable to invest long-term.

Common for many cases is that more effort was required than the outsourcer initially estimated. Creating a functioning outsourcing, whether it is about collaborating or transferring complete responsibility, is not easy. Management costs are hard to estimate and it is all about building up trust. Having dedicated people that work with the supplier on a daily basis or having dedicated points of contact is the key to managing outsourcing. This is helpful both for the supplier that does not have to communicate with multiple people from the outsourcer and for people in the home organization that want to get in contact with the supplier. Evidence from projects that have not had a dedicated person working with the supplier on a daily basis is that the project can get delayed. Project management for delayed outsourcing projects think that working with the supplier on a daily basis could have ensured timely delivery. However it must be appreciated that the severity of delayed projects depends on the time criticality of the project and needs to be compared to the costs of overhead management in the home organization. Although the project was delayed, the budget for management costs was held. The tasks of the people that work with the supplier on a daily basis can vary depending on needs. The supplier could get help with technical issues, tool issues etc. They could also get support regarding how to communicate with people in Sweden, prepare presentations and write reports. According to observations, how things are communicated differs noticeably between India and Sweden.

Continuity in workload has been an important question in many interviews. Some cases from the interviews take full responsibility for ensuring full utilization of their teams whilst some other are of the opinion that this should be the supplier’s responsibility. There are different outcomes of the different approaches. When taking full responsibility, outsourcing can not be used to manage development cycles since the supplier cannot be used to even out cycles of demand in human resources to the same extent as when not taking full responsibility. One respondent that is working in this way however says that their R&D is an area that is easier to make long-term plans for than other areas. This means that they do not need to use the supplier to even out demand. The advantage of taking full responsibility is that resources are not wasted. At SITC, the teams that have a continuous workload have a close to zero staff turnover. This is very advantageous since it is a demanding process to build up a functioning team. If a well functioning team has been built up but is not being utilized, money invested in building up communication and a working culture is simply thrown away. Also if there is a group of people with well functioning group dynamics they should be valued.

Another advantage of continuous work in teams is the staff motivation. The SITC respondents clearly express that, even though they are paid when being idle, they are not interested in being paid for nothing. It is clear that being idle is bad for their careers and
does not look good for future references. SITC respondents also say that they would rather have too much work load than too little since they feel like they can perform better under pressure. There is a tendency that project managers who do not have sufficient work load for their teams spend much time communicating with Swedish managers trying to find new work packages. This is natural regarding the circumstances but it has been said that they do not want to work in this way. This affects their performance as team leaders since the focus is shifted from developing the team and performing tasks towards selling more. This in turns affects the relationship with existing project managers at Saab since they want SITC to have full focus on their projects and not focus on selling in new projects. On the contrary, one project manager that always has continuous work says that “I never have a stressed mind and can focus 100 % on building my team”.

**Initiating Outsourcing**

It is a fact that for a long period of time the outsourcing productivity will be lower. Initiating outsourcing requires a lot of effort and the first period of time is often spent on simply building up communication. The less that can be specified and the fewer requirements that can be set, the more communication is needed. One Swedish respondent closely involved with SITC says that “Everything starts with communication and establishing a personal contact. This should not be underestimated.” Also setting up appropriate infrastructure can take time and one Swedish respondent said that in their case, the person who was supposed to be the leader of the project had to spend most if the initial time solving problems with infrastructure. The respondent says that difficulties with establishing functional infrastructure is underestimated and that if this is not understood centrally and accounted for, the projects will be forced to handle this. In conclusion there are more process challenges than technical challenges related to the task in the beginning of outsourcing and it is important that a lot of effort is spent in the start-up phase. If this time and effort is not spent in the beginning of outsourcing, it will take long time before a higher productivity level can be achieved.

Common for almost all of the respondents is that the first thing they have done after deciding on outsourcing is to bring representatives from the supplier team to Sweden which sets a collaborative atmosphere and creates commitment. Focus has been on two major things during the visits. The first is to get the supplier representative started with the technical work that is to be done. This has been the primary focus of the visit in many cases that has had predefined work and working environment for the supplier. The other thing is to work together with the supplier representative to develop ways of working, setting up the environment and introducing them to the home organization and ways of communicating. This has been done in cases with no predefined work but with a will to start working with the supplier. It has also been done in combination with starting the technical work off in cases where there was predefined work but no environment or routines. The advantage of involving the supplier in setting up routines and environment is that a more collaborative way of working is achieved. At SITC, there is also a lot of knowledge and experience from building up these kinds of collaborations that can then be utilized. Experiences show that it is important to achieve a functioning way of working before sending the representatives back to India. When there is no supplier representative on-site in Sweden, it becomes much harder to communicate and solve problems.
Finding the right people to work with the outsourcing internally and from the supplier site is essential. The person responsible for the outsourcing in the home organization must have drive, be energetic and really interested in making the outsourcing work. There will be many obstacles in the beginning and without the willpower to make it work; these obstacles will bring down the outsourcing. At the same time it is important with authority and recognition. The “good cop, bad cop” set up has been proven effective in several outsourcing cases. It is important with somebody that is humble and interested in bringing in experiences and ideas from the supplier team. At the same time, an authoritarian person is needed when difficult decisions have to be made. Communicative power is central to have for everybody involved and the relationship between the manager in the home organization and the manager at the supplier is especially important. When choosing a manager from the supplier, an important factor to consider should be the personal chemistry with the manager in the home organization. It is also important with a high sense of perceptiveness and understanding of the fact that it is not always the most technically skilled employees that are the best choice as team members. Neither the manager nor the team members need to be the most technically skilled people. It is more important to recruit people that can work in teams and take responsibility. When recruiting, it is beneficial to focus more on interviews than on CV:s. The home organization should also be involved in the recruitment and not leave it up to the supplier.

**Incentive Modeling**

Swedish respondents say that staff turnover in the Indian Peninsula is relatively high compared to Sweden. To increase salary the employees generally need to change jobs. Titles and promotions are also important for social standing and affect not only salary but also the ability to apply for loans and even marriage prospects. Our Swedish titles are often not sufficient and one respondent say that they have created parallel titles that are socially accepted in that culture. They have also created clearer career paths to keep advancements within the outsourcing structure. Another respondent well experienced in outsourcing says that heightened salaries are motivating but that promotions are generally more effective. All contracts will of course not allow for the outsourcer to create own career paths but in those cases this is something that the supplier could work with. Staff turnover should also be a frequently followed up KPI (Key Performance Indicator) to ensure that this remains a focus area.

It is recognized by Swedish respondents that the supplier needs to be given challenging tasks to decrease staff turnover. Outsourcing basic, repetitive work is of course good for ensuring cost reduction but it does not develop the competence of the supplier’s engineers - “you pay peanuts and you get monkeys”. The possibility to go on exchange to Sweden or other countries can also be used as motivation. Involving employees at the supplier site close to normal business creates a unique feeling of belongingness. It is costly but benefits motivation, acceptance and commitment to the outsourcer. Good feedback on performance is important and vocational pride should not be underestimated. Understanding the benefit an employee creates for the company improves performance and working with awards to premiere good performance or actions is appreciated. What according to the SITC respondents is most motivating for them is challenging tasks,
responsibility, continuous learning, close involvement with Saab and understanding the purpose of work tasks.

Contractual solutions are a part of decreasing staff turnover and it is also important to work with contracts to align incentives and prevent risks. One major question is if there should be a fixed price or if the outsourcer should pay by the hour. The respondents that have experience from working with fixed price contracts said that a fixed price contract is often not a good solution. They talk about how it enhances the risk of the supplier taking shortcuts, especially towards the end of the project. It is also harder to work with fixed price contracts when working according to agile processes.

**Measuring Performance**

To profit optimally from outsourcing, measuring performance is important. Swedish companies that have worked with outsourcing stress the importance of using KPI:s and also say that it is important to work with the same KPI:s internally as with the supplier. The KPI:s they measure are in some cases too general but taken very seriously and one respondent says that it can sometimes be too much focus on the KPI:s instead of the real issue. This problem is recognized by Saab employees who say that it is important to take control over the KPI:s so that they actually measure the right thing. Measuring the wrong thing affects the engineers in the wrong direction. One example is the KPI *First Time Right* that is an important KPI for many teams to create acceptance for SITC in the home organization. It ensures that the outsourcer from Saab gets the same quality back as could be expected from a Swedish engineer. *Number of errors* could be seen as a substitute for this KPI but if that was measured, it would be premièred to not perform work since then there can be no errors. This is of course not desirable and it is important to analyze what the company really wants to achieve to get to the core of what actually creates value. One Swedish project manager says that they prefer value based KPI:s rather than financial KPI:s and the corresponding SITC project manager mentions *number of improvements* as one important KPI.

Some Swedish managers that work with SITC work hard with KPI:s and others recognize that they need to become better at it. However, measuring performance is tricky and it can sometimes be easier and more valuable to measure predictability. The higher the predictability, the easier it becomes to work with improvements since a high predictability signals problem-solving capability. In one SITC team, the KPI *drive* is important. It measures the predictability of the SITC team’s time estimations. When working with KPI:s it is important to continuously follow up on them to give real effect. Tech Mahindra measures KPI:s for SITC but it is not in all cases that the importance of KPI:s is recognized by Saab management. In those cases, the project managers at SITC say that they lack feedback from Saab and would like more of this to know how they can improve. KPI:s are an important tool to ensure continuous improvement and the SITC teams internally work hard on other tools like best practices, checklists and root cause analysis. This is also incorporated into new team members training to avoid reinventing the wheel. According to observations this often stays within the SITC team and does not spread to Saab but teams that incorporate this into the entire relationship benefit from it. There are teams that via this have improved their outsourcing management processes.


4.4.3 Optimizing Internal Processes

Organizational Acceptance

Creating acceptance in the organization for working with external partners is essential since commitment and understanding amongst employees benefit the entire organization. Experiences from different outsourcing organizations show that the mindsets of the employees create different cultures and conditions for the collaboration which affects how well it works. A manager with low acceptance for external collaboration within the team expresses that it would be easier to handle the collaboration if the employees were more involved. Resistance within the organization poses obstacles for external collaboration, and if the acceptance was higher, a perception is that natural obstacles could be overcome more easily.

The level of acceptance varies depending on organization and department but even departments with well developed routines for outsourcing have to fight for acceptance. For Swedish people collaborating with India, a perception is also that if employees are simply commanded to collaborate externally without being involved in the decision, the acceptance will be lower. For people not involved in sourcing to India, low acceptance could, according to a respondent, be due to the fact that many people associate collaborating externally with failed outsourcing that they previously have experienced or heard about.

Overcoming issues with acceptance is a complex task but it is possible to reach a state where outsourcing is simply accepted. A respondent from an organization with long experience of outsourcing expresses that “We have created a straightforward culture where resistance against outsourcing is simply not accepted anymore. We have formed our organization around this collaboration and our basic values demonstrate it. There is a social pressure that does not accept resistance.” To create this culture, it is essential to enable meetings in person between people from both sides. For Swedish people, having the chance to work at the other location can also work as an incentive for better performance. An effective way of improving the attitude towards outsourcing is to send more people to visit the partner company. It improves confidence in the skills of the engineers and provides insight into how other departments are working with the partner.

