



# **Exploring the Potential to Sell Solutions in the Swedish Construction Industry**

## The Case of Skanska Asfalt & Betong

Master's Thesis in the Master's Programmes Management and Economics of Innovation and Supply Chain Management

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Cover: Illustration of the conditions and components layers of a solution, introduced on page 74.

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## Preface

This master's thesis was carried out during the first semester of 2017 at the department of Technology Management and Economics at Chalmers University of Technology. The study was conducted on behalf of the market function at Skanska Asfalt & Betong.

Thank you Anna Dubois, our supervisor at Chalmers University of Technology, for your valuable feedback and encouragement throughout the process. We could not have imagined having a better supervisor than you!

We would also like to express our gratitude to Annhelen Tångemar and Daniel Bergström at Skanska Asfalt & Betong for your continuous optimism and support.

Lastly, we would like to thank everyone that has participated in interviews. You all made the success of this study possible.

Gothenburg, June 2017

Anna Antonsson & Viann Karlsson

## Abstract

This thesis was carried out at the market function at Skanska Asfalt & Betong. As providers of standardised materials and services in an industry that is highly characterised by competitive bidding and transactional relationships, Skanska Asfalt & Betong are facing a differentiation dilemma. In other industries, firms have been able to differentiate themselves by becoming solution providers. Therefore, the main purpose of this study was to explore Skanska Asfalt & Betong's potential to sell solutions to customers in the private sector of the construction industry.

The study was carried out as a case study of Skanska Asfalt & Betong, using a systematic combining approach. In addition, two embedded cases were included in the study. These cases illustrate two previously delivered solutions and thus add a practical perspective on selling solutions. The embedded cases provide illustrations of how solutions can be delivered both by single business units and jointly by several business units to create value for both Skanska Asfalt & Betong and their customers. 46 semi-structured interviews with employees and customers were used as primary sources of data. Previous research on business networks, business relationships, solutions, and the construction industry was employed to form a frame of reference for the study.

The key findings in this study suggest that whether a customer is interested in purchasing solutions, as well as what kind of solutions, depend on factors such as business scope, strategic intent, and types of projects. Customers however have different readiness for purchasing solutions. It is suggested that the customers can be arranged along a continuum in accordance to their potential, which integrates certain characteristics of the customers and of the selling firm. However, the possibility to sell solutions to a certain customer not only depends on the customer's potential, but on the prevailing conditions in the customer firm, in the project, in the buyer-supplier relationship, and in the network. Furthermore, a conceptual model for how solutions define the scopes of potential solutions, and that solutions can integrate in-house components with components provided by third-parties. A key issue associated with designing solutions is to find a balance between treating projects uniquely, and obtaining a certain degree of repetitiveness to allow for efficiencies across projects over time.

Evidently, Skanska Asfalt & Betong have large potential to sell solutions. To develop the solution business it is recommended that reference projects are carried out in collaboration with lead customers. It would allow for joint learning and for the obtained value to be scrutinised and demonstrated both internally and to customers.

Keywords: construction industry, solutions, construction networks, buyer-supplier relationships.

## Contents

1	Intr	oduction	1
	1.1	Aim	3
	1.2	Problem description and research questions	3
	1.3	Outline of the report	5
2	Met	thodology	6
	2.1	Research design and research process	6
	2.2	Data collection and data analysis	8
	2.2.	1 Internal interviews	8
	2.2.	2 Customer interviews	9
	2.2.	3 Embedded case studies	11
	2.2.	4 Data analysis	12
	2.3	Methodology reflections	12
3	The	eoretical framework	14
	3.1	Rethinking market exchange	14
	3.2	Business networks	15
	3.3	Business relationships	16
	3.4	Solution offerings	18
	3.5	The construction industry	20
	3.5.	1 Purchasing in the construction industry	20
	3.5.	2 Buyer-supplier relationships	21
4	The	e business network	22
	4.1	The haulers' different roles in the network	24
	4.1.	1 The haulers' role in Gothenburg	24
	4.1.	2 The haulers' role in Stockholm	26
5	The	e selling firm's perspective	28
	5.1	The five business units and their sales organisations	28
	5.2	Overview of the sales process	31
	5.3	Importance of geographical location	32
	5.4	Customer relationships	34
	5.5	Perspectives on selling solutions and joint offerings	34
6	The	e buying firms' perspectives	37
	6.1	The purchasing process	37

6.2 Evaluating suppliers	38			
6.3 Supplier involvement	40			
6.4 Supplier relationships	42			
6.5 Customers' perceptions of Skanska Asfalt & Betong	43			
6.6 Perspectives on purchasing solutions	44			
6.6.1 Categories of customers	44			
6.6.2 Potential solutions	47			
6.6.3 Perceived benefits and drawbacks of purchasing solutions	49			
6.6.4 Project characteristics' implications for purchasing solutions	50			
6.6.5 Conditions for change	51			
7 Successful solutions - two cases	53			
7.1 Case 1: "Packat & Klart"	53			
7.2 Analysis of case 1	56			
7.3 Case 2: Illustrating a joint solution	57			
7.4 Analysis of case 2	59			
8 Analysis	61			
8.1 Value generated by solution offerings	61			
8.2 Buyer-supplier relationships	63			
8.3 Relationships' implications for solutions	65			
8.4 High potential customers and projects	66			
8.4.1 High potential customers	66			
8.4.2 High potential projects	69			
8.5 Key challenges	70			
8.5.1 Demonstrating value	70			
8.5.2 Acquiring new competence	71			
8.5.3 Unique projects call for flexible solutions	72			
8.5.4 Mutual adaptations between Skanska A&B and their customers	74			
8.6 Creating a path forward	75			
9 Conclusions	78			
References	80			
Appendix 1 Internal interview guide8				
Appendix 2 Customer interview guide87				

## 1 Introduction

As we approach the 2020's, companies are facing an increasingly competitive business environment. To outcompete rivals, Porter (1996) argues that operational efficiency is rarely sufficient due to the diffusion of best practises, and the tendency that companies become increasingly homogeneous as they benchmark against each other. Rather, Porter concludes that "Competitive strategy is about being different" (p. 64). However, the potential of differentiating on basis of basic product offerings is limited. Matthyssens and Vandenbempt (2008) argue that all products and services eventually will reach a commodity status, through the dynamic process of commoditisation. When a supplier's offerings are perceived as more or less equivalent to those of other suppliers', customers will gain bargaining power and the supplier will face a price-squeeze situation. Simultaneously, the situation may lead to increased costs as a consequence of efforts to retain customers. For example, the supplier may respond by increasing expenses related to selling, marketing and branding. The commoditisation process described by Matthyssens and Vandenbempt thus ultimately have negative impact on organisations' financial positions through deteriorating their competitive differentiation potential.

Competitive bidding is a deeply-rooted tradition within the construction industry (Wegelius-Lehtonen, 2001), which According to Dubois and Gadde (2000) follows from the strong focus on the individual project and its economy. Customers expose suppliers to competition since it is assumed to be the best way to secure efficient operations. Standardised offerings is a prerequisite for tendering procedures, or buyers would not be able to evaluate the tenders (Dubois and Gadde, 2002a). Notably, commoditisation is recognised in the literature as a key challenge in many business markets (Matthyssens and Vandenbempt, 2008), and it seems that commoditisation in the construction industry follows from the logic in the construction industry.

Skanska Asfalt & Betong, hereafter referred to as Skanska A&B, operate within the Construction business stream of Skanska Sverige, which is one of the major construction companies in Sweden<sup>1</sup>. Skanska A&B contains six business units: Skanska Asfalt; Skanska Betong; Skanska Bergmaterial; Skanska Infraservice; Skanska Maskin; and Skanska Nordic. The first five are included in this study. A short overview of these five business units are provided in Table 1. The companies that purchase from Skanska A&B's business units are found in both the public and private sectors, as well as in other divisions of Skanska Sverige. The latter customers are referred to as "internal customers". The five business units each have their own sales organisation, operating in silos without any explicit collaboration in terms of sales efforts. To some extent, the business units share customers and can in parallel be supplying the same project. The products and services offered are fairly standardised and are perceived to be similar to those offered by competing companies. Primarily Skanska A&B's customers purchase products and services via tendering processes and thereby expose their suppliers to competition and price pressure. Attempts to differentiate their offerings from the competitors' offerings have been made by Skanska A&B via product differentiation. However,

<sup>&</sup>lt;sup>1</sup> Learn more about Skanska Sweden and their organisation at http://www.skanska.se/

the dilemma with product differentiation is that price most often is a more important factor than factors such as quality, total cost of ownership<sup>2</sup> and environmental impact. The transportation costs constitute a substantial share of the total cost and are further predicted to increase in the coming years, which will make it difficult to sustain the current profit margins. Additionally, the industry is becoming increasingly customer-oriented and Skanska A&B's competitors seem to be ahead in terms of partnering programs, consultative selling, and customised solutions<sup>3</sup>.

Business unit	Products and/or services	Turnover 2016 [MSEK]
Skanska Asfalt	Range of asphalt mixtures; pavement; deliveries	2,502
Skanska Betong	Ready mixed concrete; concrete pumping; deliveries; concrete analyses	715
Skanska Bergmaterial	Aggregate products (e.g. rock flour, macadam, crushed stone, soil, and re-cycled material); deliveries; analysis of excavated masses	1,473
Skanska Infraservice	Operation and maintenance of roads, bridges, public lighting; traffic control; construction jobs	482
Skanska Maskin	Rental services including a wide range of machines, handheld tools, sheds, and lifts; transportation; logistics solutions; project support; establishments; scaffolding	842

Table 1 Overview of the business units

Based on the above, the identified challenge for Skanska A&B is to find ways to differentiate their offerings from their competitors with means that shift the focus from competitive bidding, and still satisfy the customers' requirements. The market function believes there is a demand for bundled offerings that includes products and services from the five business units. The belief is influenced by the observations that customers to an increasing extent lack knowledge about Skanska A&B's products, and that the customers' projects are becoming more complex. Additionally, demand for bundled offerings has been communicated by internal customers, which is considered an indication of potential external demand too. Moreover, there is a shared belief across the business units' sales organisations that the key to profitable businesses and avoiding price focus is to offer customers "something else" than basic products and services. Currently neither bundled offerings nor joint solutions, i.e. solutions that are jointly designed and delivered by more than one business unit, are offered. In studies of other business markets, it has been recommended to provide solutions to achieve decommoditisation (Matthyssens and Vandenbempt, 2008). Therefore, it is possible that providing solutions could potentially become a point of differentiation for Skanska A&B too. In doing so, Skanska A&B could potentially take a position in which the total value for customers is increased, and total cost decreased, and thereby generate a win-win situation for both parties. However, customers' needs, demands, or perceived value of purchasing solutions have not been further investigated. This forms the background for this study.

<sup>&</sup>lt;sup>2</sup> Defined as "the sum of purchase price plus all expenses incurred during the productive lifetime of a product or service minus its salvage or resale price" (Anderson, Narus and Narayandas, 2009, p. 103)

<sup>&</sup>lt;sup>3</sup> Based on internal documentation

#### 1.1 Aim

This study aims to explore Skanska A&B's potential of selling solutions to customers in the private sector in the construction industry. Further it aims to provide insight to what distinguishes high potential customers and projects, and how solutions could be designed and delivered to generate value for both the Skanska A&B and their customers. Lastly, it aims to identify the challenges associated with becoming a solution provider.

#### 1.2 Problem description and research questions

In a recently performed customer interview study, six of 19 interviewees expressed that they did not perceive any advantages of Skanska A&B relative their competitors, thus suggesting that the offered products and services are perceived as equivalent to those of competing suppliers. As previously mentioned, provision of solutions may enable companies to restore the differentiation of a company's offerings. Tuli, Kohli and Bharadwaj (2007) emphasise that the purpose of providing solutions is to satisfy customers' business needs, and thus the customers' view on solutions, customer insight and internal resources and capabilities should be combined to enable value creation for both the supplier and its customers (Storbacka, 2011). Thus, as a starting point it is necessary to explore the value of solutions for Skanska A&B and their customers. Therefore, the first research question is formulated as follows:

1. What value would selling and purchasing solutions generate for Skanska A&B and their customers, respectively?

Customer relationships have been emphasised by sales representatives at Skanska A&B as being highly influential on the probability to win a contract, which is remarkable considering that price pressure is typically associated with transactional relationships (Anderson, Narus and Narayandas, 2009). Additionally, it is believed that project-specific solutions could be enabled through earlier involvement in customers' projects, which would ultimately require new ways of interacting with customers. In the literature, buyer-supplier relationships are emphasised as an important factor for the successful implementation of solutions (e.g. Tuli et al., 2007; Windahl and Lakemond, 2006). For example, customers' willingness to share vital information will impact the implementation (Windahl and Lakemond, 2006). Therefore, it is of interest to study Skanska A&B's current customer relationships for the purpose of fulfilling the aim of this study. Supplier-buyer relationships ranges along a continuum between pure transactional relationships and purely collaborative relationships (Anderson et al., 2009), and can be categorised in terms of function and substance, which refers to who and what is affected by the relationship, respectively (Håkansson and Snehota, 1995). The second and third research question are thus formulated as follows:

2. What is the current substance and function of the buyer-supplier relationships?

3. What implications does the buyer-supplier relationships have for the possibility to sell and purchase solutions?

Differences in customers' needs, purchasing orientation and buyer-supplier relationships will impact the attractiveness as well as suitability of solution offerings. Another aspect to consider is the cost and expected benefit of providing solutions. Providing solutions that are both effective and profitable is not easy (Tuli et al., 2007). Consequently, efforts to design and deliver solutions should be focused where the payoff is expected to be highest. However, the notion of *"the customer"* is complex in the context of the construction industry. The operations are based on projects and thus it is sometimes ambiguous whether the buying company or the project itself should be considered the customer. Therefore, it is of interest to investigate which customers and/or projects that solutions can be designed and deliver to create value for both the customer and Skanska A&B. The fourth research question will be formulated as follows:

#### 4. Which customers and/or projects should be targeted with solution offerings?

A potential implementation would require new means of organising business deals, as both the supplying firm and buying firm would need to adapt their organisations in order to sell and purchase solutions, respectively. For example, Gailbraight (2005) explains that providing solutions would require adaptations of a company's existing business orientation. Changes in strategies, structure, and processes in order to become more customer-centred would be needed. Windahl and Lakemond (2006) add that this could be challenging for companies with a strong product focus since the company would have to concentrate on finding the best solution instead of the best product. Moreover, providing solutions would require integration and cooperation between the internal businesses which could be challenging for companies who have not been working that way before. However, what specific challenges that Skanska A&B would face if they were to provide solution offerings are currently unknown and need to be identified in order to plan for a potential implementation. The last research questions will therefore be:

#### 5. What challenges are associated with becoming a solution provider?

#### 1.3 Outline of the report

#### Chapter 2: Methodology

This chapter presents the study's research design and research process, including the methods that have been used for data collection and data analysis, and provide details on the interviewees that have participated in the study. The chapter ends with a discussion regarding the quality of the study.

