CHALMERS
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Managing Collaborative Innovations with Suppliers

A Case Study within the Construction Industry

Master's thesis in Supply Chain Management

PETRA KESEK
EMMA UHDE JÖNSSON

Technology Management and Economics
CHALMERS UNIVERSITY OF TECHNOLOGY
Gothenburg, Sweden 2018

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Abstract

Innovation is an important area for business in general which has been highlighted during the last decades. However, the construction industry has been lagging behind with innovations. This is among other things explained by characteristics within the industry such as project based organisation, low profit margins, a highly regulated market, a lack of competitors and a general low demand of innovation. Suppliers have been identified as a possible generator for innovation with the benefit with specific expertise and a possibility to share risks.

This master thesis is a case study of a large construction company which is refereed to as Construction Sweden. The master thesis investigates how Construction Sweden can be innovative in collaboration with suppliers and gives recommendation to the company on how to move forward. The research issues in this report aim at investigate the current processes and factors influencing the ability to be innovative in collaboration with suppliers and the Procurement organisation is the focal point. This is investigated through a context developed model which includes different factors that are identified as important for Construction Sweden to consider in order to work more with collaborative innovations with suppliers.

The main finding of this master thesis is that there is a great potential with collaborative innovations with suppliers at Construction Sweden. In general, Construction Sweden is an attractive partner for the suppliers and has successfully established close relationships with suppliers. This is an important prerequisite for collaborative innovations with suppliers but there are some organisational issues which need to be taken care of in order to achieve more collaborative innovations. For example changes with the processes, transfer of knowledge and distribution of responsibility. This master thesis is focusing on Construction Sweden but we believe that the developed model and the result from this case can be applied on other companies as well, both within the construction industry but also within industries with similar characteristics.

Keywords: Construction, Innovation, Collaborative Innovation, Supplier Collaboration, Supplier Relationships, Partnering.

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During this interesting project, we have both learned a lot but and been able to apply knowledge acquired during our education. We would like to thank Construction Sweden for giving us the opportunity to do this project and to all interviewees for taking their time. In addition, we would like to express a special gratitude for Amanda, our supervisor at Construction Sweden and Project Manager at Supplier Development. Amanda has been very inspiring and helped us a lot during this spring.

Finally, we would like to thank Kajsa Hulthén, our supervisor at Chalmers University of Technology, for always taking her time, supporting us and giving us interesting insights.

We hope that our master thesis will inspire Construction Sweden to be more supportive regarding innovation throughout the organisation and to review their processes in order to achieve more collaborative innovations with suppliers.

Emma Uhde Jönsson & Petra Kesek, Gothenburg, May 2018

Glossary

B2B = Business to Business
CM = Category Manager
Construction Group = The global group organisation
Construction Sweden = The Swedish organisation
CP = Category Purchaser
DPM = District Purchasing Manager
KAM = Key Account Manager
NPD = The Nordic procurement department
RPD = Regional Purchasing Director
RPM = Regional Purchasing Manager

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1
Introduction

This first chapter introduces the background of the thesis, the studied case company Construction Sweden and the aim of the research.

1.1 Background

It is vital for companies to understand the importance of managing innovation (Chesbrough, 2003). Many CEOs have understood that innovation is an important strategic area but to actual incorporate this into the corporate strategy and make it work is complicated (Sawhney *et al.*, 2006). Within, for example, the IT and the automotive sector, innovations have been an important part of how to develop technology but also how to move forward and conduct business. The construction sector, on the other hand, has not been driven by similar forces (Blayse and Manley, 2004).

The construction industry has not developed as rapidly as other industries (Blayse and Manley, 2004). Over the years, it has become conservative and there is a general perception that it is inefficient compared to other industries (Blayse and Manley, 2004). There are several characteristics that are affecting the ability to develop and innovate. The construction industry is characterised by low margins, which limits the room for loss in the projects, creating a fear of trying new or unknown things (Demirkesen *et al.*, 2016). The focus is on individual projects, which implies lack of incentives to innovate since the degree to which a given solution is applicable in other projects is limited (Blayse and Manley, 2004). Furthermore, the nature of project-based organisations challenges the ability to implement strategies of the permanent organisation (Frödell, 2014). Additionally, the construction industry is highly regulated meaning that the products need to be built in order to meet a lot of rules and requirements regarding safety, sustainability, the environment etc. This limits the opportunities of being creative and innovative (Yusof *et al.*, 2014). Altogether, the current environment within the construction industry does not favour innovative behaviour (Yusof *et al.*, 2014).

This master's thesis is made upon request from the case company Construction Sweden and its subsidiary the Nordic Procurement Department (NPD). Construction Sweden and NPD belong to the global company Construction Group. Construction Group is a major construction and project development company with business in Europe and North America. With the aim to contribute to a sustainable society and to be a leading actor in the industry, Construction Group and Construction Sweden

need to be in the forefront of development. According to Construction Sweden's annual report from 2016, innovation is needed in order to respond to current and future needs and to be able to stay competitive (Construction Group, 2018). Through innovation, Construction Sweden identifies and develops new technical products, services and processes, improving the competitive advantage and creating increased value for Construction Sweden and its customers.

According to Rosell and Lakemond (2012), it is widely known that suppliers contribute positively to innovation in product development and Construction Sweden has a strong belief in the innovation potential of its suppliers. Construction Sweden has a number of activities in place that support supplier development and has pursued several supplier development initiatives in the past. However, both current and past supplier development have focused on supplier performance rather than innovation. In order for Construction Sweden to benefit from the innovation potential in the supplier base, processes that facilitate collaborative innovations together with suppliers need to be established.

The suppliers of Construction Sweden are divided into material suppliers, service providers and suppliers that supply both material and services. This thesis mainly focuses on material suppliers with long-term agreements that are contracted for series of projects. This is because the transactions between Construction Sweden and material suppliers are similar from project to project, compared to services where it is more common to use local suppliers and therefore the transactions with service providers vary more. Furthermore, this study focuses on a specific unit within Construction Sweden, the NPD and the Supplier Development Department, mainly from a Swedish perspective. NPD offers services to Construction Sweden's projects including project procurement, framework agreements, logistics and international procurement. In addition to these primary services, NPD provides support with procurement tools, processes and training programs. NPD supports Construction Sweden's strategy by actively developing safe, green and cost efficient procurement solutions and supply chains.

1.2 Aim

The aim of this study is to evaluate how Construction Sweden's current procurement organisation, procurement processes and supplier relationships facilitate collaborative innovation with suppliers and to identify development potential within these processes to better promote innovation in collaboration with suppliers. The concept of collaborative innovation referees to co-created innovations where both parties contribute actively in developing the new product and both parties benefit from the result.

2
Analytical Framework

The analytical framework consists of theory introducing the area of innovation, the problem area and business relationships. Furthermore, the analytical framework includes theories and models that later are made into an analytical model. The analytical model is used to analyse the situation of the case company. The framework ends with a number of research issues which the study intends to discuss.

2.1 Innovation

Sawhney *et al.* (2006) argue that many CEOs view innovation as an important strategic factor that is crucial for securing the future for a company, but the writers also state that many managers have a narrow view of what innovation is. A common opinion is that innovation has to be a new product or traditional R&D but innovation can occur in different forms, for example, in a manufacturing process, in the way of sourcing or in the form of the organisation (Granstrand, 2010; Sawhney *et al.*, 2006). According to Granstrand (2010) an innovation is a combination of an invention and a technical, commercial or economic success. An invention is a novelty or creation that is invented by humans but success is not a requirement. It is not until an invention becomes a success, it turns into an innovation. According to Granstrand (2010), a product innovation is a so-called technical innovation that can be protected through patent. There is also another dimension of which innovations can be categorised. These are incremental or radical (Herzog and Leker, 2010). Incremental innovations are stemming from existing competence and consist of small technical changes and improvements. Radical innovation, on the other hand, is a fundamental change that disrupts old competence and technology.

2.1.1 Collaborative Innovation

According to Chesbrough (2003) and Sawhney *et al.* (2006), the traditional view with internally oriented, centralised R&D has become outdated. This does not mean that internal R&D is useless. Instead, internal R&D is supposed to be combined with external ideas and knowledge in order to succeed with innovation and this is called open innovation (Chesbrough, 2003). The main thoughts within open innovation is that all knowledge and competence are not only acquired within a company's boarders and ideas do not have to be created in-house in order to be profitable. This can be achieved by using internal expertise and skills together with ideas from external sources in order to advance in technology and solutions.

Co-creation and Collaborative Innovation with Suppliers

Co-creation is a concept, which according to Chesbrough's (2003) definition, can be categorised as open innovation since it is combining internal knowledge and competence with external knowledge and competence. Co-creation is an interactive, creative and social process between stakeholders and includes the exchange of ideas and sharing of knowledge. The focus is on a collaboration and interaction where both producer and user play an active role in creating value (Roser *et al.*, 2013). Co-creation can be governed in different ways, for example through crowd sourcing, a type of outsourcing activity using a platform where a large crowd can co-create value or one to one co-creation. One to one co-creation is when the organisation has a strategic alliance or an outsourcing type of relationship. Developing these kinds of relationships in a successful way usually requires changes in both organisations in the relationship. This in turn, requires top management support in order for employees to feel comfortable to invest in partnerships and collaborations with suppliers (McQuiston, 2001; Rosell and Lakemond, 2012).

Brem (2014) identifies four value stages for suppliers' involvement to reach collaborative innovations. These are Importance, Requirements, Management and Outcome. The stage Importance refers to understanding the importance of supplier involvement and starts to view the suppliers as more than just a goods or service provider. The next stage, Requirements, includes senior management support, which also McQuiston (2001) and Rosell and Lakemond (2012) have argued for as stated earlier, but Brem (2014) points out the importance of support from both sides. The culture and the view on collaborative innovation are also important factors in this stage (Brem, 2014). Furthermore, West and Bogers (2014) argue that identifying and acquiring innovations from external suppliers is only one part of the process. In order to really succeed, the innovation needs to be absorbed into the existing R&D activities and the technical capability needs to be in place. There are also corporate cultural issues connected to external innovation where it can be attitude problems against innovations that are "not invented here". To be able to profit from innovations that are stemming from external sources and collaboration with external partners, cultural changes are often necessary. This especially regards organisations that have been successful with internal innovations (Schiele, 2010). The third stage which Brem (2014) has identified is Management. This refers to timing, i.e. how early a supplier should be involved and to what extent. When this is clear, the fourth stage, Outcome can be reached. This stage refers to the measurement of success and it is in this stage where the benefits from supplier involvement can be realised. The value of the involvement of suppliers increase throughout these four stages.

Another issue which needs to be taken into account when creating collaborative innovations is the distribution of responsibility, risks, intellectual property, revenues, losses, costs etc. (Rayna and Striukova, 2005). It is common that technological collaboration between companies lack a formalised agreement (Ford, Gadde, *et al.*, 1998). If these terms are agreed upon in a proper contract in an early state of an innovation project, it can facilitate the process of collaborative innovations (Rayna

and Striukova, 2005). This can also decrease the risk of conflicts between the involved parties.

2.2 Innovation in the Construction Industry

As mentioned in the introduction, innovation is a complex area within the construction industry. Some of the characteristics and issues were mentioned in the introduction but this section will explain the area more in detail.

Innovation is vital for successful, long-term company performance in the construction industry (Gambatese and Hallowell, 2011). The construction industry and the constructing companies in particular, are more service providers than manufacturers and do not own the products and processes. A construction company provides the service of assembly and project management but it is usually the suppliers who own the products and the processes. Therefore, a construction company can be categorised as a service company. The service industry has in general been lagging behind in the area of innovation compared to the manufacturing industry but according to Miles (2008), it is important for the service industry to start taking the question of innovation seriously. There is a general perception that the construction industry is not as innovative as other industries and that there is much room for improvement (Blayse and Manley, 2004). There are several features of the construction industry that are likely to explain the low levels of innovation.

The motives for construction companies to invest in innovation and development are many. According to Brandon and Lu (2008), customers' requirements are considered the main driving force for innovation in the construction industry. A survey conducted by Håkansson and Ingemansson (2013) revealed that 77 percent of the responding construction companies perceived ideas and opinions from clients as a very important force of renewal and innovation. Customers have the ability to encourage innovation by increasing demand for high standard work and products (Demirkesen *et al.*, 2016). In Sweden, two public investigations in 2002 and 2009 suggested that insufficient competition could explain the lack of incentives for innovation within the industry (Havenvid, 2015). However, the last couple of years, competition has increased and today, Demirkesen *et al.* (2016) identify innovation as the key for gaining a competitive advantage in the construction industry.

Furthermore, companies in the industry believe that project performance in terms of for example cost, time, quality and customer satisfaction is highly dependent on the innovation potential of the construction company (Ozorhon, 2013). Therefore, performance improvement is regarded as an important driver for innovation. Moreover, corporate social and environmental responsibility play a critical role in improving the corporate image of a company (Ozorhon, 2013). The construction sector has a high environmental impact and is often seen as a major contributing factor to increasing climate problems. Qi *et al.* (2010) describe that expanded environmental legislation and new regulations can be a major driver for customers and entrepreneurs to invest in the development of green innovations.

2.2.1 Barriers to Innovation within the Construction Industry

One of the major barriers to innovation in the construction sector is, according to Demirkesen *et al.* (2016), the lack of financial resources within the companies. Research and development of innovations often require large resources and this is not a prioritised area in the industry (Yusof *et al.*, 2014). Furthermore, Demirkesen *et al.* (2016) explain that the level of innovation in the construction sector is limited because most of the work is carried out in temporary and unique projects. The focus on individual projects within the construction companies, limits the degree to which a given innovation will be applicable to other situations (Blayse and Manley, 2004). This reduces the benefits of innovation and therefore incentives to innovate. The focus on individual projects also has the effect that solutions to similar problems are developed time after time, meaning that organisational learning is not taken advantage of (Blayse and Manley, 2004). This implies challenges regarding the interplay between the permanent organisation and the projects as well as learning and diffusion of project practices across the organisation (Frödell, 2014).

The profit margins in the construction sector are relatively low. This is one reason why financing is an issue within the construction industry. Therefore, it can be difficult to justify investments in innovations if there is no room for losses in the project (Demirkesen *et al.*, 2016). It also implies that the benefits of implementing new products or processes must be clear from the outset. In order to enable innovative behaviour, it requires that there is an innovation-creating culture within the company (Yusof *et al.*, 2014). According to Demirkesen *et al.* (2016), the construction sector has long been criticised for its weakness in introducing new working methods and technical solutions in projects. In order to succeed in developing successful innovations, a culture within the company that encourages new solutions to problems and allows a certain risk-taking within the projects are necessary (Yusof *et al.*, 2014). Furthermore, the construction market is characterised by certain aspects of regulation and a dominant position of the government leading to limited opportunities for variation and innovation (Yusof *et al.*, 2014).

There is a large body of literature that points to the significant influence of business relationships on construction innovation. The importance of relationships lies in the capacity to facilitate exchange of knowledge through interactions between individuals and firms (Blayse and Manley, 2004). Dubois and Gadde (2002a) describe the relationships in the construction industry as loose couplings meaning that firms and individuals come together to complete a project, and then disband. These loose couplings stem from the decentralisation of authority, where centrally located authority has limited possibilities to intervene in local operations (Dubois and Gadde, 2002a). Blayse and Manley (2004) mean that these arrangements can inhibit innovation because the learning environments are constantly changing.

According to Demirkesen *et al.* (2016), successful innovation in the construction industry requires effective cooperation, coordination and integration among involved parties. Subcontractors perform a large share of work in projects, however, the main contractors remain relatively unsophisticated in their approach to them (Eriksson *et al.*, 2017). Historically, the relationship between contractors and subcontractors has been transactional in nature and construction companies seek price reductions rather than expertise and cooperation (Miller *et al.*, 2002). Hence, subcontractors are generally not involved in the planning and design of the work that they are responsible for executing, resulting in subcontractors being more likely to stick to what they know rather than pushing for innovative solutions (Miller *et al.*, 2002). According to Eriksson *et al.* (2017), the failure to recognise the contribution that material suppliers and subcontractors can make to innovation results in waste of talent and knowledge. By having an integrated supply chain, the knowledge and talent of these actors can be utilised to facilitate innovation (Eriksson *et al.*, 2017).

2.2.2 Enabling Factors for Innovation within the Construction Industry

Good communication within the firm, support from upper management and overlap of design and construction phases are all found to be enablers of innovation (Gambatese and Hallowell, 2011). Furthermore, Gambatese and Hallowell (2011) identify the climate and structure of an organisation as influencing factors for encouraging and overcoming barriers to innovation. Economic incentives or personal rewards can also help to make innovations in the construction sector possible (Demirkesen *et al.*, 2016). Moreover, the formation of collaborative relationships with suppliers can be viewed as a potential generator of innovation (Xue *et al.*, 2018; Roy *et al.*, 2004). According to Rosell and Lakemond (2012), procurement fulfills an important function for facilitating collaborative innovation with suppliers by initiating regular innovation meetings with suppliers and developing technology road maps linking firm strategy, innovation strategy and sourcing strategy. As well as for innovation in general, successful management of supplier collaboration requires a strong commitment from top management. Commitment within the organisation creates a positive attitude to collaborative innovation with suppliers instead of creating competitive relations with suppliers (Rosell and Lakemond, 2012).

2.3 Models for Analysing Relationships and Networks

The Network Perspective and the ARA-model can be used in order to explain a company's position within a network, analyse the relationships and understand how activities, resources and actors interact and are combined. This can then be used in order to investigate the prerequisite for developing relationships with suppliers and the possibility to create collaborative innovations together with suppliers.

The Network Perspective and the ARA-model can be used on different levels, for example within a company between different departments or in a supply chain network with different companies.

2.3.1 The Network Perspective

When considering a relationship it can be of great advantage to first take a holistic view and try to understand the network where the involved parties are operating (Ford, Bethon, *et al.*, 2002). There are different important features that is useful to consider when evaluating the positions and relationships within a network. The focal point, for example a company, has relationships with different suppliers and customers that are in direct relationships with each other. Nevertheless, in the same network, the suppliers have suppliers on their own and these relationships will affect the focal company and its direct relationships as well. This is called indirect relationships and these need to be working as well, in order for the focal company to have efficient relationships with their suppliers. All together, these direct and indirect relationships need to be coordinated (Ford, Bethon, *et al.*, 2002).

Large companies can have a major impact on the development of a network. With a holistic understanding of the network, the large company can combine relationships and develop the network to a more productive state with a long-term perspective. However, it is important to understand that a network is dynamic and the relationships and prerequisites change over time. One company cannot control the entire network and the relationships are interdependent. The possibility to influence the network is dependent of the power position of the company in question, which can also change over time.

2.3.2 The Role of Relationships within the Network Perspective

Relationships are developed in order to meet requirements of companies and departments and to be able to link resources and skills to solve problems (Håkansson and Ford, 2002). If a company for example does not have relationships, it will not survive and if the parties in a relationship do not have resources and skills, the relationship has no purpose. When analysing a company in a network, it is important to get an image of how the companies within this network view each other, the resources and the relationships. According to Håkansson and Ford (2002) there are two aspects that need to be taken into account, (1) the parties' interests towards each other and (2) what actually happens in the relationship. It is easier for parties that share a common view of their relationship to find work-ways that are beneficial for both. What actually happens in a relationship concerns the fact that in order to create value for each other, activities need to be performed and to be able to perform activities, there need to be resources available.

Supplier-buyer relationships can vary a lot. The nature of these relationships depends on, for example the products or services involved and for how long the relationship has been going on (Ford, Gadde, *et al.*, 1998). Sometimes suppliers and buyers try to get a short-term advantage and other times more long-term relationships are desired in order to achieve mutual benefits. The history between two companies will affect the relationship. Furthermore, Ford, Gadde, *et al.* (1998) argue that how companies have treated each other earlier and the established degree of trust will impact the behaviour against each other regarding for example cooperation opportunities and how willing they are to assist each other. Hence, this will directly affect the possibility to have successful cooperation and reach collaborative innovations.

In order to analyse a relationship, the activities which each party has in relation to the other party and the resources the parties own or has access to need to be described (Håkansson and Ford, 2002). A relationship is a resource itself, both through the opportunity to influence the development of each other but also through the access to external resources that it provides. For example, two companies in a relationship do not only get access to their respective resources, but also to the resources of other companies in the network. It is also worth mentioning, that a relationship where conflicts and difficulties are absent, is not necessarily a functioning relationship. This can instead indicate a lack of interaction between the parties. Conflicts and difficulties can be seen as an opportunity to learn from each other and when handled successfully, the relationship is developed further.

2.3.3 The ARA-model

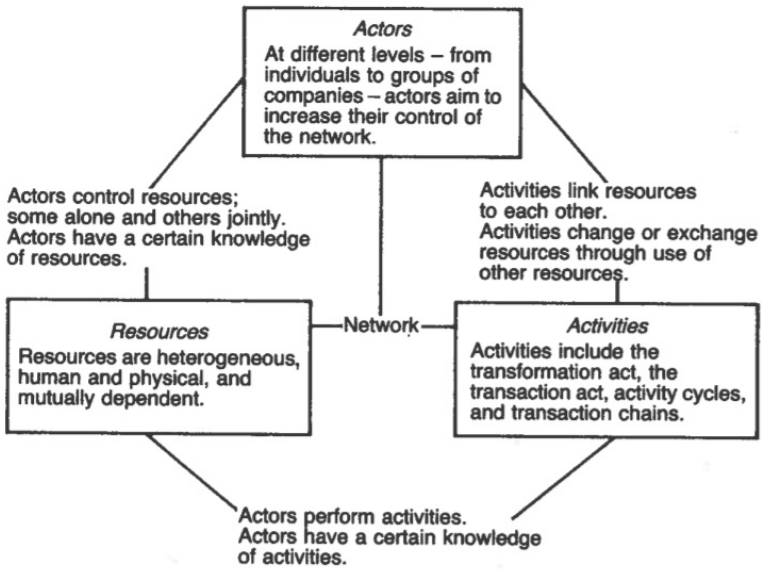

Figure 2.1: A description of the ARA-model and the three layers and the connections in between the layers (Gadde and Håkansson, 1993).

The ARA-model which is a part of the Network model identifies three different layers in which a network can be analysed; Activities, Resources and Actors (See figure 2.1). The model can be used to give a detailed view of a relationship and the effect it has on the parties involved in the relationship. By using the ARA-model the substance of a relationship can be analysed in the network dimension's as Actors Bonds, Resource Ties and Activity Links. These are illustrated in figure 2.2.

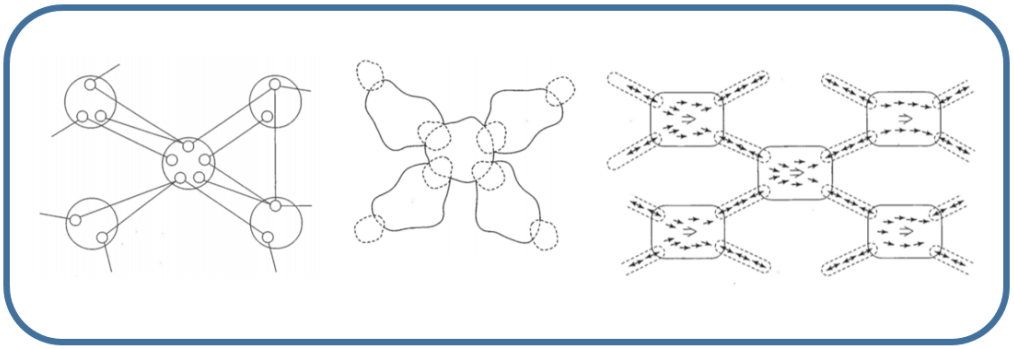

Figure 2.2: An illustration of Actors and Actor Bonds, Resources and Resource Ties and Activities and Activity Links. (Ford, Bethon, *et al.*, 2002).

Actors and Actors Bonds
Actors are connected to each other through actor bonds, as showed in figure 2.2. Actor bonds include interaction and trust and can be considered as a social dimension where the actors' norms, attitudes and values are important (Ford, Bethon, *et al.*, 2002). The interaction between the actors is developed into a relationship. In order to develop a relationship of value there has to be trust between the involved actors. This dimension is useful to consider in order to understanding the social aspect of the network and is a presumption for the other dimensions since the actors perform the activities and control the resources.

Gadde and Håkansson (1993) argue that from a procurement perspective, suppliers are the most important group of actors. However, it is important to review other actors as well, such as authorities, organisations or internal departments since these actors also have an impact on procurement. Suppliers might also have large competitors as customers that will have an impact on the suppliers' behaviour. The first step in analysing the actors is to identify the main actors and how they interrelate. The attributes of these actors such as size, level of competence, financial strength are relevant in order to understand the structure, strengths and weaknesses of the different actors (Gadde and Håkansson, 1993). When this is performed, it is possible to analyse questions like; What actor bonds are needed? Which actors are involved? Are the actor bonds limited by lack of resource ties or activity links and how? or Do we need to change a relationship and how?