A connection can be seen between acceptance and tradition. A respondent who has experienced outsourcing from the perspective of different departments says that for a department that was relatively recently formed, the resistance against outsourcing was much lower than for a department that was older. Another respondent who experienced outsourcing from the perspective of two different nationalities claimed that a much higher resistance could be perceived from one country than from the other. One respondent said that they simply did not have any resistance because all employees were aware of that the company was an international company where working with other nationalities was a natural part of business.

Job Protection

The level of acceptance also varies with complexity of tasks; the more routine tasks, the more acceptance it seems to gain. An analysis made by a respondent is that this could be
due to the fact that the feeling of jobs in the home organization being threatened is lower when the tasks performed externally are less complex. The concern of one’s job being threatened is present at both Saab and other organizations. Four different respondents from Saab mentioned that job protection seems to be a concern in the organization and three of them thought that this was most likely due to insufficient communication. One respondent elaborated that “This is probably a communication problem. We have to be clearer regarding why we are outsourcing and that it is not a matter of reducing the workforce in Sweden”. For Saab, working with SITC should not be perceived as a threat to the jobs in Sweden and the purpose of SITC needs to be made clear to avoid Swedish employees feeling threatened. Regarding all outsourcing, people who are affected by the outsourcing need to be given a sense of safety. If their job is affected, clear plans need to be put forward for what their new tasks will be. It is also important to communicate that the outsourcing is often done in order for the Swedish engineers to be able to focus on more value creating tasks and not in order to make them unemployed. Communicating this message could be very effective and there is proof from one organization where this was done. In this organization, the employees were very happy with the outsourcing decision and eager to get started with the new activities.

**Communicating about Drivers**

When asking how to best deal with resistance, a respondent with long experience of managing outsourcing says that the first thing to do is to communicate why it is being done. Showing a business case and other drivers is essential in creating acceptance.

Many of the Swedish respondents agree and speak of communicating the drivers behind outsourcing as an important part of the strategy. They talk about how this communication creates motivation, acceptance, commitment, and understanding and ensures that employees strive towards a common goal. They further elaborate how it reduces tension between the home organization and the supplier, prevents suspicion and kills the entire debate regarding whether or not to work with outsourcing. Employees can then focus on how to make the collaboration work instead of debating its existence.

Creating a common vision in the organization for the outsourcing is one way of communicating drivers. The vision could be positive, for example that outsourcing enables employees to focus on more important tasks or that outsourcing is a main contributor to gaining more business. The vision could also create a sense of urgency and stress the fact that without outsourcing, the competitiveness of the organization might not be enough for further existence. Another vision to convey to employees is that if the organization wants to grow its future business it will be hard to find enough qualified engineers in Sweden alone.

Interesting to notice is that there is a difference in how the communication of drivers is perceived by different levels of the organization. Top management in different organizations emphasize the importance of communication and also think that they are communicating well. However, as one respondent from a lower level in an organization puts it: “Top management underestimate the importance of communicating drivers”. Another respondent says that drivers are well communicated but when speaking of
drivers, the respondent only talks about financial aspects. At Saab, it has been observed that the understanding of why SITC is being used can be heightened amongst the employees that are not currently engaged in SITC.

The Right People
It is important that the people leading the outsourcing operationally are true enthusiasts and that they really want the outsourcing to succeed. There will be obstacles and pitfalls and if the people working with this on a daily basis are not willing to work past these it will be hard to achieve anything. It is also important that the people that are formal leaders for the outsourcing initiative are committed. If the initiators are negative or view the first work as a trial, it is very likely that it will fail. It is easy to create obstacles and simply finish a failed outsourcing trial off with an “I told you so”. In the beginning it is especially important to focus on finding the right people that are true enthusiasts.

Organizations and departments that have succeeded with outsourcing stress the importance of employing the right people. They have had people in the home organization that formally are the project managers towards the supplier and that also communicate about this in the home organization. They have had leaders that put up goals and make sure that they are achieved. They also believe that it is important to identify the informal leaders of a group and actively work on their attitude.

The respondent that expressed the least concern of low organizational acceptance is working in a manager position leading an outsourcing collaboration. This respondent especially expressed how important the own attitude towards outsourcing has been and said that it is the task of the manager to create a good environment for succeeding. The respondent emphasized that without manager drive and commitment, it is impossible to motivate employees.

Preserving Acceptance and Motivation
The organization needs to hear success stories to get motivated. Setting up goals, both financial and non-financial, and showing the organization that they are achieved is important. The goals do not need to be major, simply starting off with easy things and showing off that good results can be achieved quickly is beneficial. It is also wise to use success stories from other collaborations applicable to the situation to gain initial motivation. One respondent expresses that the resistance that they experienced initially disappeared by the collaboration working well.

Setting goals for quality is important since work from the supplier is often reviewed more critically than work in the home organization is. It has been said by a person well experienced in outsourcing that “Everything starts with trust and within R&D, trust is all about quality. Therefore, we used a gatekeeper to review the quality of all delivered work so to not ruin acceptance in the home organization” Other respondents agree that it is crucial to ensure that the quality of the results that come from the supplier are as expected. This is especially important to mitigate rumors spreading about bad quality from the supplier. One respondent particularly expresses that the importance of securing quality is not because of risks for lower quality. The respondent wishes that people would
realize that India is not behind in quality and that they cannot expect 9 million people in Sweden to be better at everything than 1.2 billion people in India.

Central Support for SITC

SITC is not a center to which entire functions are outsourced but it is used by many functions and projects for parts of their business. In different parts of Saab it is controlled differently; some have a central function to coordinate and manage initiatives to SITC from several projects and in some cases single projects use SITC. Where there is no central function to coordinate efforts or put requirements on projects to use SITC, it has been proven difficult to get work to SITC. It has been expressed that “There is a lot to overcome before starting to work with SITC for the first time. People in the organization generally have no idea of how to start and many do not even know that SITC exists.” Some opinions are that there is not a lot of talk about SITC internally but that there should be. Especially lower in the organization, awareness of SITC should be spread. Further, there are security issues to handle and since all projects are time critical, it is hard to get them convinced to use SITC. There are startup costs that no single project is keen on taking. Where there is a central function, the startup problem is removed from the single projects and also departments that do not have a central function have a very positive attitude towards the central function setup. Not only are startup costs removed from the projects but it also removes the obstacle of having to set up tools and communication for each work package. This is instead centralized to the central support that works with this on a daily basis which is the foundation for achieving scale advantages. A respondent working without central support says that “If we want SITC initiatives to come from below in the organization, it would be beneficial to have a SITC group for support”. Where there is a central support it is also possible to work with budget restrictions to enhance the use of SITC. This has been done and it is a way of creating an incentive for projects to use SITC.

One respondent involved with SITC expresses that it is important to integrate SITC as closely as possible with normal operation. If it is much harder to get work done at SITC than in Sweden, it will be difficult to get people to use SITC. Maybe Saab needs to adjust the processes to work better in collaborations. Several respondents emphasize the importance of the line organization approving of and driving the business with SITC. This is especially important to ensure a long-term perspective and that it leads to concrete results. The SITC team must be integrated into the organizational chart under an existing line manager. It is essential to gain the acceptance of a line manager that can treat them as normal internal resources. If they could be integrated into the organization like this, it is possible that they are no longer perceived as a threat.

Knowledge Management

When collaborating with Indian companies there is a lot to be learned. They are very skilled in certain technical areas and the outsourcer can benefit from this. In the process of outsourcing, the outsourcer can learn a lot about collaborating externally simply from the experience of dealing with it. It is also noteworthy that some Indian companies have experience from building up these kinds of collaborations that the outsourcer can learn from. In order to retain this knowledge, it is important to keep a long term perspective of
the collaboration. Also here, the power of a central team and a collaboration driven by the line organization becomes important. Single projects working independently with outsourcing leads to a short term perspective that might not preserve knowledge in an optimal way. There is need for an outsourcing organization that processes and creates competence. A central team can ensure proper documentation and management of lessons learned. Working in mixed teams with people from both organizations could also have a positive effect on retention of knowledge.

An observation at SITC is that they are very aware of knowledge management. They document lessons learned and actively incorporate them into the daily work. They also use knowledge sharing sessions to spread knowledge in the organization. As one project manager at SITC says: “We work with check lists, root cause analysis, track defects, best practices and lessons learned. Once we do something, we document it. I feel like this documentation is very important so that I do not forget what I have learned.” A respondent from Saab says that it would be good if these assets were better managed and spread in the home organization. Other organizations than Saab have also had challenges in managing knowledge from the supplier. They think that there could be a lot to gain from managing the knowledge better, especially for decreasing the costs of staff turnover.
5. Analysis

In the following chapter, an analysis will be conducted that compares the theoretical framework with the empirical findings. The analysis is structured according to the chapter of empirical evidence for readability purposes.

5.1 Drivers of Outsourcing R&D

This chapter aims to analyze the drivers of outsourcing that are applicable in the situation of TDH outsourcing to SITC.

Gaining Access to the Indian Defense Market and Internationalization

According to Enarsson (2008), gaining access to new markets and accelerating expansion internationally is a reason for outsourcing. This is applicable for Saab that strives to gain access to the Indian market by operating there. Gaining access to the large Indian defense market means that Saab can collect knowledge, identify business opportunities (Johansson et al, 2002; Enarsson, 2008) and enhance their credibility and image (Enarsson, 2008) as an international company. Since the work that is outsourced to SITC can be used as offsets in future business, Saab is further enhancing their credibility. When a potential business deal emerges they can show that part of the requirements concerning offsets are already being met. By operating in the Indian market, Saab gains experience and knowledge about suppliers, authorities and their interdependence (Enarsson, 2008), that will facilitate further engagements in the Indian market. In addition, Saab will gain experience of how to operate internationally (Enarsson, 2008), and how the organization has to adjust in order to suit the business collaboration. This drive is especially interesting for top management at Saab, but also concerns TDH as they are part of Saab and will benefit from increased revenues and a business prospect in their area. TDH will probably be collaborating internationally in the future due to the fact that the number of international customers is likely to increase. Therefore it is important to build up the competence to work internationally. Outsourcing to SITC is a good opportunity to improve this ability.