#### Chapter 3: Theoretical framework

This chapter outlines previous research within the areas of business market management, business networks, business relationships, and solution offerings to provide a frame of reference for this study. First a general overview is provided, followed by an overview of findings from research within the construction industry. The latter aims to outline the main characteristics of the construction industry to create an industry-specific frame of reference.

#### Chapter 4: The business network

This chapter illustrates the business network(s) that Skanska A&B operates within. First an overview of the general business network is provided, followed by a comparison of the haulers' different roles in the Gothenburg and Stockholm networks.

#### Chapter 5: The selling firm's perspective

This chapter presents the results from the internal interviews. First it introduces the five business units' sales organisations and portfolios of products and services, followed by an overview of the sales process and an explanation of the geographical locations of production plants' importance for winning contracts. Lastly the internal views on customer relationships and on the potential of selling solutions are presented.

#### Chapter 6: The buying firms' perspectives

This chapter presents the results from the customer interviews. First it explains the general purchasing process, followed by an overview of how the customers evaluate suppliers, involve suppliers in their projects, and their perspectives on supplier relationships. Thereafter the chapter presents and explains the customers' perceptions of solution offerings; including their view on why solution offerings would be valuable, and potential benefits and drawbacks of purchasing solutions. The last section presents the customers' views on conditions for change.

#### Chapter 7: Successful solutions - two cases

This chapter presents two cases of when Skanska A&B have delivered solutions to customers. In the first case, "Packat & Klart", a solution has been delivered by Skanska Bergmaterial. In the second case, "Illustrating a joint solution", it is illustrated how Skanska A&B's business units and a customer collaboratively have worked out a solution-based way of conducting business that creates value for all involved parties.

#### Chapter 8: Analysis

This chapter aims to answer the study's research questions. It is divided into six sections. The first five sections mirror the study's five research questions, and the sixth section provides recommendations for how Skanska A&B could proceed to develop their solution business.

Chapter 9: Conclusions

## 2 Methodology

This chapter presents the study's research design and research process, including the methods that have been used for data collection and data analysis, and provide details on the interviewees that have participated in the study. The chapter ends with a discussion regarding the quality of the study.

#### 2.1 Research design and research process

This study was carried out using a qualitative research strategy, and employed a case study design that was conducted in an explorative manner. A case study entails a detailed and intensive analysis of a single case, which can refer to an organisation, event, or other single objects of interest (Bryman and Bell, 2002). This study explored the potential of selling solution offerings in the construction industry from the perspective of Skanska A&B, and thus Skanska A&B was the case's unit of analysis. Employing a case study design was considered appropriate given that the case was an object of interest in itself, in contrast to providing a location in which to frame findings (Bryman, 2012). In addition, two embedded cases were used to add a practical perspective to the findings.

The case study was carried out using a systematic combining approach; which was introduced by Dubois and Gadde (2002b). In this approach, the theoretical framework, empirical study, and case analysis develop simultaneously, in contrast to a linear research process. Thus the research focus and the analytical framework are continuously reoriented in the light of the empirical world. Its most prominent characteristic is that the process contains an ongoing alternation between the empirical world and a model world. Through the continuous process of alternating between research activities and between empirical observations and theory, the understanding of both theory and the empirical phenomena can be expanded. The underlying assumption is that "theory cannot be understood without empirical observation and vice versa" (p. 555). The systematic combining approach illustrated in Figure 1 consists of two processes: matching, and direction and redirection. Matching aims to match theory and reality through alternating between framework, data sources, and analysis. Thereby, data need not be forced to fit a pre-determined theory, but the theoretical framework and data can be developed simultaneously to yield a fit between them. The second process; direction and redirection, direct and redirect the study and thus enables matching. Rather than directing data collection to confirm the current framework, multiple data sources should be used to enable unknown aspects to be revealed. Such aspects may result in redirection of the study and further development of the framework.



Figure 1 Overview of the systematic combining approach (Dubois and Gadde, 2002b, p.555)

Guided by Dubois and Gadde (2002b) this study was designed according to the systematic combining approach. The research process is illustrated in Figure 2 and describes that the literature review, data collection and case analysis proceeded simultaneously. The research process was thus not sequential in its nature, but alternated between the described research activities. Thereby, the theory supported the interpretation of data. At the same time, the empirical findings guided the choice of theory. Additionally, the empirical findings redirected the study and guided the subsequent data collection. The study was thus based on both passive and active data (Dubois and Gadde, 2002b): data that was searched for, and data associated with discovery, respectively. This alternating process proceeded until the analysis was considered finalised, and was followed by a phase of a concluding discussion and generation of recommendations.

LITERATURE REVIEW	CONCLUDING
EMPIRICAL DATA COLLECTION	DISCUSSION AND GENERATION OF
CASE ANALYSIS	RECOMMENDATIONS

#### Figure 2 The research process

Three main redirections were made during the study. The first redirection regarded the study's delimitations. Initially the study was delimited to only include external customers, not internal customers. However, as the internal interviews proceeded it became clear that the interviewees shared the perception that internal customers should be treated as are external customers. Therefore, it was decided to include internal customers in the study as well. The second redirection regarded the sample of external interviewees. Initially solely customers were supposed to be interviewed. However, the internal interviews showed that the haulers in the Stockholm area were becoming competitors in addition to being customers and suppliers, and played a key role in delivering solutions; whereas the haulers in Gothenburg solely acted as suppliers of transportation services. To enable a comparison of the haulers' roles in Gothenburg

and Stockholm it was decided to include Gothenburg haulers in the study too, despite them not being major customers of Skanska A&B. The third redirection regarded the theoretical framework. In the early phase of the study, the theoretical framework reflected the mainstream marketing literature and focused on how the selling firm create value for the buying firm. However, the interviews revealed that relational processes are important for value creation. Therefore, the theoretical framework's focus was redirected towards business relationships and interaction among firms.

#### 2.2 Data collection and data analysis

The study mainly employed interviews for collection of primary data, and reviews of internal documentation for collection of secondary data. In addition, primary data was collected informally through interaction with internal stakeholders in their daily work environment. The latter is an example of active data: interaction via for example small talk by the coffee machine enabled unexpected discovery of data that guided future data collection. In accordance to the systematic combining approach, the data was collected continuously throughout the study.

Interviews were held with internal stakeholders at Skanska A&B and Skanska Sverige, and with internal and external customers. The results from the interviews are presented in the chapters 4 The business network, 5 The selling firm's perspective, 6 The buying firm's perspective, and 7 Successful solutions - two cases. Since all interviews were held in Swedish the quotations have been translated into English. Literal translations are not provided, but the translations aim to convey the meaning of the original quotes. Further details on the interviews will be provided in the two following subsections.

#### 2.2.1 Internal interviews

In total, 21 interviews were held with 18 employees at Skanska A&B and Skanska Sverige to gain understanding of the organisation and analyse the current situation, including the internal perspective on selling joint offerings. The interviews focused on the sales process, current market offerings, customer relationships, and customers' purchasing behaviours. Ideas for change and examples of previous joint offerings were also discussed. Interviews were held with representatives from each business unit, and others with insight in customer needs and/or relationships. Details on the interviews are provided in Table 2 on the next page.

Table 2 Internal interviews

#	Interviewee's title	Organisation	Date	Duration
1	Sales Area Manager	Skanska Bergmaterial	31/01/17	1.5h
2	Market Strategist	Skanska Sverige	01/02/17	1.5h
3	Sales Representative	Skanska Bergmaterial	01/02/17; 09/02/17	1h; 0.5h
4	Sales Representative	Skanska Bergmaterial	01/02/17	1.5h
5	Market Manager	Skanska A&B	02/02/17; 24/05/17	1.5h; 0.5h
6	Business Intelligence	Skanska A&B	02/02/17	1.5h
7	Head of Sales	Skanska Bergmaterial	06/02/17	1.5h
8	Key Account Manager	Skanska Betong	06/02/17	1.5h
9	Sales Area Manager	Skanska Maskin	07/02/17	1.5h
10	Head of Sales	Skanska Betong	07/02/17; 09/02/17	1h; 0.5h
11	Sales Area Manager	Skanska Asfalt	09/02/17	1.5h
12	Sales Area Manager	Skanska Bergmaterial	10/02/17	1.5h
13	Sales Representative	Skanska Infraservice	10/02/17	1.5h
14	Sales Representative	Skanska Machine	10/02/17	1.5h
15	Project Developer	Skanska Bergmaterial	08/03/17	1.5h
16	Head of Sales	Skanska Infraservice	13/03/17	1.5h
17	Project Manager	Skanska Sverige	15/03/17	1h
18	Legal Counsel	Skanska Sverige	06/04/17	1h

Qualitative interviews were conducted because rich and detailed answers were sought, and there was a large interest in the interviewees' points of view (Bryman and Bell, 2003). An interview guide<sup>4</sup> was designed based on the outcome of the initial literature review. The same guide was used in the 12 interviews held with the representatives from the five business units' sales organisations. However, the questions were not asked in the same sequence and follow up questions were allowed for. The structure of such interviews is referred to as semi-structured (Bryman and Bell, 2003). The interviews held with the Market Manager, Market Strategist, Business developer, Project Developer, Project Manager and Legal Counsel were also semistructured, but individual interview guides were employed based on the topics of the interviews. The sampling of interviewees combined purposive sampling, i.e. selection of interviewees was based on relevance and knowledge; and snowball sampling, i.e. interviewees referred the interviewers on to other potential interviewees (Denscombe, 2014). The interviews with the sales organisations' representatives were scheduled for one and a half hour each. In two cases, the time was divided into two meetings. Interviews were held face-to-face whenever possible, and via telephone or video conference when needed. Interviews were held until a point of theoretical saturation had been reached, which occurred when new data confirmed rather than added to the analysis (Denscombe, 2014).

#### 2.2.2 Customer interviews

The customer interviews were semi-structured. Semi-structured interviews were considered most appropriate given that solution offerings were currently not offered and thus required a dialogue between the interviewers and the interviewees. The interviews were divided into three parts. First, the purchasing process was discussed. Second, supplier relationships in general and the relationship to Skanska A&B were discussed. Third, the interviewee were asked to express

<sup>&</sup>lt;sup>4</sup> The interview guide is provided in Appendix 1

their views on purchasing bundled offerings and solutions. An interview guide<sup>5</sup> was designed using the internal interview guide as a point of reference, and adjusted to capture the buying firms' perspectives. By using similar questions it was possible to capture both the internal and external perspectives on the same issues. During the interviews, one interviewer asked questions and one interviewer took notes. Additionally, the interviews were recorded to enable for data to be confirmed and avoid factual errors. In total, 25 customer interviews were carried out, of which four customers were haulers. 15 customer representatives declined the request to participate in an interview. Four interviews were held face-to-face and 21 interviews via telephone. Face-to-face interviews were preferred, as telephone interviews *"lack the immediate contextualization, depth and non-verbal communication of a face-to-face interview"* (Easterby-Smith et al., 2015, p.407). Interview details are provided in Table 3 below.

Table 3 Customer interviews

#	Interviewee's title	Type of firm	Turnover	No. of	Date	Duration	Cu	stome	r to <sup>8</sup> :
			[MSEK] <sup>6</sup>	employees <sup>7</sup>			AS	С	AG
1	Project Manager	Construction [I]9	-	-	15/02/17	1h	-	-	-
2	Production Manager	Construction [I]	-	-	10/03/17	1h	-	-	-
3	Production Manager	Construction	60	40	14/03/17	1h	$\checkmark$		$\checkmark$
4	Business Area Manager	Hauler	340	21	16/03/17	1h			$\checkmark$
5	CEO	Construction	400	78	17/03/17	1h	$\checkmark$	$\checkmark$	$\checkmark$
6	CEO	Hauler	-	-	17/03/17	1h	$\checkmark$		$\checkmark$
7	Operations Manager	Hauler/Construction	210	31	20/03/17	1h	$\checkmark$		$\checkmark$
8	CEO	Construction	11	5	21/03/17	1h			$\checkmark$
9	CEO, Owner	Hauler	575	21	21/03/17	1h	$\checkmark$		$\checkmark$
10	Site Manager	Construction	68	40	23/03/17	1h [P] <sup>10</sup>	$\checkmark$	$\checkmark$	$\checkmark$
11	Co-owner, Supervisor	Construction	47	4	23/03/17	1h [P]			$\checkmark$
12	Purchasing Manager	Concrete Supplier	1300	287	27/03/17	1h		$\checkmark$	$\checkmark$
13	Site Manager	Construction	380	41	29/03/17	1h		$\checkmark$	$\checkmark$
14	CEO	Construction	1500	34	30/03/17	1h	$\checkmark$	$\checkmark$	$\checkmark$
15	Co-owner, CEO	Construction	150	20	31/03/17	1h		$\checkmark$	$\checkmark$
16	Co-owner, Supervisor	Construction	100	27	04/04/17	1h	$\checkmark$	$\checkmark$	$\checkmark$
17	Founder, CEO	Construction	300	51	04/04/17	1h	$\checkmark$	$\checkmark$	$\checkmark$
18	CEO, Owner	Construction	60	33	05/04/17	1h	$\checkmark$		$\checkmark$
19	Production Manager	Construction	300	105	05/04/17	1h	$\checkmark$	$\checkmark$	$\checkmark$
20	CEO	Construction	440	111	06/04/17	0.5h [P]	$\checkmark$	$\checkmark$	$\checkmark$
21	Supervisor	Construction	300	200	06/04/17	1h	$\checkmark$	$\checkmark$	$\checkmark$
22	CEO	Construction	260	69	07/04/17	1h			$\checkmark$
23	CEO, Co-owner	Construction	150	71	07/04/17	1h	$\checkmark$	$\checkmark$	$\checkmark$
24	Founder, Co-owner	Construction	710	117	10/04/17	1h	$\checkmark$	$\checkmark$	$\checkmark$
25	Construction Manager	Construction	950	300	27/04/17	1h [P]	$\checkmark$	$\checkmark$	$\checkmark$

<sup>&</sup>lt;sup>5</sup> The interview guide is provided in Appendix 2

<sup>&</sup>lt;sup>6</sup> The column shows the turnover from 2015 or 2016, based on interview data or collected via http://allabolag.se. <sup>7</sup> The column shows the number of employees from 2015, 2016, or 2017; based on interview data or collected

via http://allabolag.se

<sup>&</sup>lt;sup>8</sup> AS denotes Skanska Asphalt, C denotes Skanska Concrete, AG denotes Skanska Aggregates

<sup>&</sup>lt;sup>9</sup> [I] denotes internal customers

<sup>&</sup>lt;sup>10</sup> [P] denotes phone interview

The sampling of interviewees was done through both snowball sampling and preferred sampling. During the internal interviews the interviewees were asked to recommend customers that were forward thinking, open to discuss new ideas, and potentially interested in purchasing solution-based offerings, as these criteria could not be assessed based on sales statistics or other secondary data. In total, 11 of the 25 interviewed customers were recommended during internal interviews. Preferred sampling was used for the remaining interviews. Skanska A&B has a wide customer base that vary in terms of for example company size, operations, and location. At the time of carrying out this study, there was no indication of what extrinsic factors could possibly impact customers' interest in bundled offerings and solution offerings, and thus such extrinsic factors were not used as basis for the preferred sampling. The sampling criteria were that the customer purchases or potentially could purchase several materials from Skanska A&B, as that was believed to indicate possibilities to purchase bundled offerings and joint solutions. The preferred sampling was conducted by using (1) an internal document provided by a Market Analyst at Skanska A&B, and (2) sales data provided by the Business Developer at Skanska Bergmaterial. The internal document listed customers that either had previously purchased materials from at least two different business units, or that the Market Analyst believed potentially could be interested in doing so. The provided sales data contained information on what materials the customers had bought as well as the invoiced sums.