Resources and Resource Ties
Resources and Resource Ties, which can be seen in the middle of figure 2.2, concern both physical resources, like products and commodities, and non-physical resources

like information, knowledge etc. It is also of interest to see how these are used and shared in a network (Ford, Bethon, *et al.*, 2002; Abrahamsen and Håkansson, 2012). Without resources, no activities can be carried out and it is the activities that bring value to the resources (Gadde and Håkansson, 1993). The investment in resources that connects two actors could lead to stronger resource ties. On the other hand, when resource ties become more developed in one relationship, it is likely that they become less developed in another relationship (Ford, Bethon, *et al.*, 2002). Therefore, resource investments with one company will affect the ability to invest with other companies. According to Ford, Bethon, *et al.* (2002), new combinations and new ways of tying resources together between companies are common ways for innovation to occur.

In order to analyse the resources available and the resource ties the structure of the network needs to be mapped (Gadde and Håkansson, 1993). Then the following questions can be answered: What role does external resources play and how are suppliers used? Which resources are vital to keep in-house and how are external and internal resources combined? Which field in technology is important for the company to keep an eye on or be involved in? The individual suppliers must be viewed separately in order to identify what knowledge and potential the supplier has. This needs to be done in order to know where to invest and where not to invest, both in which relationships but also where to increase and decrease the resource ties. In addition, as mentioned, combination of resources is a source for innovation (Ford, Bethon, *et al.*, 2002) and therefore, new combinations of resources should be evaluated when striving for more innovative collaborations (Gadde and Håkansson, 1993). It can also be interesting to review alternative resources such as new technologies and new suppliers. Since the activities and the resources are dependent on each other, the activity analysis and the resource analysis should be linked together. If there is a change in resource ties, it is likely that there is a need of change in the activity links and vice versa.

Activities and Activity Links

Activities and Activity Links, which can be seen to the right in figure 2.2, shows what, where and by who the activities are performed (Abrahamsen and Håkansson, 2012). Examples are services and activities involved in production, logistics or design and it is an important part of a relationship to decide what and how activities should be linked (Ford, Bethon, *et al.*, 2002). This decision will be affected by the nature of the buyer's and supplier's view of the relationship and its strategies. If the parties lack interest for each others activities and are not prepared to invest, it is likely that the activity links are limited compared to a relationship with a mutual willingness to develop further together in a partnership.

According to Gadde and Håkansson (1993), when making an activity analysis from a procurement perspective, a systematic review of the chains of activities in relation to suppliers needs to be done as well as reviewing the activity chain to customers. This includes looking at subcontractor, customers' customers and competitors where main activities are carried out which impacts the focal point of the analysis (Gadde

and Håkansson, 1993). When this is done the activity structure can be discussed and for example, the following questions should be answered; Do we have to eliminate or relocate some activities? Can activities be better coordinated in order to be more efficient?

The Use of the ARA-Model
In a business relationship, whether it is internal between departments or external with customers and suppliers, analysing these three dimensions can be useful in order to obtain a planned outcome of a relationship. Ford, Bethon, *et al.* (2002) are for example discussing the fact that marketing companies often focus on creating social bonds but do not work so much with creating activity links and resource ties. Therefore, a relationship might not reach its full potential since it might be a very convenient relationship but do not add any value. It is more demanding to have strong activity links and resource ties but that kind of relationship has better prerequisites in adding value to both parties. When the wished outcome of a relationship is collaborative innovations, balancing these three dimensions and maintaining a strong relationship between the parties are crucial.

2.4 Additional Conditions which are Important for Successful Collaborations

McQuiston (2001) provides interesting insights in what is needed in a business-to-business (B2B) relationship in order to be successful. There is a need of shared values, norms and trust, which is in line with Ford, Bethon, *et al.*'s (2002) opinion. McQuiston (2001) has also identified investment of effort by top management and argues that it is important that the communication in a partnership, is overseen by individuals. If these individuals come from upper management of a firm, the partnership are more likely to be successful. Since successful partnerships usually lead to changes within the organisations, top management needs to be on-board to support these changes. If top management prioritises a relationship and shows willingness to work towards a partnership, it is likely that the employees will do the same.

Another factor mentioned by McQuiston (2001) is Open Lines of Communication. It has been found that within successful alliances, there is a need of frequent exchange of information. This is beneficial both for sharing information in general but also in order to solve problems. There has to be an established communication pattern between the parties in order to have a succesful relationship.

As mentioned above, shared values, norms and trust are desirable within a successful relationship but in reality, most organisations are acting on self-interest and will therefore primarily work to secure their own surplus (Hingley, 2005). However, this does not mean that a B2B-relationship cannot be successful. It is common with asymmetrical relationships where one party has more power than the other one and that the power balance changes over time. As the less powerful party, it can be

beneficial to accept the position as long as it is not destructive. However, if one party is feeling forced in a relationship the willingness to adapt and collaborate will decrease (Nyaga *et al.*, 2013). Therefore, in a relationship when one party has the more powerful position it might not be the best option to exploit that power. Instead it is more beneficial not to choose a coercive strategy if the goal is to have a collaborative relationship (Nyaga *et al.*, 2013; Kumar, 1996). However, it is important to remember that within a strong relationship there is a co-dependence between the two parties. Investing in stronger ties, can lead to an increase dependency.

2.4.1 Partnering

Relationships among stakeholders in the construction industry have been characterised by several problems such as inefficient communication, limited trust and lack of cooperation resulting in a win-lose climate between stakeholders (Chan *et al.*, 2004). To solve the problems, new management techniques have evolved and gained popularity in the industry. Partnering is one such technique that has drawn attention both from academics and practitioners (Zuo *et al.*, 2013; Chan *et al.*, 2004). There are numerous definitions of partnering, among them, the definition developed by the Construction Industry Institute (CII) in the United States is the most widely cited. The CII define partnering as:

> *A long-term commitment between two or more organisations for the purposes of achieving specific business objectives by maximising the effectiveness of each participant resources. This requires changing traditional relationships to a shared culture without regard to organisational boundaries. The relationship is based on trust, dedication to common goals, and an understanding of each other's individual expectations and values - CII, 1991.*

There are predominantly two forms of partnering in the construction industry: strategical partnering and project specific partnering (Cheng and Li, 2004). The former focuses on strategic goals and emphasises strategic long-term relationships that open up for continuity and mutual benefits for the involved parties. The latter looks for short-term benefits and focuses on project performance. For project specific partnering the parties disband when the project is completed (Chan *et al.*, 2004). Project partnering has kept dominating the construction industry (Li *et al.*, 2004; Sundquist *et al.*, 2018). However, according to Blayse and Manley (2004), tighter couplings and long-term relationships between parties are more likely to support collaborative innovations. Therefore, strategical partnering is the preferred form of partnering in order to achieve this (Rowlinson and McDermott, 2005). Sundquist *et al.* (2018) especially highlights supplier partnering as important since it partnering allows for companies to make use of the knowledge and the competencies of their suppliers. Furthermore, (Sundquist *et al.*, 2018) highlights that neglecting supplier partnering constrains the opportunities for innovation.

The definition of partnering stated earlier emphasises important factors as well as

expected benefits from partnering. It highlights the importance of trust and mutual understanding and these factors are confirmed as the most important components of partnering by Cheng and Li (2004). Other factors identified by Cheng and Li (2004) as critical for the success of strategical partnering are open communication, effective coordination, long-term commitment, adequate resources and support from top management.

Pruitt (1981) defined trust as the belief that a party is reliable in fulfilling its obligations in an exchange relationship. Having mutual trust open the boundaries, increase information exchange and joint problem solving and promise better outcomes of a relationship (Li *et al.*, 2004). According to Mosey (2009) personal chemistry between individuals rather than contractual links are the first priority for building trust in relations.

Cheng and Li (2004) describes long-term commitment as the willingness of the involved parties to integrate continuously to weather problems. Committed parties balance realisation of short-term objectives with long-term goals. Furthermore, it contributes to the achievement of individual and shared missions without raising the fear of opportunistic behaviour.

As senior management formulate the overall strategy for a business, full support is critical for the success of partnering arrangements (Cheng and Li, 2004). According to Love *et al.* (2000), top management can show support by providing sufficient resources, including money, time, manpower and authority. Furthermore, by assigning a senior executive that deals with partnering matters, top management can contribute to a successful partnering strategy (Li *et al.*, 2004).

Li *et al.* (2004) have made a summary of how to measure critical success factors for partnering. In order to evaluate if a supplier is suitable to form a partnership with, the following questions can be asked:

- Has top management showed support for formation of partnering?
- Has top management showed that partnering is a strategical affair?
- Are the partner trustworthy?
- Will the partner take decisions which can give mutual benefits?
- Is the partner committed to the relationship on a long-term basis?
- Are there good channels established in order to facilitate communication and avoid misunderstandings?

This list is based on Li *et al.*'s (2004) findings.

2.4.2 Cross-functional Teams

Cross-functional teams, sometimes also called multidisciplinary teams, is a managerial mechanism that provides integration between parties through cooperation processes (Pimenta *et al.*, 2016). Cross-functional teams allow a more efficient use of resources by combining skill-sets of the involved parties compared to when the

resources are managed in isolation by the involved parties. Different authors define cross-functional teams somehow differently but the definition used in this thesis is from Parker (2003, p. 6):

> *A group of people with a clear purpose representing a variety of functions or disciplines in the organisation whose combined efforts are necessary for achieving the team's purpose.*

The cross-functional team can be permanent or different from time to time and may include customers and suppliers. According to Sethi *et al.* (2001), cross-functional teams are an effective tool for companies in order to solve problems. Research by Frödell (2014) propose internal integration by forming cross-functional teams as a way to handle conflicting interests between departments within construction companies. By aligning different sets of perspectives and knowledge, superior solutions that reflect requirements of all involved parties can be found. Bossink (2004) emphasises the importance of integration between design and construction disciplines to avoid development of innovative designs that cannot be constructed. In addition, Bossink (2004) mentions that external integration with both customers and suppliers can contribute to the innovation capacity of construction firms. Cross-functional teams provide a good base for creativity by mixing people with different backgrounds, styles, cultural value, etc. Well-managed and properly balanced cross-functional teams have many advantages to increase the innovation capacity of firms (Parker, 2003). The implementation of cross-functional teams speeds up the product development process, improves the ability to solve complex problems, focus the resources on satisfying the customers' needs, increases the creativity and promotes organisational learning.

Some factors are critical for the success of cross-functional teams. It is important to work towards a clearly defined common goal and to have a plan on how to achieve it. Furthermore, the commitment of the involved parties is crucial. Therefore, collaborative efforts should be emphasised and rewarded. Providing training on how to work with a diverse group of people support these factors (Parker, 2003).

2.4.3 A Model for Evaluating the Potential for Collaborative Innovation with suppliers

The ARA-model and the Network perspective is applied by analysing the activities and activity links, resources and resource ties and actors and actor bonds in order to evaluate a current state and the relationships (Ford, Gadde, *et al.*, 1998; Gadde and Håkansson, 1993; Ford, Bethon, *et al.*, 2002; Håkansson and Ingemansson, 2013; Abrahamsen and Håkansson, 2012). This can then be used in order to understand and develop the network and the relationships to reach collaborative innovations with suppliers. Based on the previous sections in the analytical framework and the aim of the study, a model for evaluating the collaborative innovation potential with suppliers of companies within the construction industry has been developed.

The model is based on the ARA-model's three layers and some additional factors, identified as important for this specific context, has been added. The developed model can be seen in figure 2.3.

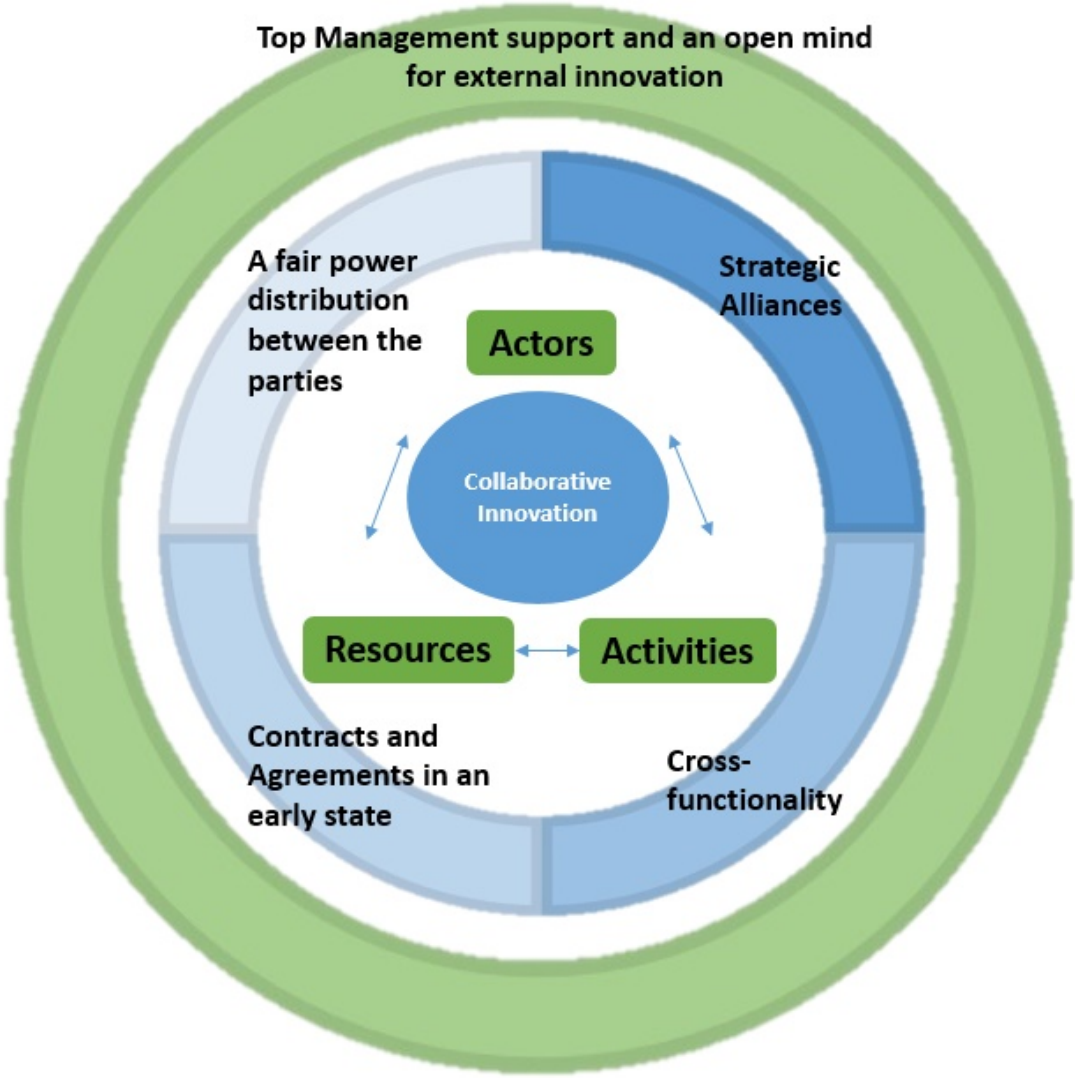

Figure 2.3: The developed model for evaluating the potential for collaborative innovation with suppliers at Construction Sweden.

Top Management support and an open mind for external development is one of the additional factors and this is a prerequisite mentioned by McQuiston (2001), Rosell and Lakemond (2012), and Brem (2014) among others and is identified as important from a holistic view. This is the reason for its top position that can be seen in 2.3. The rest of the additional factors can be sorted in the dimensions of activity links, resource ties and actor bonds. However, these additional factors are seen as extra important for the context and some of them belong to more than one of these dimensions and are therefore presented in the model. The position of these

factors, which can be seen in 2.3, does not mean that they belong to the layer that it is closest to. The connections to the three layers are instead explained below.
A fair power distribution is according to Kumar (1996) and Nyaga *et al.* (2013) important in order for creating a relationship where both parties are interested in helping each other which collaborative innovation is dependent on. As Hingley (2005) states, relationships are usually not entirely symmetrical. If there is a wish for a long-term relationship it might not be beneficial to exploit the weaker party. Hence, it is useful to be aware of the power distribution of the relationship. The distribution of power mirrors the actor bonds between the actors.

Cross-functionality and cross-functional teams are as Parker (2003) and Sethi *et al.* (2001) mention an effective tool to solve problems and increase the innovation capacity through collaboration. This is a factor that gives a platform to form actor bonds both internally and externally. However, it is also a platform for sharing resources where for example a cross-functional team with suppliers and customers are using the facilities of one party to create collaborative innovation through the combining of knowledge.

Strategic alliances, which is often referred to as partnering within the construction industry (Cheng and Li, 2004; Chan *et al.*, 2004; Li *et al.*, 2004; Rowlinson and McDermott, 2005), is useful in order to create collaborative innovation. A strategic alliance is mainly an actor bond, but gives prerequisites and opportunities for investing more in shared activity links and resources ties to reach more collaborative innovations.

Contracts and agreements is a factor that points to the importance of makingt contracts and agreements in an early state when aiming at creating collaborative innovations together with suppliers (Rayna and Striukova, 2005). This allows for a fair distribution of the resources such as monetary resources, both costs and revenues, and intellectual property but also that together with all actors go through risks and responsibilities in order to not harm the actor bonds and the relationship.

2.4.4 Research Issues

With the analytical framework and the model presented above as a base, the following research issues are discussed:

RI1: Innovation within Construction Sweden and the Procurement Organisation

- What are the perceptions of innovation within Construction Sweden and how do these affect the strategic procurement processes?
- Which are the current strategic procurement processes that have the possibility to facilitate collaborative innovation?
- What in these identified processes hinders and facilitates collaborative innovation?

RI2: Construction Sweden's Relationships and Prerequisites for Collaborative Innovations

- What features, internally and in the relationships, in terms of activity links, resource ties and actor bonds facilitate and hinder collaborative innovation with suppliers?
- What features, in terms of the additional factors, facilitate and hinder collaborative innovation with suppliers?
- What prerequisites, internally and in the relationships, in terms of activity links, resource ties and actor bonds are required from Construction Sweden to develop in order to have successful relationships and reach more collaborative innovations?
- What prerequisites, in terms of the additional factors, are required from Construction Sweden to develop in order to have successful relationships and reach more collaborative innovations?

3
Method

This chapter explains the research process and how the study was designed in order fulfil the aim and give an insight within the two research issues presented at the end of the theoretical framework.

3.1 Research process

The research process of this master's thesis was conducted as described in figure 3.1 and consisted of four different phases.

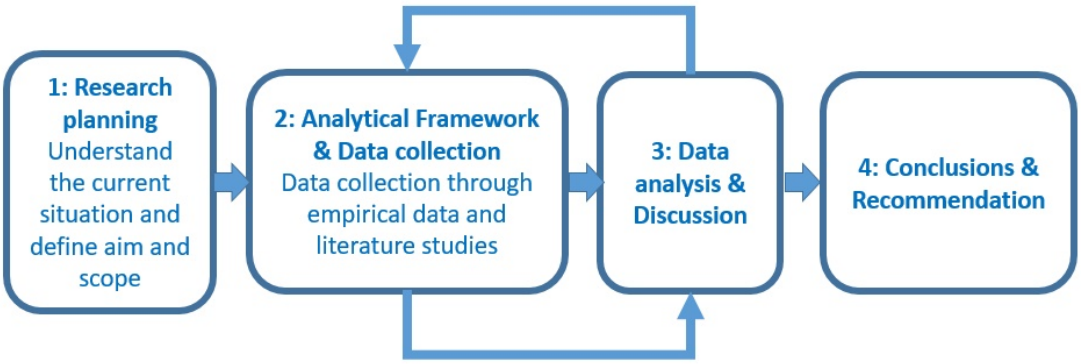

Figure 3.1: An illustration of the research process.

The first phase was about understanding the current situation at Construction Sweden in order to define the scope of the research. This was made through literature studies and discussions with representatives from Construction Sweden and the supervisor at Chalmers University of Technology. During this first phase, the forming of the empirical data collection and the actual study took place. The second phase consisted of an iterative process with data collection and building up the analytical framework. The data collection and the analytical framework has been continuously developed and adjusted in order to create a base for the analysis. The model presented in section 2.4.3 was developed during the end of this phase. The analysis and the discussion of the two research issues, which was the third phase, were made with the empirical data and the analytical framework as a base. The fourth phase

includes the writing of the chapters conclusions and recommendations for Construction Sweden on how to move forward with collaborative innovations with suppliers. These two chapters were based on the analysis.

3.2 Research Strategy and Research Design

This master's thesis is based on a case study of the construction company Construction Sweden and was conducted on behalf of the Supplier Management Department at Construction Sweden. The aim of the study was to evaluate how the current procurement processes at Construction Sweden and the supplier relationships facilitate collaborative innovations with suppliers and to develop the processes and the prerequisites to reach more collaborative innovations with suppliers. A case study was chosen as an approach since it is useful for getting an in-depth understanding of a problem in a specific context (Bryman and Bell, 2015; Dubois and Gadde, 2014; Dubois and Gadde, 2002b), in this case of Construction Sweden's lack of collaborative innovations together with suppliers. A case study is also a common approach to use when performing business research (Bryman and Bell, 2015; Dubois and Gadde, 2014; Dubois and Gadde, 2002b). The case study has given us the possibility to map and understand current actors, activities and resources related to collaborative innovations with suppliers. Thereafter, we have analysed current processes and the relationships in order to develop the Procurement Department's process to facilitate collaborative innovations with suppliers. The approach of this case study has been qualitative. A qualitative approach emphasises words when collecting and analysing data. Usually qualitative data is collected through interviews, observations or reports (Bryman and Bell, 2015; Ghauri and Grønhaug, 2010; Saunders *et al.*, 2009).

When performing a case study with an iterative process it is called an abductive approach, which can be useful when theory and reality need to be matched during the research process (Dubois and Gadde, 2014). The concept of abductive approach is describing the relationship between research and theory. Abductive approach, in some context, is also called systematic combining, and helps with moving from a descriptive observation on the surface to a deeper context-specific explanation of underlying structures. This is used during this study since the analytical framework has been adapted during the research process.

3.3 The Empirical Data Collection

The empirical data has been collected through both what Bryman and Bell (2015) referred to as primary and secondary data. Primary data is data that has been collected for the sole purpose of the research whilst secondary data has been collected for other purposes, for example for other research (Bryman and Bell, 2015). In this study the primary data was represented by observations and interviews with relevant personnel at Construction Sweden and suppliers. The interviewees can be seen in table 3.1.

Table 3.1: Table over the interviewees and their roles.

Interviewees	
1. Head of Development	NPD
2. Sourcing Manager	NPD
3. Project Manager Supplier Development	NPD
4. Category Manager A, Windows	Construction Sweden
5. Category Manager B, Elevators	Construction Sweden
6. Key Account Manager A, Windows Supplier	Supplier A
7. Key Account Manager B, Elevator Supplier	Supplier B
8. Project Purchaser and Former Foreman	Construction Sweden
9. R&D Manager	Construction Sweden Technology

The secondary data was in this case study organisational documents and internal material, which gave an insight of the official description of the work-ways within Construction Sweden.

3.3.1 The Approach of the Interviews

The first step was to map the current situation and understand what processes Construction Sweden has. To get a deeper understanding of the current activities regarding collaborative innovations with suppliers we used the secondary data such as organisational documents but this was combined with interviews with employees within the Procurement Organisation such as the Head of Development, the Sourcing Manager and a project manager at Supplier Development. They helped us to understand the processes and were used to verify that we understood the processes correctly. These interviews were made face-to-face with the interview objects and duration was around 45-60 minutes. The interviews were mainly unstructured. Unstructured interviews are characterised by having predefined topics and themes rather than specific questions (Bryman and Bell, 2015). The project manager at Supplier Development has also been our supervisor at Construction Sweden and therefore, we have been in contact continuously during the study.

The interviews with the Category Managers and Suppliers were used in order to get a more detailed view on the relationship and the interaction between suppliers and Construction Sweden. We have chosen to talk to two category managers, one who was responsible for windows and glass facades and one who was responsible for elevators. The focus has not been on these specific products. The selection of the category managers and suppliers was solely based on recommendations from our supervisor at Construction Sweden. They were chosen since a potential was seen to work more with collaborative innovations with these suppliers, both because of the characteristics of the products but also the characteristics of the relationship. The main subject for discussion has therefore been the supplier relationships and the current collaborative activities with these suppliers.

Thereafter, we also made interviews with Key Account Managers at the chosen suppliers within the two respective categories. This was made in order to get the suppliers' views on the relationship with Construction Sweden, collaborative activities and innovation. These interviews were semi-structured meaning that the interviews are based on questions that can be changed and adjusted during the interview depending on the answers (Bryman and Bell, 2015). Why semi-structured interviews was chosen was that we wanted to get a discussion of the same subjects. The interview with Category Manager A was a face-to-face meeting and the interview with Category Manager B was a Skype-meeting with video link. Both interviews lasted for about 70-90 minutes. The interviews with the key account managers at the suppliers was over Skype and lasted for about 45 minutes.