Cost Reduction

Cost reduction is one of the most common reasons cited by the respondents as to why Saab is outsourcing to India, and why TDH should outsource to SITC. This driver is supported by both theory (Lonsdale and Cox, 2000; Enarsson, 2008; McIvor, 2005) and by empirical evidence that shows that cost reduction can be achieved by outsourcing work to SITC. In the case of TDH, cost reduction will not be achieved by outsourcing to a specialist supplier as suggested in the theoretical framework (Enarsson, 2008; McIvor, 2005). Enarsson (2008) however suggested that the supplier could reach economies of scale by performing the activity for other customers to a large extent. Saab’s supplier, Tech Mahindra, has economies of scale when it comes to providing a sufficient number of engineers that have relevant knowledge within a short period of time. This is possible since Tech Mahindra is a large company with a resource pool and a learning center that can provide their customers with engineers. This is an ability that TDH can utilize and gain monetary benefits from. Furthermore, the engineers at SITC are less costly than their Swedish counterparts.
Accessing Competence
Sometimes it can be difficult for a company to keep an activity in-house due to lack of sufficiently skilled human resources (Quinn, 2000). There are several examples of activities that have been outsourced from Saab as a result of insufficient human resources with relevant competence. For example, when it comes to ADA- and NC-programming, resources are scarce in Sweden and easier to find or build in India. These activities thus fulfill conditions for appropriate activities to outsource in order to access competence, according to Dr. Chaudhuri (in Rosenthal, 2010). Accessing competence is an important opportunity that can be explored by THD when working with SITC.

Managing Development Cycles
During the development cycle it is not uncommon for peaks in demand of human resources to occur. Both the theoretical framework and the empirical data suggest that peaks in development cycles could be handled by outsourcing work. This is then an alternative to using consultancy agencies (Enarsson, 2008) or, as one respondent from TDH says, borrowing employees from less prioritized projects which then suffer. By doing this, fixed costs can be turned into variable costs. (Lonsdale and Cox, 2000) Managing development cycles via SITC could be a possibility for TDH depending on how the collaboration is organized.

Concentrating on Core Competence
Engineers at TDH are daily conducting activities which are perceived by them as activities that anyone could learn to perform with proper training. Suggested as a driver for outsourcing, a company could free resources by outsourcing non-core tasks and instead invest them in core areas (Enarsson, 2008). By concentrating on core areas, competitive advantages can be achieved (McIvor, 2008; Lonsdale and Cox, 2000; Quinn and Hilmer, 1995). Freeing engineers from doing this kind of work could enable the TDH employees to conduct other, more value creating, activities.

Decreasing Innovation Risk
The theoretical framework also suggested that decreasing innovation risk could be a driver for outsourcing R&D. Quinn (2000) points out that innovations are associated with financial risks and that a company cannot afford to perform everything in-house. This is especially applicable when the new product development is dependent on many different innovations. For TDH this is true for many of the projects that they are involved in, for example the new development of Jas Gripen E, as they involve product development with many innovations. However, SITC does not currently function in the way Quinn (2000) describes, since SITC is cannot spread risk between multiple customers. Additionally, as a lot of work contains defense secrets which cannot be shared with any external party, domain knowledge is difficult to outsource, thus it is difficult to outsource innovation responsibility to SITC. Furthermore, no respondent mentioned anything similar to decreasing innovation risk as a reason for outsourcing to SITC. This could however be a mere coincidence.
Speed to Market
Speed to market is suggested as a driver for outsourcing R&D (Özer and Uncu, 2013; Quinn, 2000; Lonsdale and Cox, 2000) in the theoretical framework, but is not mentioned as a driver for Saab by any respondents. Compared to other businesses, Saab’s business that mostly concerns military aircrafts involves longer development cycles and product life cycles. This could be a contributing factor as to why speed to market is not mentioned as a driving force for outsourcing R&D to India.

5.2 Risks of Outsourcing R&D
This chapter tries to analyze the risks mentioned in the empirical data, in order to answer the question of what risks TDH should consider when outsourcing R&D to India and how it may affect the outsourcing process.

Political Risk
In the empirical data, political risk is associated with the geographical location of the center. The risk is described as impossible to affect, an example being terrorism, and could result in monetary losses, cause severe delays in operation and even bring the outsourcing center to a closure. Political risk lies within the definition of intrinsic risks of location (Aron et al, 2005) since it is caused by simply moving activities to remote locations. If TDH moves activities to SITC they will expose themselves to several kinds of political risks, such as escalation of a violent conflict or corruption. Respondents state that a continuous risk analysis should be performed and a contingency plan should be created. This already exists at a higher level than TDH but should also be considered by TDH. It is important for TDH to have the ability to transfer or build up the capabilities to perform the activities again at another location, in case operations at SITC are made impossible.

Overestimating Cost Reduction
It can be derived from the empirical data that overestimating cost reduction is something that commonly occurs. The risk of overestimating cost reduction falls under Aron et al.’s (2005) definition of operational risks, since it is the complexity of operations that makes it difficult to predict the cost of management, communication, travel etc. Cost reduction is commonly overestimated due to underestimation of the management costs associated with collaborating externally. This is confirmed in McIvor’s (2005) statement that many organizations underestimate the magnitude of management costs. Furthermore, the empirical data suggests that directly expecting the same efficiency from the vendor as before the activity was outsourced can lead to overestimating cost reduction. Also Aron and Singh (2005) say that companies should not expect engineers at the supplier site to have the same efficiency as the engineers that performed the activity in-house, at least not initially. The phrase at least not initially indicates that efficiency might increase over time. This is confirmed by a respondent that says that the efficiency of conducting an outsourced activity often converges towards the previous efficiency in the home organization after a certain period of time. Another respondent also says that lower initial efficiency is often due to infrastructural problems and not the skills of the engineer.
It is clear that it is difficult to estimate the monetary benefits of outsourcing an activity. This risk should be considered as high risk for TDH, where the work conducted is of a complex nature and dependencies between activities are common. It could therefore be more difficult to predict cost. Thus, it is important to not have too narrow margins, since cost reduction can turn into increased costs in comparison to what was expected when all expenses are compiled. It is also evident that reaching a high efficiency can take time and outsourcing too small single work packages should therefore be done with caution. The size of the work package itself might not be the issue but if the total amount of work outsourced is not sufficient for a certain competence area, optimal cost benefits might not be achieved.

**Underestimating the Need for Home Organization Involvement**

Noted from the empirical data is that many companies underestimate the need of own involvement in managing the outsourcing process. It is important to understand that it is costly and necessary to manage this process in order to avoid dire consequences. This is supported by Barthélemy (2003), who stresses the importance of maintaining control over the outsourced work, by having internal employees managing the relationship. It can also be derived from the empirical data that in order for the collaboration to work, the outsourcing organization has to demonstrate that they are willing to invest in the supplier and that they are willing to adjust their working process at home. Furthermore, by not considering this, there is a risk that when meeting obstacles, they cannot be overcome, and the outsourced activity has to be moved back to Sweden. Low involvement from the outsourcing organization can also lead to delays and misunderstandings which thus increases the risk of poor result. Bragg (2006) supports this statement by saying that underestimating management costs, and thereby trivializing the need of management, could lead to unsatisfying results from the supplier. In the case of TDH tasks are often difficult to specify. Therefore, the need for communication is greater than in cases where tasks are more easily defined and this risk is probably more likely to occur. Considering the risk of underestimating the need of home organization involvement, TDH should be willing to adjust processes at home if needed in order to facilitate the collaboration.

One respondent also states that especially in the beginning of the outsourcing process, involvement from the outsourcer is important, since it has major impact on how the efficiency of the engineers conducting the outsourced activities will evolve. As described in the previous chapter, a respondent says that efficiency often converges towards initial efficiency in the home organization after a certain period of time. The addition to this statement after considering need for management involvement is however that it can be assumed that this efficiency improvement does not happen without sufficient management involvement. This cannot be supported nor denied by the theoretical framework, and needs further investigation before making any conclusions. However, it implies that if TDH is especially involved in the beginning of the outsourcing process, efficiency rate could improve at a faster pace.

**Risks Associated with Staff Turnover**

Staff turnover is something that will always occur at a company and should not be seen as a risk, but rather a fact. However, high staff turnover escalates other risks. The empirical
data suggests two risks associated with staff turnover. The first is the risk of information leaking to competitors due to staff turnover. This is not mentioned by the respondents who work with outsourcing on an operational level. They do not seem to think about this as a major risk. When working on an operational level with a supplier, it might be good to not get caught up in this risk since it could likely undermine trust that has been built up and damage the outsourcer supplier relationship. However, on a contractual and strategic level, it could be necessary to consider the risks described by the theory. Under Aron et al.’s (2005) Strategic risks, it is described that suppliers may exploit clients. Closely related, is that the supplier’s employees could exploit the client when they move to another company or start up their own business. Aron et al. (2005) explains that one part of the concept of poaching is that a supplier could misuse information from the outsourcing company and become a competitor. Furthermore, he describes that the incentive for poaching increases with the value of the information. According to the above reasoning, TDH should, on a strategic level, take precautions before sharing any business critical knowledge with SITC or simply strategically decide which information can and cannot be shared with SITC. This should be considered before any engagement so that it does not affect the operations negatively.

The other risk noted from the empirical data was associated with information loss due to poor transfer of information between the leaving employee and the newly hired. This can be categorized into Aron et al.’s operational risks, since losing information when team members change employment is caused by breakdown at the vendor’s location. One respondent from another organization than Saab, means that the individual competence is important in a CV, which creates a competitive behavior. The respondent also says that when Indians work in a group they prefer to work on their own and knowledge is not without hesitation shared. However, many Saab respondents talk about the exact opposite to this behavior and express that their teams work closely together and share knowledge with each other. Also SITC respondents describe how they actively share information with each other. This difference in perceptions could be connected to how close the collaboration is since the empirical data shows that SITC respondents are open to adjust their attitudes to fit better with the Swedish ways of working. In either way, respondents say that it is important to invest in the transfer of information when an employment is changed, so that it does not fall on employees in Sweden to recurrently educate the new employee in how to perform their tasks. Considering this risk, TDH should invest in the transfer of information between engineers at SITC by affecting the attitude towards more knowledge sharing, so that they avoid the risk that employees in Sweden recurrently have to educate the new SITC employees in how to perform their tasks.

**Risk of Opportunism**
Risk of opportunism, or Strategic risk, is caused by deliberate actions by the supplier to exploit customers (Aron et al., 2005). Respondents working with SITC perceive the risk of opportunism as low. Even though the risk is perceived as low, it is important to try to be objective and aware that opportunism can arise when the opportunity presents itself. Like in the paragraph before, this is especially relevant for TDH on a strategic and contractual level and should probably not be considered too much on an operational level since this could damage the relationship between the supplier and the outsourcer. Aron
and Singh (2005) mean that the supplier will not always act in the way of both partners’ best interest and McIvor (2005) says that a supplier may exploit the outsourcing organization’s naiveté and inexperience. In the case of TDH having limited experience of collaborating externally, this should be considered, even if contractual terms are handled by a higher level at Saab. Aron et al. (2005) suggest that the incentive for misusing information is higher when information is easily codified. However, the risk of information being misused by SITC is not perceived high by respondent since thorough measures have been taken to decrease this risk. For example, employees are not allowed to carry bags at work and all USB out-puts are blocked.