#### 2.2.3 Embedded case studies

The interviews revealed two cases in which business had been conducted in ways that were in line with the study's understanding of solutions. Therefore, these cases were studied in greater detail and can thus be referred to as embedded case studies, as part of the greater case study. In the first case, similar solutions had been designed and delivered by Skanska Bergmaterial to three different projects. In the second case, Skanska A&B's business units and a customer collaboratively had worked out a solution-based way of conducting business that created value for all involved parties. The case studies added a practical perspective to the investigated topic.

The case studies were based on semi-structured interviews with Skanska A&B employees and internal and external customers that were involved in the respective cases. Details on the interviewees are provided in Table 4 at the end of this section. Snowball sampling were used in the sampling of interviewees to include in each case study. The purpose of the interviews was to provide (1) detailed descriptions of the cases, (2) insight to the perceived value of the offerings, and (3) key learnings from the efforts. Four interviews formed the basis for the first case, including interviews with one internal stakeholder, one internal customer, and two external customers. The first two interviews were held solely regarding the case, and the two latter addressed the case among other topics during "standard" customer interviews were held solely regarding the case, and the other addressed the case among other topics during a "standard" customer interview.

Table 4 Case interviews

	Title	Organisation	Date
Case 1	Project Developer	Skanska Bergmaterial	08/03/2017
	Project Manager	Skanska Infrastructure	02/04/2017
	Supervisor	Customer #21	06/04/2017
	Construction Manager	Customer #25	24/04/2017
Case 2	Market Manager	Skanska A&B	21/04/2017
	Co-owner	Customer #24	10/04/2017

#### 2.2.4 Data analysis

The process of preparing and analysing data was ongoing throughout the study. Detailed notes were taken during each interview and audio recording was used as support to enable prevention of factual errors. Ideas, insights and themes were recorded as they emerged, and directed and redirected the process as the study proceeded forward. For example, some interviewees were contacted again to discuss insights from the reviewed data. Whenever possible the data was verified by double checking with a second interview source.

#### 2.3 Methodology reflections

Reliability, replicability and validity are the most prominent criteria for assessing research quality. However, these criteria are more suitable for judging quantitative research than qualitative research (Bryman, 2012; Denscombe, 2014). It is suggested that the concept of trustworthiness can be applied instead; including the aspects of credibility, transferability, dependability, and confirmability (Bryman, 2012). Credibility concerns the accuracy and appropriateness of the data (Denscombe, 2014). This study employed interviews as a method for collection of primary data, which impact the credibility. For example, interviewees' perceptions of the interviewers have impact on the responses. Denscombe (2014) refers to this phenomenon as the interviewer effect. In addition, internal interviewees would likely be affected if the proposed changes in this study were to be implemented, which was taken into account during data analysis. Triangulation, i.e. cross-checking of data (Denscombe, 2014), was used whenever possible as means to increase the level of credibility, as proposed in the literature (e.g. Bryman 2012; Denscombe 2014). Thereby it could be avoided to base findings on individual interviews; rather emerging themes across the interviews were considered. Transferability parallels the concept of external validity (Bryman, 2012) and answers the question "'To what extent could the findings be transferred to other settings'" (Denscombe, 2014, p.333). The study mainly focused on the customers' perspectives, and thus the findings regarding potential customers and potential projects should be transferable to other firms in the industry as well. It should be noted that the study did not include a cross-section of customers which impact the transferability. The study's dependability reflects the extent to which the study constitutes reputable procedures and reasonable decisions, and thus approximates its reliability (Denscombe, 2014). This methodology chapter includes rich descriptions of the research process to enable the reader to assess the study. Lastly, confirmability is an issue of objectivity. It is however recognised that objectivity cannot be ensured in qualitative research as qualitative data are "the product of a process of interpretation" (Denscombe, 2014, p.334).

To increase the confirmability the data have been revisited throughout the study to ensure that it is data, and not the author's personal values, that motivate the conclusions.

## 3 Theoretical framework

This chapter outlines previous research within the areas of business market management, business networks, business relationships, and solution offerings to provide a frame of reference for this study. First a general overview is provided, followed by an overview of findings from research within the construction industry. The latter aims to outline the main characteristics of the construction industry to create an industry-specific frame of reference.

#### 3.1 Rethinking market exchange

The book *Rethinking marketing: developing a new understanding of markets* was published in 2004 and addressed the need to develop a new understanding of business marketing. One key issue being addressed in the book is the misfit between classical marketing thinking and the empirical world. Part of this issue is according to Håkansson, Henjesand and Waluszewski (2004, p.3) that most classical marketing models share "the influential heritage from traditional economic theory". The models rest upon the assumptions of the stylised market provided by economic theory, which was developed to simplify the empirical world's operations and translate them into mathematical representations. In the economic theory perspective, the boundaries of the market are given by a product: its demand, supply, and substitutes; and it is formed by the buyers and sellers of the given product (Snehota, 2004). Håkansson et al. (2004) further explain that the marketing actor is considered independent from other actors, and as having different or conflicting interests with buyers. The marketing actor and the buyer operate in a context characterised by exchange processes that allows for optimal resource allocation. According to Snehota (2004), price is the most important exchange mechanism. Because both actors share the meaning of the product and they know each other's needs and capacities, the price carry all or most information necessary to realise the exchange. Therefore interaction among actors is limited. In this perspective, Håkansson et al. (2004) explain that the roles of marketing actors and buyers are simply to "identify targets and to compete" and "make passive choices between given offerings", respectively (p.3). Exchanges between actors can thus be described as transactions: one object of value is simply traded for another, and it has neither history nor future.

The central yet passive role of the customer as well as the one-directed nature of the exchange process are key assumptions in the traditional marketing concept (Håkansson and Waluszewski, 2005). Håkansson et al. (2004) exemplify this by citing traditional marketing literature. The quotations illustrate how the traditional marketing literature assumes that the customer will purchase from the supplier that provides the highest value and thus the supplier compete on its ability to deliver value and customer satisfaction. Creating value is therefore considered the task of the marketing actor and the customer have no active role in the process. However, Håkansson et al. (2004, p.6) claim that "the gap between classical marketing thinking and empirical impressions of contemporary marketing is impressive". Whereas the traditional marketing thinking views exchanges as separate transactions between marketing actors and buyers, empirical studies indicate that exchanges are often repeated over time and involve interactions between several functions in both the supplying and the buying companies. Snehota (2004) explains that empirical studies of business markets rather indicate that market actors engage in rich communication and interaction that in addition to information exchange also entail important elements of social exchange. Further, the interactions have both history

and expected future which create interdependencies between involved actors. Snehota conclude that the market is characterised and defined by the set of actors and relationships rather than the product, as was suggested by the neoclassical perspective. Lastly, markets are not stable but evolutionary: actors and relationships continuously change, including the products exchanged. Actors mutually adjust to each other as well as to exogenous changes.

Once acknowledging that exchange processes are interactive and resources heterogeneous, it becomes evident that business markets are filled with dynamic features (Håkansson and Waluszewski, 2005). Empirical observations have redirected the marketing thinking towards business relationships and business networks. Håkansson et al. (2004) explain that whereas traditional marketing primarily consisted of transactions between the marketing actor and the buyer, contemporary marketing is an issue between exchange partners who are organised in network-like structures.

#### 3.2 Business networks

The previous section directed the focus to business networks. According to Ford, Gadde, Snehota and Håkansson (2002a) a network consists of companies and the relationships between them. The network is most often explained in terms of a number of nodes linked to each other by threads, where the nodes are actors and the threads are the relationships between them (Håkansson and Ford, 2002). Gadde and Håkansson (1993) present the "network model" that can be used to describe the structure of a network. The network model illustrated in Figure 3 depicts the network as consisting of three components: actors, resources, and activities. Everyone operating within the business network are actors. Some examples of resource components include products, capital, vehicles, competence and capabilities. The activities performed in a business network are represented by the activity components. Activities could for example be production, sales, transportation, warehousing or material handling.



Figure 3 The Network model (Gadde and Håkansson, 1993, p.112)

In addition to describing the structure of a network, Gadde and Håkansson (1993) explain that the model can be used to describe and analyse the development of a network. The network model provides a view of the interactions between the network's components. The actors in the network are interrelated as they are performing either complementary or competitive activities. In turn, the activities performed results in added value to a company's own resources from the purchase of others' resources. The authors explain further that the three components are interdependent. The activities are performed by the actors, who consume resources in order to put added value to other resources. The resources are controlled by the actors and the value of the resources are decided by the way activities are performed.

As explained by Ford et al. (2002b), a network cannot be centered around a specific company or defined by the company itself. That is because the view and surrounding of the network is affected by how the individual company perceives the network and thus it does not reflect the reality. Although all companies within the network may not have relationships with each other, they are still indirectly connected. Therefore, Wilkinson (2006) explains that none of the companies within the network can control the network or the relationships alone. Although some firms may have more control than others, no firm can alone adapt, design and implement the network in an optimal manner. Additionally, Ford et al. (2002a) explain that due to interdependencies, all actors within the network will be affected by possible changes in any of the existing relationship within the network. The impact could be either positive or negative. As a result of this, companies are able to indirectly affect each other through the direct or indirect impact of other actors in the network.

#### 3.3 Business relationships

A business relationship is created when a company frequently is doing business deals with another company over time (Anderson et al., 2009). Thus, a relationship is a result of an interaction process that has developed connections between the two parties, by which they produce mutual orientation and commitment (Håkansson and Snehota, 1995). Prior research has suggested that business relationships can be described as ranging along a continuum between pure transactional relationships and purely collaborative relationships (e.g. Anderson et al., 2009). The nature of relationships can be described in a more comprehensive manner by using the framework provided by Håkansson and Snehota (1995). The authors explain relationships in terms of the two dimensions substance and function. The substance dimension describes what is affected by the relationship in the respective firms. It consists of three layers: (1) activity links that connect internal activities within each firm, (2) resource ties that connect resource elements of each firm, and (3) actor bonds that are established through interaction between actors across the firms, and influence their perception of each other. The substance dimension is used by Snehota and Gadde (2000) to classify relationships in terms of involvement. The authors describe that relationships that score high or low in all three factors are described as high-involvement and low-involvement relationships, respectively.

Håkansson and Snehota (1995) suggest that a business relationship constitutes a 'quasiorganisation' and its function could be described in terms of team effects, stemming from the substance layers. The function dimension defines the effects the relationship have for different actors, which vary due to the interconnectedness within the network. The authors differentiate between three different functions: the dyad, the individual firm, and third parties. First, the interactions in the relationship have certain outcomes for the two actors i.e. the dyad. Second, the relationship has a function for the respective actors as they both affect and are affected by the relationship in different ways. Third, due to the interconnectedness within the network other actors than those directly involved in the relationship affect and are affected by the relationship. In all relationships the three functions are interwoven, and thus need to be considered when analysing a certain relationship and its development potential.

The involved firms in a business relationship are required to adapt to each other to develop and sustain the relationship (Håkansson and Snehota, 1995). Customisation of products, that is to produce something according to specific customer-demands, is one of the most well-known type of adaptations (Hallén, Johansson and Seyed-Mohamed, 1991). However, adaptations go beyond products and can be made by both involved parties, which is captured by Brennan, Turnbull and Wilson (2003, p.1639) who define inter-firm adaptation as "behavioral or organizational modifications at the individual, group or corporate level, carried out by one organization, which are designed to meet the specific needs of one other organization". Adaptations can according to Håkansson and Snehota (1995) be initiated and carried out as a response to a request, or emerge in an incremental and unplanned manner as a means to solve certain problems. Empirical findings suggest that adaptations may be both unilateral and reciprocal (e.g. Hallén et al., 1991). Although adaptations can be made by both the buying and the supplying side of the relationship, the empirical studies by Brennan et al. (2003) and Schimdt, Tyler and Brennan (2007) suggest that supplier adaptations are more frequent than customer adaptations. Additionally, empirical findings suggest that adaptation behaviour is influenced by the selling and buying firms' managerial orientation, referring to the preferences for relational or transactional marketing and sourcing, respectively (Brennan et al., 2003). At its most basic, Håkansson and Snehota (1995) explain that adaptations enable firms to function better vis-a-vis each other. Whilst adaptations in relationships bind the involved firms together and generate and reflect mutual commitment, they also pose constraints on the involved firms (Håkansson and Snehota, 1995). Snehota and Gadde (2000) conclude that on the one hand, well-developed, high-involvement relationships constitute a part of the core in the survival, growth and development of the firm. On the other hand, the same relationships lock the firm to its current ways of operating and delimit its possibilities to change. Adaptations are associated with extensive costs, including both switching costs, opportunity costs and sunk costs. Araujo, Dubois and Gadde (1999) thus summarise that the higher degree of involvement in a relationship, the higher are the associated resource demands. Therefore, the benefits received from closer involvement must offset the associated investments.

High-involvement relationships seem to have generally been understood as advantageous. However, recent evidence suggest that this is not necessarily the case. For example, Gadde and Persson (2004) discuss advantages and disadvantages of both high and low-involvement relationships, based on which they conclude that "there is no such thing as a 'universally best' type of relationship" (p.177). Given the costs associated with relationships, and that firms can reap varying benefits from different relationships, it appears justified to have different kinds of relationships within the same firm (Snehota and Gadde, 2000). Recalling that relationships are results of an interaction process, it is highlighted by Håkansson and Snehota (1995, p.46) that the single firm "cannot unilaterally control and decide the development of relationships". This is contradictory to the illusion of relationships to be an outcome of strategic decisions made by top management (Snehota and Gadde, 2000). Rather, the nature of the relationship between two firms depends on their mutual interest in each other (Anderson et al., 2009), market conditions, and occurring changes in other parts of the network (Wilkinson, 2006). This can be illustrated by the discussion of relationship longevity, referring to the length of a relationship, that is provided by Storbacka, Strandvik and Grönroos (1994). According to the authors, the outset of the analysis of longevity should be whether it resides in relationship intrinsic or extrinsic factors. For example, if the customer is limited to an oligopolistic supply market, the longevity of the relationship is highly influenced by extrinsic factors. Thus, as Clarke and Freytag (2008, p.1035) put it: "It is not only a matter of choosing and being chosen, but also for what purpose!".