During the interviews, we asked for recommendations on who to interview regarding the subject collaborative innovations. The R&D Manager and Project Purchaser and Former Foreman are example of this kind of recommendations. The interviews with these two were unstructured interviews with the theme collaborative innovations with suppliers and were done over Skype. The interviews lasted for about 45-60 minutes. Unstructured and semi-structured interviews are common when performing qualitative research (Bryman and Bell, 2015), which also have been suitable for this research. A summary of the interview characteristics can be seen in 3.2

Table 3.2: Table of the interviewees, the structure of the interview and the way the interviews took place.

The Interview Characteristics			
Head of Development	Unstructured	Face-to-face	70 min
Sourcing Manager	Unstructured	Face-to-face	45 min
Project Manager Supplier Development	Unstructured	Face-to-face and Skype	Continuously
Category Manager A, Windows	Semi-structured	Face-to-face	90 min
Category Manager B, Elevators	Semi-structured	Skype+Video	70 min
Key Account Manager A, Window Supplier	Semi-structured	Skype	45 min
Key Account Manager B, Elevator Supplier	Semi-structured	Skype	45 min
Project Purchaser and Former Foreman	Unstructured	Skype	45 min
R&D Manager	Unstructured	Skype	60 min

The reason for using Skype for the interviews was mainly due to geographical distance. However, Skype is a well-known tool for the employees at Construction Sweden and the suppliers since it is used on a regular basis for meetings. Therefore, the set-up with Skype interviews has worked very well.

3.4 Summary of the Research Process

The figure presented below is a summary of the sections above; the research process, the research strategy and research design and the data collection.

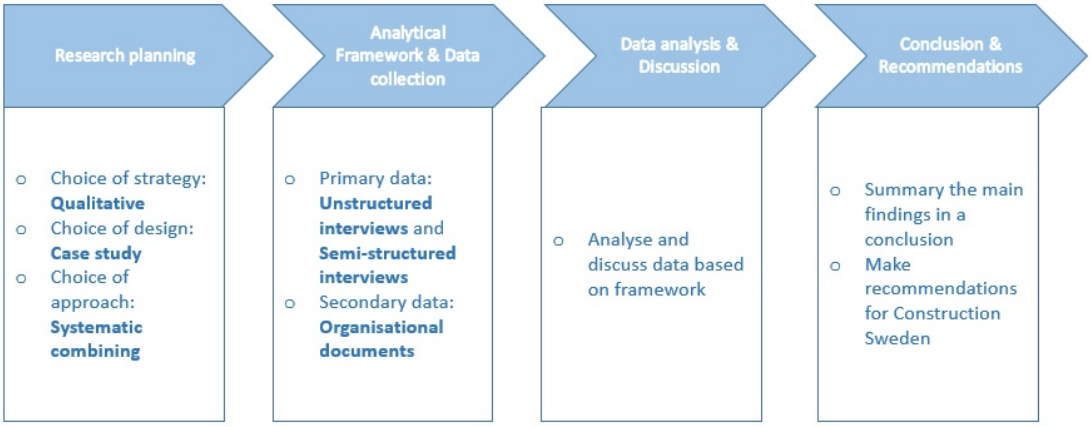

Figure 3.2: A summary of the research process.

3.5 Research Quality and Credibility

According to Bryman and Bell (2015), it is not possible to be completely value free when conducting research, which is something that needs to be taken into account, especially when performing qualitative research. One of the major critics against qualitative research is that it is too impressionistic and subjective. This means that the research based on qualitative findings is influenced by the researcher's view on what is important and personal opinions can affect the outcome. This puts extra pressure on planning and executing the research to ensure the trustworthiness. However, a qualitative approach is suitable when wanting to generate and develop explanations within a context (Bryman and Bell, 2015), which was needed in order to fulfil the aim of this study.

Validity is one measurement mentioned as important when speaking about trustworthiness when performing a qualitative study Bryman and Bell (2015). The gathered information has been validated through conversations where the interview objects are getting a chance to verify the information. We have sent the empirical data to the Project Manager for Supplier Management Competence Management and made additional discussions with the Category Managers to make sure that we understand the current activities and processes correctly.

4

Empirical Data

This chapter presents the empirical data, which has been collected from organisational documents and interviews. The Procurement Department is the focal point and the chapter starts with an overview of Construction Sweden and the Procurement Department's organisation. Following this, is a description of a number of procurement processes. Thereafter, there is a section regarding the supplier relationships and the chapter ends with sections concerning the R&D Department and two examples of innovative collaborations with suppliers.

4.1 The Procurement Function at Construction Sweden

Construction Sweden is as mentioned earlier, a part of the global company Construction Group. The Procurement Department is the main focus of this study and the position of the procurement function within Construction Sweden is illustrated in figure 4.1.

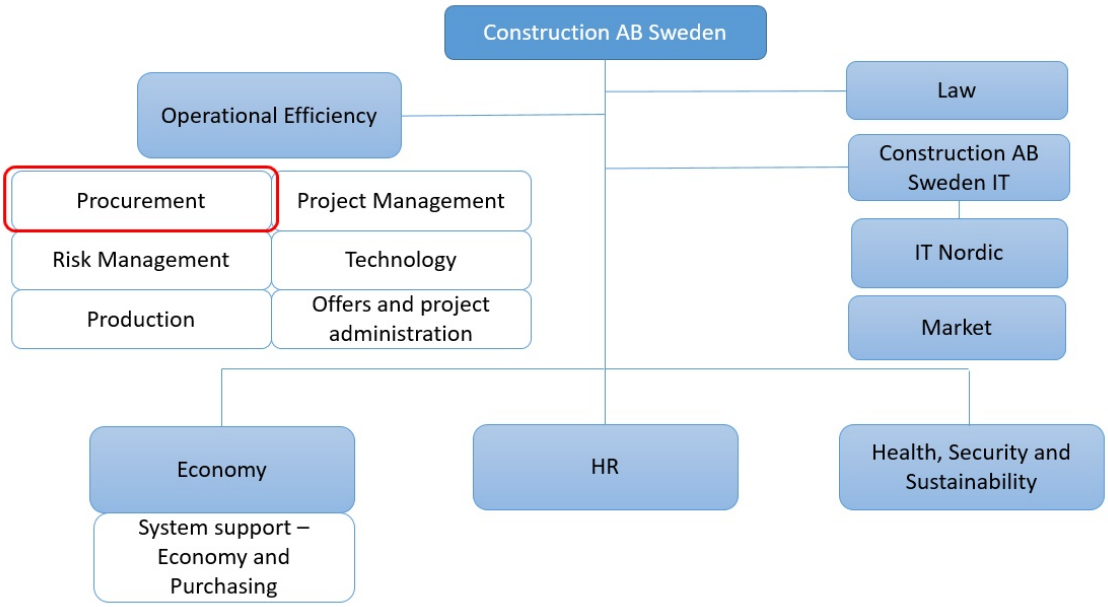

Figure 4.1: Map of Construction Sweden's Organisation.

The Swedish Procurement Director and the Swedish Procurement Management Team lead the work within procurement at Construction Sweden. Construction Sweden has a business plan, which expands over a five years period. Annually, the Swedish Procurement Support Department establishes an action plan, which supports this Business Plan. The action plan covers the most important measures and development projects for procurement in Sweden. One important goal from Construction Sweden, which has an impact also on the Procurement Organisation, is the goal of being climate neutral in 2050. This climate goal is a strategic decision to become carbon neutral, in terms of net emissions in 2050. This includes material and services, which are purchased from external suppliers.

4.1.1 The Different Functions of the Procurement Organisation

Procurement at Construction Sweden is separated to indirect procurement such as strategical issues and direct procurement such as operational purchasing. General strategies, targets and KPIs for the procurement function are decided by the Swedish Procurement Management Team but some issues are escalated to the Swedish Management Team. The Swedish procurement function is divided into portfolios, regions and districts depending on the business area. The structure of the Swedish procurement function can be seen in figure 4.2.

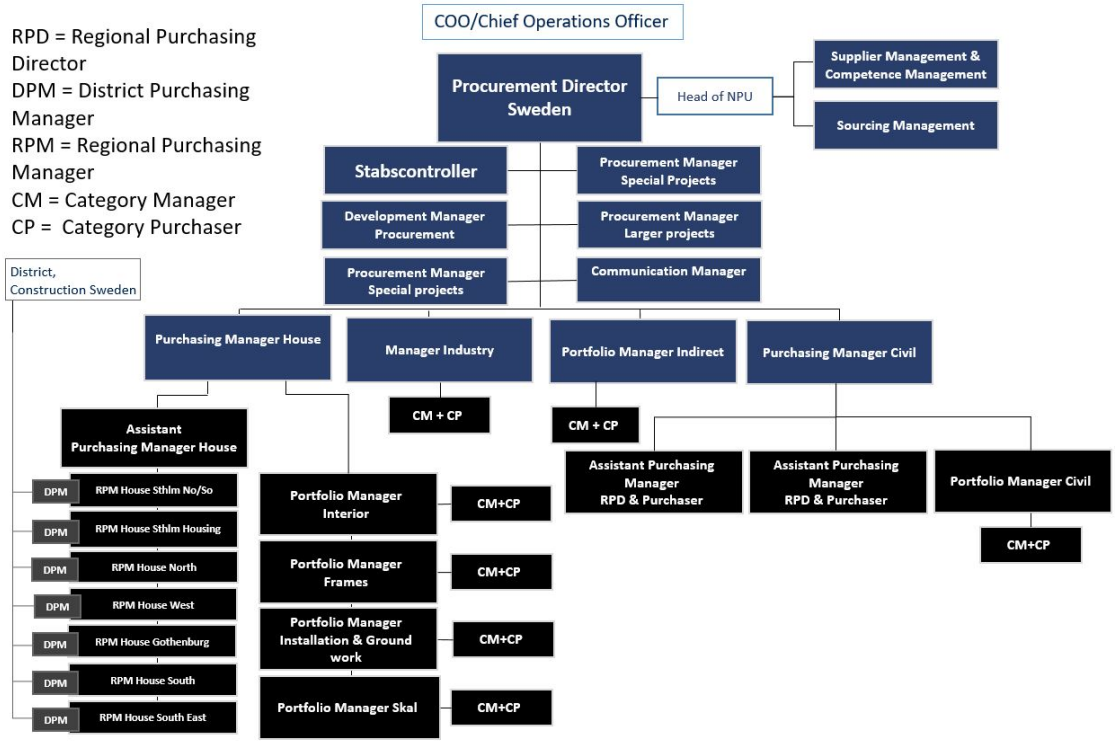

Figure 4.2: Map of Construction Sweden's procurement function on a strategic level. See appendix A.1 for a higher resolution image.

The level of detail in figure 4.2 stops at Category Manager (CM) and Category Purchasers (CP) but the direct procurement, which works with operational purchase belongs to groups under the Regional Purchasing Managers (RPM). The operational function belongs to the procurement department and the projects belong to the production department, see figure 4.1. The portfolios work both with framework agreements and with procurement support to the projects. Each portfolio consists of a number of categories which, in turn, are divided into sub categories. How the portfolios are organised and what roles are included within each portfolio can be seen in figure 4.2. The division is made in order to facilitate the coordination of procurement, set up strategies and to secure the supplier base within each category.

The Purchasing Organisation controls about 50-60% of Construction Sweden's total spend. The projects handle the purchasing by themselves for "bread-and-butter" products and when it is beneficial to utilise local markets. In those cases, Construction Sweden sees no need for centralised purchasing with framework agreements. The aim is to use suppliers with framework agreements when possible, but the projects still have the power to choose by themselves. There are different support functions within the organisation, which work with indirect procurement support and coordination of the Nordic procurement. These support functions are Supplier Management & Competence Management and Sourcing Management and can be seen in figure 4.2.

The support function Supplier Management & Competence Management works among other things, with making sure that Construction Sweden's supplier base is competitive by following up the performance and competence, driving improvements and develop the suppliers. The focus areas of Supplier Management & Competence Management are prequalification, performance evaluation and supplier development. Prequalification is the process of securing that suppliers live up to legal regulations and to Construction Sweden's requirements before negotiation. Performance evaluation means that suppliers are measured and evaluated on different parameters such as delivery performance and quality performance. Supplier development is about improving the performance of suppliers by ensuring that suppliers actively work with monitoring and continuous improvements.

The support function Sourcing Management is responsible for the category planning and strategic sourcing processes at Construction Sweden. The coordination of the category planning between the Nordic portfolios and make sure that appropriate data and tools are available are also responsibilities of Sourcing Management.

4.2 The Category Planning and Category Work

The category planning is a process at Construction Sweden, which aims at:

- Identifying and prioritising purchasing activities for the respective category and year
- Acquiring the right information regarding goals, time frames, resource need etc. in order to set a budget
- Establish the procurement plan with other parts of the organisation and regions to ensure the quality of the purchase guidelines

Figure 4.3: The annual process of the category planning and the category work in Sweden.

The category planning process is run jointly for the entire NPD and the work results in annual national category plans for Sweden, Norway and Finland as well as a common Nordic category plan. The Nordic process is managed by Sourcing Management. The annual time line can be seen in figure 4.3.

Based on the needs, requirements, risks and opportunities identified for a category in the category planning process, the CMs are responsible of formulating a category strategy. The category strategy is documented in a category card, which is described more in detail below in this section. The aims of the category strategy are generally based on saving requirements in order to meet the Construction Sweden's overall business plan and is performed yearly. The savings are supposed to be implemented the year after. An illustration of this can be seen in figure 4.4.

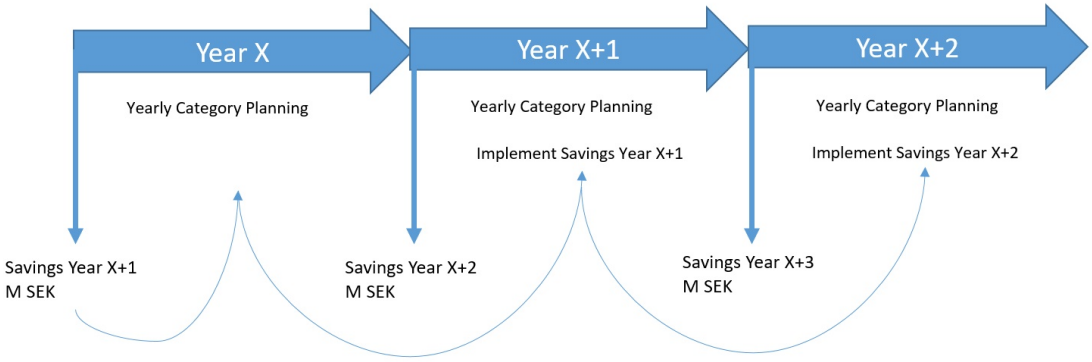

Figure 4.4: An illustration of the savings from the category planning.

In order to make the category strategy and category planning the CM consults the Extended Category Team. The Extended Category Team is a cross-functional team with representatives from different departments within Construction Sweden, such as the Technical Department, The Quality Department, the production etc. These teams are up to the CM to put together and the cross-functional competence can be used for example when formulating the Category Card, making a framework agreement or discussing a new project.

4.2.1 Category Cards

The category cards present short and long-term strategy, market and competitor analysis, opportunities and goals as well as plans for activities and savings potential for next year. The category strategy should also show a strategy for supplier segmentation, which also is described further down in this section.

The category card work is led by the CMs in consultation with the Extended Category Team, which is consisting of representatives from Operations, Sustainability, Health and Safety among others. The CMs are responsible for ensuring that the Category Card is well established with the extended category team. An example of a category cards can be seen in figure 4.5.

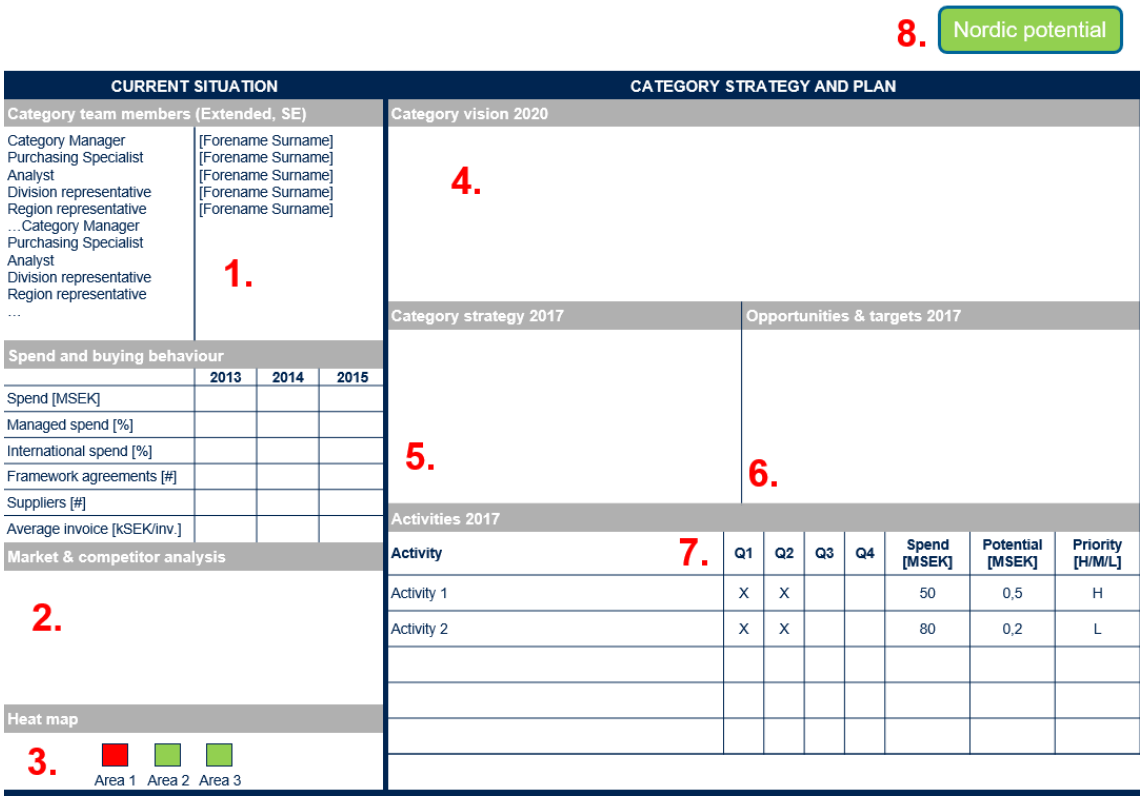

Figure 4.5: Part of the Category Card that is filled in by CM to map current situation, set targets and plan for the category. See appendix B.1 for a higher resolution image.

Detailed description of the Category Card in figure 4.5
1. The Extend Category Team shall agree on the category card together with the CM. Having the right people in the Extended Category Team is a prerequisite for proper development and establishment of the strategy.
2. Description of the supplier market and how competitors work within the area. Also a future analysis over what changes can be seen; in the market, in the supply chain etc.
3. Show the significant risk areas within the category based on the colours from the Nordic Heat Map. The Nordic Heat Map is a tool used to evaluate risk and has an increasing scale from Green to Yellow to Red.
4. Long-term category vision to support the Business Plan, which extends to 2020 and how the category can evolve, risks and risk management but also the long-term potential.
5. Short-term category strategy to support category vision, which extends to 2020. This strategy should be specific and the way of working towards this strategy should be clarified.
6. Targets should be set and they have to be Specific, Measurable, Achievable, Relevant and Time bound together with an analysis of what is needed in order to accomplish these targets.
7. Specific activities that need to be performed over the year, how much savings potential there is and priority of the activity, from low to high.
8. This banner can be used in order to show if there is Nordic coordination potential in any of the proposed activities.

Construction Sweden has performed mapping of the Category Cards where supplier development activities from different categories were compiled. According to the Supplier Development Project Manager, the mapping revealed inadequate follow-up of the supplier development activities. There is no reconciliation to see if planned activities were carried out. Furthermore, the follow-up revealed that the activities are on varying levels and that the activities focus on supplier performance rather than supplier development.

4.2.2 Supplier Segmentation

Segmentation of suppliers at Construction Sweden is part of the category planning and it is performed in order to clarify the role and importance of the suppliers. The segmentation process allows for Construction Sweden to differentiate the ways of working towards suppliers in a structured and systematic way. There are five different segmentation levels; Not Approved, Prequalified, Approved, Preferred and Key (see figure 4.6).

Figure 4.6: Illustration of Construction Sweden's segmentation of suppliers.

Construction Sweden has a system, which automatically sets status as Prequalified or Not approved based on a prequalification process, which consists of an online questionnaire filled in by the supplier, credit rating and tax status. The suppliers should be at least at the Prequalified level in order to be utilised in projects. Approved suppliers are checked and approved by the procurement department regarding for example risks within sustainability areas. This means that the responsible CM continuously follows up that the supplier meet the requirements within these areas. The CM or Portfolio Manager are free to upgrade a supplier from Prequalified to Approved. With suppliers that are segmented as Key or Preferred, Construction Sweden has a more strategic and long-term cooperation with continuous follow-up and development meetings. The relationship between Construction Sweden and the supplier is in these cases more of a partnership. If a supplier should be upgraded to Preferred or Key level or not is decided in the Sourcing Board. The Sourcing Board is a group of representative managers from Sweden, Norway and Finland within procurement and sourcing.

Each category has unique prerequisites and therefore also a unique supplier base and different needs of supplier segmentation. In some categories where for example price is the most important factor or where the purchasing is of a "bread-and-butter" nature, there may not be a need for more than prequalified suppliers. More strategical and important purchases, which demand stronger commitments in the supplier relationship require at least approved suppliers. The segmentation strategy for Approved, Preferred and Key is determined as part of category planning.

4.2.3 The Toll Gate Process

Construction Sweden's sourcing strategy process is referred to as the Toll Gate process. The different steps in the process can be seen in figure 4.7.

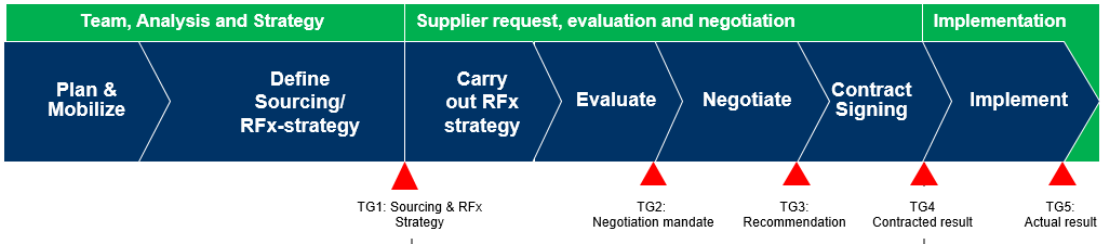

Figure 4.7: An overview of the strategic sourcing process at Construction Sweden.

The Toll Gates represent five decision points where the first one, TG1, is where the sourcing strategy is decided and mandate of going further is given. At this point, if the sourcing project is of low impact to the organisation and the spend is low, it is possible to seek negotiation and supplier selection mandate for TG2 and TG3 decisions. The phase before TG1 consists of mobilising a team, understanding the demands and requirements and making a spend and market analysis. This is the foundation for the development of the sourcing strategy, which is presented to the Sourcing Board. The phase that expands from TG1 to TG4 is about qualifying and selecting suppliers, defining an implementation plan and preparing, negotiating and signing an agreement. The phase between TG4 and TG5 is about documenting the implementation. As mentioned, the Toll Gates are decision points and TG1 focuses on procurement strategies, tactics, current state, size of the supplier base, reconsideration of old agreements or just adjusting price. Supplier development is considered in this stage but in terms of relationship, delivery etc. rather than innovation.

4.3 The CM's Perspective on the Category Work

The category work and category planning are two of the CMs' main responsibilities. These activities focus mostly on supplier relationships and supplier follow-up regarding delivery, precision and quality performance. Innovations and new technology from suppliers are not specified as a responsibility in the CMs' job description. Still, it happens that the CM pushes for new solutions when there is a problem or if the CM sees a potential.

For example, CM A who is responsible for the window-category is currently studying technical specifications in order to push Supplier A, which delivers windows to Construction Sweden. CM A wants Supplier A to find a functional solution by setting stricter requirements in order to solve a problem regarding condensation on the inside of the windows. CM B, who is responsible for the category elevators, has also driven a development initiative. There was a problem with safety in the

elevator shafts where Construction Sweden wanted a standard solution for a safety fence to prevent accidents and keep the shafts clean. CM B passed the problem on to Supplier B in order to find a long-term solution. The solution was a safety fence, which is now a standard solution for all of Construction Sweden's projects.