One thing that according to respondents poses risks is if the home organization loses the ability to order work packages and estimate how much time is needed to perform a task. The risk for exploitation by the vendor then increases and the supplier could for example charge more man hours than needed. Losing this competence could be due to long-term intrinsic risks of atrophy. Aron et al. (2005) say that this could happen by losing the core group of people who were familiar with the activity through retirement, losing technical skills over time, or losing knowledgeable employees to other companies. Keeping part of an activity in-house could according to a respondent be a good idea since knowledge is always shifting, and there is a risk that the company ends up in a hostage situation. When the vendor’s involvement increases and the home organization’s competence disappears, the vendor may exploit the situation. Keeping parts of an activity in-house can be related to Aron, Clemens and Reddi’s (2005) definition of Chunkification. However, instead of dividing the activity amongst several vendors, the outsourcer can apply Chunkification by keeping part of the activity in-house and outsourcing the rest. The risk for opportunism can also vary with the degree of dependence on the supplier for performing activities within a certain competence area. Dependence on the vendor in ways other than information dependence, for example if large investments in human resources or physical assets have been made, can lead to increased bargaining power of the vendor (McIvor, 2008). This in turn may lead to the vendor opportunistically exploiting the situation.

Haggling, which one respondent perceived as an opportunistic behaviour, is rather a cultural difference that should be understood and managed. However, designing contracts as fixed price or pay-by-the-hour must be considered. There is one example from a respondent where paying for performance was not desirable by the supplier and paying by the hour was not desirable by the outsourcer. They both perceived the corresponding alternatives as unfavourable for them; the outsourcer did not like the idea of a pay-by-the-hour contract since it creates incentives for underperforming. One way to manage a pay-by-the-hour contract is by having clear limits for how many hours the work package is allowed to take. Another way is to have internal personnel on-site. The risk for underachievement in order to collect more man-hours than needed for a work package is perceived as being very low at SITC. This can be due to the fact that the performance of the SITC engineers is measured individually and salary strongly correlates to this individual performance. Aron et al. (2005) mentions that under-performance can become an issue if the outsourcer has no means of detecting it, however, as mentioned above, this is not perceived as an issue at SITC. Another aforementioned factor to consider is the internal competency for ordering work-packages. If this competence is high and the
outsourcer is well informed about the supplier’s performance, it could lower the risk of under-performance. Considering the risk of ending up in a hostage situation and the risk of underperformance, TDH should try to keep parts of an outsourced activity in-house, so e.g. purchasing skills and technical skills do not get lost.

**Not Understanding Cultural Differences**

There are many differences between the Indian and the Swedish culture. Some respondents perceive this as a risk and other perceive it as a fact that has to be considered. Regardless of the differing opinions if cultural differences are a risk or a fact that could increase risk, both Kleen et al. (2006) and the empirical data states that culture affects how business is conducted. Furthermore, Walsham (2002) says that considering cultural differences is not about changing attitudes and values, but rather about being more sensitive and having empathy for other people. There are many aspects to consider when it comes to cultural differences between Sweden and India and some of them have been identified in the empirical data as follows:

- **Personal contacts** are important when conducting business in the Indian market. This can be more important than the business in itself and should not be ignored. Kleen et al. (2006) supports this statement and adds that personal contacts need to be created at both a professional and a personal level.

- **Hierarchy** is more important in the Indian culture than in the Swedish culture. This needs to be understood and adjusted for. In cases where hierarchy is pronounced, employees are used to following strict orders and having someone tell them what to do. In these cases, employees are not likely to take initiatives, contradict their managers and creativity is restrained. This is supported by Hofstede et al. (2010) who expresses that in a country with large power distance, such as India, subordinates are not likely to approach and contradict their bosses.

- The tendency to **avoid acknowledging shortcomings** expresses itself, according to some respondents, in for example that the answer is always “yes” when asked if something can be performed. Furthermore, some respondents say that it is important to know that questions are generally not asked even if some information is lacking. This is especially important to understand since, according to respondents, Swedish people are bad at specifying requirements.

- **Time** is not as important in India as in Sweden; a task could always be done tomorrow. According to a Swedish respondent, it is a mistake to say that “do this when you have time”, since this will be interpreted as that the task not being important.

Not understanding cultural differences should be considered as a risk, when outsourcing to India. There are many differences that could lead to misunderstandings, and also conflicts according to Walsham (2002), that could affect the end result. TDH is no exception, especially if the work that is being outsourced is complex. Complex work could create even further confusion.
5.3 Strategies for Outsourcing R&D

This chapter attempts to analyze how TDH should initiate outsourcing. The three chapters cover what to consider when choosing activities to outsource; how the supplier and outsourcer relationship should be managed; and how internal processes should be adjusted in order to optimize benefits of outsourcing.

5.3.1 Choosing the Right Activities to Outsource

When choosing what activities to outsource there are several factors to consider for TDH. There are two examples when laws prohibit outsourcing. First, activities that contain defense secrets that cannot be separated from the material can obviously not be considered for outsourcing. Secondly, there is a perception that it is hard to outsource activities containing parts with American export control restriction. Swedish export control, however, should not be seen as a hinder, since there are several examples within Saab where this has simply been handled and the same should be applicable for TDH.

The empirical data further recommends that core competencies should not be outsourced, which is supported by McIvor (2005). Lankford and Parsa (1999) declare that non-core activities are appropriate candidates for outsourcing, and Barthélémy (2003) means that in order to identify these activities, a good understanding of what resources and capabilities that contribute to competitive advantages is needed. The empirical data suggests that the line management should be the ones to identify core competencies. Barthélémy (2003) means that this analysis should be made on an activity level, since most functions and business areas have parts that belong to core competence. This implies that activities within these areas could in fact be considered as non-core and are thus candidates for outsourcing.

Risks should be carefully considered before choosing what activities to outsource. One example mentioned by a respondent is competence dependent on a person, which should not be outsourced, since there is then a risk of losing the ability to perform the work. According to another respondent, restraints in communication should also be considered, since activities that are dependent on fast feedback loops will be conducted at a much slower pace when outsourced. Activities that only require general knowledge in order to perform them are not as risky to outsource, and are therefore good candidates according to the empirical data. General knowledge is easy to duplicate for competitors. This means that it not should be seen as a core competence, which answers Prahalad and Hamel’s (1990) third question: deciding whether a competence is core competence or not.

Level of Experience

The empirical data describes outsourcing as a “learning by doing” process, where most organizations with low experience have started to outsource at a smaller scale. The work packages have been well defined, non-critical and isolated from other activities. Quinn and Hilmer (2000) support the idea to begin the outsourcing process with less critical activities, meaning that it is beneficial. Furthermore, the empirical data describes that as the organization’s experience has increased, the vendor has gained more trust and responsibility in performing more critical and complex work. They mean that as experience grows, more profitable opportunities will appear, making even critical
activities beneficial to outsource. This is also described by Maskell et al. (2007), who say that when experience is gained, outsourcing can begin to even include innovation. Furthermore, they mean that the drivers for outsourcing broaden, when companies realize that suppliers in low-cost countries not only provide cost reduction, but also quality and contribute to innovation. Dr. Chaudhuri (in Rosenthal, 2010) makes the same observation and adds that outsourcing R&D includes interdependencies and close coordination between the outsourcing company and the supplier, which takes time to build. Respondents say that it is crucial to understand that it will be difficult to understand each other in the beginning of the collaboration with the vendor. Therefore it can be helpful to start to outsource work packages, where the technical difficulties are insignificant. This together with accepting that there will be initial trial and errors is essential to enable focus on establishing the work process, communication and personal relations. The level of experience of outsourcing at TDH is limited due to a tradition of performing most work in-house. It would therefore be beneficial for TDH to, if possible, start with outsourcing non-critical activities that are not technically challenging in order to focus on establishing a work process, communication and personal relations. Furthermore, respondents add that when outsourcing small work packages, results will return faster and success stories can be spread throughout the organization. This can be compared to rapid-results-initiatives (Matta and Ashkenas, 2000) and Kotter’s short-term wins (1996), if the whole outsourcing process is viewed as a transformation from performing everything in-house to letting a vendor conduct activities. The success stories will generate confidence (Matta and Ashkenas, 2000) and keep the transformational process vital (Kotter, 1996). The analysis of the present situation showed that acceptance for SITC at TDH could be improved which makes using wins and success-stories extra beneficial.

When an organization has experience in outsourcing when starting an outsourcing process, the empirical data suggests that some of them also start with non-critical work packages. However, the difference is that the organization already has a thorough plan for how knowledge should be shared, how infrastructure should be built up, what functions should be outsourced etcetera. A process that has been successful in earlier engagements is often used, which probably creates confidence, and increases acceptance for outsourcing. The fact that also some experienced organizations start with non-critical work confirms that this could be a good strategy when initiating any new outsourcing relationship.

As aforementioned, less experienced organizations benefit from outsourcing non-critical activities. Considering this in McIvor’s (2008) four quadrant sourcing strategies, activities in the two upper quadrants are then excluded from outsourcing when the organization is in-experienced. When this is done, the factor that separates the remaining quadrants (3 and 4, see figure 3.2) for outsourcing consideration is initially relative capability position. Intuitively, activities in quadrant 3 should be considered first since the organization is less capable in performing the activities relative the vendor, which implies more gains compared to outsourcing activities that the company is more capable of performing than the vendor. However, there are no guarantees that this is the best strategy when choosing activities to outsource, since there are other factors to consider, such as risks, infrastructural issues, laws, fast feedback-loops etcetera.
5.3.2 Managing the Supplier-Outsourcer Relationship

Barthélemy’s (2003, p. 92) statement, “Outsourcing does not mean abdicating!” agrees well with the opinions of many respondents. Managing the supplier-outsourcer relationship is time consuming and particularly in the case of outsourcing complex R&D tasks, the problem of how to manage and evaluate the outsourcing process becomes increasingly complex (McIvor, 2005). The fact that companies that want to outsource R&D need to have a change in mindset, like stated in Rosenthal’s (2010) article, becomes evident when analyzing the interview cases. Many respondents spoke of close collaboration as a key to succeeding and there seems to be a point to the statement in Rosenthal’s (2010) article that a buyer/service provider relationship does not work for R&D outsourcing. According to Kaplan (2010), the main reason that outsourcing fails is because of the traditional way in which it is being organized and managed. It therefore becomes important to develop better functioning strategies for the outsourcing relationship.

Creating a Common Working Culture

As Aron and Singh (2005, p. 143) say, “Clearly, offshoring isn’t just about companies moving across geographical boundaries; it’s also about companies redrawing organizational boundaries to achieve collaborative supply chains of information, expertise and knowledge”. When collaborating externally, the respondents say that creating a culture that is sustainable and incorporates the different cultures is crucial. In order to do this, cultural differences must be understood. Hofstede’s dimensions of national culture (Hofstede et al., 2010) speak of cultural differences between Sweden and India and many of the respondents’ interviews confirm this, or at least the perception of cultural differences. Operational risk increases with cultural differences since they affect the way business is being done (Kleen et al., 2005) and can cause conflict (Walsham, 2002). The respondents talked about how things one culture might perceive as unimportant could greatly affect how business in being done in the other culture.