#### 3.4 Solution offerings

Managing market offerings refers to the process of combining products, services, programs, and systems into offerings that create value for the firm's customers (Anderson et al., 2009). The first step in understanding how to combine offerings is to clarify the difference between the components. Doyle (1998, p.35) defines a product as "anything the firm offers to satisfy the needs or wants of customers". A service is more difficult to define, but Doyle provides five major differences in which the characteristics of a service distinguishes itself from products: (1) services are intangible, meaning that they cannot be touched; (2) services are inseparable as they are simultaneously produced and consumed in terms of time and place; (3) services are heterogeneous, which means that it is hard to provide standardised services as they are performed by humans and therefore it is hard to control the quality of services; (4) services are perishables as they are performed by human interaction, and can therefore not be stored; and (5) lack of ownership, since services are leased and cannot be owned by the customers. When products and services, separate or together, are designed and presented to meet the needs of customers, an offering is created (Doyle, 2011). To be satisfying for the customer, the offering should be created in a way in which the customer perceives higher benefits than sacrifices associated with purchasing the offering (Zeithaml, 1988). The problem-solving abilities of the supplier is an important factor when it comes to providing value to the customer. If the created offering is not satisfying the customer's needs, the customer will not buy the offering and thus all the tasks related to creating the offering will not generate any value. Therefore, it is important for companies to adapt their offerings to changes in customer needs (Brennan et al., 2007). With this in mind, Brady, Davies and Hobday (2006) argue that companies have to understand how value is created from the customer perspective in order to satisfy the customers, thus the offerings are influenced by the customers' preferences.

Some authors argue that adding services to products, in the literature referred to as "servitisation", can be a way for companies to enhance their value propositions and gain competitive advantage (e.g. Tukker and Tischner, 2006; Baines and Lightfoot, 2013). However, other authors suggest that servitisation is insufficient to gain competitive advantage. Davis (2004) explains that services have to be combined with products into solutions that are designed to address customer needs to gain competitive advantage. Therefore, the interest of combining services and products into solution offerings has increased (Windahl and Lakemond, 2006). The literature provides several definitions of what a solution is. In this study, Storbacka's (2011, p.669) definition of integrated solutions will be used "Longitudinal relational processes, during which a solution provider integrates goods, service and knowledge

components into unique combinations that solve strategically important customer specific problems, and is compensated on the basis of the customer's value-in-use".

The definition provided by Storbacka emphasises that solutions aim to solve customer problems. When offering solutions, the suppliers are expected to act as problem solvers. The customers are not only buying solutions for the ease of buying products and services together, they are rather paying for the trouble-free operation (Davies et al., 2006). Value chain integration is another type of solutions value proposition that is put forward by Miller, Hope, Eisenstat, Foote and Gailbraith (2002). In value chain integration the supplier takes over some of the customer's ongoing operations. Due to factors such as economies of scale and broad experiences, the supplier can perform certain activities better or more cost-effectively than the customer itself would be able to. It further reduces the customer's risk and allow the customer to focus on areas of core competency.

Suppliers that attempt to become solution providers may face several challenges. Tuli et al. (2007) emphasise that it is a balancing act to find a solution that is both effective and profitable. Miller et al. (2002) suggest that the challenges that must be overcome to profit from selling solutions are to provide better or more cost-effective solutions than the customers and the competitors can. If not, the customers will not be willing to pay enough for solutions to enable the solution provider to make a profit. Furthermore, many companies lack knowledge in how to integrate products and services into solution offerings (Windahl and Lakemond, 2006). Becoming a solution provider also require skills within the areas of key account management, risk analysis, financial acumen, legal skills, innovation management and portfolio management (Brady, Davies and Gann, 2005). Furthermore, the supplier's organisation must be reorganised in order to manage to design and deliver new types of solutions (Galbraith, 2002). It will also put higher requirements on the collaboration between the selling and the buying firms, as well as on collaborations within each organisation. A solution business model cannot be implemented by one single department in the firm. To be successful, the implementation has to be a firm-wide effort with support from all functions (Storbacka, 2011). Further, Windahl and Lakemond (2006) emphasise that the internal collaborations between business units have to increase as the development of solutions will require firms to develop their business, products and services in an integrated way, and not as separated parts in the offering.

Customer relationships must also be considered when a firm attempts to become a solution provider. As solutions aim to fulfil customer needs, it is necessary for the supplier to have a deeper insight in the customer's problems and applications. Developing long-term customer relationships and focusing on customer involvement are therefore of high importance (Galbraith, 2002). Furthermore, the study conducted by Tuli et al. (2007) revealed that suppliers and customers look at solutions in two different ways. Suppliers often have product-centric views of how solutions should be created, whereas the customers instead look at solutions from a relational process point of view. The gap between the actors' perspectives could lead to disadvantages for the selling firm in terms of lost sales opportunities and decreased customer satisfaction and profitability. Therefore, the suppliers must be willing to change the way they are working and become more customer-centric (Galbraith, 2002).

#### 3.5 The construction industry

"...construction is inherently a site-specific 'project-based' activity" (Cox and Thompson, 1997, p.128).

The quote above highlights the perhaps most salient characteristic of the construction industry: the work is project-based and each project is considered to be unique (e.g. Cox and Thompson, 1997). Wegelius-Lehtonen (2001) explains that although some process stages are similar in all projects, each project site is unique and thus also the project design. Therefore, Thompson, Cox and Anderson (1998) explain that construction projects rarely experience the benefits of repetitive orders or production-line activities, in contrast to manufacturing. Additionally, different actors are involved in each project, each with their own perspective of the project at hand and without common goals. Furthermore, Dubois and Gadde (2000) highlight that the roles of different actors greatly vary between projects. A certain activity can be carried out by the own workforce in one project, but outsourced to a subcontractor in the subsequent one. Thus two firms may be both partners and competitors at different points in time. In each project the roles of the actors are determined by the contractual form.

According to Dubois and Gadde (2000), the construction project can be considered a temporary network within the construction industry, which constitutes the larger permanent network. Thus, there are two network layers within the construction industry. In Dubois and Gadde (2002b) these findings were elaborated into describing the construction industry as a loosely coupled system. Couplings between activities can be explained as interdependencies that can be "tight" or "loose" depending on the degree of interdependency. Intra-project couplings are tight which is explained by the authors to depend on three factors: "(1) the importance of time, (2) the need to perform and coordinate the activities sequentially, and (3) the specialization of actors" (p. 624). In contrast, inter-project couplings are loose, especially between activities that are undertaken by firms outside the scope of the individual project.

The particular pattern of couplings that characterises the construction network is according to Dubois and Gadde (2002a) beneficial for productivity in projects. However, the loose couplings between projects make performance criteria relate to activities within the boundaries of each project, and thus it becomes problematic for contractors to coordinate efforts across projects. Additionally, it impedes interfirm cooperation, favours short term productivity, and hinders learning.

#### 3.5.1 Purchasing in the construction industry

In broad terms, purchasing refers to the process of acquiring resources and capabilities for the company from external actors (Anderson et al., 2009). In the first stage of the purchasing process, firms need to determine what resources and activities should be produced in-house versus what should be bought or contracted out (Van Weele, 2014). According to Dubois and Gadde (2012), more than two thirds of a construction company's total cost are generally made up of purchased goods and services. The construction industry has been part of taking the lead in the trend towards increased outsourcing, which has made suppliers increasingly important for the individual firm's performance. This has led to the questioning of what is seen as efficient purchasing and suitable supplier relationships.

The construction industry has been found to be heavily reliant on tendering procedures (Dubois and Gadde, 2000) and competitive bidding is a deeply-rooted tradition (Wegelius-Lehtonen, 2001). According to Dubois and Gadde (2000) this follows from the strong focus on the individual project and its economy. Exposing suppliers to competition is assumed to be the best way to secure efficient operations. For example, Frödell (2014) found that in 2012-2013, the three largest Swedish construction companies' annual reports highlighted purchasing as part of their core strategies. Their strategic activities included attempts to lowering the costs of purchased resources by inducing the suppliers to lower their prices, which would partly be achieved by using a broader supplier base to increase the competition.

Purchasing can be organised in various structures, and at different levels in the corporate hierarchy. Understanding the buying firm's purchasing organisation provides invaluable insight about who to approach and what levels and types of purchasing they control (Brennan et al., 2007). Empirical findings suggest that construction firms commonly have a hybrid structured purchasing organisation, in which a central purchasing department is responsible for strategic issues, whilst purchasing is carried out at the production level of the organisation (Frödell, 2011; Ellegaard and Koch, 2012). Building materials are mainly standardised materials, and the low degree of customisation seems to be a general theme in construction projects (Dubois and Gadde, 2000). Standardised offerings is a prerequisite for tendering procedures, or buyers would not be able to evaluate the tenders (Dubois and Gadde, 2002a).

#### 3.5.2 Buyer-supplier relationships

Generally, buyer-supplier relationships in the construction industry have been "arms-length relationships" (e.g. Cox and Thompson, 1997; Dubois and Gadde, 2000; Gadde and Dubois, 2010). Although many firms have a history of doing business, the relationships tend to be irregular and intermittent (Gadde and Dubois, 2010). For example, Thompson et al. (1998) explain that relationships are confined to the duration of the contract, and that "the focus of the transaction is *contractual* rather than *relational*" (p.33). Gadde and Dubois (2010) explain that the main reason for arms-length relationships in the construction industry is that firms strive to avoid dependence on specific actors. One underlying assumption is that firms that rely on a base of interchangeable suppliers are able to "(i) reduce uncertainty in single transactions since alternative suppliers are readily available, (ii) avoid becoming 'locked' into the technical solutions of a single supplier and (iii) encourage competition in order to stimulate supplier performance, primarily in terms of price" (p.257).

Gadde and Dubois (2010) highlight that there are substantial costs associated with competitive bidding, which will ultimately be paid by all buying firms collectively. First, costs are created for the buying firm in the process of evaluating tenders prior to each purchasing transaction. Second, buying firms will also have to pay for the costs that are incurred in the supplying company from participating in tendering processes that never materialise in sales. It has been reported that firms spend between 4 and 7 percentages of their turnover on tendering (Dubois and Gadde, 2002a).

## 4 The business network

This chapter illustrates the business network(s) that Skanska A&B operates within. First an overview of the general business network is provided, followed by a comparison of the haulers' different roles in the Gothenburg and Stockholm networks.

A network illustration does not reflect the reality, but the illustrator's perception of it. The network illustration provided in Figure 4 is based on the understanding of the network obtained during interviews with internal and external stakeholders. The circles represent business actors, and the lines represent relationships between the actors, referred to as *nodes* and *threads*, respectively. The illustration is simplified and only includes one node per type of actor. A more comprehensive network illustration would include several customers, competitors, and so on, as well as the relationships between them. In total nine types of actors have been identified and included in the network: the focal business unit, Skanska A&B, Skanska Sverige, Competitors, Customers, Haulers, Clients, Designers, and Consultants. These actors and their roles in the network will be described in the subsequent list.



Figure 4 The business network

#### Skanska A&B Focal business unit

This node represents one of the five business units within Skanska A&B. At this level of network complexity, the network looks similar regardless of what business unit constitutes the focal business unit.

#### Customers

The customer node represents the focal business unit's customer. It can for example be a construction company, building company, material producer, a hauler, or an individual. Alternatively, an individual project can be considered a customer. It has previously been described that the notion of *"the customer"* is complex in the context of the construction industry. It follows from the fact that the operations are project-based and thus it is sometimes ambiguous whether the buying company or the project itself should be considered the customer.

#### Skanska Sverige

This node represents the corporate group, containing four business streams. Thus, in a more comprehensive network illustration the node could have been depicted as several nodes; either one per business stream or per business unit within each business stream. Skanska Sverige can have several roles in the network; they can be a customer, a client, a competitor, or a contractor.

#### Skanska A&B

This node consists of top management and the four other business units within A&B. Top management sets the boundaries for the focal business unit's operations and impact the interaction with both internal and external actors. The other business units can have several roles in the network; they can be suppliers or customers to the focal business unit, and suppliers, customers or competitors to other actors in the network. For example, Skanska Bergmaterial supply Skanska Betong with material to be used in their production of concrete mixtures.

#### Haulers

The haulers provide transportation services to the other actors in the network. Skanska A&B outsources all deliveries to haulers. Framework agreements are procured by the central purchasing department in Skanska Sverige. The procured haulers are used by both the business units in Skanska A&B, and by other business streams within Skanska Sverige. The haulers can have different roles in the network. In addition to being a supplier of transportation services, they can also be a customer or a competitor to the focal business unit and/or the customer, which is further explained in section 4.1.

#### **Consultants**

Various consultants may be hired by customers and clients. For example, a consultant can be hired to create construction documents, requests for tenders, or contracts.

#### Designers

The designer node can be represented by a construction engineer, structural engineer, or designer that creates the drawings and specifies materials. The designer can be hired either by the customer or by the client, depending on who is responsible for designing the project.

#### Clients

The client has ordered the construction project and assigned a contractor who is the focal business unit's customer. The client could thus be referred to as "the end-customer". The client can be an individual, commercial, governmental or public actor.

#### **Competitors**

Competing firms include material and service suppliers, and haulers that either operate their own quarries or act as middlemen between Skanska A&B and their customers. Competing material suppliers will occasionally purchase materials and/or services from Skanska A&B.

#### 4.1 The haulers' different roles in the network

Skanska A&B do not operate any trucks themselves but use haulers with whom they have framework agreements. Most customers purchase the material including transportation services; whereas a smaller share of the customers purchase the transportation separately, or operate their own trucks. Moreover, customers also purchase material including transportation services directly from haulers. Thus some haulers occasionally act as middlemen between Skanska A&B and their customers. The interactions between the haulers, Skanska A&B, and the customers are illustrated in Figure 5 below.



Figure 5 a) The customer purchases material including transportation services from Skanska A&B; b) The customer purchases material from Skanska A&B and transportation services from a hauler; c) The customer purchases material including transportation services from the hauler.

Based on interviews with four haulers, it is evident that there are major differences in the haulers' roles in the network depending on if they are operating in the greater Stockholm area or the greater Gothenburg area. Whereas the haulers in Gothenburg solely have a supplier role in relation to Skanska Bergmaterial; the haulers in Stockholm act as both suppliers, customers and competitors to Skanska Bergmaterial. This will be further described in the two following sections.

#### 4.1.1 The haulers' role in Gothenburg

In Gothenburg, Skanska Bergmaterial use different haulers depending on which of Skanska Bergmaterial' plants the material is ordered from. The respective roles of the haulers and Skanska Bergmaterial are clearly defined, as explained by one employee at Skanska Bergmaterial: *"the haulers are offering transportation services and we are selling the materials"*. However, the situation is different outside of Gothenburg. In some districts, the haulers are big customers to Skanska A&B whilst in other districts, the haulers are both offering transportation services and operating their own quarries. The Skanska Bergmaterial employee explains that *"in some districts, the haulers have the direct contact with the customers and a lot of the sales are managed through them. But we want direct access to the end-customers so that we own the business deals"*. Therefore, measures have been taken to influence the haulers in Gothenburg to remain transportation service providers and refrain from becoming competitors.