However, as it is today there are no processes supporting collaborative innovations with suppliers at Construction Sweden. It is up to the individual CM to drive these kinds of initiatives and innovation responsibility is not in the work specification of the CMs. It is more of an unspoken responsibility. This it confirmed with both the CMs, the Sourcing Manager and the Head of development and therefore innovation initiatives are highly dependent on the individual CMs. However, it is important to highlight that the CMs have support within the Procurement Organisation from the Sourcing Management Department and the Supplier & Competence Management Department but the daily, continuous connection that could lead to collaborative innovations is up to the CMs to maintain and drive forward.

According to CM A at Construction Sweden the Category Cards are quite meaningless and not much time is spent on filling them in. The Category Cards are basically a tool for the Procurement Management Team to forecast future savings. CM A thinks that the Category Cards are not detailed enough. On the other hand, at the automotive company where CM A worked prior to Construction Sweden, the corresponding "Category Card" was too extensive, around 70-100 pages, and exhausting to develop. CM B agrees with CM A's opinion. The Category Cards are not comprehensive enough in order to be useful and it is hard to fit all information into the card since there is no physical space to develop and explain. Therefore, it is not possible to write detailed plans and actions. It is also a problem that all categories have different needs but are supposed to use the same template.

Today, the Category Cards are "dead documents" and are only used when they are presented to the Procurement Management Team. In between those occasions, the Category Cards are not used at all. Nevertheless, CM B sees a potential for the Category Card if it was developed and became a "living" document with a more detailed activity list connected to goals. For example, if it is written on the Category Card as a goal to save a specific amount of money, it should be a list of activities connected to this goal. CM B thinks that it would be more useful if follow-ups of the activities and goals were made in order to develop the category cards continuously, not only occasionally as it is today.

CM A states that in order to be able to focus more on supplier development a long-term technical strategy for the categories is needed. With technical strategy CM A refers to a strategy where the technical department presents what will be provided in the future for each category. For example, within CM A's category; how will the windows look like in ten years? CM A means that with a long-term technical strategy it would be easier to decide, which suppliers to focus on and how these need to develop in order to deliver according to this long-term strategy. This can then be used in order to decide on supplier segmentation.

The CMs have the possibility to collect feedback from the projects through supplier evaluations. When a project have used a supplier the Project Manager fills in a standardised evaluation template. This is something that the projects are obligated to do and a tool which could be used by the CMs. However, according to CM A, these are not always filled in and used as they are intend to, mainly due to current technical problems.

The Portfolio, which CM B's category Elevators belongs to is Installation. Within this portfolio, it has been decided to take a precarious approach regarding the supplier segmentation. Since the Segmentation Pyramid is rather new, the Installation Portfolio Manager has decided to see how it evolves before moving suppliers up. Therefore, all suppliers within the portfolio are at the approved level, even though the relationships differ.

Elevators is a category where there is still a Nordic framework agreement and the main goal is to get as low prices as possible and standardised products. There are some cases where there is a need for adaption. For example when renovating an old building with an already existing elevator shaft it can be cheaper to use local suppliers, which can deliver a project specific product instead of trying to adapt standardised products.

Within the elevator category there are four suppliers, which CM B thinks has the characteristics of being above the level of approved suppliers. The collaboration with these suppliers is more intense with regular meetings to follow up delivery and development projects. Two of these are, in a long-term perspective, going to be moved up to the key level. It is also worth mentioning that the elevator market, does not have a major selection of suppliers. This is one of the reasons why there has been no focus on segmentation but some suppliers are still treated as if they are at the Preferred or Key level.

According to the CM A and the Sourcing manager it is not common to think long-term and there is a fear of trying new things within the construction industry. It is easier for Construction Sweden to work with incremental innovations together with suppliers but radical innovations are more difficult. Construction Sweden is also afraid of trying new construction technologies since the consequences can be devastating. For example, many houses built the last two decades were constructed with a certain kind of facade solution, which later showed to not be working and now all these facades need to be replaced with new ones.

According to the Sourcing Manager one reason for the lack of technological innovations within the construction industry is that there is not a demand from the market. The end-customer, which utilises the houses and the roads does not demand innovations from Construction Sweden. The Sourcing Manager sees potential in innovations, which are coming from these kind of other external sources as well, not only suppliers. Therefore, the Sourcing Manager thinks it would be beneficial

to get involved in an early stage of a project in order to find innovative solutions together with the customers. As it is now, when a project reaches the procurement department it is in the stage of purchasing for an already decided specification, which does not leave much room for innovations since it is too late for major changes. This is confirmed both by the Sourcing Manager and the Head of Development.

Another reason for the lack of innovations within the construction industry brought up by the Sourcing Manager is that the projects are decentralised leading to the projects choosing suppliers, methods, material etc. according to personal preferences. The rules and regulation that exist in the construction industry are also a hinder since there are no room for failure. Errors like the one with the facades cost a lot of time and money for Construction Sweden to correct. In addition to this, Construction Sweden's Management Team and the Procurement Management Team have not prioritised innovation as the following citation confirms.

> *Within the Management Teams, we have have not put our foot down to promote more innovative initiatives* - Sourcing Manager

4.4 The Supplier Relationships

This section presents the findings, which are relevant for understanding the supplier relationship with Supplier A and Supplier B.

4.4.1 Supplier A

Supplier A belongs to CM A's category Windows and provides Construction Sweden with window solutions. Construction Sweden and Supplier A have a collaboration, which goes back more than 30 years. The windows as a product is not a major cost for a project, but timing is very important. Usually when building multi-storey houses the windows are delivered when the body of one story is assembled. The windows are usually not needed until the end of the process but in this way, it is possible to use the same lifting equipment used to lift on the next story. If the windows arrive late, they need to be carried up the stairs manually, which increases the time consumption and the cost. In projects where the windows need to be assembled right away, a delay can mean that the entire project might be stalled.

According to the Key Account Manager A (KAM A), who manages Supplier A's contact with Construction Sweden, the relationship is a partnership and Supplier A values Construction Sweden as an important customer.

> *There is no Us and Them, we are developing the business together* - KAM A

The latest framework agreement states that Construction Sweden and Supplier A are in a business partnership where both parties have a responsibility to develop the business. This includes continuous improvements and creation of new business and

products, all in order to create a win-win situation for both parties. Construction Sweden is the only customer which Supplier A has this kind of collaboration with. They develop customer-adapted solutions for other customers as well, but regarding development and deeper collaboration Construction Sweden is the only one. This is both due to the size of the company since Construction Sweden is Supplier A's largest customer but also because of Construction Sweden's open attitude towards collaboration with supplier A. According to KAM A, Construction Sweden is the company within the industry, at least in Sweden, which is most interested in new technologies and development.

As it is today, the innovations and new products within the Windows area from Supplier A are based on a problem or a requirement from Construction Sweden or developed internally by Supplier A's R&D department. In general, this means that Supplier A develops the products and owns the technology but a lot of input comes from Construction Sweden. Supplier A uses Construction Sweden as a reference to see if new products are relevant for the market. Construction Sweden has requirements, for example lower costs and high quality products, which KAM A sees as a great incitement for innovation in order to deliver cheaper products without lowering the quality standards. Another area, which triggers innovative behaviour at Supplier A is digitalisation, an area where great efforts are made, both strategical with support from management and operational with actual products. Examples of digitalisation of windows are an automatically open and close function or weather information directly in the window. A goal is that 20% of the windows that Supplier A are selling should be digital in 2020.

There are many connection points between Supplier A and Construction Sweden. Officially, CM A and KAM A have monthly follow-up meetings, which they are obligated to have. At these meetings, they discuss complaints, current projects and important KPIs such as delivery precision, quality etc. As mentioned earlier, timing is very critical and is therefore a common subject for the conversations. Both CM A and KAM A confirm that they are in contact with each other almost every week.

There are also connections between Construction Sweden and Supplier A within the projects where the Foreman and Project Managers at Construction Sweden are in contact with the Technical Sales Personal at Supplier A. When a project needs support regarding Supplier A's windows, the Project Manager can consult the Technical Sales Personal at Supplier A, both to get help, get a price suggestion or make a contract for the specific project. If the purchase exceeds a certain amount or is complex, a professional purchaser from Construction Sweden is involved. The Technical Sales Representative at Supplier A, which the project is in contact with from the beginning, is usually involved during the entire project. When it is time for the delivery of the windows, the contact is between the Foreman at Construction Sweden and the Technical Sales Representative at Supplier A. CM A and KAM A only gets involved when there are problems that are escalated from the projects.

There are also other links between Construction Sweden and Supplier A but the two mentioned above are those that are directly connected to the procurement process and they constitute the official connection. Examples of special projects where other connections are needed are within logistics or R&D, which might require a contact between the R&D Department at Supplier A and the Technical Department at Construction Sweden or between the logistics departments. It could be more than one supplier involved in a project. In a current project where Supplier A is developing a digital window there is a third party involved, an IT supplier, which is referred to as Supplier Aa. Both Supplier A and Supplier Aa are therefore in contact with a special Digitalisation Manager at Construction Sweden connected to this specific project. In figure 4.8 there is an illustration of the described connections. This is just an example to show the complexity of the contacts and is only illustrating the external connections.

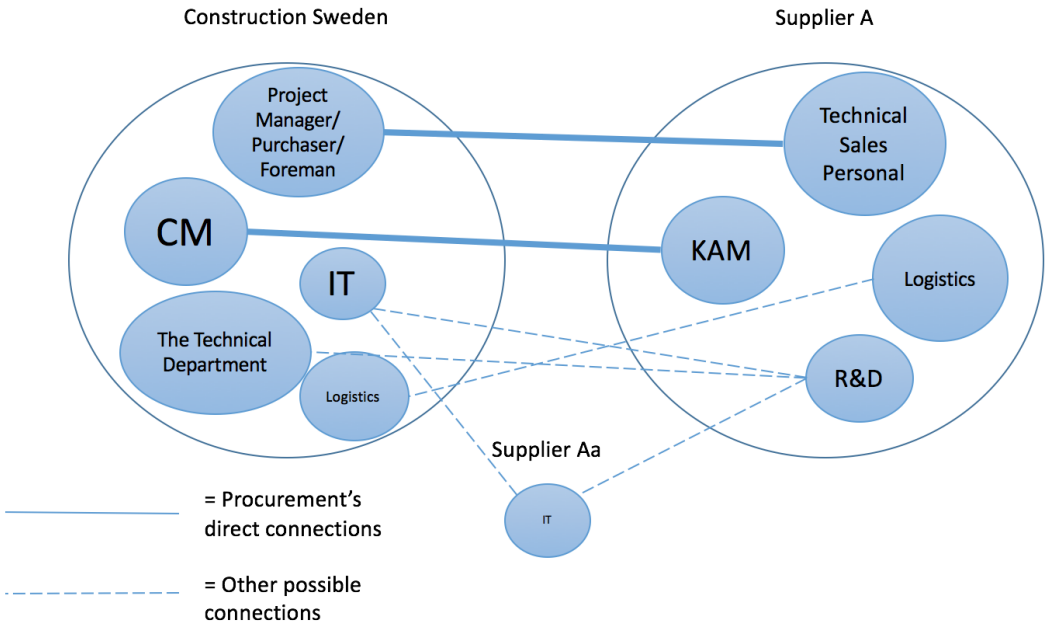

Figure 4.8: Illustration of the connections between Construction Sweden, Supplier A and Supplier Aa.

Supplier A is willing to engage in developing products together with Construction Sweden in the future. Both in major projects like the Green Window, which is described in the next section but also to develop processes and products in accordance to Construction Sweden's requirements within the Windows area.

> *Remember, we are the ones that actually know Windows the best*
> - KAM A

KAM A is of the opinion that Supplier A has a lot to contribute with regarding developing new window products together with Construction Sweden.

Green Window

An example of a collaborative innovation project with Supplier A was a project called Green Window. The initiative Green Window was a trial in 2013 initiated by Construction Sweden to become more proactive in the development activities together with suppliers. The project aimed to increase profitability in Construction Sweden's projects by capitalising on improved energy performance for a product and by reducing assembly time. Furthermore, it aimed to achieve sustainability certification goals in the projects. Supplier A was market leading and had a long history of cooperation and framework agreements with Construction Sweden. Late 2011, Construction Sweden initiated a contact with Supplier A and Business Development at Construction Sweden explained a vision to Supplier A. The vision was to improve the energy efficiency and economy of buildings both during the building time and when in use. The year after there was a first meeting to concretise the vision and exchange thoughts about the future product.

As can be seen in figure 4.9, the project involved stakeholders from Construction Sweden and Supplier A as well as other external parties. The various parties contributed with specific expertise, for example the technical department of Construction Sweden contributed with expertise in technical development and quality assurance.

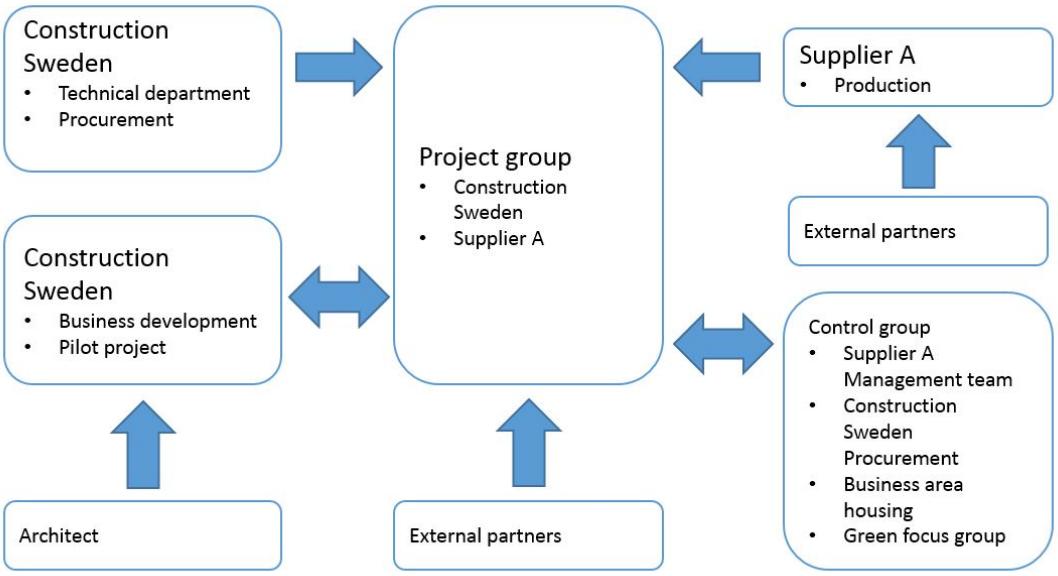

Figure 4.9: The project organisation for Green Window.

The involvement of all these parties resulted in the development of the product Green Window that, from several perspectives, was well functioning. The project was also successful in terms of collaboration and support from management, both at Construction Sweden and Supplier A. There was a clearly defined scope and goals, dedicated resources in forms of the project group and the Project Manager and a timetable with milestones. However, the product was never used in a large scale.

The main problem was that the Green Window required very small tolerances of the wall elements to be assembled correctly and it is not very common to use wall elements that meet these requirements.

Something that Construction Sweden identified as an important learning from the Green Window project was that no agreement or contract was signed before the project start. This meant that the risks, costs, intellectual property, revenues etc. were not formally distributed between the two parties. Green Window did never really reach the market and in this case it was Supplier A that carried the major parts of the costs. However, if the project would have succeeded, Construction Sweden could have missed an opportunity for revenues. As a lesson, the procurement department at Construction Sweden developed a checklist for collaboration agreements to be used in future development projects with suppliers. The agreement must be in writing, approved and signed in an initial phase of a project. The checklist included the following points:

- Objectives and delivery
- Division of responsibilities
- Project budget
- Ownership and rights to the result/product
- Cost allocation between stakeholders
- Dividend of profits between stakeholders
- Access rights
- Right to further develop

4.4.2 Supplier B

Supplier B belongs to CM B's category Elevators and provides Construction Sweden with elevators, both the product and assembly. Construction Sweden has been collaborating with Supplier B in Sweden for over 30 years. In addition, Supplier B has a Nordic and global collaboration with Construction Group. There are no manufacturing units in Sweden, however, there is a factory and an R&D department in Finland. Supplier B has many customers within the construction industry and Construction Group is one of the three largest. However, it is hard for both Construction Sweden and Supplier B to combine the collaboration in the different countries since the preferences and standards of elevators vary. For example, in India there is a need for elevators, that are not driven by electrical power due to unstable power supply. Therefore, they have developed a battery solution, which are very useful in that market but not as interesting in the European market.

Construction Sweden has had Nordic framework agreements for elevators with Supplier B since 2008. These are updated every other or every third year, meaning that Supplier B has to compete with other suppliers for the contracts. The Key Account Manager B (KAM B) describes the relationship with Construction Sweden as a good and stable relationship that has been built up over the years. KAM B and CM B are supposed to have reconciliations quarterly, but are usually only in

contact with each other when a problem occurs once or twice a year. According to KAM B the business relationship is very smooth, which is the reason why the reconciliation has been absent but KAM B wishes for a more regular contact, from both Supplier B and Construction Sweden's side in order to develop the business further. CM B, which also is responsible for the Nordic coordination of Category B, describes Supplier B as one of the more stable suppliers but not the one with the cheapest price. However, as the competitors with lower prices have begun to improve in quality and performance, Supplier B has been forced to lower the prices as well.

KAM B also has the role as Business Development Director at Supplier B and is involved in the launch of a program called SpeedUp. The aim with the program is to "win together" with customers and includes setting up structures to work closer with the customers and think from an outside-in perspective.

> *SpeedUp is a global program that will accelerate the work towards winning with the customers* - KAM B and Business Development Director at Supplier B

The project will be completed in 2020 and KAM B thinks that this program will give the opportunity for Supplier B to spend more time and engagement in development projects together with Construction Sweden.

Apart from the contact between CM B and KAM B there are also other connections between Construction Sweden and Supplier B, which is illustrated in figure 4.10 below.

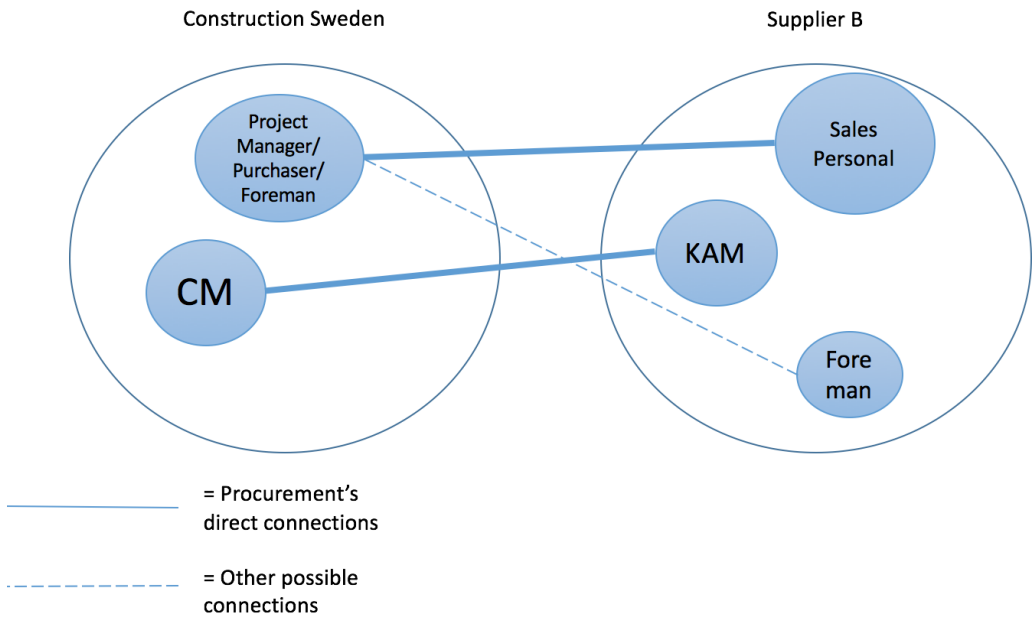

Figure 4.10: Illustration of the connections between Construction Sweden.

Construction Sweden has developed a template that based on the characteristics of the project and the framework agreement, calculates a price that can be used to set a budget. Then sales personnel at Supplier B help to refine the price proposal before a project agreement is signed. Prior to delivery the contact is between the foreman at Construction Sweden and the foreman at Supplier B. After Supplier B has delivered it to the project, Supplier B is evaluated by the project. CM B presents the results of the project evaluations to KAM B.

KAM B states the importance of continuously develop the collaboration within a partnership and to review all parts of the mutual processes in order to avoid errors. Since errors always come at a cost and the later these are discovered, the higher cost. Supplier B therefore works together with Construction Sweden to prevent errors from occurring. An example of this is a development project called Readiness that Supplier B and Construction Sweden did together. Readiness was about having the site completely ready for the assembly of the elevator before delivery. Through the project, five control points were identified as critical before delivery in order to avoid errors and time waste. These control points are now integrated into Construction Sweden's process. If a project at Construction Sweden meets all the control points there is a monetary reward designated for this specific project. If Construction Sweden meets all the control points and the supplier still does not deliver in accordance with the specification, it implies a penalty for Supplier B. If Construction Sweden does not meet the five checkpoints, they are not entitled to compensation in case of delays.

Supplier B is ranked as one of the top 50 of the Forbes' list of the World's Most Innovative Companies and are in forefront of development in the elevator business. The company is constantly working on finding new technical and digital solutions for the products. However, according to KAM B it is not common that Supplier B develop together with customers even though Supplier B is open to it. Today, it is KAM B who promotes to CM B that Supplier B has developed a new solution of some sort and then it is up to CM B to sell it to the projects.

There is some difference in opinion between CM B and KAM B regarding the European construction market and its potential for innovation for elevators. CM B believes that Construction Sweden is not a driver for innovation within the elevator area due to the nature of what is built in Sweden compared to what is built in for example Asia. The houses here are much lower and the construction industry asks for standardised solutions compared to the Asian market where there is a more high-end market with more skyscrapers. However, according to KAM B, Supplier B has quite the freedom to sell innovations at least in northern Europe. Supplier B's global R&D is located in Finland and therefore the Swedish and other surrounding market become pilot countries for innovations. Nevertheless, KAM B agrees with CM B that the demand for high-end products is not as big in Europe as it is in Asia.

4.5 The R&D Department at Construction Sweden

The R&D Department at Construction Sweden consists of one person, the R&D Manager. However, there is an R&D Department on a global level but the R&D Department in Sweden works separate from this. The Swedish R&D Department belongs to the Technical Department but is working independently in Sweden and uses the Technical Department for competence such as project managers when needed in R&D projects.

The R&D department works strategically and long term with collaborations with Universities but also with more operational and short-term projects. The R&D manager makes sure that Construction Sweden is producing the right things and in the right way within the portfolios.

> *What I focus on is really to manage the R&D, the little that we have* - R&D Manager

The R&D Manager performs market research and external analysis in order to understand trends and driving forces from a holistic view, for example sustainability and digitalisation. Based on this, an internal analysis is performed to see where there is a need of new technology or additional competence. Construction Sweden is a service business, which provides assembly service of construction. Therefore, Construction Sweden does not in general own the products and the production, and therefore, according to the R&D Manager, competence is an important key resource. This also means that Construction Sweden often makes agreements regarding price, volume, time frame, material and placement but exactly how the work is carried out is not something Construction Sweden in general controls. This is an active choice in order to decrease the risk. If Construction Sweden decides exactly how the suppliers should work they are responsible if something goes wrong. This is a key reason why Construction Sweden cannot provide a long-term technical strategy. According to the R&D Manager Construction Sweden needs to have a clear vision of how the future construction site will look like and let the suppliers meet these requirements before they can provide a long-term technical strategy.

Ideas for an R&D project can come from different internal and external sources, such as suppliers, projects or procurement. In general, the initiatives are depending on personal contacts and individual commitment. In order for it to become an actual R&D project the financing and support within the organisation are key questions. In general, the Technical Department, the R&D Department and the Procurement Department are not involved in each other's strategical work and do not know each other's processes. For example, the R&D Manager was not aware of the segmentation of suppliers. The R&D Department involves the Procurement Department in an already existing project if the competence is needed or if suppliers are involved, since the Procurement Department handles the contact with suppliers. How much and if the Procurement Department is involved is decided from time to time.

According to the R&D Manager, innovation with suppliers is a complex task. In some cases, Construction Sweden is only a small customer, for example compared to the hardware stores and building suppliers like Bauhaus or Beijer, which are purchasing huge volumes. On the other hand, Construction Sweden has knowledge and competence, which the hardware stores and building suppliers are lacking.

Issues mentioned in an earlier section regarding collaborative innovations with suppliers are distribution and evaluation of risk and performance. According the the R&D Manager, an innovation is in an early stage usually not as good as its forerunner, which is extra problematic since the construction industry is highly regulated. An example, which illustrates this clearly is the facade problem brought up earlier.