Creating a common working culture starts with mutual understanding. The respondents who recognize cultural differences and actively work with them are the ones who have achieved a good working culture. Less involved respondents see cultural differences as an obstacle. Walsham (2002) discusses the need for being sensitive to cultural differences but also stresses that it is not about changing the attitude and values but that it is rather a matter of having empathy for others. This viewpoint should be seen from both the outsourcer and the supplier perspective and respondents have talked about how important it is to incorporate both cultures into the resulting working culture. The opinion of one respondent; “The greatest mistake that we can make is to think that we in Sweden are some kind of norm that everybody should simply accept”, is central in this reasoning. As the respondents have said and as observations have shown, the Indian engineers are generally hard working, flexible regarding their schedule, have great technical skills and often experience of managing outsourcing relationships that Swedish respondents lack. If this is not incorporated into the common working routine and if the supplier’s employees are not used for what they are good at, a lot of learning opportunities are lost for the Swedish organization. Bertrand and Mol (2013) have written about the significance of absorbing external knowledge as the indirect benefit of outsourcing. They have stated

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that the utilization of knowledge gained from outsourcing is crucial in building a competitive strategy. Since gaining access to the Indian defense market is a main driver for outsourcing at Saab, and since an extensive globalization is taking place, TDH needs to learn as much as possible about internationalization and collaborating with international suppliers. As the analysis of the present situation shows, TDH has limited experience of collaborating with international suppliers in R&D. Market knowledge and internationalization knowledge can, according to Johanson et al. (2002), only be learned by experience. It therefore becomes important to continuously learn from the supplier and in order to achieve this, Christopher and Tanwar (2012) say that it is essential to create a culture of knowledge sharing. The extensive experience of external collaboration that some employees SITC have needs to be incorporated into the collaboration.

What chances are there then of achieving a common working culture for the collaboration? Unsurprisingly, Hofstede et al. (2010) state that culture is not only a phenomenon at a national level. It also stems from for example a corporate level which implies that the culture for an outsourcing collaboration can differ from both Swedish and Indian culture. The preconditions for TDH to affect the SITC employees are good. The vocational pride of working for Saab seems to be very high and many identify themselves as Saab employees and are trying to adapt to the environment. There is also proof from Saab respondents where the culture has been successfully influenced and changed. However open people may be to changing their attitude, affecting a culture is not easy and a lot of hard work is required. Swedish respondents said that they continuously have to work with this, by for example always encouraging raising questions and bringing up problems. It was also said that finding allies at the supplier site that can drive this cultural change is crucial. By Swedish respondents it is more often talked about how to influence the Indian culture than how the Swedish ways of working have changed. However, some organizations have learned a lot from the Indian culture and adapted to it. This is often the case in a mixed team.

**Mixed Teams**

The empirical data points out that Swedish people are commonly bad at defining requirements and expectations. At THD, many of the tasks are complex and for complex tasks especially, defining requirements is time-consuming and the effort spent on this could be better spent elsewhere. Aron and Singh (2005) say that *noncodifiable* processes where there is broad variation in business events pose an especially high operational risk. One way to deal with this increased operational risk and work without having to define strict requirements or expectations is, according to the interviews, frequent contact. To stay in frequent contact, one way is to work in a mixed team. Lakemond et al. (2006) describe the organizational form *Project Integration Coordination* which resembles a mixed team setup and is good for facilitating the development of common expectations and understanding.

A mixed team is according to respondents particularly beneficial in the initial stages of outsourcing. According to McIvor (2005), limited experience and knowledge of outsourcing are often the problems that lead to poor outsourcing results and since TDH, according to the analysis of the present situation, have limited experience of outsourcing
this is relevant to consider. Lakemond et al. (2006) consider different organizational forms for collaborations and also state that an organizational form where contact occurs on an incidental basis is not suited for new relationships.

Mixed teams are beneficial in many aspects and like Lakemond et al. (2006), Aron and Singh (2005) describe an organizational form that resembles a mixed team; The Extended Organization. This organizational form is advantageous since it enables a move from command-and-control to sense-and-respond. It is also, according to Aron and Singh (2005), especially good for complex offshoring. The respondents agree with the benefits of a mixed team, especially when working with smaller work packages and work that is hard to define. They say that problems can be detected earlier and the entire “blame-game” of who caused an error is avoided. A mixed team also facilitates the close contact needed when the tasks that are to be performed at the supplier are highly integrated with other tasks at the outsourcer. Lakemond et al., (2006) describe that an organizational form with very little contact is disadvantageous when there is a high degree of dependency between tasks which is often the case at TDH. Further, a mixed team could be a means of chunkification. Not chunkification by dividing tasks between different suppliers like described by Aron, Clemens and Reddi (2005) but by dividing tasks between the supplier and employees at the outsourcer like one respondent suggested as a means of dealing with risk for opportunism.

Mixed teams have many positive side-effects as well. Respondents say that knowledge generally stays with the outsourcer. Keeping the ability to perform a task is important for risk mitigation, both to handle political risks like mentioned by respondents and to handle long term intrinsic risks of atrophy described by Aron et al. (2005). Another side effect is according to the empirical data better knowledge sharing. Werr and Runsten (2013) say that the way a relationship is organized determines the resulting level of knowledge sharing. Christopher and Tanwar (2012) say that to promote effective knowledge sharing, work should be organized around teams not individuals and Werr and Runsten (2013) underline the importance of roles not being too narrowly defined and separated from each other. According to respondents, organizing the collaboration in a mixed team also results in optimal usage of all resources and creates a feeling of belongingness between the supplier and the outsourcer. Finally, respondents say that integrating the supplier as closely as possible with normal operations creates acceptance in the home organization and by mixing a team of Swedish and Indian engineers, the supplier becomes closely involved with home organization’s business.

**Communication**

Communication is something that according to many interviews costs more and requires more effort than initially estimated. What is especially important are meetings in person and as stated by a respondent, Swedish people often have a hard time understanding the importance of personal relationships in the Indian market. Also, as described in the risk chapter, involvement of the home organization often needs to be greater than expected. Barthélemy’s (2003, p.92) statement, "Outsourcing does not mean abdicating!", once again becomes central.
The analysis of the present situation shows that communication between Sweden and India is difficult, especially for immature relationships. In order to improve communication, respondents say that availability via all existing communication tools is important. A daily standup meeting is a frequently used setup that ensures early upbringing of problems, collaborative problem solving and could also be an incentive to work hard by, according to the theory of Narayanan and Raman (2004) about misaligned incentives, revealing hidden information. Respondents say that good communication, especially within R&D, is hard to build up via only tools. In the defense industry in particular, export control restricts much communication and a strict control over the information flow is required. Meeting in person is essential for understanding each other and thereby enhancing performance and building trust. The respondents emphasize the importance of enabling meetings between the supplier and the outsourcer on all organizational levels and to educate at least 10% of the Indian staff on-site in Sweden. The research of Kleen et al. (2006) confirms the importance of personal contacts to get to know the supplier.

**Long-term Investment**

The empirical data shows that making long-term investments in the outsourcing relationship creates several benefits. The ability and benefit of doing so is however dependant on the drivers and goals for outsourcing being sufficiently long-term oriented. However, when the goals are sufficiently long-term oriented, long-term focus also creates short-term benefits. According to Aron et al. (2005), a short-term outsourcing engagement creates little incentive for the supplier to pass on knowledge to the outsourcer and the incentives for poaching increase. As the value of information increases, the incentive for poaching increases which should be especially considered in the defense industry.

Having dedicated people that work with the supplier on a daily basis from the home organization is important according to respondents. Also Barthélemy (2003) say that it is crucial that the outsourcing organization maintains control over the outsourced process or activities via internal employees managing the relationship. According to respondents, it can improve supplier performance, help with knowledge management and be a good point of contact for the home organization in regards of supplier matters. These people could be compared to the *Process Masters* described by Quinn (2000) and the *Outsiders on the Inside* described by Klein (2004). According to observations, how things are communicated differs noticeably between India and Sweden. A point of contact that supports the supplier and explains how communication in Sweden is done would be of great help simply to ease the communication and ensure that communication issues do not cause more serious problems or distrust.

Creating a long-term outsourcing relationship with the supplier by ensuring continuity of work was something heavily discussed in the interviews. The disadvantage of ensuring continuous work is that the supplier cannot be used for managing variations in demand of resources. The benefits of this observed at SITC are that the team leaders and members in teams that have a continuous workload can focus on optimizing performance instead of selling in new packages. If there is not continuous work, a natural incentive for focusing
ones resources on selling rather than on the current work is created, much like the theory describe by Aron et al. (2005) where incentives for under-performing increase when resources can be used better elsewhere. In the theory, it is discussed that this could be the case when the supplier uses resources for other customers. This is not a problem at SITC since resources are exclusively employed for Saab but when selling new projects instead of focusing on the current one, resources are in one way used for “other internal customers”. This has according to interviews been a cause for disagreement between Saab and SITC and it could be good to understand the benefits of continuous work to eliminate incentives for acting in this way.

Continuous work also ensures that resources that are spent on building a team are not wasted since the staff turnover decreases and group dynamics are kept intact. This is interesting in regards to how to initiate outsourcing. As stated in the empirical data, starting off with smaller work packages can be a strategy when it is hard to find larger work packages to outsource. The importance of continuity in workload was however heavily emphasized by respondents since initiating a smaller work package as a single trial is not likely to be successful. This seems legit when considering empirical evidence of large startup costs and Aron and Singh’s advice to not assume high efficiency in the beginning of an outsourcing process. The advice from respondents is then to develop certain competence areas long-term. When starting off with larger work packages, the empirical data suggests that if the goal of the outsourcing is to utilize the supplier for similar types of tasks in the future, then resources are wasted if there is no continuity in workload.

Considering that it is desirable for TDH to learn as much as possible from collaboration with SITC and since they handle highly sensitive information, it is preferable if the outsourcing is long-term oriented in order to align incentives with SITC. To improve performance, knowledge management and ensure that communication issues do not cause more serious problems, TDH would benefit from assigning dedicated people to work with SITC on a daily basis.

**Initiating Outsourcing**
Initiating outsourcing is a time-consuming process and according to respondents, productivity in the beginning can be assumed lower due to infrastructural and communication issues. Respondents say that process challenges are large in the beginning but that if this time and effort is not spent in the beginning of outsourcing, it will take long time before productivity levels are up to normal. Also the theory states that initiating outsourcing is difficult. In the article by Rosenthal (2010) it is said that outsourcing R&D includes interdependencies and close coordination between the sourcing company and the supplier, which takes time to build. Aron and Singh (2005, p. 137) also suggests that “Smart companies start off assuming that service providers won’t be able to execute business processes as well as their employees perform them in-house – at least not for a long time”. It is important that the effort and risks of starting up an outsourcing relationship is recognized, according to Aron et al. (2005) it is otherwise a risk that the organization judges the performance of outsourcing based solely on first-year results.
A common first thing to do amongst Swedish respondents when initiating outsourcing is to bring supplier employees to Sweden. This is either to start the work or to develop processes for the outsourcing relationship together with the supplier. As described in the analysis of the present situation at SITC, the employees at SITC often have experience from building up outsourcing collaborations for other companies. This knowledge could be well utilized by less experienced organizations, like TDH. Bertrand and Mol (2013) say that the obtention and utilization of knowledge gained from outsourcing is crucial in building a competitive strategy. Bringing in somebody from the supplier that has previous experience in this could be a good way to obtain knowledge and then directly utilize this knowledge in the outsourcing processes that are built up. The respondents stress the fact that it is important to make sure that all processes work and that the work packages are up and running before sending the supplier representative back to India. Regarding the level of technical readiness that the analysis of the present situation showed for TDH, this could be assumed important also in the case of TDH.