Representatives from two haulers operating in Gothenburg were interviewed. Skanska A&B is a large customer to both of the firms. The first interviewee explains that his firm's role as a

customer to Skanska A&B is limited. Only a small volume of material is purchased annually. Rather, the firm is a supplier of transportation services to Skanska A&B. The firm has decided not to sell the same materials or services as provided by their customers as they do not want to compete with their customers. Instead their business focuses on transportation services and landfill solutions. If the end-customer requests excavated masses<sup>11</sup> to be removed from the project site, the deal is made via Skanska Bergmaterial. Likewise, if the end-customer for example requests that the purchased material should be spread upon delivery, it is Skanska Bergmaterial that makes the deal with the end-customer and orders the service from the hauler. Although that kind of service is rare, the interviewee acknowledges that it could be offered to a larger extent as such services are offered by other actors. Again he emphasises that his firm has decided not to become competitors to Skanska A&B.

The second interviewee explains that his firm is both a supplier and a customer to Skanska A&B. They provide Skanska A&B with transportation services, and purchases material from Skanska Bergmaterial. In addition to selling transportation services, the firm operates a number of quarries and a landfill business. That is, they offer both transportation services, aggregate materials, and landfill services to customers. The hauler also purchase material from other quarries and sell it to their customers. According to the interviewee, many customers request solutions: they want to purchase both the material and the transportation services from one supplier, especially if the solution also includes landfill services. He says that his firm aims to be a solution provider, and that offering solutions is a way to win more contracts. The hauler's quarries are not in the same areas as are Skanska Bergmaterial' quarries and therefore the two firms are not direct competitors. The interviewee explains that if his firm and Skanska Bergmaterial receive requests for quotations on the same job, they always discuss how to solve it. The situation is however different in a municipality south of Gothenburg. In that area the hauler purchase material from Skanska Bergmaterial and sell it to the customer and thus act as a middleman between Skanska Bergmaterial and the end-customer. That is however never the case with asphalt customers. The hauler operates asphalt trucks for Skanska Asfalt, but never purchase or sell any asphalt. The interviewee adds that "we do not want to take work from our customers. We do not want to compete, if we do we will not be chosen as a transportation service supplier".

Evidently, both interviewees are aware that their firms have the capacity to deliver other services than transportation services and that the customers request them to do so. It is explained that they could carry out certain project activities such as for example spreading aggregate materials upon delivery, but as they are dependent on Skanska A&B they do not want to become competitors. Yet, one interviewee mentions that this could be changed in the future and that they will likely start to deliver solutions. However, they do not intend to become competitors. Rather they emphasise that they are interested in developing their roles in collaboration with Skanska A&B, and that they could jointly provide solutions to Skanska A&B's customers. The interviewees clearly state that their firms are open for an expanded collaboration with Skanska A&B, as it would be mutual beneficial for the involved parties. Further, he believes that by being involved in projects to higher extents his firm could add

<sup>&</sup>lt;sup>11</sup> Masses of e.g. soil and rock materials that have been excavated at the project site.

value to projects. It is however explained that site managers decide whether to involve haulers, and that some site managers are unwilling to collaborate with the haulers.

#### 4.1.2 The haulers' role in Stockholm

The haulers operating in Stockholm have a more complex role than the haulers in Gothenburg. They have capacity to both deliver solutions to customers and take on contracts by themselves. A solution in this case could be to, for example, purchase materials from material suppliers and then execute parts of their customers projects, or transfer excavated masses between their customers' project sites. Thus some haulers have established a coordinating role in the network. The coordinating role is illustrated in Figure 6 below.



Figure 6 The hauler's coordinating role in the network. The customer (C) only does business with the hauler (H), who purchases material from two suppliers (S1, S2) that is delivered to the customer's two projects (P1, P2). Additionally, the hauler transports excavated masses from one project to the other, so that it can be used as input material at the project site. Lastly, the hauler transports excavated masses to the supplier's landfill.

Evidently, the haulers can simultaneously be both suppliers, customers, and competitors to Skanska A&B. Both internal and external interviewees describe that the haulers are delivering solutions that include transportation of new material and excavated masses, and landfills. To an increasing extent the haulers have become middlemen between Skanska Bergmaterial and their customers. There is a desire from Skanska Aggregate's point of view to do business directly with the customers. One internal interviewee says that *"the ambition has been to get more direct customers, but as we are dependent on our haulers we cannot sell directly to their customers"*. She further explains that when the haulers act as middlemen, Skanska Bergmaterial may have no contact with the end-customer at all. Skanska Bergmaterial have suggested to the haulers that they want to participate in the starting meetings i.e. the first meeting in a project where the client and the assigned contractors participate to establish a relationship to the end-customer. The haulers are however perceived as reluctant to working too close to Skanska Bergmaterial because they are afraid that Skanska Bergmaterial would try to sell directly to the end-customer. Again, the interviewee emphasises that *"...we are dependent on them, but they have not understood that yet"*.

Representatives from two haulers operating in Stockholm were interviewed. The first hauler considers Skanska A&B to be a partner with whom they collaborate. For example, the interviewee explains that his firm sells rock to Skanska Bergmaterial that they crush. Subsequently his firm purchases the crushed rock from Skanska Bergmaterial, and deliver it to his firm's customers. The firm is simultaneously both a supplier, customer, and competitor to Skanska Bergmaterial. They sell materials and transportation services directly to customers, and often the material is purchased from Skanska Bergmaterial i.e. they operate as a
middleman. The interviewee mentions that he believes that Skanska Bergmaterial wants to sell directly to the end-customer, but suggests that the customers prefer to work with one supplier rather than many and that his firm can offer both the material and the transportation. He explains further that Skanska Bergmaterial has previously made an attempt to cut his firm as a middleman by offering lower prices to the end-customers than to his firm.

The hauler has previously collaborated with Skanska Bergmaterial in some projects in which they delivered solutions together. The interviewee gives an example of a project in which the hauler had excavated rock that Skanska Bergmaterial crushed directly at the project site. In this case, the hauler had been responsible for the transportation, and Skanska Bergmaterial for selling the material. The interviewee says that Skanska Bergmaterial previously had a department that was very interested in delivering such solutions. He adds that his firm is open to deliver solutions collaboratively with Skanska A&B again but "*it all comes down to the people that are involved*".

The second hauler occasionally provide transportation services to Skanska A&B, and is also a customer to Skanska Bergmaterial and Skanska Asfalt. In addition to offering transportation services, the hauler also purchases and sells materials. The interviewee explains that his firm delivers materials from Skanska A&B's plants in two different situations. Either the transportation services are ordered by Skanska A&B who have sold the material to the customer, or both the material and the transportation services are ordered from the hauler by the customer. In the former case, the hauler simply delivers the material to Skanska A&B's customers. In the latter case, the hauler purchases the material from Skanska A&B and delivers it to their own customer. The customer pays a price per ton of material that includes the transportation services.

The interviewee explains that if their customers request something that is outside the scope of their expertise, they usually consult the issue with their suppliers. He says that collaborations between actors are becoming more common in the construction industry, and that "*you do what you are good at in a project and let others help with the rest. But - trust is important*". They are working with different kind of collaborations with different actors, but not with Skanska A&B as they are not able to offer any landfills which is important for the hauler's business. One example of a collaboration is when the supplier crushes rock at the project site and handle the sales of the crushed rock. The interviewee explains that since Skanska A&B is both a supplier and a customer to his firm, they are trying to do as much work for Skanska A&B as possible. He adds: "we believe that if both parties recurrently purchase products and services from each other it will generate more trust and more business deals".

# 5 The selling firm's perspective

This chapter presents the results from the internal interviews. First it introduces the five business units' sales organisations and portfolios of products and services, followed by an overview of the sales process and an explanation of the geographical locations of production plants' importance for winning contracts. Lastly the internal views on customer relationships and on the potential of selling solutions are presented.

Skanska A&B is a supplier of construction materials and services to infrastructure and construction projects in the Swedish construction industry. Skanska A&B contains five business units: Skanska Asfalt, Skanska Betong, Skanska Bergmaterial, Skanska Infraservice, and Skanska Maskin; which are organised as separate profit-driven firms. The organisational structure is illustrated in Figure 7 below. Skanska Sverige and thus also Skanska A&B have historically been highly decentralised, and local production units have generally been operating as individual firms. Over the years Skanska A&B have worked deliberately to become increasingly centralised. Nonetheless, the organisation is still highly characterised by the local perspective. There are large variations in business procedures across the geographical locations, which is partly explained to follow from that the business networks vary greatly across different areas of Sweden. Thus, the findings presented in the subsequent sections do not provide a complete description of Skanska A&B, but a more general picture of the internal perspective without consideration to local differences.



Figure 7 Organisational structure of Skanska Asfalt & Betong

# 5.1 The five business units and their sales organisations

Skanska A&B has historically been characterised by a high focus on production management, and less focus on sales strategies. Previously the production and sales organisations were mixed. However, sales strategies are receiving increasing attention and the business units now have their own sales organisations. The recently implemented CRM system also reflects the increased focus on sales and on customers. The CRM system enables the business units to get an overview of their customers and the sales pipeline, as well as of previous business deals. Previously, each sales representative compiled their own data in excel documents and thus it was difficult to get an overview of both customers and previous and upcoming projects.

The business units can be categorised into three categories: Skanska Bergmaterial and Skanska Betong are material suppliers; Skanska Infraservice and Skanska Maskin are service suppliers; and Skanska Asfalt is something in between as they both sell the material and carry out asphalt pavements. Each business unit represents their own portfolio of products and/or services, which are summarised in Table 5. The sales organisations and their portfolios are introduced in more detail in the subsequent sections.

Business Unit	Products and/or services	
Skanska Asfalt	Range of asphalt mixtures; pavement; deliveries	
Skanska Betong	Ready mixed concrete; concrete pumping; deliveries; concrete analyses	
Skanska Bergmaterial	Aggregate products (e.g. rock flour, macadam, crushed stone, soil, and re-cycled material); deliveries; analysis of excavated masses	
Skanska Infraservice	Operation and maintenance of roads, bridges, public lighting; traffic control; construction jobs	
Skanska Maskin	Rental services including a wide range of machines, handheld tools, sheds, and lifts; transportation; logistics solutions; project support; establishments; scaffolding	

Table 5 An overview of the business units' product and service portfolios

#### Skanska Asfalt

Skanska Asfalt's portfolio contains up to 500 different asphalt mixtures. Some of the recipes are classified as standard materials, and others are Skanska Asfalt's own mixtures. Skanska Asfalt's customers have different purchasing behaviours. Construction companies that carry out asphalt works in-house are typically experts on the material and only purchase the asphalt mixture as-is or including transportation services. These firms know what material they need and purchase it from the supplier that offers the lowest price. Construction companies that outsource the asphalt paving in their projects purchase both materials, transportation services and pavement services. Typically they know what materials that are required, and provide Skanska Asfalt with drawings according to which they carry out the asphalt pavements. There are also companies and private individuals that purchase both the materials, transportation services and pavement services, but that do not know what materials that are required, or how to carry out the job. For example, a company may own an asphalt surface that is in bad shape that needs to be repaired. In these cases Skanska Asfalt may design, choose materials, and carry out the job in accordance to what the customer wants, what the budget is, and what the asphalt surface will be used for.

#### Skanska Bergmaterial

Skanska Bergmaterial produces and sells a range of aggregate products, including rock flour, macadam, crushed stone, soil, and recycled material. In addition to their standard products, customised materials are offered too. The offered services include analysis of excavated masses and logistics services including delivery of purchased material, and removing excavated material from project sites. If possible, the same truck is used for both delivering the purchased material and removing the excavated masses; either to get rid of it or/and to process it into new material or sell it directly to another customer. Such transportation services have high demand due to cost-efficiencies and reduced environmental impact. However, they are relatively rare due to three reasons. First, return transportations are difficult to coordinate, partly due to time constraints. There is rarely sufficient time to spend on the extra planning required to enable

return transportations. Additionally, excavation of masses and delivery of material often occur in different stages of the project which limits the possibility to use return transportations. Second, not all truck beds are compatible with excavated masses, or the truck beds may become dirty from the excavated masses and pollute the new material. Third, the availability of landfills is highly limited. A necessary condition for efficient return transportations is that there is a landfill close to either the production plant or the project site. The landfill issue is further elaborated in section 6.2.1.

#### Skanska Betong

Skanska Betong produces and sells concrete. Produced concrete needs to be delivered within one to three hours, depending on its recipe. A large variety of concrete recipes are available and generally the production requires daily adaptations depending on the input material. A set of standard recipes according to European standards are offered. Additionally, customer adaptations can be made to fulfil certain needs or requirements. Skanska Betong either helps the customers develop adapted recipes, or customers provide their own recipes. Several additional services are offered, including transportation services, concrete pumping, a range of concrete analyses, and courses. The core business is however concrete and concrete pumping. Concrete casting is not offered; the Head of Sales acknowledges that it would be a lucrative business, but explains that it would make Skanska Betong competitors to their customers and thus they have chosen to remain material suppliers.

In 2014, Skanska Betong implemented a key account management (KAM) role, which is still under development. The objective was to improve the management of tendering processes for key projects. Key projects are defined based on the quotation value and typically run over several years. The KAM is responsible for calculating for quotations and, once a deal is made, for following up the project as it proceeds. The KAM is the customer's outspoken contact at Skanska Betong throughout the project. As described, the KAM role is centred around key projects rather than key customers. It follows from that it is initially unknown who the customer will be, as several contractors will participate in the tendering process initiated by the client. A key project could however be known years in advance and thus the KAM can start calculating and preparing for the project long before the contract is assigned to a certain customer.

#### Skanska Infraservice

Skanska Infraservice' service portfolio includes services such as operation and maintenance of roads, bridges, public lightning, and outdoor environments; traffic control; and smaller construction works, including for example asphalt pavements and excavation of masses. Skanska Infraservice' core business is operation and maintenance of roads. The Swedish Transport Administration is their largest customer, who procure operation and maintenance of different parts of the Swedish road network using contracts with lengths of six years. Thus, when Skanska Infraservice are assigned a contract they will establish an organisation in the local area. It is mainly in these areas that Skanska Infraservice can offer their other services such as for example smaller construction works. In addition, construction works are offered in Stockholm and in the south of Sweden where there are permanent organisations.

#### Skanska Maskin

Skanska Maskin became a part of Skanska A&B in 2016 after a re-organisation. Skanska Maskin is a rental service company that among many things offers a wide range of machines and handheld tools, sheds, and lifts for rent. They also offer project support, establishments, and scaffolding. Skanska Maskin mainly provide internal customers with services, but also have some external customers. Skanska Maskin recently implemented a KAM role. The KAM is responsible for managing customer relationships with customers that are purchasing from several customer centres. Thereby agreements with the customer can be centralised, and the local customer centres have to adapt accordingly. However, the KAM role is rather new and still under development. Skanska Maskin work with ABC-segmentation of their customers. Accustomers are paid extra attention; for example they are more frequently visited and invited to events. All new customers are considered A-customers to ensure they stay customers, as well as large internal projects. B customers are visited less frequently and may have more phonecontact. C customers are not prioritised "but should know that we are by their side".