The R&D Manager does not think that the problem is that Construction Sweden is not working with innovations. The projects are improving and solving problems continuously together with local suppliers. However, the improvements and solutions are not systemised and the knowledge does not get transferred back into Construction Sweden. The projects are not in general documenting their requirement specifications, which makes it hard for the Procurement Department to make use of knowledge between projects. Hence, it is hard to evaluate how well a product works if there is nothing documented to compare with.

> *If we do not have a zero, how do we know when something is improved?*
> - R&D Manager

The R&D Manager thinks that having a requirement specification as a zero is a possible tool for the Procurement Department to be able to measure performance and get a better structure. The R&D Manager sees potential in the Extended Category Teams as a forum for making these kinds of requirement specifications but once again, the R&D Manager sees financing as a key question here. The Procurement Department's budget needs to allow expenses for requiring competence from the Technical Department and from the Production.

The R&D Manager mentions the question about proper agreements and contracts when developing collaborative innovations together with suppliers. Therefore, the R&D Manager thinks that it is best if the R&D Department has the responsibility for innovations at Construction Sweden. The R&D Department should be involved in an early stage in developing projects in order to secure the right prerequisite for a successful collaboration with a desired outcome.

Another hinder for collaborative innovation, which the R&D Manager addresses is projects using other suppliers than the ones that the Procurement Department has framework agreements with. It is important to follow up and make sure that the framework agreements are preferred and used in the projects.

Often when developing new products with suppliers, they want a guaranteed volume which Construction Sweden needs to be able to promise. If the projects do not care about the framework agreements this kind of promise cannot be made.

4.6 The Development Council

The Development Council is a team, which consists of a cross-functional council with managers from different areas within Construction Sweden. It is an upper level management team and the aim is to support, define, coordinate and prioritise change initiatives within Construction Sweden. The Development Council is also responsible to make follow-ups on projects and goals. The Development Council can be contacted when having an idea for a project and where some other criteria is met as well. For example, the project needs to involve different departments and have a large impact within production. It is important to be able to present why the project is needed and the possible improvements when starting a project. If a project is approved by the Development Council there is a clear process of how these are performed with a preparatory phase where the project plan is made, an implementation phase where the project is carried out and a decommission phase when the project is finished and the results can be summarised. Example of projects are change of systems and platforms, digitalisation of internal education, a competition for green solutions among suppliers etc.

4.7 Earlier Collaborations with Suppliers

Over the years, Construction Sweden has been part of collaborative innovation projects. The following section describes two recent projects.

4.7.1 Supplier Team

Supplier Team was an initiative by Construction Sweden in 2013 to improve supplier performance through collaboration. Construction Sweden had spent eight years on professionalising procurement and identified a possibility to develop and work with supplier performance. The Supplier Team project took off with a conference where a large number of suppliers with framework agreements were invited. At this meeting, Construction Sweden presented its proposal and a consultant, specialised in lean management, gave a lecture on how to work with problem solving. Thereafter, eight suppliers out of the ones that showed interest to the project were chosen. Construction Sweden then formed two teams consisting of suppliers of windows, plasterboards, cell plastic, bathroom furnishings, etc. An important factor in the composition of the teams was that the suppliers were not supposed to be competitors. Figure 4.11 below illustrates the Supplier Team formation process.

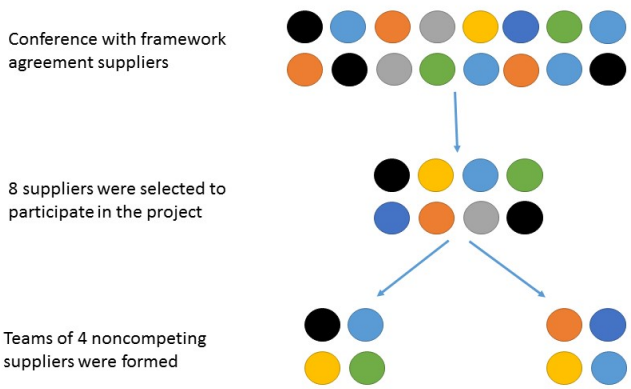

Figure 4.11: The Supplier Team formation process.

The groups of suppliers had joint meetings together with representatives from Construction Sweden at the production site of each supplier. Each meeting focused on finding, breaking down, analysing and coming up with a solution to a problem at the host supplier that in some way affected the relationship and the business with Construction Sweden. The project showed that suppliers in the industry contributed a lot to identifying problems and finding improvements for each other. Below are two out of eight examples of outcomes from the Supplier Team project and these are included in order to show that the Supplier Team was a successful forum for external collaboration.

Example of problem identification and problem solving at a bathroom interior supplier:

The Bathroom Interior Supplier had problems with customer complaints regarding its customised shower enclosures. The Bathroom Interior Supplier presented the problem and together with the other members of the Supplier Team direct causes of the problem were identified. The problem identification process took place at the Bathroom Interior's site. It was found that the Bathroom Interior Supplier had an insufficient structure in its production facility, inadequate documentation and that there was no simple tool for following up complaints. Based on the problem identification, the Bathroom Interior Supplier presented a plan of action and made improvement, which resulted in a decrease from 2.1% complaints in 2012 to 1.7% in 2013 with a target of reaching less than 1% the following year. The Bathroom Interior Supplier's key takeaway from the project was the problem solving methodology that they could make use of both internally and together with their own suppliers. For Construction Sweden the result was a more stable and better bathroom interior supplier than before.

Example of problem identification and problem solving at a plasterboard supplier:

The Plasterboard Supplier had a problem with tolerances in the production, which resulted in complications when assembling the plasterboards at the construction sites. The Plasterboard Supplier presented the problem and identified the direct reasons together with the other suppliers in the group. During the problem identification, it was found that the Plasterboard Supplier had too much variation in the manufacturing process and lack of knowledge regarding the assembly. Therefore, the Plasterboard Supplier introduced a plan of action that included new production limits and development of a standard for assembly.

Supplier Team Dissolution

The Supplier Team project ended with a conference where the CEO of Construction Sweden was present. At this conference, all suppliers presented their individual results. According to the Project Manager for Supplier Development at the time, this was a successful initiative. It resulted in improvements for both Construction Sweden and the involved suppliers as well as closer relationships with the suppliers.

The group from Construction Sweden that ran the project was interested in going for another round with Supplier Team. At the time, the Procurement Management Team was in the middle of formulating a strategy regarding, which suppliers to invest in. It was decided to wait until the formulating of this strategy was further ahead in order to ensure that time and money were invested in the right suppliers. Now there is a more clear strategy in place, but no project like Suppliers Team has been initiated since then. The former project manager believes that a similar forum as Supplier Team could work for collaborative innovations with suppliers. However, according to the former project manager, in order to develop this concept, it is important to involve the Technical Department at Construction Sweden as well.

4.7.2 Innovative Door Handle for Hospitals

Construction Sweden is involved in a large building project that has created a great commitment within the organisation and has given the opportunity to challenge current framework agreements with the large volumes. The customer demanded door handles with the possibility to open the door with the elbows, for hygiene reasons, but it should still make sure the door was shut accordingly to fire security regulations. Construction Sweden asked for tenders in an early stage of the project. This made it possible to both review current solutions but also for the suppliers to develop new products that could meet the requirements. Since the demands were so high due the requirements of fire safety, noise reduction and hygiene, the existing products could not meet these requirements. Therefore, Construction Sweden reached out to one of its suppliers, which is a retailer that distributes handles among other things. The retailer facilitated the contact with a producer that was willing to develop a solution that could meet the requirements.

The supplier designed a handle internally and took all the costs for the development whilst Construction Sweden contributed with knowledge and the opportunity to test the handle on a large scale. Furthermore, Construction Sweden contributed with its strong brand and a prestigious reference project, which may mean a lot if the supplier wishes to sell the handles to other customers. However, Construction Sweden did not think about making a contractual agreement, which means that only the supplier and not Construction Sweden can benefit from future sales of the product.

5
Analysis

This chapter presents an analysis of the empirical findings and aims to provide insight into the two research issues. The chapter is structured in the same order as the research issues, hence, it begins with an analysis of Construction Sweden's view on innovation and the current processes. This is followed by a section where the developed model presented in the analytical framework is applied on the empirical data. All figures presented within this chapter can bee seen in a higher resolution in Appendix 3.

5.1 Innovation within Construction Sweden and the Procurement Organisation

Construction Sweden has initiatives and activities, which support innovation, but these are not very coordinated, especially between the different departments within the company. The focus of this study has been the Procurement Organisation and from that perspective, there are currently not any continuous structures and processes that support innovations. Instead, the focus is more on supplier development where price reductions and problem solving are the driving forces rather than finding new solutions and creating innovations. According to Ozorhon (2013) companies in the construction industry identify improvements in terms of cost, quality and time as main drivers for innovation. The result of this is that it is more common with incremental technical improvements. These are stemming from existing competence, which is common within the construction industry (Herzog and Leker, 2010). For example the safety fence for elevators that is mentioned in the empirical findings. There is however, a lack of radical innovations and the employees at Construction Sweden are in general restrictive of using the word innovation at all. They rather call it improvements or development of technology. As Sawhney *et al.* (2006), Miles (2008), and Demirkesen *et al.* (2016) state, it is important for a company's future business to work with innovations to stay competitive and with Construction Sweden's goals of being a market leader and climate neutral in 2050, improvement and development of technology is not enough, there is a need for more radical innovations.

The lack of coordination of innovative activities and initiatives driving innovations is not just a company problem. It is confirmed by Blayse and Manley (2004), Demirkesen *et al.* (2016), Yusof *et al.* (2014), Dubois and Gadde (2002a), Eriksson *et al.* (2017), and Miller *et al.* (2002) that this is an industry problem. It is a result of the environment and the prerequisites within the construction industry, such as

low profit margins, project based organisations and conservative behaviour. However, this is no reason for Construction Sweden not to be innovative. Therefore, processes where there is currently no focus on innovation but where there is a potential for working continuously with collaborative innovations with suppliers have been identified.

5.1.1 The Current Processes and the Potential for Innovation

The general view of innovation mentioned earlier within the construction industry is mirrored in the processes of the Procurement Organisation. There is a great opportunity to work with collaborative innovations with suppliers, which is beneficial according to Chesbrough (2003) in order to find new technology and solutions. However, this potential is not utilised continuously within the procurement processes. The business plan of the procurement organisation is broken down into an action plan that covers the most important measures and development projects. However, it does not really emphasise innovation or support innovative behaviour. As mentioned by McQuiston (2001), Gambatese and Hallowell (2011), and Brem (2014) upper management support is an important factor in order to succeed with innovation. By focusing on measures and development rather than innovation sends a message to the employees within Construction Sweden that innovation is not a priority. The current procurement processes lack innovation as an area of business which affect the results and the decisions made by the employees. Below is a section where the processes within the category work are problemised and improvements are identified.

The Category Planning

First of all, innovation is not an official part of the category planning. However, it is in-officially a responsibility of the CMs to work with collaborative innovations even though it is not stated in the job description. This is confirmed by both the CM's, The Sourcing Manager and The Head of Development. Not having innovation as an official part of the category planning, makes collaborative innovations highly dependent on the individuals, which possess the role as CM.

Another issue with the category planning is that it is performed on a yearly basis and the saving plan for each category expands over the same period. This short time period, makes it problematic to consider collaborative innovations and the benefits from it within the yearly saving plan. For example, when developing a new product with a supplier, it is going to add extra costs during the development phase, but when the product is ready, the savings and the improvements can be realised.

Therefore, as the saving plan focuses on one year, the potential savings from an innovation in year Y+2 are not taken into account. This is illustrated in figure 5.1 where the red parts in the figure represent the missed potential from collaborative innovations.

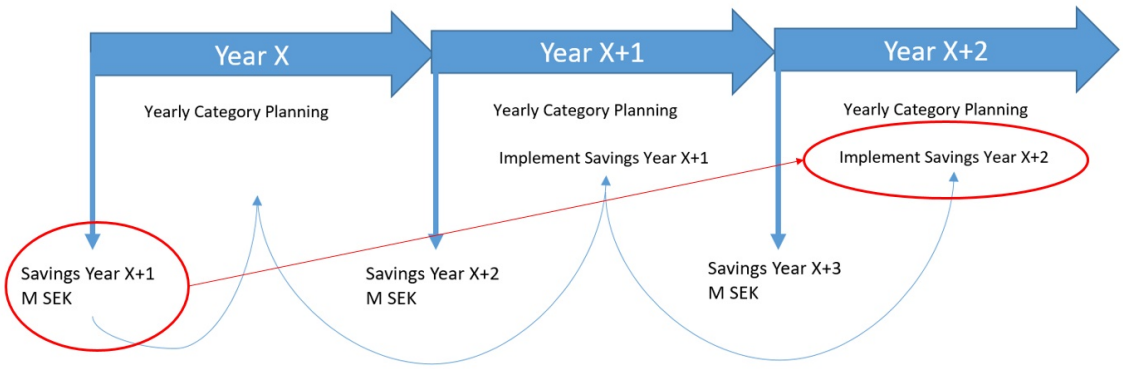

Figure 5.1: An illustration of the missed potential savings within the annual process of the category planning and the category work in Sweden.

The R&D Manager points out the importance of evaluating the risk of failing with a new product as a major hinder for innovation. However, as mentioned earlier, innovation is necessary in order for Construction Sweden to stay competitive and to reach the climate goals. The current planning process hinders the necessary discussion of innovation with suppliers since the focus is on how to get a lower price instead of how to improve and change the product.

Category Card

The Category Card is a part of the planning process and consists of the category strategy broken down into different areas such as market analysis, supplier segmentation, opportunities, goals and activities to achieve these goals. However, as both CMs state, the category cards are not very useful. The cards are "dead documents", which are just filled in but not followed-up. The cards are not worked with continuously and there is not enough space for the strategies and activities.

CM A also mentioned that a technical strategy would facilitate the category planning. If there were future implications of where the category is heading, the selection of suppliers would be easier to preform by the CMs. For example, if the technical strategy stated that digital windows are the future, the CM could evaluate suppliers based on this requirement. However, as the R&D Manager points out, in order to have a technical strategy you need to know what you want to offer in the future. As Construction Sweden in many cases do not own the products and the processes this can be a bit complex but there is a potential in collaborating with suppliers as well in order to develop a technical strategy.

The Extended Category Team has, as mentioned in the empirical data, a role when making the category planning and the category cards. These teams are put together by the CMs and are supposed to be cross-functional. However, since it is up to the individual CM to make the team, it is a risk that the distribution of competences within the Extended Category Team is not as cross-functional as it could be. Moreover, as Parker (2003) mentions, one success factor is to work towards a clearly defined common goal and to have a plan on how to achieve it. Right now the way of using the Extended Category Team seems to vary between categories and it is possible that the potential of the cross-functionality is getting lost.

Supplier Segmentation

As mentioned, the Supplier Segmentation is performed in order to clarify the role and importance of the suppliers. Supplier Segmentation helps differentiating the work with suppliers in a structured way and it has been identified as a potential tool to integrate innovation strategies into. Today, the relationships with suppliers, which are segmented as Key or Preferred are strategic and long term and it is specified that continuous follow-ups and development meetings are part of the relationships. According to Xue *et al.* (2018) and Roy *et al.* (2004) formation of collaborative relationships with suppliers can be viewed as a potential generator of innovation. However, it is important to ensure that efforts are spent on suppliers with the potential to be innovative and develop the business.

As it is today, not all portfolios and categories use the Supplier Segmentation to its full extent. For example, the Portfolio Manager of Installation has decided to have a precarious approach regarding supplier segmentation to see how it evolves before moving suppliers to the higher levels of the Segmentation Pyramid. According to Chan *et al.* (2004), relationships in the construction industry are characterised by limited trust and lack of cooperation, which might explain the precarious approach towards moving suppliers up the pyramid.

Furthermore, the Supplier Segmentation is not always used as intended by the projects. Personal preferences, local markets etc. affect the choice of suppliers in the projects. Sometimes Prequalified suppliers are hired even if there are Preferred or Key suppliers available for the category. This is something that the R&D Manager point out as a problem. It is important to have a commitment within the organisation to avoid creating competitive relations and instead create collaborative relationships with suppliers (Rosell and Lakemond, 2012). The Preferred and Key suppliers probably expect a certain volume from Construction Sweden and this is also important when creating collaborative innovations with suppliers.

5.1.2 The Toll Gate Process

The Toll Gate Process is the sourcing process where the sourcing strategy is set. When deciding on a sourcing strategy there are several things which need to be considered and discussed, such as the procurement strategies and the current state. The suppliers are also evaluated, for example if old suppliers should be reconsidered, if there is a need of adjustments in agreements or if there is a need of an entirely new supplier. The same problem, which seems to be general for Construction Sweden and the Category Planning Process applies here as well. The evaluation is from a supplier development perspective, which involves measurements as delivery precision and the relationship potential but innovation is not a part that is evaluated. However, there is a potential in evaluating suppliers and categories in order to see where there is a possibility for partnerships and collaborative innovations.

5.1.3 R&D Department

The R&D Department consists of only one person that works with R&D questions full-time, and is placed under the Technical Department. As a part of the organisational R&D work, an analysis is made in order to understand future needs. This has the potential, if distributed to the Procurement Department, to constitute the base of a technical strategy, which CM A wishes for. At the same time, it is important that the Technical Department, including the R&D Department, and the Procurement Department understand each others processes and needs. As it is now, the CMs did not even mentioned the R&D Department as a way to achieve collaborative innovations even though there has been R&D projects involving suppliers. And at the same time, the R&D Manager sees a problem with collaborative innovations on a continuous basis due to the amount of suppliers and the risk of investing in the wrong relationship. However, the R&D Manager was not aware of the procurement processes and the supplier segmentation, which is an example of a tool that can be utilised in order to know which suppliers to invest in. As it is today, there is a risk for duplication of work when not communicating between departments and resources are wasted if there are projects working on the same problem in different places within Construction Sweden without knowing about each other.

5.1.4 The Development Council

The Development Council has been identified as a potential platform for collaborative innovations and some of the current activities from the Development Council already support this. For example the competition for green solutions among suppliers. However, the projects and the results from the Development Council have over the years mostly been focusing on coordination and smaller improvement with current solutions. The structure for projects from the development council seems to be more suitable for this kind of use rather than developing innovations. However, the requirement that it has to involve different departments, gives better prerequisites for among other things creativity, complex problem solving (Parker, 2003) which can support collaborative innovations.

It is interesting that when talking to the CMs the Development Council was not mentioned at all. The aim of the Development Council seems suitable for collaborative innovation projects but it is currently not utilised by the procurement department for this purpose.

5.2 A Network Analysis with Procurement Department as a Focal Point

The first and second part of this section analyse the activities and activity links, resources and resource ties and actors and actor bonds, first from an internal perspective and then from an external perspective. The third and last part analyse how the layers and dimensions are combined, how this affect collaborative innovation and how they could be combined in order to facilitate collaborative innovations. The additional factors, which is presented in the developed model are discussed when relevant.

5.2.1 Top Management Support

Top management support has been highlighted as extra important from a holistic view in the developed analytical model. This is because if top management does not support collaborative innovations with suppliers actively, the employees will act according to this. As mentioned earlier, in order to reach Construction Sweden's goal of being market leaders and the goal of being climate neutral in 2050, innovation is vital. The importance of innovation has been stated both by researchers such as Chesbrough (2003), Gambatese and Hallowell (2011), and Miles (2008) but also in Construction Sweden's annual report from 2016. This indicates that Construction Sweden's management team seems to have come to the insight of what Brem (2014) referees to as the stage of Importance and has understood that innovation is important. However, to write that innovation is important in an annual report is not enough.

In order to achieve an innovation friendly environment and within the Procurement Department, there is a need for management support. In the end, lack of an active top management support for collaborative innovations with suppliers is a major hinder for having successful combinations of the ties and links of resources and activities, which can facilitate collaborative innovations with suppliers and the actors will not utilise their actor bonds to their full extent within this area. Top management support of collaborative innovations and strategic alliances at the supplier is of course also important as well. There needs to be a mutual willingness to invest in the relationship in order to reach collaborative innovations, which can be beneficial in the long run for both parties.

5.2.2 The ARA-Model Applied Internally

An ARA-analysis is conducted in order to understand the connections and the possibility to reach collaborative innovations together with suppliers. The first step is to see what activities and activity links, resources and resource ties and actors and actor bonds that exist, which can affect the relationship with suppliers and the possibility for collaborative innovations and to map how information is spread internally. As mentioned by Ford, Bethon, *et al.* (2002) it is important to take the chosen focal point into account and understand that the relationships, which are analysed are affected by other relationships. Therefore, in this case, indirect relations can still affect the Procurement Department. The Production and the Technical Department have relationships of their own, which will affect how they act towards the Procurement Department. However, since the Procurement Department is the focal point of this analysis, it will mainly consider the direct relationships of the Procurement Department and only briefly discuss and analyse the indirect relationships when relevant.

The Internal Actor Dimension

According to Gadde and Håkansson (1993) actors can be seen on different levels, as individuals, groups or companies. From a group level perspective, the Procurement Department, the Projects and the Technical Department can be seen as actors, as well as the individuals who work at these departments. The interaction between these actors creates actor bonds. An illustration of the actors and actor bonds identified in this study can be seen in figure 5.2.

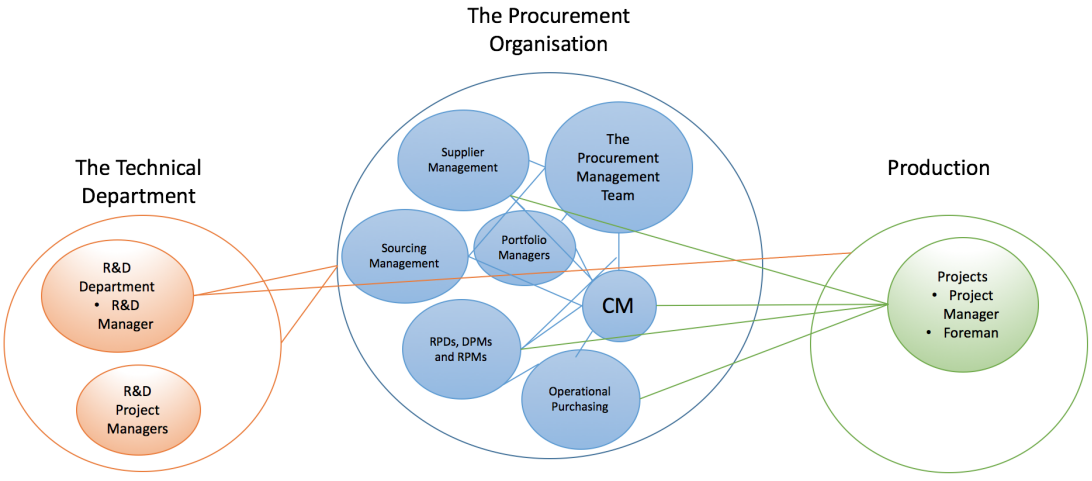

Figure 5.2: An illustration of the internal actors and actor bonds.

Some of the actor bonds have more substance than others. Example of actor bonds internally within the Procurement Department are between the CMs and the members of the Procurement Management Team, the Portfolio Managers and the CMs, the members of the Sourcing Board and the CMs. Outside the Procurement Department borders are actors such as the R&D Manager, Project Managers for R&D projects, Project Managers for Production projects and Foremen at the Production Projects. When there is a need for the R&D Department to contact suppliers, when a project has larger problems with suppliers or when there is a general need for procurement competence, these actors interact and actor bods are created. The Extended Category Team is also an example where actors from different departments meets and creates actor bonds between different departments and individuals. If a member of an Extended Category Team quits or an R&D project is finished, the actor bonds can be still there and can be used in the future since the actors are aware of each other and has built up some kind of relationship.

Within Construction Sweden, important decisions relies on individual employees. As mentioned for example by the R&D Manager individual contacts and commitments are important for an R&D project to take place. The production projects are decentralised, which gives the project managers a possibility to choose suppliers and method by themselves. When relying on individuals to take this kind of important decisions, these actors become vital to Construction Sweden and the actors and actor bonds they have within their network will influence these decisions.

The Internal Resource Dimension

The different departments are separated from each other and have their own resources and budgets in order to perform the assigned tasks and these are illustrated in 5.3.