Having the right people working with the outsourcing from both the supplier side and the outsourcer side is important according to the empirical evidence. The person responsible from the outsourcer must have a high drive since there are many pitfalls in the beginning and it is easy to fail. The person responsible from the supplier must have good communicative skills, a high level of perceptiveness and good chemistry with the person responsible from the outsourcer. The empirical evidence also shows that when recruiting managers and team members, it is good if the outsourcer is involved and focuses on finding people with the right mindset instead of finding the most technically skilled people.

**Incentive Modeling**

In 90 % of failed outsourcing relationships, the outsourcer did not create supplier incentives or penalties (Rosenthal, 2007). Aron and Singh (2005) say that the mistake that many outsourcing companies make is to assume that suppliers will always act in a way that maximizes the interest of both parties. As seen in the risk chapter, strategic risks are triggered by different incentives. Aron et al. (2005) say that aligning incentives actively prevents under-performance by the supplier and the importance of aligning incentives by different means thereby becomes important.

One example of how to align incentives is the one discussed in the chapter of long-term investment regarding continuous work. Other means of enhancing commitment from the supplier have been discussed by respondents. In the case of SITC, ensuring that risks, costs and rewards are distributed fairly as suggested by Narayanan and Raman (2004) is out of the hands of the single departments. However, what can be done is to according to Narayanan and Raman’s suggestion prevent causes of misaligned incentives, such as hidden actions, hidden information and badly aligned incentives that do not reward partners for what actually creates value. They suggest trust based solutions, information based solutions and contract based solutions. There are suggestions from respondents that resemble trust based solutions. Involving employees at the supplier site close to normal business creates a unique feeling of belongingness according to respondents. Vocational pride should not be underestimated and feedback from the outsourcer on the work that is
being done can be very motivating. SITC respondents say that one thing that is very motivating for them is challenging work. Respondents also touch on to information based solutions when talking about how enlightening the supplier’s employees of the purpose of the work creates commitment. Risks of knowledge sharing must be considered when sharing contextual information but it can be very beneficial for performance. Quinn (2000) also says that creating an exciting vision by figures of merit can act motivating.

Contractual solutions must most often be implemented on a corporate level. Such things as decreasing staff turnover by implementing a KPI for it or by aligning titles with regards to the culture in India, as suggested by a respondent, is often not feasible for a single department to take on. However, what can be influenced is if the contract for a work package should be fixed price or pay-by-the-hour. Fixed price contracts were perceived badly by many respondents who said that they trigger the supplier taking shortcuts and are not feasible in agile development. However, the negative aspects of pay-by-the-hour contracts must also be evaluated. As seen in the theory by Aron et al. (2005), there is an incentive for under-performing if it triggers higher commission. The hours must therefore in some way be restricted or the incentive for spending more hours must be removed. A way of removing this incentive is to measure predictability which will be discussed in the next chapter.

Considering the above reasoning, TDH would benefit from actively working on aligning incentives with SITC via trust, information and contract based solutions. TDH should strengthen the already high vocational pride at SITC, by providing SITC with challenging work and signal that SITC is important by giving them regular feedback. To further align incentives, TDH should also explain the broader context of the outsourced work. However, when working in the defense industry this must of course be done with caution considering defense secrecy and other information restricting factors.

**Measuring Performance**

In 80 % of failed outsourcing relationships, the outsourcer did not have a formal process for overseeing the outsourcing relationship and measuring performance (Rosenthal, 2007). According to Laffont and Martimort (2001), the principal-agent problem occurs when the objectives differ and information about the agent is imperfect. In interview cases it can also be seen that incentives for opportunism can be decreased by measuring the right KPI:s and thereby influencing the engineers in the right direction. The respondents say that it is therefore important to take control over the KPI:s and what is being measured. According to the empirical data, it is important to get to the core of what really creates value for the organization, like for example the KPI *First time right*. Like stated in the previous chapter, Narayanan and Raman (2004) say it is important to reward suppliers for what actually creates value. Value based KPI:s are preferred by some respondents and Kaplan et al. (2010) speak of the benefit of using a collaboration themed scorecard for measuring performance. These both viewpoints show that only financial metrics are not sufficient.

The empirical studies also suggest to measure predictability when performance is hard to measure. By measuring predictability, and at the same time have the competence to
estimate required time for a work package in the home organization, it could be easier to work with unlimited pay-by-the-hour contracts without risk for under-performance. Other benefits of measuring performance is according to respondents that goals can be set and the home organization can be shown success stories, the outsourcer can learn from the supplier, the supplier gets feedback on performed work which is often desired by suppliers and it becomes possible to work with continuous improvement. Aron and Singh (2005) say that it is important to measure performance also to reduce operational risk.

5.3.3 Optimizing Internal Processes

Organizational Acceptance

According to respondents, creating acceptance for working with external partners is an essential part of the outsourcing strategy. The respondents say it benefits the entire organization since it creates commitment, understanding and makes obstacles easier to overcome. The empirical data also suggests that the mindsets of the employees create different cultures and conditions which affect how well the collaboration works. Also Goolsby (2009) confirms the negative impact of organizational resistance on outsourcing success.

In interviews it was discovered that many organizations and departments have to fight for acceptance. It was speculated around that low acceptance could be due to low involvement from the employees in the decision to outsource. It could also be due to the fact that employees that do not have enough information about the outsourcing associate it with previously failed outsourcing that they have experienced or heard about. The analysis of the present situation at TDH shows that acceptance could be improved and that the employees lack information or appropriate information. To heighten the level of acceptance, respondents suggested that enabling meetings in person between outsourcer and supplier was essential since personal trust is so important. Very effective is to send employees from the outsourcer to the supplier site since it improves confidence in the supplier and shows examples of how others are working with the supplier. Kotter (1996) says that it is important when facing huge obstacles to convince employees that they are possible to overcome. This shows why showing examples of how others have worked with the supplier could be so effective.

There is a connection between acceptance and tradition according to the empirical data. It has been seen that for more mature outsourcing relationships, a state where outsourcing is simply accepted has been reached. Accepting outsourcing was integrated into the basic values of the company and the social pressure favored it. For more experienced organizations, working with other nationalities was a natural part of business which contributed to acceptance. Goolsby (2009) supports this reasoning by describing limited experience as a contributing factor to organizational resistance. What could also be seen in the empirical data is that for a department that was recently formed, the resistance towards outsourcing was less than for an older department. This could have something to do with tradition which is supported by Quinn (2000) who says that it is difficult to implement an innovative idea, such as outsourcing R&D, in a company where there is a traditional mindset of keeping projects within the company. A respondent also talked about an example where resistance differed between countries which could also have to
do with tradition. What should be remembered is that change is not final until new ideas become tacit and rooted in the organizational culture and norms (Kotter 1996; Klein 2004). Considering this, lower levels of acceptance within TDH could be due to the fact that there is limited experience from outsourcing at TDH and a long tradition of performing work in-house.

**Job Protection**

Job protection thinking was present in many of the respondents’ cases. In the analysis of the situation at TDH it showed that this was sometimes of concern to the employees when discussing outsourcing. Many respondents thought that the job protection thinking was likely due to insufficient communication regarding why outsourcing is being introduced and that it is not a matter of reducing workforce in Sweden. Barthélemy (2003) agrees with the respondents and say that open communication is needed since most people have the view that the company is trying to cut costs when outsourcing, and that their job is the next to get cut. Respondents suggest that people who are affected by the outsourcing need to be given a sense of safety. Safety could also probably in many cases be guaranteed, Arora and Gambardella state that, “external collaboration of research is complementary to, rather than a replacement for, in-house research activity” (Howells, 1999, pp. 22). Swedish respondents add that outsourcing is often done in order for the Swedish engineers to be able to focus on more value creating tasks and not in order to make them unemployed. Empirical proof suggests that when this is communicated, job protection thinking can be overcome.

Respondents think that job protection thinking also depends on the complexity of the tasks being outsourced. The more complex tasks that are being outsourced, the feeling of internal tasks being threatened are increased. Outsourcing has, according to amongst others McIvor (2005), traditionally been focused in peripheral business activities which mean that there generally is more experience from this. Following the reasoning of the chapter above that more experience means more organizational acceptance, the statement that outsourcing less complex tasks means less resistance is strengthened.

**Communicating About Drivers**

Communicating the drivers behind outsourcing is not only important to prevent job protection thinking. According to the respondents, communicating drivers is important since it creates motivation, acceptance and commitment, improves understanding for outsourcing and ensures that everybody in the organization is striving towards a common goal. Communicating the purpose and goals of outsourcing is especially important since people have a stereotypical view of outsourcing and do not understand that the decision can be to create strategic advantage rather than merely cutting costs (Aron et al., 2005). A company must communicate in such a way that the benefits of outsourcing become obvious for the people involved (Kotter, 1996).

Respondents experienced in outsourcing say that communicating driver reduces tensions between the outsourcer and the supplier, prevents suspicion and kills the entire debate regarding whether or not to outsource. This enables the organization to focus on making the outsourcing work. On the opposite, if information is not properly communicated,
Barthélemy (2003) states that rumors spreading and counterproductive actions is what occurs. The analysis of the situation at TDH shows that the curiosity for SITC is increasing and employees are requesting more information about it. It could be of value to meet this curiosity and supply more information, especially to prevent rumors spreading which could be of great disadvantage to TDH and a future collaboration with SITC.

In order to efficiently communicate drivers, it is important to understand how they are perceived. The empirical data shows that top management often believes that driver are communicated efficiently in the organization. However, this is not always the way it is perceived by people lower in the organization. It was said that the message is not always applicable to the employees’ situation and all drivers are also not always understood but much focus lies on the cost reduction driver.

One way to communicate drivers is to create a common vision for the outsourcing. The respondents suggest a vision of how outsourcing will enable the home organization employees to focus on their genuine core competencies. Kotter (1996) says that a vision is essential in helping to direct, align and inspire a large number of people. Also Nahavandi (2000) says that a vision is important to empower people to act independently. A sense of urgency is also important; Kotter (1996) says that a company should never make an internal change without a sense of urgency. Furthermore, respondents underline the importance of a sense of urgency such as outsourcing being necessary for the company’s future existence or supply of qualified personnel.