## 5.2 Overview of the sales process

This section will provide a general description of the sales process. However, it should be emphasised that the business units' sales processes vary. Among other things, the sales processes vary depending on the customers and the projects. Customers either order directly from the production plants; or they procure the materials and services via tendering processes. The general sales process for customers that procure materials and services via tendering processes proceeds as depicted in Figure 8 below. It starts when a customer has decided to enter a tendering process initiated by a client, and therefore initiate its own tendering process. The customer sends a request for tender to a sales representative who chooses whether to join the tender process or not. Cost-based pricing is used and the price is calculated by the CRM system. A written tender is then delivered to the customer. Commonly both the prices of the products including and excluding delivery are specified, to facilitate the customer's evaluation of tenders.



Figure 8 The sales process

Generally a sales representative is responsible for calculating and delivering tenders, but several internal roles may be involved during the tendering process. Who they are vary between projects as well as between the business units. It can be sales managers, technicians, production managers, operators, calculators, and customer service representatives. These people can help with technical issues, logistics issues, and planning issues that impact the costs and thus the price provided in the tender.

Several customers may participate in the same tendering process for a client's project, and thus a business unit may receive several requests for tenders in parallel. In addition to a direct request from a construction company, an indirect request from the same company may be sent via a hauler, as explained in section 4.1. This adds to the complexity of the tendering process, especially as the different requests may be sent to different sales representatives or even business units. For example, Skanska Infraservice and Skanska Asfalt are occasionally asked for tenders for the same jobs as their businesses overlap in some aspects. Ensuring an internal dialogue is considered to be key to avoid leaving several tenders to the same customer or tenders to different customers that differ greatly in prices. The interviewees agree that *"everyone in this industry knows each other"* and therefore the customer relationships.

If the customer wins the client's contract the process proceeds. It is rare that contracts are written based on the tender given to the customer during the client's tendering process. Rather, the customer sends a second request for tender. Prices are reviewed and negotiated before a second written tender is delivered to the customer. During this process stage, customers sometimes call and explain that other suppliers are offering lower prices and ask if prices can be further reduced, which illustrates that some customers bargain with great efforts. Based on the outcome of the customer's tendering evaluation the business unit will or will not be assigned the contract. Prices that are agreed upon do not extend to other projects, but each project is procured individually. Call offs are made continuously throughout the project according to the contract specifications. Some projects run over periods of several years. In those cases the contracts typically include price indexes according to which prices are increased periodically.

Not all projects are procured via tendering procedures. For example, most of Skanska Maskin' customers place their orders directly to customer service representatives, either via phone or their website. Smaller orders of concrete, asphalt, and aggregates can also be handled directly by customer service representatives. Additionally, some customers have annual price lists or framework agreements that are used as bases for call-offs. However, if the volume exceeds a certain level many customers prefer to ask for quotations despite having price-lists or framework agreements, hoping to receive discounts.

# 5.3 Importance of geographical location

The geographical locations of the business units' production facilities are critical for winning contracts. This follows from the transportation costs' high proportion of the total cost. It is approximated<sup>12</sup> that the business units Skanska Bergmaterial, Skanska Betong and Skanska Asfalt generally span areas with radii of 30-40, 100, and 150 kilometres, respectively. This is illustrated in Figure 9 below. Traffic is another factor to consider in relation to geographical location. Traffic congestions is a big issue in larger cities and delays are costly for the customers if the delays result in idle machines and/or workers. Thus a shorter distance is

<sup>&</sup>lt;sup>12</sup> N.B. the radii differs across geographical areas of Sweden depending on the available supply of materials.

beneficial in that aspect too. Being able to reschedule deliveries to production plants nearby is also a way to prevent delays.



Figure 9 Illustration of the areas that are spanned by each production plant

The intensity of competition is consequently dependent on the geographical location. Generally, it is only in geographical locations where suppliers' areas overlap that customers' use of competitive bidding truly exposes the suppliers to competition, which is illustrated in Figure 10.



Figure 10 Illustration of areas in which suppliers are subject to competition

For Skanska Bergmaterial, the geographical locations of landfills are critical too. The cost of removing excavated masses from the project site is often more expensive than the cost of purchasing new material. Therefore, it is cheaper for customers to use a material supplier that is more distant, but that offers a landfill solution too. Transport distance is claimed to be the single most important factor in customers' purchasing decisions, but the possibility to offer return deliveries of excavated masses and landfill options is recognised as increasingly important too. Currently there is a high unsatisfied demand for landfill options on the market. The Market Manager explains that it is a consequence of recent regulations and requirements. Previously, excavated masses were dealt with by haulers. In many cases the masses were

simply discharged in the nature and thus there was an unlimited supply of "landfills". Dealing with excavated masses was therefore an unprofitable business that most actors chose not to enter. Due to recent regulations and requirements, excavated masses cannot longer be discharged in the nature. Additionally, setting up a landfill is a lengthy process due to the permissions required. Thus the supply of landfills is currently low.

# 5.4 Customer relationships

In general the interviewees describe their customer relationships as "good" and it seems that many of the relationships are characterised by personal relationships between sales representatives and buyers. The interviewees explain that they have different kind of relationships with different customers, and that they have adapted to the customers' preferences for how the relationships should be. For example, it is described by interviewees from both Skanska Bergmaterial and Skanska Asfalt that some customers prefer frequent and personal contact, whilst others prefer to have less contact. Further, the interviewees describe their relationships as long-term. They have been doing business with many customers for a long time. They describe that they cooperate with customers in individual projects, but they have no collaborations that are not connected to individual projects.

The interviewees at Skanska Betong also describe that many of their customer relationships are long-term, and depending on the individual sales representatives. Skanska Betong aims to have dialogues with their customers regarding the project pipelines and which projects are planned ahead. Such information is valuable for forecasting and planning reasons. There are no formal routines for gathering the information, but it is rather obtained during conversations with the customers that relate to other matters.

It is pointed out by one employee at Skanska Maskin that relationships are the most important factor in purchasing decisions. Customers will rent machines for several subsequent projects and thus relationships become very important as it will enable recurrent contracts. The importance of relationships in business deals have also been mentioned by Skanska Bergmaterial. One interviewee points out that in some cases it can clearly be seen that the personal contact between the supplier and buyer is important when doing business deals. However, she emphasises that regardless how good the relationship is, the price will determine if there will be a deal or not. Moreover, it is argued that the lowest price not always entails the lowest total cost if transports and coordination are handled efficiently. Personal contacts and previous experiences of working together are of great importance in this matter, as it will enable you to work more efficiently together.

# 5.5 Perspectives on selling solutions and joint offerings

It is frequently mentioned during the interviews that the business units strive to deliver the best solutions to each project. However, it seems that "solutions" in this context generally refer to solving certain problems in individual projects after the contracts have been assigned, via for example providing ideas on alternative aggregate materials or concrete and asphalt mixtures, or planning of deliveries. Currently bundled offerings are not provided, i.e. offerings that include materials and/or services from more than one business unit, and neither are joint

solutions, i.e. solutions that are jointly designed and delivered by more than one business unit. The term "joint offerings" will be used to describe both bundled offerings and joint solutions.

The five business units are internally considered as five separate firms. Sales statistics show that many customers purchase from more than one business unit. Yet the interviewees do not perceive that the business units share customers to a large extent. Each business unit has its own relationships to the customers and joint sales efforts are rare. Generally, in cases when several business units participate in the same tendering process, each business unit sends individual tenders including the materials and services offered in its own portfolio. Likewise, if several business units are assigned contracts during the same tendering process, they will proceed as individual actors in the project. However, Skanska A&B has recently started working on strengthening the integration between the business units. A work group including executives and personnel from each business unit, excluding Skanska Maskin, has regular meetings to discuss how they could increase the cooperation between the sales organisations. According to one sales representative, the objective is to jointly enter future tendering processes and consequently increase the number of assigned contracts as well as the profitability. Another interviewee explains that if one business unit has major advantages relative its competitors in one tendering process, that advantage can be utilised to generate business deals for the other business units too. For example, Skanska Bergmaterial may have a plant closer to the project site than its competitors and can therefore also offer a lower price; whereas Skanska Betong's plant may be further away from the project site than its competitors' plants and are therefore not able to offer a competitive price. However, if the two business units jointly provide an offering they can provide a price that is competitive and thus enable Skanska Betong to win the contract despite their disadvantageous location. Skanska A&B would benefit; whereas Skanska Bergmaterial would lower their profitability in the given deal, which is also why several interviewees believe that it would be a challenge to implement joint offerings. Another interviewee suggests that Skanska A&B are unique in the sense that they are able to offer the full range of products and services "under one roof" and that joint offerings could become a unique selling point.

The views on solutions and joint offerings differ among the interviewees. Some interviewees have a positive view on selling solutions. They believe that customers demand solutions and that selling solutions would offer an opportunity to charge higher prices. For example, customers have expressed interest for purchasing a "finished surface" from Skanska Bergmaterial, similar to the solution offering "Packat & Klart" presented in section 7.1. To be able to deliver such solutions one interviewee from Skanska Bergmaterial suggests that "we have to work closer together with Skanska Infrastructure" since Skanska Bergmaterial themselves do not execute the job but are dependent on subcontractors. It is also suggested that "the sooner we are invited by the customer to discuss the project, the more possibilities we can enable in the project and the better solutions we can provide". It is further suggested that most competitors offer solutions.

The interviewees representing Skanska Infraservice consider selling solutions to be a possibility for them to offer traffic control services as part of larger solutions provided by the other business units. For example, they could manage the traffic control during an asphalt pavement job carried out by Skanska Asfalt. One interviewee believes that many of the services in the service portfolio could constitute parts of joint solutions, especially in larger projects and

in areas where Skanska Infraservice have established organisations. Another interviewee, who seem positive towards the idea of selling joint offerings, provides an example of a previous joint effort to promote different business units to private road associations. He explains that the business units jointly can provide everything needed to build and maintain roads. In the promotion effort the involved business units jointly held a promotion event, at which each business unit promoted themselves and provided the participants with contact details to each business unit. The interviewee says that it is difficult to assess whether it generated business opportunities, but suggests that it was a good way to establish relationships with customers.

Other interviewees seem more sceptical towards joint offerings. For example, one interviewee expresses that he does not see how Skanska A&B would benefit from selling bundled offerings. Customers rarely ask for materials from more than one business unit and therefore it would be no point in providing joint tenders. Another interviewee claims that "*the truth is that there is no one in any of the business units who wants to sell together*". In the current sales organisations, each sales representative is a specialist on the materials and services that he or she represents. Therefore, the interviewee suggests that the sales representatives will oppose the idea of bundled offerings. Moreover, it is suggested that the sales representatives will argue that bundled offerings provide the customers with the opportunity to bargain: if the customer purchase large volumes and from several business units a discount will be expected. Therefore it is easier to charge more if the materials are sold separately.

To become able to sell bundled offerings, the interviewees agree that they need to learn about the other business units' activities and portfolios. It is also necessary to establish procedures for how to deliver joint tenders, rather than delivering individual tenders, so that Skanska A&B truly offers a joint offering and provide the customer with all materials and services that are required. The recently implemented CRM system is considered a facilitator for selling bundled offerings. It will provide a better overview of which customers are shared by the business units as well as in which geographical areas. It is also suggested that it would be necessary to visit customers together, although it could be a challenge given that the involved business units may profit differently from selling joint offerings. Other mentioned challenges are that the sales representatives have not worked like that before and thus change is required, and that the willingness to sell together with other business units needs to change. Lastly, it is considered necessary to review the economic aspect as the current individual profit targets do not support joint offerings.

# 6 The buying firms' perspectives

This chapter presents the results from the customer interviews. First it explains the general purchasing process, followed by an overview of how the customers evaluate suppliers, involve suppliers in their projects, and their perspectives on supplier relationships. Thereafter the chapter presents and explains the customers' perceptions of solution offerings; including their view on why solution offerings would be valuable, and potential benefits and drawbacks of purchasing solutions. The last section presents the customers' views on conditions for change.

## 6.1 The purchasing process

Purchasing is a project-specific activity which is carried out with a strong focus on what is best for the individual project. Figure 11 illustrates how the purchasing process generally proceeds. It starts with the client's initiation of a tendering process to procure a project. Thereafter, the customer decides whether to enter the tendering process or not. If the decision is to enter, the firm sends requests for tenders to selected suppliers. The provided tenders are reviewed and used as input to the firm's tender calculation. This process is managed by different roles in different firms; commonly the firms have calculators who are calculating on the projects. Once finalised, the tender is delivered to the client who reviews the received tenders and assigns the contract. If the firm is assigned the contract, its purchasing process proceeds. From this stage forward the purchasing process is carried out at project level; purchases are always made by someone in the specific project. Typically, it is the site managers, but CEOs, supervisors, production managers, and project managers can be involved too. Similarly, purchasing decisions are generally made by site managers and/or supervisors, but CEOs may occasionally be involved too, often depending on the purchasing sum. None of the external customers have a purchasing organisation that are part of the purchasing in projects.



Figure 11 The general purchasing process

The tenders received during the client's tendering process have little impact on which suppliers are chosen in the project. The suppliers are informed that the firm has been assigned the contract, and are asked to provide a second tender. On the one hand, the tenders provided during the tender process are usually only valid for 30 days and thus asking for a second tender may be necessary. On the other hand, most interviewees explain that the purpose of asking again is to enable them to bargain. Based on the tenders received, the firm assigns contracts to the chosen suppliers. Thereafter, orders are called-off in accordance to the contract terms.

Most interviewees explain that the second round of tenders enable them to pressure the suppliers to reduce the prices. For example, one interviewee explains that he and his colleagues will divide the tenders between them and then call the suppliers one-by-one to bargain. It seems that the second round of tenders indeed do impact prices: one interviewee claims that the prices tend to be reduced by 10%. In contrast, a few interviewees explain that they do not do a second round of tenders as they believe it does not lead to significantly lower prices. Similarly, some choose suppliers based on the tenders that were provided during the first tendering procedure if the volume is small, as the impact on the total cost is insignificant.

Although the general purchasing process proceeds in accordance to the above description, there are differences between firms, between projects within firms, and between resources within projects. For example, a few interviewees explain that they solely ask for tenders after they have been assigned the client's contract. As they believe they have knowledge of the price levels, they do not need tenders as input during their calculation processes. Order volumes impact whether firms use tender processes or price lists during the purchasing processes. Most firms have price lists that are used as bases for orders with smaller order volumes. It is considered time consuming to review tenders, and if the order volume is small, small price differences will not make a large difference to the total purchasing sum. In these cases, the geographical location of the suppliers' plants typically determine what supplier is used due to the transportation costs substantial share of total costs. Moreover, different products may be purchased at different stages in the project. For example, aggregate products are often used earlier in a project than are asphalt products, and aggregate products are therefore often purchased before asphalt products.