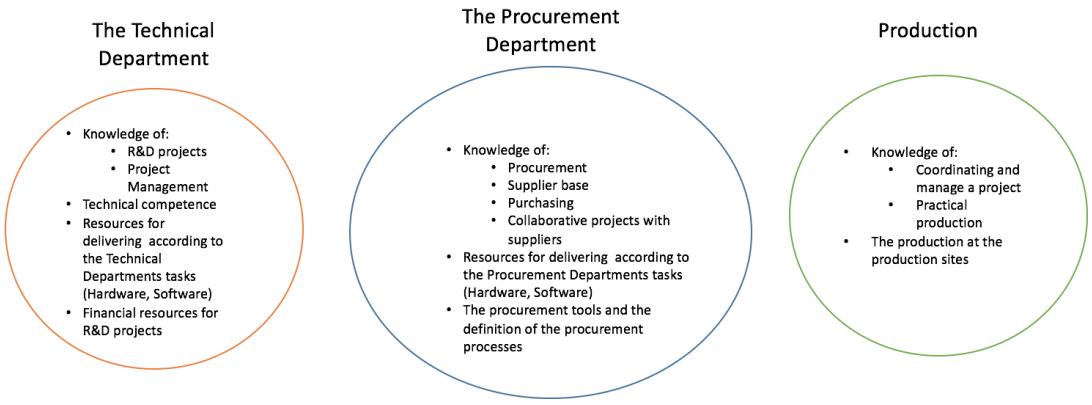

Figure 5.3: The internal resources, which are relevant for the context of collaborative innovations with the Procurement Department as a focal point.

Knowledge and competence are as the R&D Manager points out, one of Construction Sweden's most important resources. Each department has its competence within their respective area. The Technical Department has technical knowledge, R&D resources and project management competence. The Procurement Department has the knowledge of procurement, supplier base and purchasing. The project has the practical knowledge of the production, coordination skills and the project management. These resources are not combined through resource ties as much as it could be in order to be used to a full extent since the departments work separately and do not interact continuously. The different departments also have the resources needed for delivering according to their specific tasks, for example at the construction sites the project owns the production, the procurement department and the technical department have hardware and software, which can handle procurement, technical drawings, databases etc.

The focal point for this analysis is the Procurement Department and the actual description of the processes can be seen as resources. The tools, such as the Category Cards, and the Supplier Segmentation and the defined processes, such as the definition of the Toll Gate Process and the definition of the annual Category Planning Process, are resources which can be utilised. Within the Procurement Department, it seems to be different views on how to use these resources. For example, the CMs think that the Category Card is poorly designed and the Installation portfolio does not use the Supplier Segmentation Pyramid to its full extent. Furthermore, the Supplier Management Department is using to Category Cards as a basis for how to work with supplier development. Hence, the resources are shared internally but the view of the importance and the usage of these resources differ.

However, between the departments there is less resource ties and it seems that for example knowledge and competence are only shared on a temporary basis. In order to be able to create collaborative innovations with suppliers, the Procurement Department, which has the contact with suppliers, needs to have more technical knowledge and project management skills. The Extended Category Team is the only forum where there are cross-functional resource ties and the resource of knowledge is actually shared on a continuous basis.

The Internal Activity Dimension

The activity dimension is the last dimension and the actual activities performed at Construction Sweden are illustrated in figure 5.4. The Procurement Department, the Technical Department and the Production Projects perform activities connected to the tasks of the respective departments. The Procurement Department activities are more elaborated on than the activities of other departments since it is the focal point of the analysis. The resources mentioned in the previous section such as the tools and defined processes are used and preformed as activities. In addition, the Extended Category Team is an activity owned by the Procurement Department but this activity is shared with the other departments trough activity links. The Technical Department owns RD project as an activity and then the activity is shared with the other departments through activity links as well.

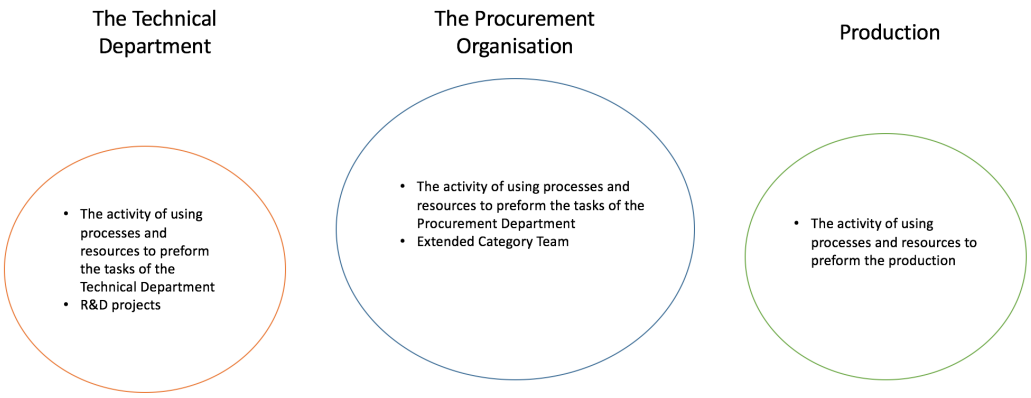

Figure 5.4: The internal activities, which are relevant for the context of collaborative innovations with the Procurement Department as a focal point.

Possible activities mentioned in the empirical findings are when the Extended Category Team and the CM is making the Category Card, when the CM presents the Category Card to the Procurement Management Team or when the CM presents the sourcing strategy to the Sourcing Board. These activities are linked together by activity links. However, there are many activities performed within the company, which are not linked that clearly or not linked to the right actors. For example, when the CM is making a category strategy together with the Extended Category Team. These teams do not always have representatives from all departments and therefore, the strategy might not mirror the strategy for Construction Sweden, only the included departments. By linking this activity to the right actors, it is more likely that the category strategy is complete. The same can be applied to activities performed for example within the production projects. If problems arise in the projects and are solved without feedback to the CM, the CM cannot take actions and learn from that problem. This might mean that the same problem keeps happening in the different projects but there are no activity, which links the solution between the Procurement Department and between the Projects.

The activity to make collaborative innovation happen is in-officially a responsibility of the CMs. However, this activity is not linked to other important departments and functions within Constructions Sweden such as the R&D Department, the Technical Department or the Production. The activity is a responsibility of the CM as an individual actor who needs to use personal actor bonds and resources in order to drive collaborative innovation. The Extended Category Team could be used as a forum to perform this activity and create continuous activity links for collaborative innovation between the different departments. However, as long as collaborative innovation is not an expressed task of the Extended Category Team, it is up to the individual CM to control the activity links within Construction Sweden and the departments regarding collaborative innovations are again dependent on individuals.

5.2.3 The ARA-Model Applied Externally

When applying the ARA-model from an external point of view the relationships with the suppliers are the main focus. As stated by Chan *et al.* (2004) the construction industry has been characterised by relationship have problems such as limited trust and lack of communication. To achieve a win-win climate in the relations with suppliers, long-term commitment and relationships based on trust, dedication to common goals, and an understanding of each other's individual expectations and values are desirable. Some of these features can be seen in the relationships both with Supplier A and Supplier B. The relationships have lasted for a long time and there are mutual trust between the parties. According to Ford, Gadde, *et al.* (1998), a long history of collaboration has an effect on current relationships and as it seems from the conversations with CM A, CM B, KAM A and KAM B the length of the relationships are viewed as a positive factor. However, that the contracts are renegotiated continuously might have the opposite effect.

The External Actor Dimension

From an external point of view, the actors are both Constructions Sweden and the suppliers as companies but also the different departments and the people. Figure 5.5 represent Construction Sweden's and Supplier A's actors and actor bonds and figure 5.5 represent Construction Sweden's and Supplier B's actors and actor bonds. These are the same figures which was presented as figure 4.8 and figure 4.10 in the empirical section.

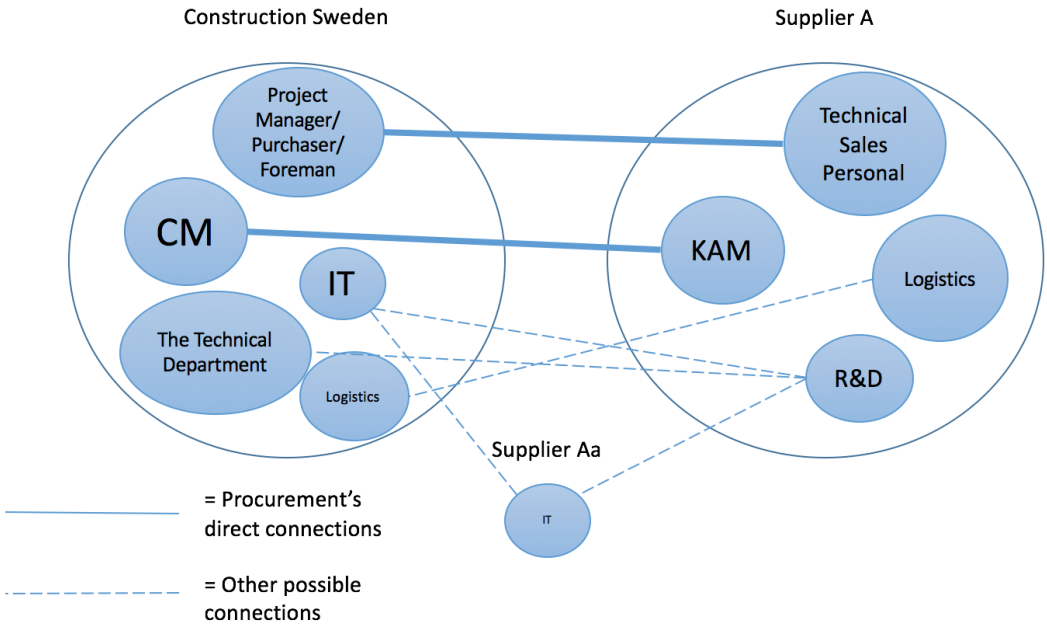

Figure 5.5: The actors and the actor bonds between Construction Sweden and Supplier A.

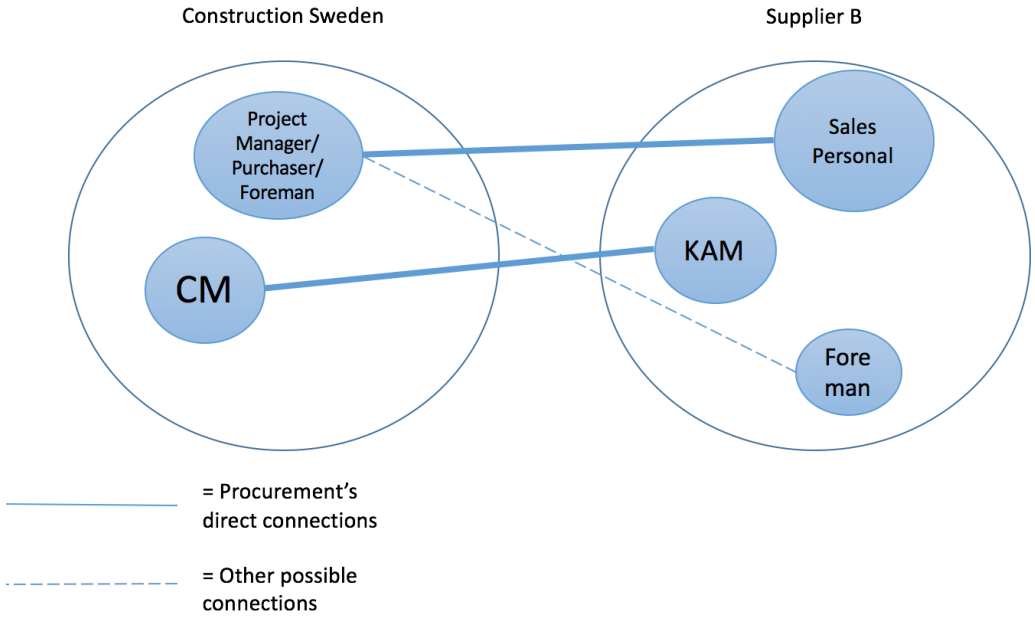

Figure 5.6: The actors and the actor bonds between Construction Sweden and Supplier B.

When having the Procurement Department as a focal point the CMs become central actors in the analysis. The KAMs are important actors in the relationship and the actor bonds between the CMs and KAMs are strong, especially between CM A and KAM A. As mentioned, the framework agreement with Supplier A states that both parties have a responsibility to develop the business. This includes continuous improvements and creation of new business and products, all in order to create a win-win situation for both parties and it seems like the relationship reflects what is stated in the contract.

CM A and KAM A are in close contact with each other and when a problem is encountered, they solve it together. Supplier A states that Construction Sweden is an important customer and the only customer that Supplier A has this kind of deep collaboration with regarding development. This shows the level of commitment by Supplier A in the relationship. However, as Construction Sweden is Supplier A's largest costumer and the larger and more powerful actor in the relationship, Construction Sweden could exploit power to push for lower prices or to achieve other benefits. Nyaga *et al.* (2013) and Kumar (1996) state that it is more beneficial to not exploit the power if the goal is to have a collaborative relationship. Supplier A describes Construction Sweden's attitude towards collaboration with Supplier A as open and it seems like Construction Sweden does not exploit its power to reap short-term benefits from the relationship with Supplier A.

The actor bond between CM B and KAM B are not as strong as the one between CM A and KAM A. The contact between the actors is not as close and continuous as between CM A and KAM A. It is a stable and smooth relationship that has

lasted for a long time. However, according to Håkansson and Ford (2002) a relationship where conflicts and difficulties are absent, is not necessarily a functioning relationship and it seems like Construction Sweden do not utilise the potential of this relationship to its fullest. Supplier B is as mentioned ranked as one of the top 50 on the Forbes' list of the World's Most Innovative Companies and is in forefront of development in the elevator business. In addition to this, Supplier B is open to innovate in collaboration with Construction Sweden. With this as a background, it seems like there is a great potential for Construction Sweden to be innovative in collaboration with Supplier B. According to McQuiston (2001) and Ford, Bethon, *et al.* (2002), there is a need of shared values, norms and trust to have successful B2B-relationships. In this relationship, it seems like Supplier B is very committed to the relationship and sees potential to develop the relation further whilst CM B does not fully see the value and potential of this relationship. However, KAM B mentioned that Supplier B has to compete with other suppliers for the framework agreements every third year. It is the same situation for Supplier A but the fact that KAM B mentioned it indicates that Supplier B feels like Construction Sweden exploits its power position to push for better deals. In general, price seemed to be more in focus in the relationship with Supplier B than in the relationship with Supplier A. Pushing for lower prices implies lowering the profit margins for the suppliers and if there are no room for losses for the suppliers, it can according to Demirkesen *et al.* (2016) be hard to justify innovations. Furthermore, CM B and KAM B do not share a common view on the Swedish market of elevators. CM B does not believe that the Swedish market demands innovations meanwhile KAM B see a great potential to test new solutions in the Swedish market. Having the same view on the relationship and common goals affect the strength of the actor bond and is as mentioned important for having a collaborative relationship.

As can be seen in figure 5.5 and figure 5.6, there are also other actors and actor bonds than the ones between the CMs and KAMs involved in the relationships with the suppliers. At the Production Projects at Construction Sweden and the suppliers there are actors, which have bonds with each other through the activities of making offers, technical support, ordering, delivery etc. but these are more on an operational level. There are internal actor bonds between the projects and the CMs, which are utilised when a problem with a supplier needs to be escalated and at the suppliers there are also a discussion between the KAMs and the technical sales personnel and the foremen from the suppliers. However, the strongest actor bonds are, as mentioned between the CMs and the KAMs but the actor bond between the project managers/foremen at Construction Sweden and the Technical Sales Personal/Foremen at the suppliers are also strong but of a more temporary in nature. The leading of Construction Sweden's projects is as mentioned decentralised and the Project Managers can choose suppliers as they like. The actor bonds that exist between Construction Sweden's project managers and actors at the suppliers can affect the decision of which supplier is chosen by the projects. However, from a strategical point of view, Construction Sweden seems to be an important actor for the suppliers.

The External Resource Dimension

Construction Sweden and the suppliers share the resource of knowledge with each other. However, the resource ties are not that strong since the sharing of knowledge and competence is more a handover. CM A tells Supplier A that there is a problem with condensation or CM B tells Supplier B that there is a problem with the elevator-shaft safety and then it is up to the suppliers to solve the problem. It can be the other way around as well when Supplier A or Supplier B want feedback from Construction Sweden on a product. The suppliers use Construction Sweden's competence and knowledge and solutions are often tested in Construction Sweden's projects. This is also a part of developing a new product or solution.

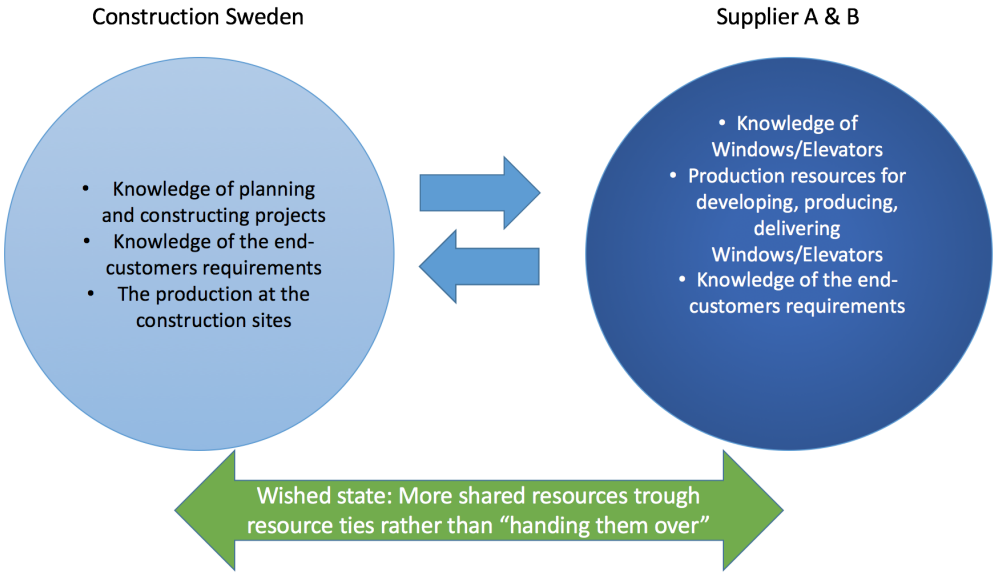

Figure 5.7: The resources of Construction Sweden and Supplier A respective Supplier B that can be utilised better in order to reach collaborative innovations.

It seems like both Construction Sweden and the suppliers do not value knowledge and competence as a resource in the same way as the development of a new product. The R&D Manager for example, highlighted that it is a problem with collaborative innovations since Construction Sweden do not own the products and processes but seems to forget that the knowledge of actually applying the new products and solutions in a real construction project is important as well. Hence, an issue that needs to be addressed mentioned by Rayna and Striukova (2005) and Ford, Gadde, *et al.* (1998) is that in order to succeed with collaborative innovation and for both parties to benefit from it, proper contractual agreements need to be developed. The lack of this, is something, which Construction Sweden has suffered from in previous collaborative projects such as the Hospital handle project and the Green Window project.

Based on the reasoning above, the resource ties are temporary with a handover characteristic rather than being a shared continuous resource tie for collaborative innovation. This is illustrated in figure 5.7. However, Green Window was an example where the problem was not just handed over to the supplier. In that case, both Construction Sweden and the Supplier were involved in a project group and developed the product together. The resource ties in this case were also temporary but stronger.

The External Activity Dimension

The continuous activity performed by the CMs and the KAMs is the follow-ups, which are supposed to take place quarterly. Between CM A and KAM A the strong actor bond makes this activity more useful since they talk to each other every week and continuously update each other. However, between CM B and KAM B the actor bond is much weaker and the activity only takes place every six month. The actor bonds between the CMs and the KAMs mirror the activity links and the strength of these.

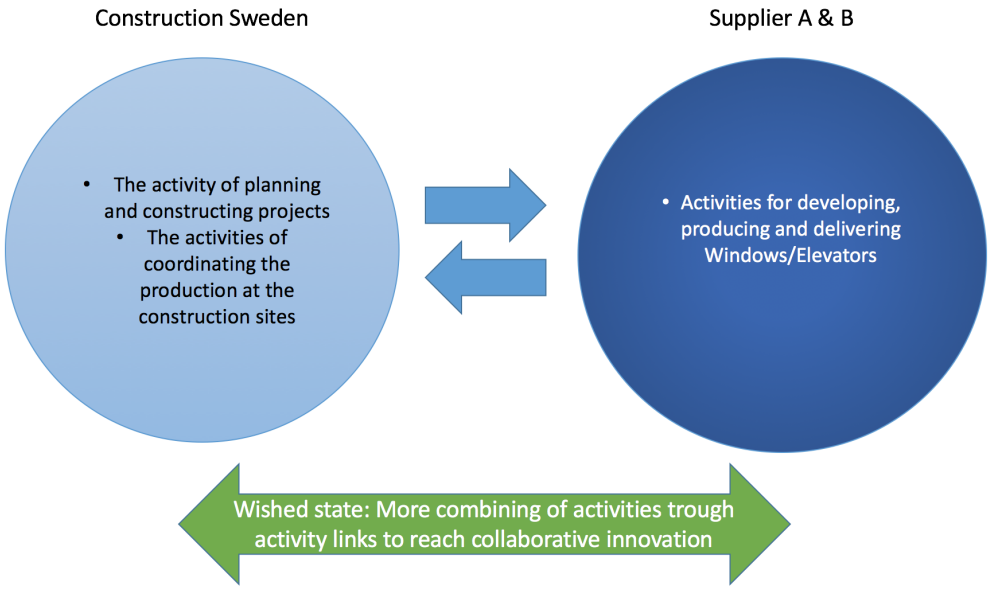

Figure 5.8: The activities of Construction Sweden and Supplier A respective Supplier B that can be utilised better in order to reach collaborative innovation.

There are other activity links between Construction Sweden and the suppliers as well, such as logistics, delivery, offers etc. which are handle by logistics and between the projects, and the suppliers sales personnel but the main activities, which Construction Sweden and Supplier A and B could utilise in order to reach collaborative innovation can be seen in figure 5.8.

As mentioned earlier, the responsibility of collaborative innovation is on the CMs, which means that from Construction Sweden's point of view, the coordination of activities also relies on the CMs. The temporary resource ties are used during

temporary activities with temporary activity links. There are no activities, which support continuous work with collaborative innovation with suppliers and therefore, this area is not prioritised. The Supplier Team is an example of an activity, which has the potential to continuously support collaborative innovations with suppliers if preformed on a regular basis.

5.2.4 Example of Current Internal and External Combinations of Actors, Resources and Activities

As mentioned in the previous parts there has been successful combinations of resources and activities with cross-functional teams, which has lead to collaborative innovations and transfer of knowledge between actors, both internally and externally.

Internal Combinations of Actors, Resources and Activities

Three examples where there are an internal combination of actors, resources and activities are the Extended Category Team, the R&D projects and escalation of problem within a project. An illustration of these activities can be seen in figure 5.9. The Extended Category Team, the R&D projects and the escalation of problems within a project are current activities, which are combining competence between the different departments but the potential is not utilised to its full extent.

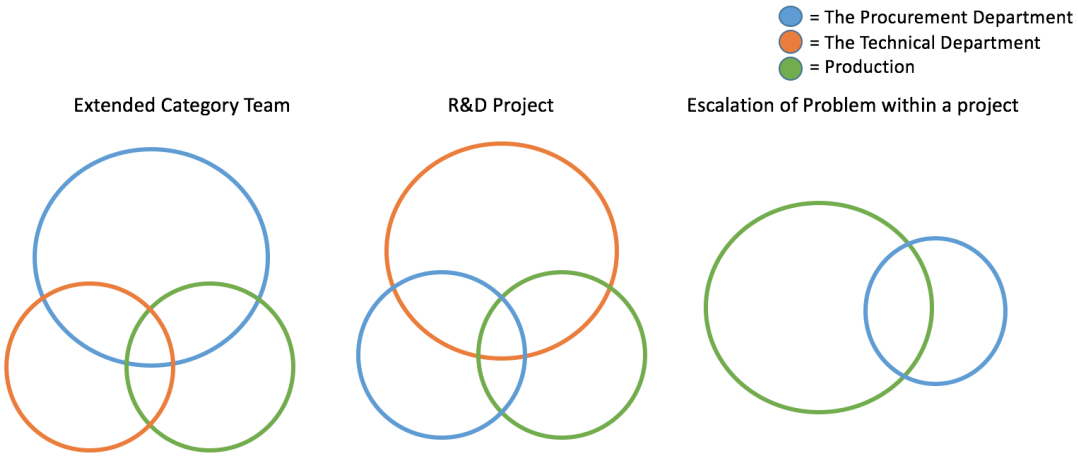

Figure 5.9: Activities where resources are shared and combined which has been found during the empirical data collection from an internal perspective.

The competence within the Extended Category Team is as mentioned earlier, too dependant on individual actor bonds and this applies to the R&D Projects as well. There is also a lack of communication and integration between the departments and the resource ties are temporary. The escalation of problems within a project refers to the situation when a project manager at Construction Sweden escalates a problem with a supplier to the CM and the CM initiates a dialog with the supplier to solve the problem. This is a reactive combination of resources and activities but it could be more proactive. The project managers could on a continuous basis give

more insight to the CMs, also regarding smaller problems and ideas in order for the CM to act proactively and avoid the same problems within other projects. The supplier evaluations are supposed to inform the CMs regarding supplier performance in projects but this does not work at the moment. However, a more personal contact could be a useful source for innovative ideas for the CM to work on together with the suppliers in order to create collaborative innovations.