In the analysis of the situation at TDH, it was discussed that the management in TDH has a growing sense of urgency regarding the use of SITC. To optimize results, this sense of urgency should be conveyed to the employees before engaging in SITC. Also, since the curiosity of SITC in the TDH-organization is growing, it needs to be met with correct information and efficient communication to avoid tension, suspicion and rumor spreading.

The Right People and Organizational Form
Respondents emphasize how important it is to find the truly enthusiastic people to lead the outsourcing operationally and formally. If the leaders are negative it is more likely that outsourcing will fail since the required effort is not put in. Further, respondents say it is important to find informal leaders and make them positive towards outsourcing. The theories of Quinn’s (2000) process masters and Klein’s (2004) outsiders on the inside are similar to what is described by respondents as the right people. Process masters help stimulate and facilitate the adoption of new solutions and outsiders on the inside are people within the company that are open to new ideas and not limited by the traditional way of problem solving.

Kotter (1996) states that it is important to have a powerful group that guides and serves as support for those involved when facing resistance against initiatives. This supporting group could facilitate outsiders on the inside or process masters. His reasoning is much like the one of some respondent regarding a central function supporting SITC. It is often
in this function that the leaders for outsourcing are. Apart from these theories, there is not much existing material on a central function setup. This could be due to the fact that not many organizations are organized like SITC is. SITC is as mentioned not a center for outsourcing entire functions but for outsourcing work packages from different functions and projects for parts of their business. The lack of theory could also be due to the fact that most outsourcing research is based on outsourcing on a company level. Although this area lacks theory, an effort is made below to analyze the concept with help of the empirical findings.

Saab respondents think that having a central team that supports different projects and coordinates all efforts from a certain part of Saab to the supplier could be advantageous. They think that a central function is especially advantageous if it is desired that initiatives to outsource come from below in the organization. As could be seen in the acceptance chapter, simply being commanded to outsource can affect acceptance negatively so therefore it is often desirable to have initiatives come from below. If there is no central support, respondents agree that there is a lot to be overcome before a single project can start using SITC. Many do not know how to start and also all projects are time critical, making the will to take on the startup effort of using SITC less. In the TDH organization, the knowledge of how to work with SITC is still low which results in a high perceived risk of delayed deliveries and increasing costs if SITC was to be used. Respondents mean that with the help of a central team, the startup problem is removed from the single projects and when there is a central function, budget restrictions could be used to promote the usage of SITC.

A respondent suggested that in order for the organization to want to utilize SITC it cannot be more difficult for them to work with SITC than it is to perform something internally. This is also where the benefit of a central team comes in. But at the same time as a central team eases the effort for single projects it could possibly also ensure that projects get started in the right way. As written before, a lot of effort needs to be spent in the beginning of a project to reach full productivity fast. A central team could assure that this is being done. According to a Saab respondent it is also crucial that SITC in some way gets integrated into the line organization. This is important for keeping a long-term perspective of the collaboration and for gaining higher acceptance. The respondent thinks that if acceptance can be gained from one of the lowest level line managers then it will be easier to achieve overall acceptance.

**Preserving Acceptance and Motivation**

According to the respondents, employees need to hear success stories to get motivated. They say that success stories from other collaborations can be used to gain initial motivation. Goolsby (2009) agrees with the respondents and the study described in his article found that to win organizational acceptance, examples of previously successful projects and motive for the choice of supplier was essential. Kotter (1996) provides a theory as to why this is important. He says that employees feel powerless and uncertain when facing huge obstacles, real and imagined, which consequently creates lack of commitment. He says that it is therefore important to convince the employees that the obstacles are possible to overcome. As has been discussed, employees in projects at TDH
see large obstacles regarding SITC. There is also proof in the analysis of the situation at TDH that employees do not always believe that working with SITC will contribute to cost advantages unless they see concrete proof. This supports Kotter’s theory that employees need to be convinced that obstacles can be overcome. Fortunately, as written in the analysis of the situation at SITC, there are many success stories from departments and projects that have been engaged with SITC that could be utilized for this purpose.

Setting up goals for the collaboration with the supplier is also important so that employees can be shown that goals are continuously achieved. Goals could be both financial and non-financial and do not need to be large. Smaller goals are preferable in order to quickly show the organization good results. Kotter (1996) also states that evidence of a successful change is important to not lose spirit. He says that the creation, achievement and celebration of short-term goals are essential and that meeting the goals should be actively planned and worked for. Also Matta and Ashkenas (2003) reason similarly with their ideas of rapid-results initiatives to improve confidence in the change.

Respondents say that setting goals for quality is important. This is according to respondent not due to the fact that bad quality might be expected. On the opposite, respondents think that quality of work from India is satisfying and also McIvor (2005) says that the quality should be the same or even higher when outsourcing to a specialist supplier. The reason that goals for quality is needed is according to the respondents that work coming from a supplier is reviewed more critically by the rest of the organization than it would have been if it was done internally. It is therefore important to ensure that all delivered work keeps good quality to avoid rumors spreading and the preconception about bad quality from being strengthened. One respondent further denotes the importance of quality in R&D, saying that it is the base for all trust in R&D.

**Knowledge Management**

A line manager describes outsourcing as a learning by doing process. Starting with less critical work and then increasing degree of complexity has been previously discussed and also the study by Maskell et al. (2007) shows that outsourcing is often a sequential learning process. It therefore becomes essential that the organization actually learns and not wastes knowledge gained. Quelin and Duhamel (2003) say that outsourcing is inseparable from Knowledge Management. This becomes especially relevant for TDH having limited experience of external collaboration. Respondents say that it is necessary to have an outsourcing organization that processes and creates competence which is then especially important for TDH to ensure that the state of limited experience doesn’t persist.

Knowledge management is also important to avoid deskilling the outsourcer and mitigate the long-term intrinsic risks of atrophy described by Aron et al. (2005). Respondents say that it is crucial that the outsourcer never loses competence in placing orders and that vulnerability increases if vendor involvement increases at the same time as the home organizations competence disappears. Quelin and Duhamel (2003) agree with the respondents’ opinions that keeping internal competence is important. They say that if the process is not understood it cannot be analyzed and thereby it cannot be controlled. Cha
et al. (2008) further elaborate that long-term offshoring projects pose a particular risk in knowledge loss for the outsourcer. They think that investing in knowledge management systems could be a good idea in these cases since technologies that codify organizational learning lower the rate that knowledge is depreciated. However, Christopher and Tanwar (2012) say that these tools must be complemented with the creation of a culture of knowledge sharing within the organization, otherwise these investments will not be effective.

The indirect benefits of absorbing external knowledge when outsourcing must be considered (Bertrand and Mol, 2013) and the possible gains from knowledge transfer is often underestimated by managers (Cha et al., 2008). Respondents agree and think that there could be much to gain from managing external knowledge better. Some respondent have also had thorough plans for how knowledge should be shared which further highlights the importance of knowledge sharing. Lee (2001) also states that the higher the degree of knowledge sharing is, the more positive effect is has on outsourcing success. Empirical evidence from SITC suggests that a lot can be learned from them. They do not only have technical experience and experience from external cooperation but they are also actively using many knowledge management tools in their everyday work.

Both Werr and Runsten (2013) and Christopher and Tanwar (2012) discuss how different ways of organizing the outsourcing affect knowledge sharing. Respondents speak about the importance of a long-term perspective in order to achieve maximal knowledge sharing. Also McIvor (2005) says that in a short-term outsourcing arrangement there is no incentive for the supplier to pass on any knowledge. According to respondents, mixed teams are beneficial for knowledge sharing. Mixed teams also have the positive effect that the risk of losing competence internally significantly diminishes when employees from the home organization are closely involved in daily operations. To assimilate knowledge, a central function can according to respondents be good. Single projects working independently with outsourcing could lead to a short term perspective that might not preserve knowledge in an optimal way. A central team can ensure proper documentation and management of lessons learned.

5.4 Revised Model of Analysis
Following the analysis of this study, a revised model of analysis for TDH has been made (see Figure 5.1). The four risk categories from the original model of analysis are intact. Risks have been identified in all categories and are described in chapter 5.2. Under the label strategic risks, risk of opportunism has been identified. Intrinsic risks of location are represented by political risk in the study. Operational risks have been highlighted to signal that this category has been of major interest in this study and explained extensively by many respondents. Overestimating cost reduction, underestimating the need for home organizational involvement, risks connected with high staff turnover and risk associated with cultural differences are all labeled under this category. No risk that has been described in the chapter 5.2, about risks, can explicitly be categorized under long-term intrinsic risk of atrophy, but the risk and its consequences have been mentioned several times in the chapter 5.2, 6.4 and 6.5 and it is by that still relevant.
When it comes to drivers for outsourcing R&D, most drivers from the original model are still present, even though some changes have been made. Cost reduction, concentrate on core competence, accessing competence, managing development cycles and internationalization has been proven to be important drivers for outsourcing R&D to SITC for India. The latter have been adjusted in order to be more applicable for the case of TDH, and been given the new name: Gaining access to the Indian defense market and gaining competence for international collaboration. This driver has been highlighted in the revised model of analysis since it is of special importance in our particular case due to internationalization and the size of the Indian defense market. Also cost reduction has been highlighted since it is a fundamental driver in the theory, the empirical data and is commonly communicated as a major reason for using SITC. The drivers decrease innovation risk and speed to market from the original model are not of major concern for TDH and have been excluded in the revised model. The first driver has been excluded, as a lot of work within TDH contains defense secrets that cannot be shared with SITC. This makes it difficult to outsource domain knowledge and thus innovation responsibility, at least in an initial state of outsourcing. The latter driver has been excluded since it has not been mentioned by respondents and could therefore not be seen as a major driver for outsourcing R&D to India.

All three strategy categories are still relevant in the revised model of analysis (see table 5.1), but subtitles have been added to specify the strategies. For choosing the right activities to outsource, our case specifically adds that activities that contain and cannot be cleared of defense secracies and American export control can not be outsourced. Remaining as a relevant point is that core competencies should not be outsourced but that they should be identified on an activity level. Activities depending on fast feedback loops should be outsourced with precaution and since TDH have many tasks highly integrated with each other it can be assumed that many tasks will be dependent on fast feedback loops. Furthermore the case analysis has confirmed that the level of experience affects the activities which are beneficial to outsource in the initial stage of the outsourcing process. For example is it beneficial to outsource less critical activities in order to focus on establishing a work process, communication and personal relations. The level of experience is important to assess at TDH.

For the category of managing the supplier-outsourcer relationship, many points have been added to the strategies. The common theme is the focus of a more collaborative alliance than a buyer-supplier relationship. The topic of creating a common working culture is important, both in order to achieve good results from outsourcing and to develop the home organization. In the theoretical framework, organizational form was discussed in a broader context but in the revised model of analysis it has been narrowed down to mixed teams. The reason for this is that the preconditions for the case studied in this thesis, such as complex work and difficulty in defining requirements, make working in mixed teams especially relevant and beneficial. Communication is also an important part of facilitating close collaboration. It has been shown that it is important to assess the importance of making long-term investments, especially to align incentives which is critical in business with highly sensitive information. Initiating outsourcing has also been added in order to discuss the transfer of activities and what expectations, of initial
performance, are appropriate. Both incentive modeling and measuring performance are relevant for TDH and remain in the revised model of analysis.