Most interviewees share the view that suppliers must be exposed to competition, otherwise the prices would increase. Therefore it is rare to purchase directly from a single supplier. It seems common to ask at least three suppliers for tenders to "get a sense" of what a reasonable price is. Exceptions are made when the order volumes are small as previously described, or when they believe that they are aware of what a reasonable price level is. In these cases, they use suppliers that they trust to provide reasonable prices. Moreover, exceptions are made if there is only one supplier within a reasonable distance from the project site. The interviewees are aware that suppliers are not truly exposed to competition unless their competitive areas overlap (see section 5.3 for an elaboration on the importance of the geographical location).

# 6.2 Evaluating suppliers

At first, nearly all interviewees respond that price is the most important factor when they choose suppliers in a project. They refer to price as the total price of the material and the transportation costs. The transportation costs constitute a substantial share of the total price and thus the geographical location of the suppliers' plants often become a determining factor when choosing suppliers. As interviewees elaborate on the issue of important factors it becomes clear that other factors can be equally or even more important than the price, depending on the types of purchased products and/or services as well as purchased volumes. For example, access to landfills is often the determining factor for purchases of aggregate products if excavated masses need to be removed from the project site. The price of the material is small relative the cost of removing excavated masses. Thus, if a supplier is able to offer a landfill site or a solution for dealing with the excavated masses, that supplier will be chosen for the material as well

regardless of the price. In contrast, the supplier providing the lowest price will be chosen if only aggregate products including or excluding transportation services are to be purchased.

Asphalt purchases most commonly include both the asphalt mixture and the asphalt pavement. For such purchases, most firms adopt a total cost orientation. The interviewees argue that the lowest price does not necessarily equal the cheapest option if the total cost is considered. If the quality of the pavement is substandard or not finished according to the schedule, the total cost will increase. Additionally, many interviewees express that their in-house knowledge of asphalt and asphalt pavement is low and thus they expect their suppliers to be experts. Smaller asphalt suppliers are claimed to often be cheaper; whereas they do not have the expertise that is requested by the customers. Reference projects and previous experience of using a supplier are therefore important factors when choosing asphalt suppliers, as these enable evaluation of the suppliers' performances in terms of both efficiency<sup>13</sup>, reliability and quality. The interviewees agree that if a supplier performs poorly it will not be used again. In contrast, if the asphalt purchase only includes asphalt mixture and transportation services, the interviewees consider price to be the determining factor as the suppliers' asphalt materials are perceived as being equivalent.

Only a few of the interviewed firms purchase large volumes of concrete. One interviewee is currently involved in a project where a substantial volume of concrete is purchased. He explains that in large projects the delivery dependability is one of the most important factors when choosing supplier. If the concrete mixtures are not delivered on time costs will increase due to idle people and machines. The concrete's quality and the supplier's ability to provide technical support are important too. The material price rarely differ significantly between suppliers and thus have smaller impact on the purchasing decision. However, most interviewed firms only purchase concrete for smaller concrete jobs. In these cases, price is the determining factor when purchasing concrete as the concrete suppliers are viewed as equivalents. This also applies to rentals of, for example, machines and sheds. However, none of the interviewees are currently renting products from Skanska Maskin. When asked why, the interviewees either used another supplier that offered lower prices; did not know that Skanska Maskin were offering their rental services to external customers; or did not know about Skanska Maskin at all.

Having a good relationship is also considered an important criterion when choosing suppliers. In many cases it seems that having a good personal relationship to the individuals in the selling firm is what characterises a "good relationship". It is argued that it *"must be fun to do business together"* and that *"personal chemistry is key in doing business together"*. To some of the interviewees personal relationships between themselves and the sales representatives seem more important than the companies behind the sales representatives. For example, one interviewee explains that if a salesperson changes company, he would not necessarily stop buying from the original company, but he would surely start buying from the new company. Another interviewee explains that he has been using the same asphalt supplier for an extensive period of time due to the close relationship with a certain contact person. However, now that this person has retired, the interviewee says that he is open to discuss business with other suppliers. The benefit of using a supplier with whom the relationship is described as good is

<sup>&</sup>lt;sup>13</sup> In this study efficiency is defined as obtaining the maximum output for given inputs. Efficiency can be assessed by determining the ratio of useful output to total input.

that the supplier knows the buying firm's wants, needs and working procedures. Likewise, the buying firm knows the supplier and its ways of working. However, most interviewees are reluctant towards using the same supplier too often as they do not want to become dependent on one supplier. One interviewee explains that the relationship does not make prices unimportant. Rather, *"good prices enable the establishment of good relationships and good relationships enable good prices"*. For this reason, many interviewees agree that if one supplier is used too often, other suppliers will raise their prices.

Other frequently mentioned criteria are material quality, previous experience of using the supplier, trust, availability, and delivery dependability. The criteria are not to be confused with determining factors in purchasing decisions. Nearly all interviewees agree that the price is ultimately the determining factor when choosing suppliers. However, some interviewees explain that they are willing to accept a higher price if one supplier is superior in terms of, for example, previous experience of using the supplier or delivery dependability, as it will ultimately be the cheaper option despite the higher price.

Even though all interviewees express that they have criteria that they consider important, only two firms formally evaluate their suppliers on the factors that they consider important. Rather, experience of working together and relationships are emphasised as important factors for evaluating other factors: "[Having a relationship] is often the only way to verify [quality, price, and delivery dependability]. These are difficult to judge based on what is written on paper. For example, gravel and concrete - it looks about the same regardless if it is delivered by [competitor 1] or [competitor 2]. But the delivery dependability must be good and you should receive the service that you expect. Conversely, you will obtain lower prices if the relationship is good. If the supplier knows that everything is in order on your project site the deal will be profitable to them: less time is required, less problems, they are paid on time. Thus, you will obtain better prices". Another interviewee explains that: "You can only evaluate delivery dependability, material quality and performance if you have worked together previously". During the interviews it is also argued that "if you have worked together before, you are willing to accept a higher price because you know what you will get". This seems to be especially important for asphalt, and is mentioned to be an underlying reason for why some interviewees are reluctant to change suppliers of asphalt.

## 6.3 Supplier involvement

In this context, supplier involvement refers to situations in which the supplier's role extends beyond solely delivering materials and/or services to a project. A couple of interviewees express that they do not involve their suppliers at all, simply because they do not perceive any need for it. These firms' scopes seem rather limited; the individual firm take on projects that are similar in terms of work activities and materials, and if a certain activity is outside the firm's scope it is outsourced. Most firms do however involve suppliers to different degrees. Commonly, the suppliers are involved in discussions regarding material choices and planning of certain activities in the projects, such as asphalt pavement and material deliveries. Some of the interviewees express that they have insufficient in-house knowledge in certain materials and therefore are dependent on the suppliers' expertise. It seems that they refer to materials that they rarely use. For example, few of the interviewees' firms do asphalt pavements and therefore depend on their asphalt suppliers to plan for the asphalt pavements, including what asphalt mixtures to use. Most interviewees however share the view that they know what materials are required to fulfil their requirements, yet the suppliers can suggest *"alternative solutions"* that benefit the project, which refers to suggestions of how things can be done differently in the specific project. Hereafter such suggestions will be referred to as "project-specific solutions". For example, the suppliers can suggest equivalent but cheaper materials, or suggest how return transportations of excavated masses can be carried out.

Discussions with suppliers generally occur after the suppliers have been assigned the contracts. However, most interviewees are positive towards receiving alternative project-specific solutions in the tender, provided that the original request is also priced to enable comparison of prices. The interviewees were asked whether the choice of suppliers is impacted if a supplier suggests alternative project-specific solutions. Some express that the provided alternatives will be discussed with other suppliers too to compare prices. Others express that the supplier that has offered an alternative will win the contract given that the price is reasonable, implying that the supplier is still benchmarked against other suppliers. The interviewees agree that if they proceed with the suggested idea with another supplier, the first supplier is unlikely to suggest ideas again.

Few interviewees explicitly express that their firms occasionally involve suppliers already during the client's tendering process. These firms can be roughly divided into two categories. The first group of firms occasionally involve suppliers because they have insufficient in-house knowledge. In these cases, they are dependent on their suppliers' expertise to be able to plan for how the project can be carried out and thus to be able to leave a tender to the client. The other group of firms acknowledge that by involving suppliers early, the suppliers become able to design better or cheaper project-specific solutions that can help them win the tendering process.

The interviewees were also asked whether they would be interested in involving suppliers earlier than they are currently doing. Many express that they are not interested in doing so, for the same reasons as previously specified. Others express that they could be interested in doing so, especially regarding material alternatives that can lower the prices. Lastly, a few are interested in involving suppliers to a greater extent to both increase their chances of winning tendering processes and find better project-specific solutions. The interviewees were further asked specifically whether they would be interested in involving Skanska A&B and their sales representatives to a greater extent than they are currently doing. Most firms agree that it would be beneficial to increase the supplier involvement. They acknowledge that Skanska A&B have expertise and abilities to solve problems and generate ideas that the customers cannot do alone, thus involving them could generate better project outcomes in terms of costs and quality. The role of the suppliers could be extended in the future to become more of a support role in the project. It is argued that it could bring added value to the customers' businesses as well as create win-win situations if project-specific solutions are found that benefit both parties. However, some interviewees point out that they are not willing to pay for the extra time spent by Skanska A&B. Additionally, some believe that if the supplier involvement is increased the customers would have to pay indirectly through increased prices, as Skanska A&B's increased costs would have to be covered.

# 6.4 Supplier relationships

Most firms have transactional relationships with their suppliers. Although the firms recurrently do business with the same suppliers, their supplier relationships do not extend beyond the transactions in the individual projects. However, within individual projects the relationships between actors may be more collaborative in its nature. For example, section 6.3 describes that firms to a large extent discuss project-specific issues with their suppliers after they have assigned contracts to the suppliers, but not before. One interviewee explains that "We might choose the more expensive offering if it involves a better solution, so that both of us can make a little more money. But the transaction is the key to conversations. Unless the price is right, you will not be invited to discuss [alternatives]". Notably, the interviewee is an advocate of increased supplier involvement as he believes it would generate better outcome in his projects.

Some of the interviewees prefer supplier relationships that are of the "arms-length" type. They explicitly express that they want to keep their suppliers at a distance to avoid situations in which negotiation becomes difficult due to dependency or too close personal relationships. Suppliers are kept at distance by avoiding using one supplier too frequently and/or limiting personal interaction. Yet the interviewees give examples of how they collaborate with suppliers in projects to find project-specific solutions that enhance the projects' results. For example, one interviewee explains that he commonly discusses project-specific solutions with suppliers in an interactive process, yet he believes that suppliers must be kept at a distance to be able to achieve the best result in each project. The underlying assumption seems to be that all options must be considered in each project, or else the best project-specific deal may be overlooked.

Whereas having a good personal relationship to the supplier's sales representatives was considered important for doing business; "good" supplier relationships are described differently. The essence of a good supplier relationship is the supplier's ability to fulfil the buying firm's expectations. For example, they think the relationship is good if the supplier provides good prices, delivery dependability is high, problems are solved together, and the contact person is available when needed. The interviewees elaborate on the issue to different extent. At minimum, the interviewees express that "[a good supplier relationship is when] they always know what to do, and they do it well". Other interviewees explain further that they value having a good dialogue and a win-win mindset. That is, when the buying firm and selling firm can work out project-specific solutions that benefits the project but also "works well" for the supplier, or enable the supplier "to make a little extra money". Trust is also emphasised by many interviewees as a key aspect of a good supplier relationship. One part of the importance of trust is that it makes it easier for the involved parties to solve problems. One interviewee explains that "trust makes everything much easier. If the supplier delivers material with poor quality it will generate more work, and it will be harder to solve, if you do not trust that supplier". The same interviewee further explains that building trust is about "personal chemistry, building relationships and to build up 'something' together in order to trust each other. [...] You keep your promises. That is what creates trust". Several interviewees explain that trust is built by doing recurrent satisfactory business deals with the same supplier.

Most interviewees agree that all suppliers are equally important as they want to keep a broad supplier base to get the best price in each project. A number of interviewees explicitly express that they systematically make sure to use different suppliers in different projects, to make sure that the supplier base is kept. Unless they use a supplier "*frequently enough*" that supplier will lose interest in doing business and thus prices will increase. Some interviewees talk about the importance of suppliers in terms of their importance to specific projects. For example, there is a limited number of suppliers available within a reasonable distance from each project site, and thus each supplier is generally equally important, but more or less important in specific geographical areas.

In contrast to what is described in the paragraphs above, a few firms have collaborations that are not linked to specific projects. In one of these firms, which will be described in more detail in section 7.3, long-term collaborative relationships is part of their business idea. The interviewee explains that he wants to work with people who are like-minded; people who want to do long-term win-win business. His focus goes beyond what is best for the individual project, but what is best for the firm long-term. Similarly, one interviewee that represents a Stockholm hauler explains that his firm collaborates with their competitors. They take on projects together and divide the deliveries between them: *"we help each other when there is either too much or not enough job to do"*. He adds that his firm is always open to collaborate with other actors: *"sometimes things go bad, sometimes things go well, but long-term it is for the best"*. Lastly, one interviewee represents a concrete supplier that involve their suppliers in the development of new concrete products, which is a kind of collaboration that is not project-specific.

Generally, the supplier relationships involve several individuals within each firm. It has previously been described that different people in the buying firm are responsible for purchasing in different projects as well as for different phases of the purchasing process. The interviewees agree that most selling firms look similar: they have different sales representatives in different areas, different teams that for example do asphalt works, and different people administering orders and coordinating transports. However, an individual in the buying firm may mainly have contact with one individual in the selling firm.

# 6.5 Customers' perceptions of Skanska Asfalt & Betong

The strong Skanska brand and its long history within the industry are often mentioned as reasons for choosing Skanska A&B in the first place. The general perception of Skanska A&B is that they are a large, serious actor with whom business runs smoothly and that there are rarely any problems in working with them. In case of problems, these are perceived as being solved together and that help can always be obtained in any matter. Two interviewees express that Skanska Sverige is a role model in the industry because of their strong focus on security at project sites and the environment. These interviewees highly appreciate these factors, and they explain that Skanska Sverige has encouraged them to follow suit. In contrast, some interviewees perceive Skanska A&B as a supplier. For example, Skanska Bergmaterial has high requirements on the excavated masses that they receive at their landfills, making it *"more convenient to use other suppliers"*.

Good price levels and the production plants' locations are the most common explanations to why Skanska A&B's different business units are used as suppliers. Generally their materials and services are perceived as being equivalent to those offered by competitors. That is especially the case for Skanska Bergmaterial' materials and services. Some of the interviewees perceive Skanska Bergmaterial as inferior to their competitors. It is explained that other firms to a larger extent offer solutions related to transportations of excavated masses, landfills, and crushing and reusing rock at the project site. Especially the need for landfills is emphasised; several interviewees explain that they choose to purchase material from Skanska Bergmaterial' competitors as the competing firms are able to handle excavated masses and coordinate return transportations. Often these competing firms are haulers.