External Combinations of Actors, Resources and Activities

Three examples where there are an external combination of actors, resources and activities are the Supplier Team, the R&D projects and separate collaborative innovation projects such as Green Window and the Hospital handle project. An illustration of these activities can be seen in figure 5.10.

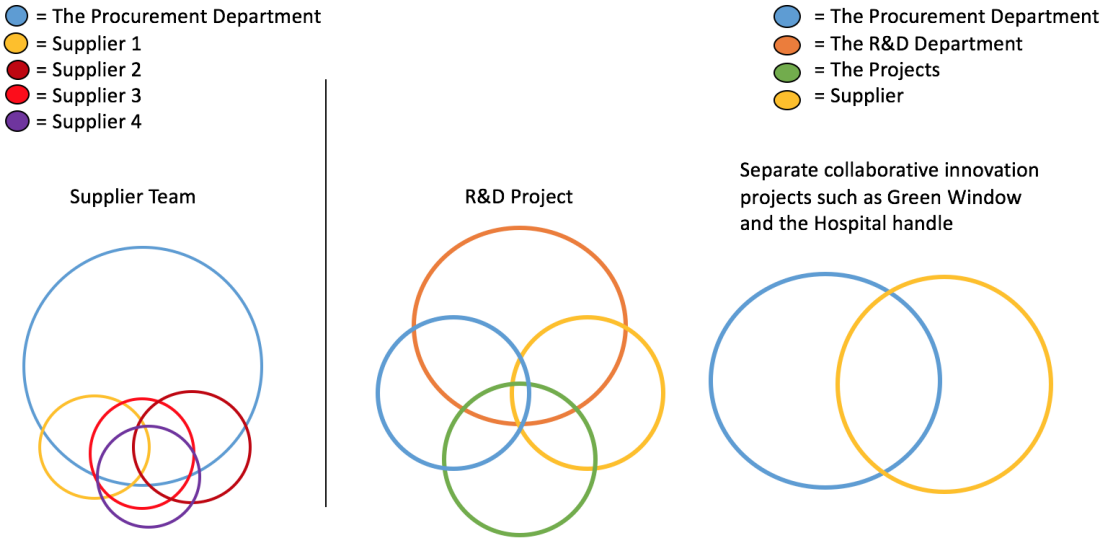

Figure 5.10: Activities where resources are shared and combined which has been found during the empirical data collection from an external perspective.

The Supplier Team was a successful activity, which not only combined and created new actor bonds but also led to innovations. Most of them were incremental as the examples presented in the empirical part but it shows that sharing knowledge and competence through new resource ties can be useful. The shared resource ties were however only temporary and are not used for continuous improvements. The R&D Projects are as mentioned dependant on individual actor bonds with temporary resource ties. The nature of an R&D Project is that it is temporary but the communication and the learnings from the projects could be diffused more between the different departments. Green Window and the Hospital Handle are two examples of collaborative innovation projects, which were driven from the Procurement Department. The Green Window Project was a successful project in terms of the resource ties and activity links but the product was not what Granstrand (2010) refers to a success and can therefore not be categorised as an innovation. The project had

the correct prerequisites to reach a collaborative innovation but failed on the area of usage. Another issue was as mentioned the agreements, which were not stated clearly and in the end no one is using the Green Window and Supplier A is the owner of the unsuccessful product. Even though the Procurement Department stated that one of the learnings from Green Window was that it is important to make contracts and agreements in an early state of a collaborative projects, this was not transferred when the Hospital Handle project was initiated. It is interesting that the R&D Manager mentioned that Construction Sweden is a small customer compared to Bauhaus and Bejier within the category which handles belong to, and Construction Sweden is therefore not an interesting partner for the suppliers. However, Bauhaus and Bejier would not have the same kind of knowledge and insight to provide to a supplier as Construction Sweden which can lead to useful innovations within the construction industry. In the case with the hospital handle, Construction Sweden provided the suppliers with resources of knowledge such as the customer specification and a major reference project to test the handle in. This led to a successful innovation, which the supplier now owns all the resources of, such as the IP, the revenues from future sales etc.

As mentioned in the beginning of the analysis Construction Sweden has initiatives and activities, which support collaborative innovation but these are not very coordinated. There is a lack of activities and resources, which support continuous work with collaborative innovations. The communication and transfer of knowledge through resource ties need to be more established in order for the different departments to learn from each other and drive the business forward. Instead of doing the same mistakes again, the focus should be on the actual development of collaborative innovations together with suppliers in order to keep the market leading position and to reach the goal of being climate neutral in 2050.

6
Conclusions

The analytical framework ended up in a model which was adapted to the context of collaborative innovations at Construction Sweden. The model highlights important factors which are necessary to evaluate in order to improve the prerequisites and the environment to achieve successful collaborative innovations with suppliers.

At Construction Sweden it is clearly stated from top management that innovation is an important issue. However, this does not seem to be communicated enough to the rest of the organisation and it is not mirrored in the current ways of working. Most processes focus on measurements like delivery precision, savings etc. and the improvements and changes within the categories come from reactive problem solving rather than working proactively with innovations.

Even though top management has expressed support for increasing the awareness and work with innovation, this is not clearly communicated in the organisation and the structures to work continuously with collaborative innovations within the Procurement organisation are currently absent. However, there are forums and processes which have the potential of supporting collaborative innovations with suppliers. Examples are, the Extended Category Team, goals and aims regarding innovation within the category planning process and the sourcing process, development projects driven by the R&D department and projects like Green Window and the Supplier Team.

The analysis of Construction Sweden's actors and actor bonds, resources and resource ties and activities and activity links has provided insight about Construction Sweden's prerequisites for collaborative innovations with suppliers.

The actors in the various departments do not seem to be aware of each others' processes and ways of working. This means that the responsibility of collaborating internally is left to the individuals in the different departments. Regarding external collaborations the CMs have the actors bonds to the suppliers and consequently are the once responsible for collaborative innovations with suppliers.

The internal actors and actor bonds affect the coordination and outcome of collaborative activities. The lack of connections and communication often results in a lack of knowledge transfer from earlier projects. Furthermore, by not involving actors with relevant competence when initiating a development project, areas which are important, for example agreements or the actual functionality of a product can

easily be forgotten.

This is also applicable to the resource and activity dimension, both internal and external. In order to reach successful collaborations, resources and activities need to be combined over department and company boarders. Combination of resources and activities can be a generator of collaborative innovations. The Extended Category Team, R&D Projects and the Supplier Team project are some examples mentioned but these are not always used to the full extent. If used right, examples like these could work as platforms, which supports collaborative innovations.

In general, Construction Sweden seems not to recognise the value of their competence and knowledge and how this can be used as resources in the interaction with suppliers when working with collaborative innovations. Instead, Construction Sweden seems to take on the role as a test reference and hand over the problem solving to the suppliers. If the knowledge was valued as an important resource when performing collaborative innovations and Construction Sweden contributed with more knowledge during the development of an innovation, it opens up for a dialogue which can give Construction Sweden rights to the intellectual property and possible future revenues. As it is now, these belong to the suppliers. However, it is important that contracts and agreements are in place in an early state of a development project and that these are formulated in a way that encourages innovative activities.

From what has been said about the relationships between Construction Sweden and the suppliers, it is estimated that there is a great potential for partnerships with collaborative innovation as a goal. However, for Construction Sweden to achieve collaborative relationships that facilitates innovation, there needs to be a stronger support from top management. This can for example be showed by making partnering a strategic affair and providing the right resources.

7
Recommendation

This chapter provides recommendations for Construction Sweden on how to create prerequisites for collaborative innovations with suppliers. The recommendations are based on the analysis and discussion in chapter five. There are some organisational issues identified, which need to be in place in order to implement the more operational recommendations. Since major changes are often very complex, are time consuming and have a large risk of failure, the development potential has primarily been identified in current tools and processes.

7.1 Secure Management Support

In order for Construction Sweden to create prerequisites for collaborative innovation with suppliers there is a major need for a strong support from management on all levels throughout the entire company; from the Board of Directors for Construction Group, the Board of Directors for Construction Sweden, the Procurement Management Team and the Procurement organisation. The support has to be active and shown throughout the processes and there is a need for more cross-functionality since the departments need to understand each others processes and get more involved in each others work. In order to make sure that the suppliers are prepared to invest in the relationship with Construction Sweden, the management support for collaborative innovations needs to be established at the suppliers as well.

As part of the management support there has to be an overall financial support for innovation and collaborative innovations with suppliers. The Procurement Organisation, the Technical department and the Production Projects need to get monetary funding that support activity coordination and combination of resources required for collaborative innovations with suppliers. The current structure, where the departments have to pay for the other departments competence, needs to be changed in order to encourage cross-functional collaborations.

7.2 Establish an Innovative Environment

In order to facilitate and encourage collaborative innovation with suppliers current processesses need to be adapted to support this. The responsibility for collaborative innovations has to be clear and divided among the different roles within the Procurement department and at Construction Sweden, instead of being an unspoken responsibility of some individuals. In addition, incitements for collaborative innovation projects should be initiated in order to get the projects and the employees at Construction Sweden to be more open to testing new solutions.

7.2.1 Improve the Processes and the Supplier Selection

The suppliers need to be evaluated in an earlier state on their ability to be innovative. This should take place already in the sourcing process and the category planning process. Innovation should be included as an area to consider during these parts of the evaluation processes. It is important to evaluate which suppliers to invest in partnerships with. Less important products do not require the same kind of relationship with the suppliers as strategically important products do. Supplier Segmentation is a useful tool to make sure that the resources are focused on the right suppliers and categories. Furthermore, in order for Construction Sweden to know which suppliers to focus on regarding collaborative innovations, a long-term technical strategy could be helpful for evaluating future needs within each category.

The current suppliers should be evaluated from an innovative perspective as well, not just delivery and saving potential. This will require that the categories' goals are not only focused on savings and current performance. Innovation needs to be a part of the goal and the savings from an innovation cannot be included on a short-term perspective. The time line for savings needs to be longer to promote innovation.

In addition, in order to support the category planning process better, the Category Cards need to be treated as living documents, which are followed-up and updated continuously. The category cards need to be developed for each category, at least so that the CMs have room to elaborate. Activities and goals need to be connected, doable, possible to measure and possible to follows up. There should also be follow-ups from earlier years, not just new category cards every year. Strategy for segmentation and possibilities for collaborative innovations should be an important part of the category cards as well. This is a way for management to follow-up and secure that the categories moves forward.

There are current activities mentioned, which are not part of the Procurement Departments' processes but have the potential to support collaborative innovations with suppliers. These are preformed by the Development Council and the R&D Department. However, these seem to have a focus on current improvements and coordination of activities rather than innovation. The R&D Department focuses on the Technical Department and neither the Development Council nor the R&D Department were mentioned much by the employees at the Procurement Department.

This indicates that the Procurement Department do not see any of this as processes for collaborative innovations with suppliers. In order to use these forums for more collaborative innovations both the development council and the R&D Department have to speak of innovation as an important matter.

7.2.2 Ensure the Transfer of Knowledge between the Departments

Knowledge transfer is a general issue which needs to be approached by Construction Sweden. The knowledge about the different departments' processes and competence needs to be shared in order to enable knowledge transfer between the departments. This would both decrease the duplication of work but also allow for a more efficient use of knowledge, for example by knowing where to go with questions regarding other departments expertise. This would be beneficial in order to avoid making the same mistake again and to learn from previous experiences, for example the Green Window project.

7.2.3 Collaborative Innovation Forums

The Extended Category Team has the potential to facilitate collaborative innovations. However, there is a need to ensure that the Extended Category Teams are cross functional and have a combination of the right competences and that innovation is included as an important area on the agenda. If this is carried out, the actors of the Extended Category Teams have the potential of discussing collaborative innovations from a more nuanced view including risk-evaluation, area of usage, volumes, quality etc. both for setting a strategy but also for evaluating innovation projects.

Supplier Team has also been identified as an activity with the potential to facilitate collaborative innovation with suppliers. The project resulted in improvements both for Construction Sweden and the involved suppliers. A similar setup could be used continuously as a forum for collaborative innovations, for example on a yearly basis. The projects can be used as a reference in order to identify problems to handle within the Supplier Team. It is important that the included suppliers have the willingness to innovate and are suppliers that Construction Sweden sees potential in regarding relationships. Furthermore, The Supplier Team needs to include internal actors from different areas such as R&D, procurement, technical, production, quality etc. in order to secure functional solutions and knowledge transfer.

7.3 The Importance of Changing the Attitude

With a profit-driven company in a low margin industry, which the construction industry is, it is in the nature of the company to require measurements, calculations and short pay-back periods. This is completely understandable but if there is no change in the way of thinking it is likely that nothing will happen. There has to

be room in the budget for innovations and failures in order to reach innovative solutions. Furthermore, the time frame needs to be extended since the pay-back period for innovation projects might be longer than the one year time horizon that is used today. If Construction Sweden wants to reach the goal of being climate neutral in 2050, actions need to be taken in order to create the prerequisites for innovations that can support this goal. To succeed with this goal, there is a major need for innovations and Construction Sweden should utilise the competence and knowledge of the suppliers in order to achieve more innovations and at the same time decrease the risk.

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A

Appendix 1

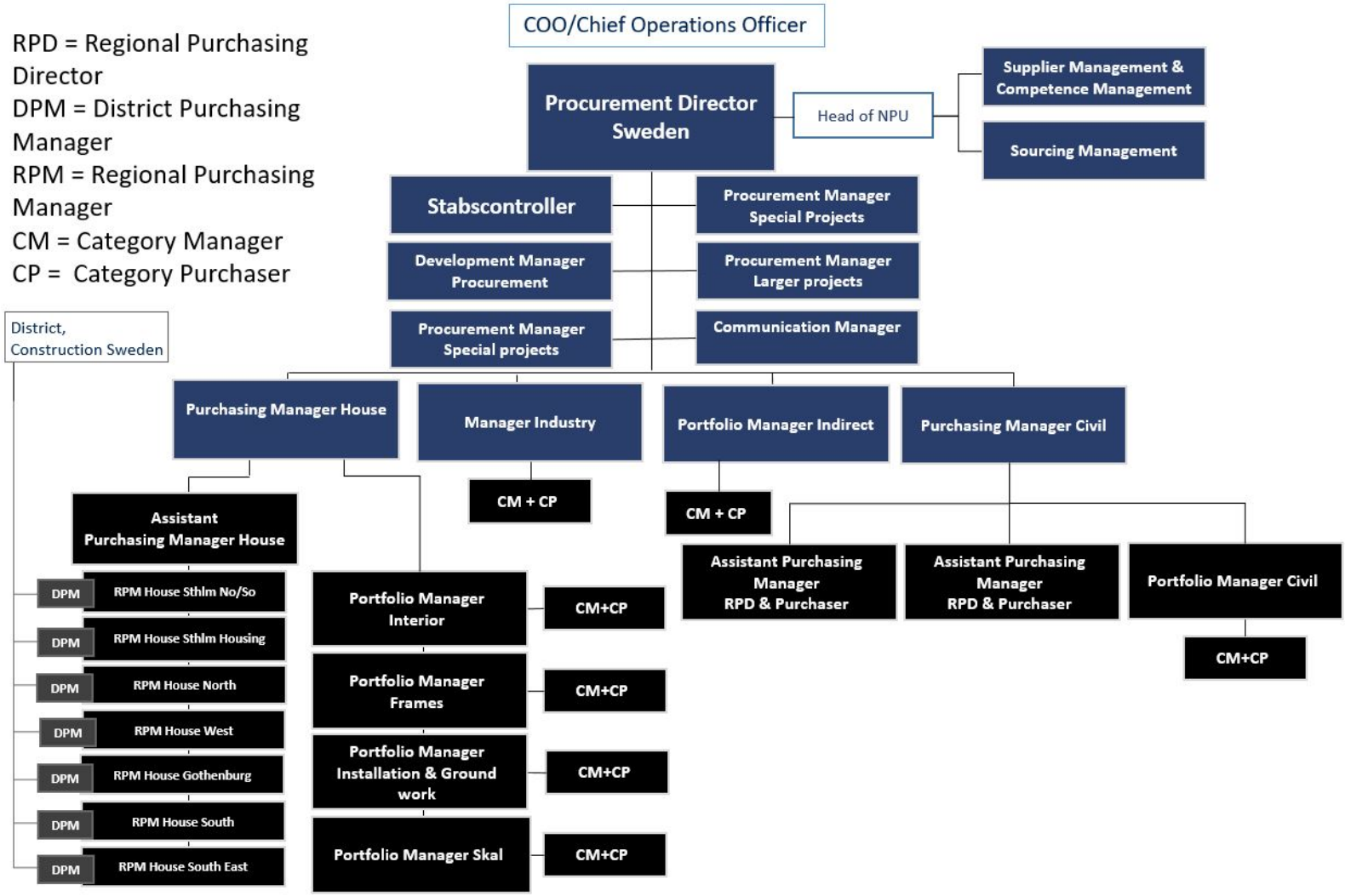


Figure A.1: Detailed Category Card in a higher resolution

B

Appendix 2

8. Nordic potential

CURRENT SITUATION

Category team members (Extended, SE)

Category Manager	[Forename Surname]
Purchasing Specialist	[Forename Surname]
Analyst	[Forename Surname]
Division representative	[Forename Surname]
Region representative	[Forename Surname]
...Category Manager	
Purchasing Specialist	
Analyst	
Division representative	
Region representative	
...	

1.

Spend and buying behaviour

	2013	2014	2015
Spend [MSEK]			
Managed spend [%]			
International spend [%]			
Framework agreements [#]			
Suppliers [#]			
Average invoice [kSEK/inv.]			

Market & competitor analysis

2.

Heat map

3. Area 1 Area 2 Area 3

CATEGORY STRATEGY AND PLAN

Category vision 2020

4.

Category strategy 2017

5.

Opportunities & targets 2017

6.

Activities 2017

Activity 7.	Q1	Q2	Q3	Q4	Spend [MSEK]	Potential [MSEK]	Priority [H/M/L]
Activity 1	X	X			50	0,5	H
Activity 2	X	X			80	0,2	L

Figure B.1: Larger version of figure 4.2

C

Appendix 3

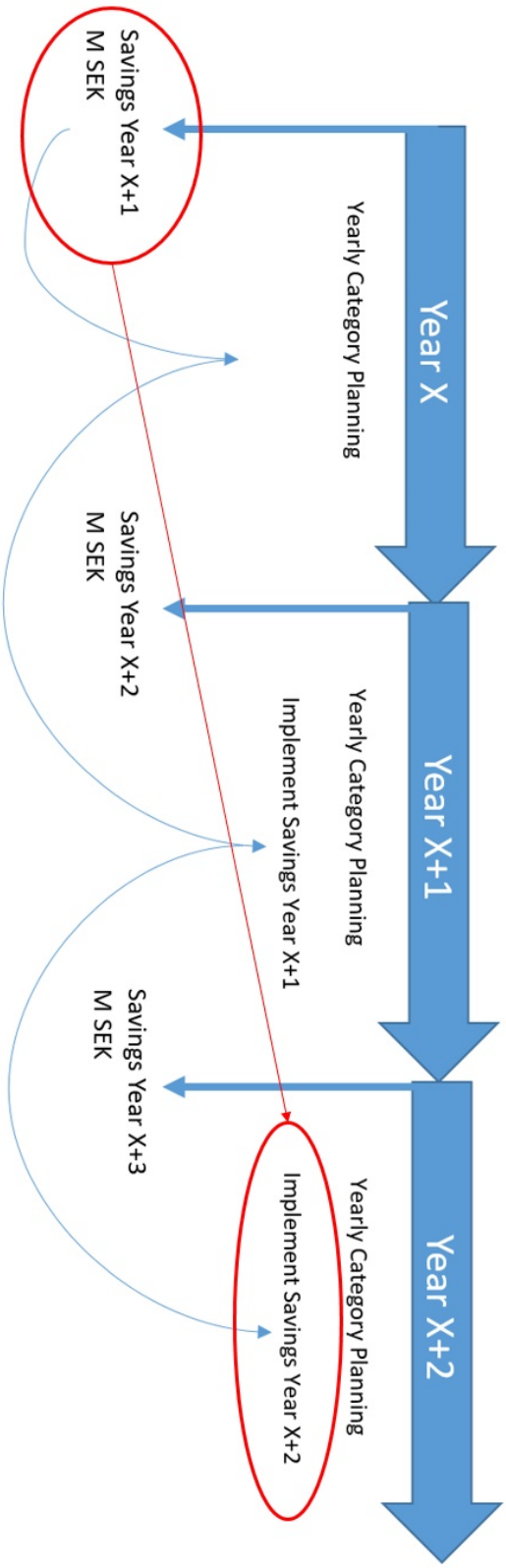
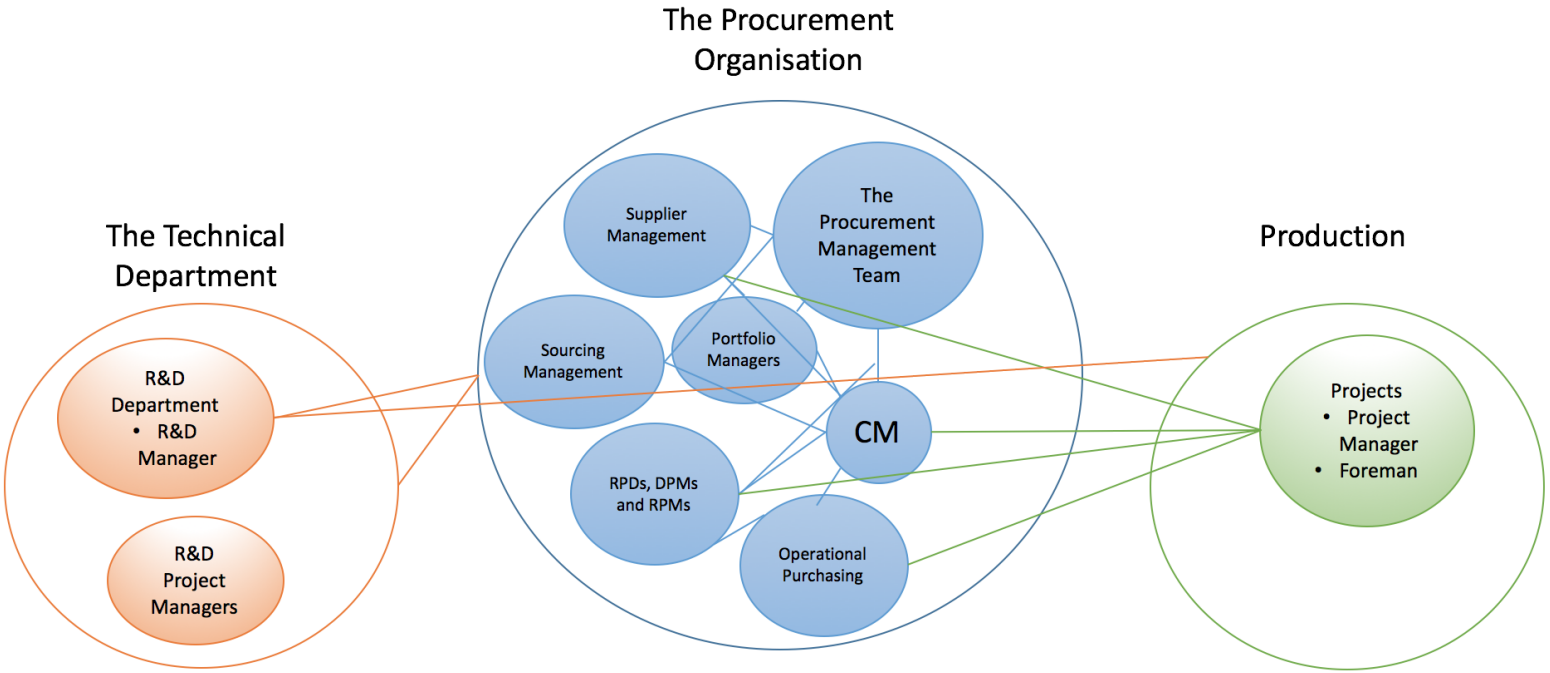