In the original model of analysis, optimizing internal processes had two subchapters. The first, communication within the organization has been divided into five parts in the revised model. As in the original model these parts is about communication both by word and act. The difference is that each part deepens the reasoning in each respective area. The five parts have been extensively discussed by all respondents and the subject of communication within the organization seems to be of big importance for both TDH and for outsourcing complex R&D in general. Knowledge management remains the same in the revised model and has been proven interesting, since outsourcing can be viewed as a learning by doing process, where an organization with limited experience of outsourcing can benefit from effective transfer of information.
Figure 5.1 Revised Model of Analysis

RISKS
- Strategic Risks
- Operational Risks
- Long-term Intrinsic Risk of Atrophy
- Intrinsic Risks of Location

DRIVERS
- Cost Reduction
- Concentrate on Core Competence
- Accessing competence
- Managing development cycles
- Gaining Access to the Indian Defense Market and Gaining Competence for International

STRATEGY
- Optimizing Internal Processes
  - Organizational acceptance
  - Job protection
  - Communicating about drivers
  - The right people and the organizational form
  - Preserving acceptance and motivation
  - Knowledge management

- Choosing the Right Activities to Outsource
  - Defense Secrecy / American and Swedish export control
  - Define core competencies on an activity level
  - Considering feedback loops
  - Level of experience
  - Size of work packages

- Managing the Supplier-Outsourcer Relationship
  - Creating a common working culture
  - Mixed teams
  - Communication
  - Long-term investment
  - Initiating outsourcing
  - Incentive modeling
  - Measuring Performance

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6. Conclusions and Recommendations

In this chapter, conclusions are drawn in order to answer the purpose of the thesis. Furthermore, key recommendations for TDH and suggestions for future research are made.

6.1 Conclusions

The analyzed strategies for initiating outsourcing of R&D have one major thing in common; they all point towards employing a more collaborative way of working than traditional outsourcing entails. Looking at the drivers and risks of outsourcing R&D, for an organization in the defense industry that has a tradition of performing most work in-house, deepens the understanding of why these collaborative strategies should be employed. Operational risks are of major concern, considering the limited experience of external collaboration and the complex, highly integrated tasks which cause operational risks to heighten. When operational risks are high, a collaborative way of working where the outsourcer is still involved in the process will ensure early detection of problems and thereby mitigation of operational risks. The driver of gaining access to the Indian defense market and gaining knowledge for internationalization is what particularly distinguishes the thesis case from others. This can partially be explained by the fact that sales in the defense industry to foreign countries are often combined with international collaboration. It also becomes understandable that collaborative outsourcing will facilitate optimal achievement of this goal. Close collaboration benefits knowledge sharing as well as learning from the process of outsourcing. It can also improve acceptance in the home organization which of course is desirable for future international collaboration.

An R&D organization in the defense industry has difficult challenges to overcome when choosing which activities to outsource. The assortment of activities will be restricted by defense secrets, American export control and if the work is dependent on fast feedback loops, which often are the case when tasks are highly integrated with each other. Considering limited experience, the range of tasks that can be considered for outsourcing should also be restricted to less critical and technically challenging tasks. All in all, it might take much effort to define appropriate work packages and the resulting ones might be small in volume. Working with many small work packages could however strengthen organizational acceptance by providing short term wins.

Managing the supplier-outsourcer relationship should be done in accordance with the collaborative way of working together, presented above. The benefits of working in this manner will be high considering differences in level of experiences. An outsourcer that has limited experience of outsourcing can learn from a supplier that possesses knowledge from previous collaborations. In order to succeed with the strategies for managing a collaborative relationship, it is a matter of ensuring that the outsourcer is open to new impressions, makes the necessary investments, puts in the required effort and always makes decisions that will benefit the collaboration long-term. Ensuring this ultimately boils down to a matter of organizational acceptance. To achieve high organizational acceptance, extensive and open information needs to be conveyed on all levels of the organization. It will become essential to pass on the goal of working with the supplier,
what drives the decision and to forward a sense of urgency regarding necessity in the matter. The organizational acceptance will also continuously have to be maintained by presenting success stories, showing off good results and enable meetings between engineers both from the outsourcer and the supplier.

6.2 Recommendations for TDH

When initiating a collaboration with SITC, TDH should spend much effort and invest in the long-term success of the relationship. They should also start by sending off small, less critical and less technically complex work packages to enable focusing on building communication and ways of working. Small work packages will make it possible to achieve rapid results that can help improve the organizational acceptance of working with SITC which has been proven important to focus on. To further increase acceptance, other departments’ successful engagements with SITC should be communicated within the organization in order to build up confidence. Informal leaders that will be affected by the work with SITC should be identified and TDH should attempt to influence their attitudes. The employees working directly with SITC should be chosen so that they are true enthusiasts, since obstacles will appear, that will be difficult to overcome without sufficient drive. Information about SITC, drivers and goals should be communicated at all levels within TDH to both eliminate false information and rumors spreading and to create a sense of urgency. Organizational acceptance at TDH will be crucial for successfully implementing a collaboration with SITC and TDH will most likely have to adjust internal processes in order to make the collaboration feasible.

To be able to work with SITC despite challenges with complex tasks that are highly integrated with each other and have insufficiently defined requirements, employing a collaborative way of working is essential. TDH should work in mixed teams whenever possible. Mixed teams can have different meanings but the important traits are daily contact, availability via all communication tools, knowledge sharing and meeting each other in person. Creating a TDH-SITC working culture is important to learn as much as possible from SITC’s extensive experience. If the high level of vocational pride and identification with Saab that exists at SITC can be met with equal willingness from the TDH organization to adapt and learn, this will be achievable and benefit the results.

6.3 Suggestions for Future Research

The strategies for how to succeed with outsourcing R&D in the defense industry presented in this thesis are of a more collaborative nature than traditional outsourcing. The findings, particularly in the empirical studies, have consequently led the researchers to the term co-sourcing. When searching for the term co-sourcing amongst articles, a lot of interesting subjects appear. The researchers believe that a study following this one should focus on researching theory on co-sourcing. There are many interesting areas to apply the theories of co-sourcing on. One example that the researchers believe can be of great interest is how employing co-sourcing and emphasizing this in the organization changes how working with an external partner in India is perceived by the organization and how it affects the resulting level of acceptance.
Since this thesis covers a large area and draws general conclusions regarding several areas of interest when outsourcing R&D, future research could also be focused on deepening the findings in one of the areas. Possible areas to research could be how to measure KPI:s optimally, how to heighten acceptance or how to align incentives between supplier and outsourcer.
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Appendix A: Interviewing guide – Swedish Respondents

Intro
- Tell us a bit about your outsourcing background. How long have you been outsourcing? Where?

Drivers
- Why does your organization outsource?
- How is this communicated in the organization – do the same drivers impact the decision at a corporate level as at the operational level?

Risks
- What risks have you seen associated with outsourcing? How have you handled them?
- What risks did you anticipate and which did you not anticipate?
- Has your view of how complex and time consuming outsourcing is changed after you initiated it?
- Have you suffered any consequences associated with any of these risks?
- What experience do you have from opportunism from suppliers?
  - Have you been dependant on a single supplier? Were there any consequences?
  - What level of physical and human resources did you invest in the outsourcing relationship that was supplier specific? How did this affect your bargaining power?
  - Was there any difference in managing the outsourcing process from managing the internal process, when the activity was made in-house?
  - What risks should especially be considered when outsourcing activities related to the defense industry?
- What experience do you have from risks associated with breakdown in operations at the vendor location?
  - How did you estimate the management costs connected to outsourcing and did the estimation match reality?
  - What initial expectations did you have on quality and cost savings?
  - Did you have predefined metrics to measure performance before outsourcing?
  - How did the cultural differences affect the outsourcing process?
- Do you have any experiences with negative consequences of outsourcing that have not been visible until several years of outsourcing have passed?
  - Have you lost skills internally? If not, what did you do to avoid this?
  - How was the risk with knowledge sharing handled?
- What experience do you have from risks associated with the geographical location of the outsourced activity?

Strategy
- How did you choose what to outsource?
- Core competence – outsource/not. How has this view changed over time?
- At what level did you decide on what your core competencies were? Function level? Process level? Activity level?
- How did the outsourced activity contribute to competitive advantage before it was outsourced?
- How is the work that you outsource? Core/codifiable/repetitive?
- How did you initiate outsourcing?
  - What previous experience did you then have from outsourcing?
- How did risks impact what activities that was outsourced?
- How did you measure supplier performance?
- How did you manage control vs. freedom in innovation outsourcing?
- How did you align incentives between you and the supplier?
  - Did you have any problems that can be traced back to badly aligned incentives?
- What was communicated within the organization to facilitate the outsourcing process?
  - How was the goal with outsourcing communicated to different levels of the organization?
- What was done to support the people involved in the outsourcing process?
- What organizational form was employed and how was the contact handled?
- How was employee resistance handled?
- Did you create rewards for people that embraced outsourcing?
- What people were leading the initiation of outsourcing and on which levels?
- How did you ensure consistency in communication?
- How did you handle knowledge management?
Appendix B. Interviewing Guide – SITC Respondents

• If you had to define SITC, how would you describe it?
• What do you think is Saab’s responsibility and what is SITC’s responsibility?
• What motivates you in your work?
• How do you envision your future at SITC?
• How should the communication with Saab in Sweden be handled?
• How do you ensure that Saab get the results they want?
• How do you ensure continuous improvements?
• If working in a mixed team; What are the benefits of working in a mixed-team for the results and for you personally?
• Do you have any reflections regarding how the teams are organized?
• Can you see any problems connected to that people have not met in person?
• If mentioned; How do you create an environment that is open to question and problem solving?
• If you visited Sweden; How did your mindset change after your visit to Sweden? And other peoples mindset?
• What are the main traits that are important for a SITC project manager and a manager from Saab?
Appendix C. List of Words and Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>SITC</td>
<td>Saab India Technology Center</td>
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<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
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<tr>
<td>BA</td>
<td>Business Area at Saab</td>
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<tr>
<td>TD</td>
<td>The Research and Development (R&amp;D) department of the Business Area Aeronautics at Saab</td>
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<tr>
<td>TDH</td>
<td>The Human Machine Interface (HMI) and Avionics division of TD</td>
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<tr>
<td>Outsourcer</td>
<td>The organization that outsources an activity or part of an activity</td>
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<tr>
<td>Supplier</td>
<td>The organization that receives the outsourced work</td>
</tr>
<tr>
<td>R&amp;D Outsourcing</td>
<td>The transfer of an entire R&amp;D activity or part of an R&amp;D activity from the organization to an outside vendor.</td>
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