Figure C.1: Larger version of figure 5.1



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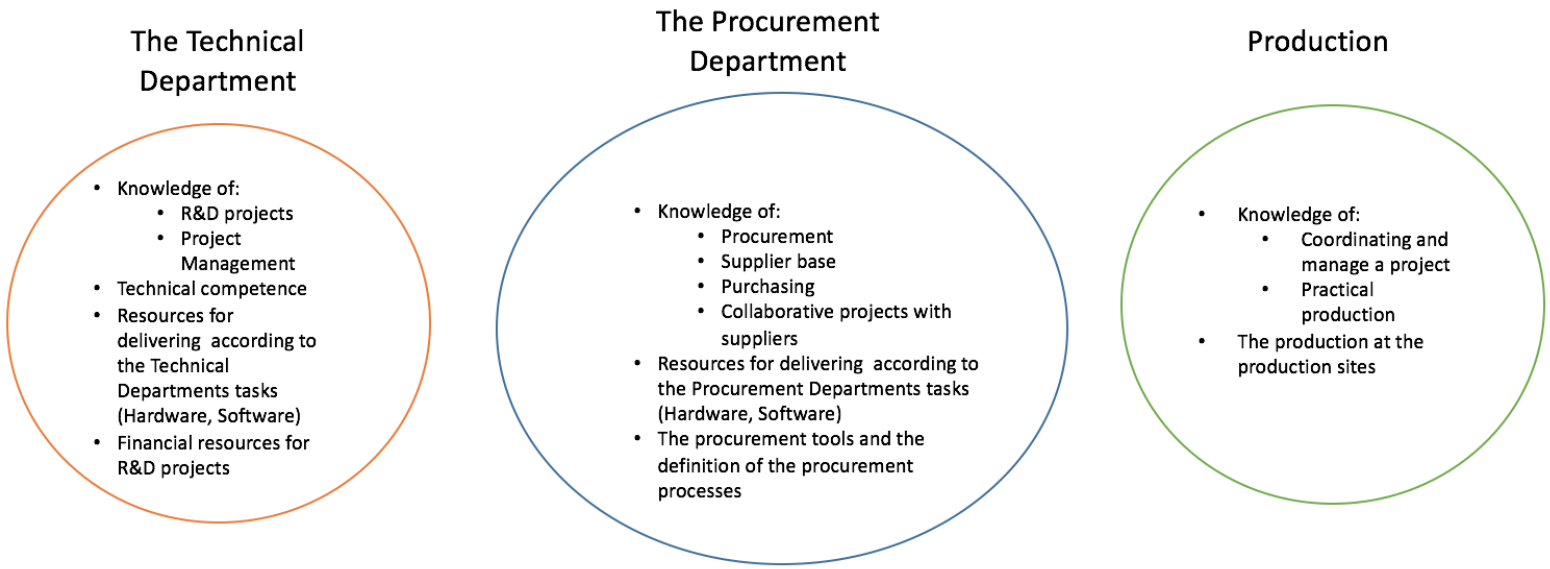

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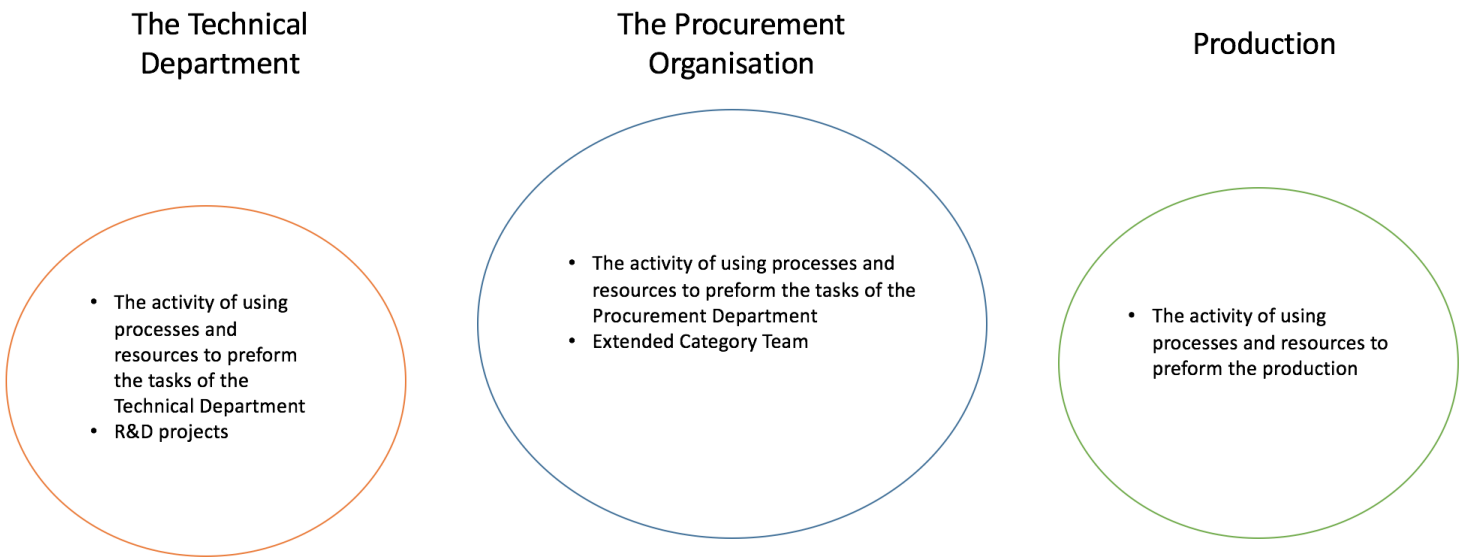

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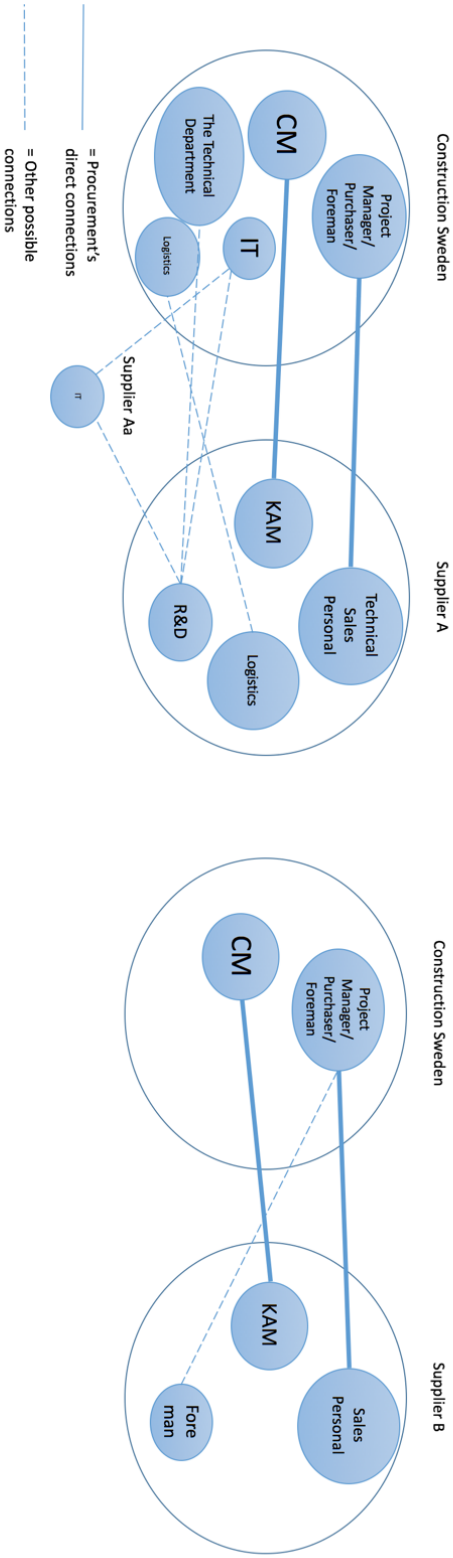

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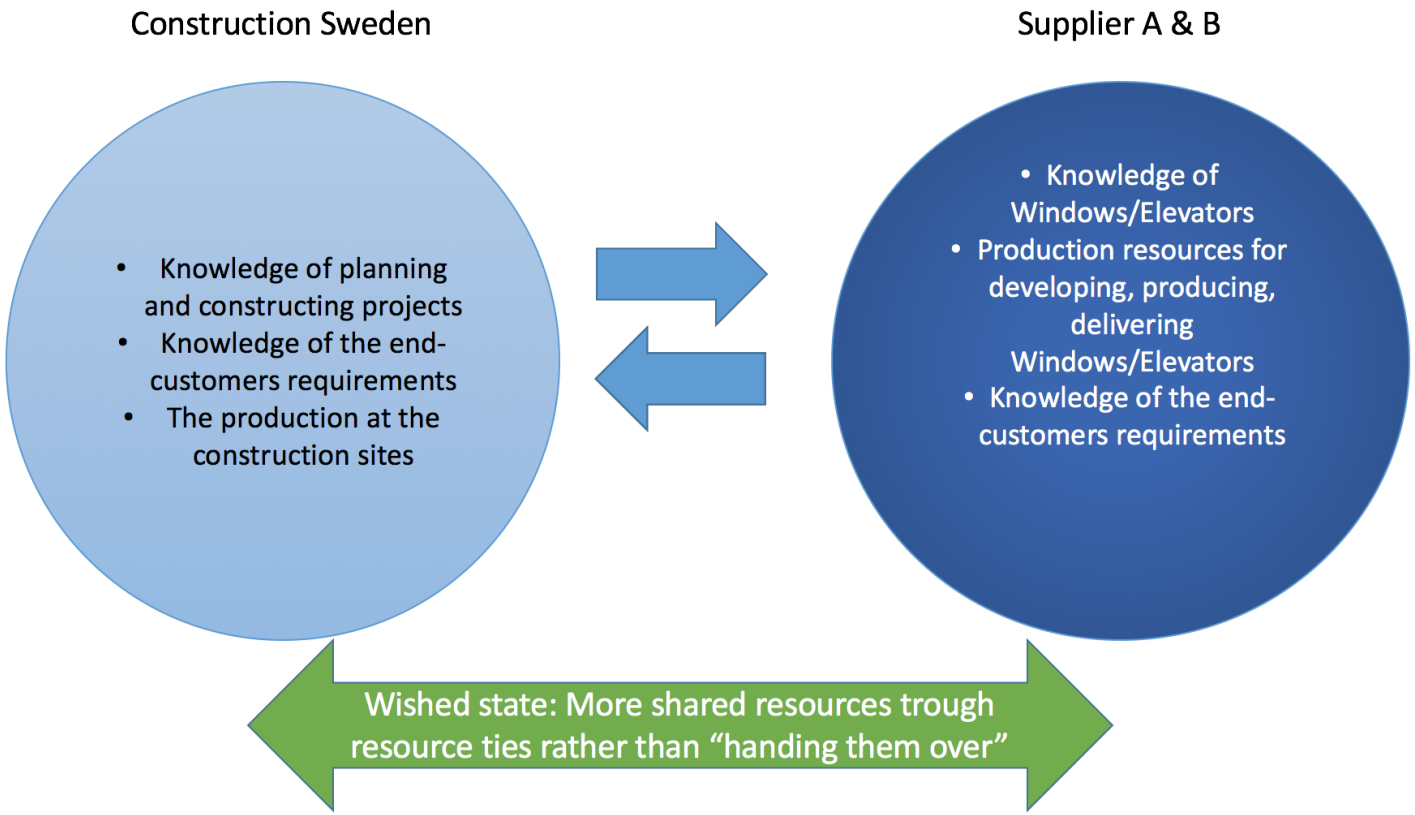

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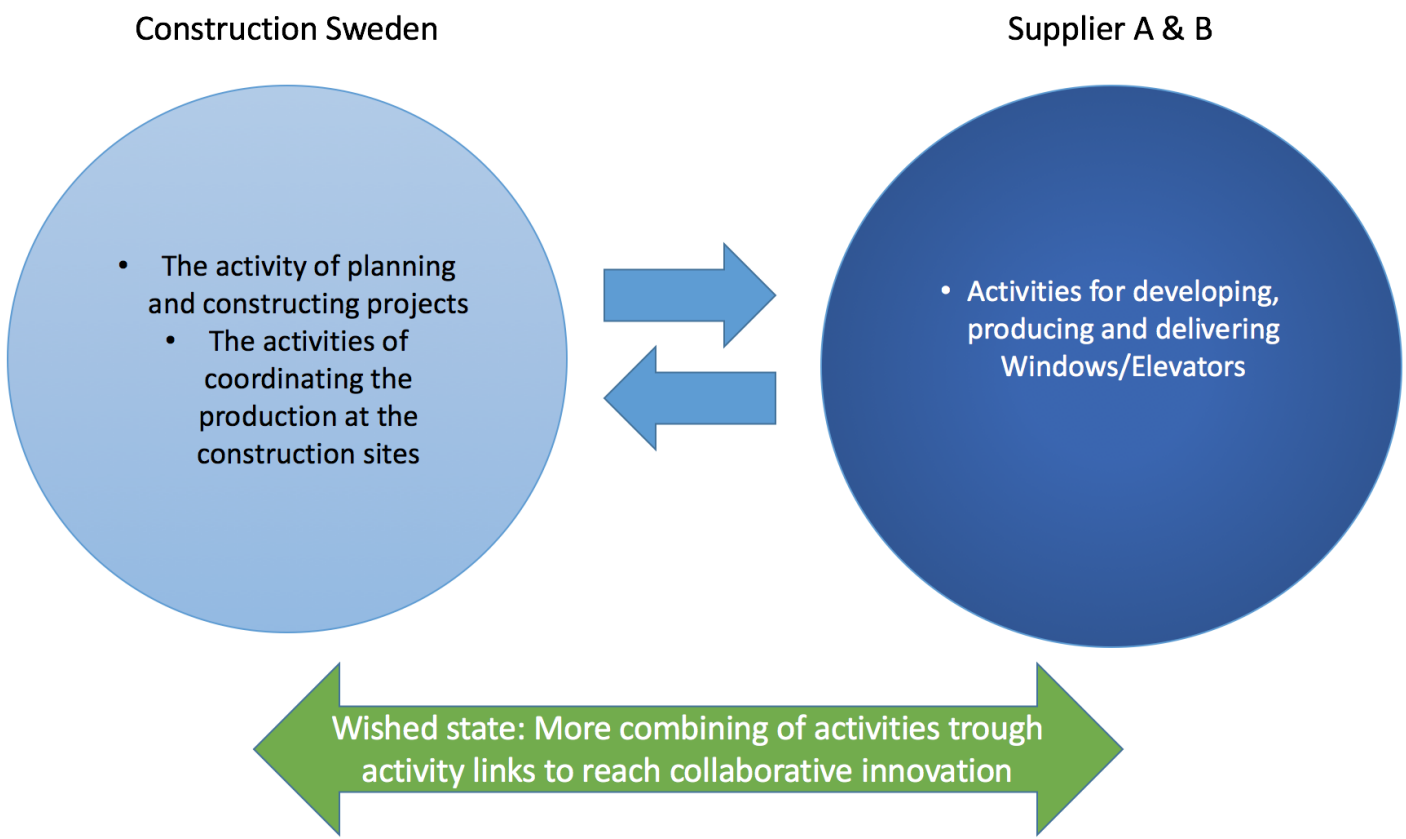

Figure C.7: Larger version of figure 5.7

Figure C.8: Larger version of figure 5.8

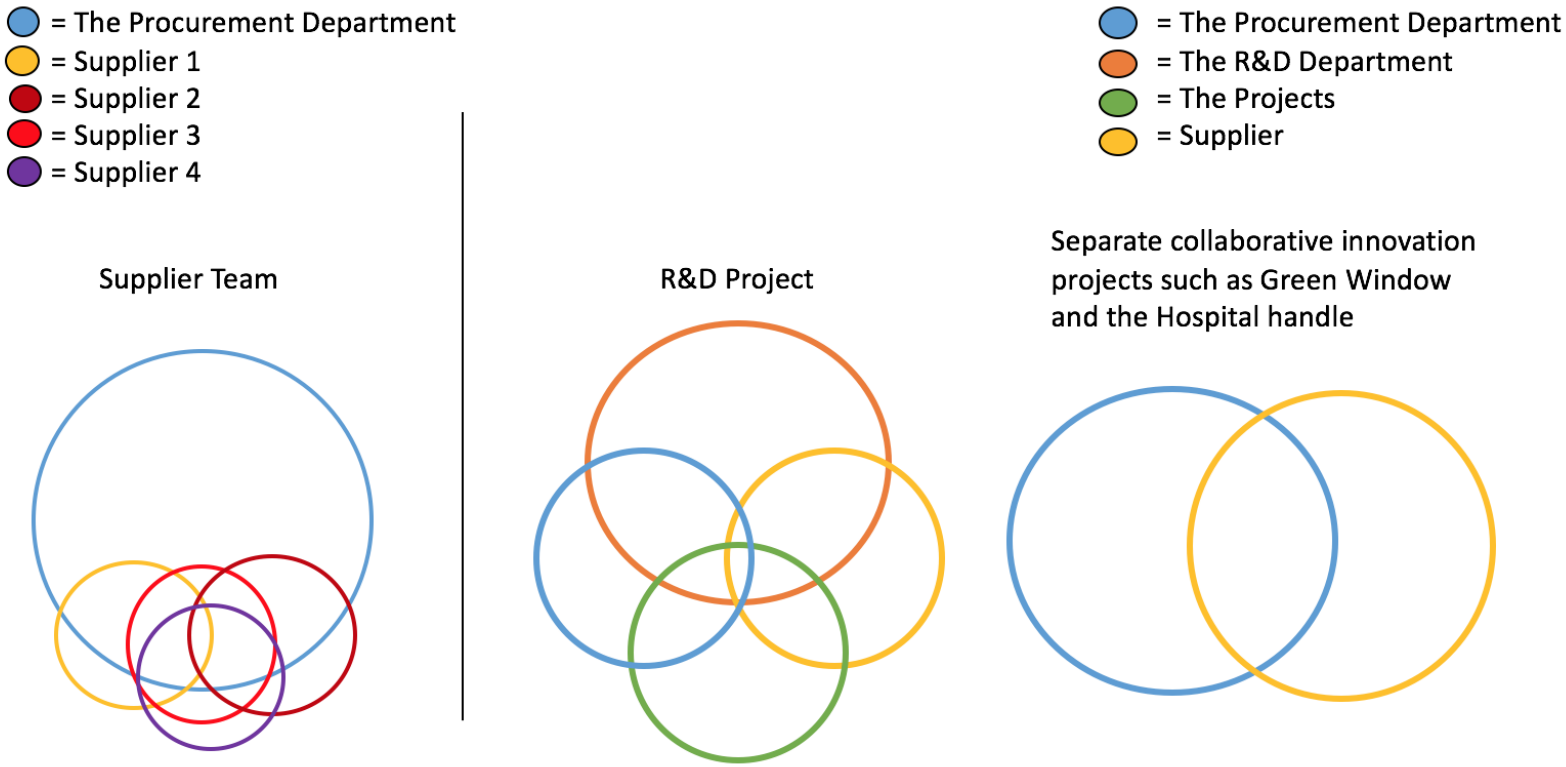

Figure C.9: Larger version of figure 5.9

D

Appendix 4

All interviews were held in Swedish, hence the following interview templates are in Swedish.

D.1 Interview template Category Manager A

Bakgrund och arbetssätt

1. Bakgrund, tid på Construction Sweden samt nuvarande roll som kategoriansvarig Vilka arbetsuppgifter ser du som viktigast i din roll som KA?
   (a) I organisationen?
2. Hur arbetar du med andra avdelningar inom Construction Sweden?
3. Kan du beskriva:
   (a) Kategoriplanering
      i. Kategorikort
      ii. UKT
      iii. Segmentering
      iv. Styrning/Incitament
   (b) Andra innovationsfrämjande/leverantörsutvecklande aktiviteter
4. Anser du att projekten följer era rekommendationer (ramavtal etc.)?

Innovation

1. Anser du att det finns processer inom Construction Sweden som hjälper dig i ditt arbete som KA att ta ett innovationsinitiativ från en leverantör till implementerad lösning i ett projekt?
2. Har du varit delaktig (känner till) i något innovations/utvecklingsprojekt? (Supplier team, green windows).
3. Ingår det i din roll eller vem ska dra i innovationsinitiativ?

Leverantörsrelation

1. Hur ser kontakten ut med leverantör? Hur sker kommunikationen?
2. Supplier x - Hur ser den relationen ut?
3. Hur arbetar du med utveckling av leverantörer? Vilka parametrar/KPI:er är viktiga? (kvalitet, leveransprecision etc.)
4. Har det hänt att leverantörer kommer innovativa förslag och ideer till dig/-Construction Sweden?
   (a) Om ja, har dessa förslag tagits vidare? Hur utvärderas ett förslag?
5. Anser du att era processer främjar innovationsinitiativ från leverantörer och projekt?
6. Anser du att relationen med leverantör möjliggör för innovationssamarbeten? Vilken typ av relation? Hinder/Möjligheter/Förbättringar

D.2 Interview template Sourcing Manager NPD

1. Tid på Construction Sweden samt nuvarande roll och avdelning
2. Din bild av innovationsprocessen på Construction Sweden
   (a) Generellt
   (b) I samarbete med leverantör med innovation
3. Tidigare initiativ
4. Styrkor och svagheter i processerna
5. Känner du till några exempel med leverantörsutveckling och samverkande innovationer (lyckade/misslyckade)
6. Finns det ett stöd inom inköpsorganisationen för leverantörsutveckling i termer av nytänk och innovation?
7. Anser du att det finns stöd i övriga organisationen?
8. Idéer/förslag

D.3 Head of Development NPD

1. Tid på Construction Sweden samt nuvarande roll som utvecklingsledare
2. Processer som främjar innovation i samverkan med leverantörer
3. Tidigare initiativ
4. Styrkor och svagheter i processerna
5. Känner du till några exempel med leverantörsutveckling och samverkande innovationer (lyckade/misslyckade)
6. Finns det ett stöd inom inköpsorganisationen för leverantörsutveckling i termer av nytänk och innovation?
7. Anser du att det finns stöd i övriga organisationen?
8. Idéer/förslag

D.4 Interview template Key Account Manager A, Windows Supplier Supplier A and Key Account Manager B, Elevator Supplier Supplier B

Supplier x

1. Kan du beskriva företaget kort och din roll?
2. Ser ni er själva som ett innovativt företag och hur arbetar ni internt med innovationer?

Relationen

1. Hur länge har Supplier x jobbat med Construction Sweden?
2. Hur skulle du beskriva Supplier x och Construction Sweden relation?
3. Hur stor kund är Construction Sweden för Supplier x? Finns det andra lika stora kunder?
4. Finns det någon önskan om en starkare/"svagare" relation till Construction Sweden?

Innovation

1. Har ni/skulle kunna tänka er genomföra gemensamma innovationsprojekt med Construction Sweden?
2. Hinder/Möjligheter (i relationen, arbetssätt osv.)?
3. Har ni andra kunder som ni kunnat ta fram gemensamma innovationer med?

D.5 Interview template Project Purchaser and Former Foreman Construction Sweden

Bakgrund och arbetssätt

1. Bakgrund, tid på Construction Sweden samt nuvarande roll som inköpare
2. Vilka arbetsuppgifter ser du som viktigast i din roll som inköpare?
3. Hur arbetar du/ni med andra avdelningar inom Construction Sweden?
4. Hur påverkas ni inköpare av den strategi som sätts av KA och inköpsledningen?
5. Hur mycket kontakt har du som inköpare med leverantörer/projekten?
6. Hur sker kontakten ut med leverantör/projekten?

Innovation

1. Anser du att det finns processer inom Construction Sweden som hjälper dig i ditt arbete som inköpare att hitta nya lösningar?
2. Har du varit delaktig (känner till) i något innovations/utvecklingsprojekt inom som genomförts tillsammans med leverantör?
3. Vem inom Construction Sweden anser du är ansvarig för att driva innovation?
4. Har det hänt att någon från ett projekt har kommit till dig med innovativa förslag och idéer?

Leverantörsrelation

1. Har det hänt att leverantörer kommer innovativa förslag och ideer till dig/-Construction Sweden?
   (a) Om ja, har dessa förslag tagits vidare? Hur utvärderas ett förslag?
2. Anser du att era processer främjar innovationsinitiativ från leverantörer och projekt?

D.6 Interview template R&D Manager Construction Sweden Technology

Construction Sweden and technical department

1. Berätta om dig själv, din roll, tid på Construction Sweden, tidigare erfarenheter
2. Kan du beskriva kortfattat vad Construction Sweden Teknik gör?
3. Är Construction Sweden Teknik involverade med andra avdelningar internt?
   (a) Hur ser relationen med inköp ut?
4. Vad ingår i RD under Construction Sweden teknik?

Innovation

1. Hur jobbar Construction Sweden Teknik med innovation?
2. Hur jobbar Construction Sweden Teknik tillsammans med leverantörer? (Viktigt att ta in innovations-perspektivet)
   (a) Generellt
   (b) Från projekt?
   (c) Från inköp?
3. Hur anser du att arbetet med innovation är generellt i Construction Sweden?
   (a) Ansvar
   (b) Hinder/Möjligheter
   (c) Framtid
4. Tycker du att Construction Sweden stöttar/hindrar innovation?
5. Vart tycker du att ansvaret för innovation ligger?
6. Vad ser du för arbetssätt som skulle kunna främja innovation tillsammans med leverantör?