The interviewees do not perceive Skanska A&B as one actor, but perceive the business units as separate actors, with whom they have separate relationships. This is explained by one of the interviewees: *"The relationship to Skanska Asfalt is more personal; their people carry out their job on our project sites. We meet beforehand and review the project plan together and agree on how the work should be carried out and when. [The relationship to] Skanska Bergmaterial is not that personal; they provide prices via email and our guys call the operator to order gravel including delivery services. The guys also call Skanska Betong to order concrete. They specify the type, the volume, when it should be delivered and how it should be unloaded. Clearly people-to-people interaction is required to make that work and make sure everything turns out right".* 

Generally the customers have many contact people at Skanska A&B. In addition to the sales representatives, there are order administrators that administer the orders and deliveries, and production teams that carry out asphalt works. The interviewees further explain that they work with different people at Skanska A&B depending on the geographical location of the projects. Therefore, the relationships to Skanska A&B's business units are also shifting across geographies. One interviewee explains that he has a good cooperation with Skanska Asfalt in areas north of Gothenburg; whereas his firm and the local Skanska Asfalt organisation in Gothenburg *"are not there yet"*. To different degrees, many individuals in the customer firms have contact with Skanska A&B. It mainly follows from the fact that the site managers are generally responsible for purchasing all resources required to carry out their own projects. As has previously been described, other people may be involved in purchasing too such as CEOs, supervisors, and calculators and thus they may have contact with Skanska A&B too.

# 6.6 Perspectives on purchasing solutions

Towards the end of the interviews, the interviewees were asked to provide their perspectives on the ideas of purchasing bundled offerings and solutions. These perspectives will be presented in the following subsections.

### 6.6.1 Categories of customers

The idea of purchasing solutions was discussed with the interviewees. Whereas some interviewees freely talked about solutions and ideas for solution offerings; other interviewees had difficulties to imagine what a solution could be and were therefore provided with examples. At first sight, it seems that the interviewees can be roughly divided into three categories based on their interview responses: those who are explicitly interested in purchasing solutions; those who could possibly become interested; and those who are explicitly negative towards the idea. However, a more comprehensive understanding of the interviewees' perspectives on solutions is obtained when their responses are coupled to other responses given during the interviews.

Evidently firms that express similar views on purchasing solutions share views in other aspects too. By coupling these responses it is possible to form categories of firms. It should be pointed out that the categories are general descriptions based on the interviews and might not fully reflect the included firms. The categories are introduced in the below paragraphs and are thereafter summarised in Table 6.

#### Category 1

In the first category, the firms do not perceive any potential value in purchasing solutions. These firms neither utilise suppliers' competence nor have any interest in doings so as they consider themselves having all the required competence in-house. Although they have used some suppliers repeatedly over the years, the firms' supplier relationships are not utilised beyond facilitating transactions. That is, the suppliers are solely considered material and/or service suppliers. Outsourcing of certain activities is used if the activities fall outside the scope of the firms' businesses.

### Category 2

In the second category are the firms that understand that purchasing solutions potentially could have some benefits. One site manager expresses: "*I get the idea, but I am not interested [in purchasing solutions]*". Similarly to the first category, these firms do most work in-house unless the activities fall outside the scopes of the firms' businesses. Suppliers are kept at a distance, and the firms express no interest in utilising their suppliers' competence. Two firms share the view that purchasing "more" from one actor could be beneficial as the larger purchasing volume enable them to bargain. They seem to consider "purchasing a solution" to be equivalent to outsourcing an activity. Additionally, they would only be interested in purchasing a solution if the price was lower than the cost of carrying out the activities in-house.

Notably, the interviewees that represent firms that are placed in the two first categories recognise no or little needs for change in the industry or ideas of how anything could be done differently; they are simply content with the way things are. Among these interviewees are also the strongest advocates of the opinion that the construction industry is highly conservative and therefore changes of any kind would be difficult to implement.

### Category 3

In the third category, the firms are increasingly perceiving potential benefits of purchasing solutions, although they have not yet done so. Likewise, these firms are increasingly aware of the benefits of utilising suppliers' competence, although it is currently not done to a large extent. These firms are however positive towards the idea of purchasing solutions and generally express willingness to try new ideas. They talk about benefits beyond price reductions: suppliers as specialists could contribute with ideas that generate better project outcomes for the project as a whole.

#### Category 4

In the fourth category, the firms have an ambition to purchase solutions and/or work in a more solution-oriented manner with their suppliers. Some of the firms have previous experience in purchasing solutions. Suppliers are often involved in these firms' projects to different extents. Many of these firms invite suppliers to discuss ideas already in the tendering process to increase the possibility to win the client's contract. Some are more interested in purchasing solutions that are developed by their suppliers; whereas others are more interested in working closer with

their suppliers to jointly develop working procedures and solutions that increase the efficiency of the project.

### Category 5

In the fifth category, the firms have experience in purchasing solutions. These firms are similar to the firms in category four, but distinguish themselves by their pronounced objectives to collaborate with suppliers and purchase solutions. They also discuss how that can be achieved, and recognise that solutions are not a one-directed issue, but result from interaction processes between the buyer and the seller.

### Category 6

Two of the firms cannot easily be categorised with any of the other firms, but could be representing categories of their own. These two firms to a large extent already do business with their customers and suppliers in a solution-based way. Although these firms have very different ways of working with solutions, they share two aspects that distinguish them from the other firms. First, they focus less on what the suppliers can do for the buying firm; and focus more on what the buying and selling firms can achieve together. One interviewee explains that "*You use each other's competences; you do what you do best*". Second, the firms have a distinct long-term focus that goes beyond individual projects. The firms recognise that when you collaborate with other actors it may not be possible to obtain the best deal in every project, but it enable the firms to benefit long-term.

Table 6 Categories of customers

	View on solutions	Characteristics
1	Perceives no potential value No previous experience in purchasing solutions	Suppliers' competences are not utilised Suppliers are not involved in projects Suppliers are kept at a distance Do most work in-house, unless certain activities fall outside the scope of the firms' businesses
2	Perceives little potential value: larger purchasing volumes would enable them to bargain No previous experience in purchasing solutions Solutions of "value chain-integration" type The price must be lower than carrying out the activities in-house	Understanding of potential value of purchasing solutions Do most work in-house, unless certain activities fall outside the scope of the firms' businesses Suppliers are not involved in projects Suppliers' competences are not utilised Suppliers are kept at a distance
3	Perceives potential value: price reductions, suppliers' competence can generate better project outcomes No previous experience in purchasing solutions Positive towards the idea of purchasing solutions	Aware of the benefits of utilising suppliers' competence, although it is not done to a large exent Express willingness to try new ideas
4	<ul> <li>Perceives potential value: better project outcomes</li> <li>Ambition to purchase solutions and/or work in a more solution-oriented manner with suppliers</li> <li>Some have previous experience in purchasing solutions</li> <li>Interested in purchasing solutions, or developing solutions in collaboration with suppliers</li> </ul>	Suppliers are involved in projects Suppliers are invited to discussions during tendering processes to increase possibility to win the client's contract
5	Experience in purchasing solutions Pronounced objectives to collaborate with suppliers and purchase solutions Solutions are not one-directed issues, but result from interaction processes between the buyer and seller	Suppliers are involved in projects Suppliers are invited to discussions during tendering processes to increase possibility to win the client's contract
6	Do business with their suppliers and/or customers solution-oriented ways Utilise each other's strengths and co-create solutions	Focus less on what the supplier can do for the buying firm; and focus more on what the buying and selling firms can achieve together Distinct long-term focus that goes beyond individual projects Maximise profits for the firm, not in each project

### 6.6.2 Potential solutions

Different kinds of potential offerings were discussed with the interviewees. The most basic offering that was discussed was the bundled offering, i.e. an offering that combined materials and/or services from more than one business unit from Skanska A&B. The interviewees were not interested in paying one price for the whole offering; but emphasised that they wanted each component to be priced individually to facilitate price comparison. However, some interviewees believe that receiving one tender for several materials could be beneficial in terms of price, as purchasing a larger total volume may give them discounts. In contrast, other

interviewees think that bundled offerings would be more expensive. If each material is purchased separately, the buyer is able to argue that the offering is equivalent to the offerings of other suppliers and can thus bargain the prices. If several materials are purchased together the offering is more difficult to compare to other offerings, and thus the possibility to bargain becomes limited. Furthermore, most interviewees agree that purchasing bundled offerings would make their purchasing process somewhat more efficient as they would have to deal with less people and review less tenders, thus decreasing their purchasing costs. However, most interviewees agree that the idea of purchasing bundled offerings from one sales representative would be unviable since they believe that one sales representative cannot alone have expertise in all materials or sufficient time to sell bundled offerings. Further, many agree that it would be important that the personal chemistry must be right. No specific obstacles are mentioned in regards to the possibility for the buying firm to purchase bundled offerings, although some add that Skanska A&B do not work that way and it is not easy to imagine how they could do so given that Skanska A&B are separate actors. Several interviewees express that it is up to Skanska A&B to decide: "If Skanska says we should purchase several materials from one salesperson or ask for several materials in one tender, we will do that". Lastly, some interviewees explain that they purchase their material in different phases in certain projects and thus it would be unfeasible to purchase bundled offerings in these projects.

Solution offerings were also discussed with the interviewees. The discussed solutions were either suggested by the interviewees or the interviewers, and were discussed in view of different degrees of complexity. The most commonly discussed solutions were: (1) rock blasting and/or crushing rock at the project site, (2) handling of excavated masses, (3) earthwork including the delivery and spreading of aggregates, compacting, and grading of the surface (equivalent to the solution "Packat & Klart" which is described in section 7.1), and (4) asphalt pavement including road markings. Some also suggest that they would be interested in purchasing solutions including both "Packat & Klart", asphalt pavement, and road markings. Other suggested potential components that could be included in a solution are sampling of excavated masses, paving slabs, detailed planning, and soft road shoulders.

The firms' interest for different solutions can be explained by the firms' business scopes, including the types of projects they carry out and what competences they have in-house. For example, firms that do not have, or rarely have, asphalt pavements in their projects do not express any interest in purchasing asphalt and road markings in a solution. Moreover, rock blasting is outsourced by most firms, and the rock is rarely crushed on site and is further expensive to remove from the site. If the rock is crushed on site it can either be reused at the project site, be sold to other project sites or aggregates suppliers, or removed from the project site at lower costs. One interviewee suggests that such solutions would have high potential as no other actors currently provide that. Further, many of the firms use subcontractors for asphalt paving and road markings as they do not have the required resources or knowledge in-house. None of the interviewees had heard about any supplier that offers both activities, but express that it would be beneficial to purchase the activities from one supplier as it eliminates the buying firms' need to supervise the interface between the activities. Some interviewees suggest that other activities could be added to the solution too, such as preparing the surface before the asphalt pavement. Moreover, some interviewees express interest in solutions that are found within their firms' business scopes. For example, several interviewees express interest in purchasing earthworks including the delivery and spreading of aggregates, compacting, and grading of the surface, especially in large projects. Typically these firms carry out the associated activities in-house, but in large projects it could be beneficial to purchase a solution either because they do not have sufficient resources in-house, or because they believe that other actors may be able to carry out the activities more efficiently.

## 6.6.3 Perceived benefits and drawbacks of purchasing solutions

In this section the perceived benefits and drawbacks associated with purchasing solutions will be summarised. Generally the interviewees related their answers to the solutions described in the previous section.

### Time savings

Time savings are mentioned as a potential benefit of purchasing a solution. The high time pressure in projects is a recurrently discussed issue during interviews, and is perceived as a problem. It is believed that time savings could be made if suppliers deliver solutions in projects and carry out parts of the project activities.

### Risk elimination

Projects are considered to be subject to risk; if something goes wrong when activities are carried out it may result in substantial costs. Purchasing a solution could potentially decrease the perceived risk as part of the risk would be transferred from the buyer to the supplier, as the supplier takes on the responsibility to carry out certain activities in the project. One interviewee explains that if you purchase a solution you will know beforehand what you will pay for that certain part of the project, and you therefore do not have to worry about unexpected costs should something go wrong.

### Environmental benefits

The customers believe that solutions would be a way to reduce the negative impact on the environment. Especially coordination of transportations and of materials between project sites, and crushing and reusing rock at the project site would reduce the number of transportations.

### Fewer actors involved

It is considered beneficial to have one actor responsible for a larger share of the project instead of having several actors responsible for different activities. Four major explanations are given. First, it is considered time-efficient to only dealing with one actor. Second, it is considered an opportunity for cost-savings. On the one hand, it is an opportunity to bargain as a larger volume of products and/or services are purchased from one actor. On the other hand, only one actor is to make a profit. Third, it is explained that things tend to go wrong in the intersection between project activities when several actors are involved, and by purchasing a larger solution from one actor the mentioned risk is decreased. Fourth, when fewer actors are involved it is easier to coordinate the work at the project site as the responsible actor has to consider fewer actors when executing their activities.

### Cost savings versus increased prices

Cost savings related to purchasing solutions are discussed in the light of two different views. First, some interviewees believe that purchasing a solution could be cheaper than carrying out all activities in-house, as the supplier may be able to carry out the activities in a more efficient way. Second, cost savings can be incurred due to using one actor instead of several, as previously explained. Cost savings would be incurred in the purchasing process as it would be more time efficient to purchase a solution from one actor compared to negotiating prices for each material and/or subcontracted activity.

In contrast to the idea that purchasing solutions could be cheaper, some interviewees believe that purchasing solutions would be more expensive as the supplier will take on more responsibilities. A few interviewees explain that they are afraid of being ripped off; or that they would end up having to pay for additional material or services that they had not planned for. For example, one interviewee explains that in a previous solution that he had been involved in, his firm had to inspect the result of the delivered solution which added costs that had not been considered during the price evaluation prior to the purchase.

### Better outcome

Many interviewees consider the suppliers as experts in the materials and services that they provide. Therefore, the suppliers are also believed to be able to design and deliver solutions that generate better outcomes in terms of for example quality, time, and cost. Some of the interviewees express that they want to develop the solution in cooperation with the supplier and thereby take advantage of the supplier's expertise. In contrast, other interviewees express that they want the supplier to develop and deliver the solution without being involved.

#### Skanska A&B may become a competitor

Some interviewees express concerns that Skanska A&B potentially could become a competitor if they started offering solutions. One interviewee argues that "there is a fine line between delivering solutions and becoming competitors". Another argues that "[suppliers] should be careful not to compete with their customers". These firms are mainly firms whose main business is to perform earthworks such as "Packat & Klart". Several of these firms explain that their role would disappear if Skanska A&B would start delivering earthworks to customers and/or clients.

### 6.6.4 Project characteristics' implications for purchasing solutions

During the interviews it emerged that the interviewees believe that the individual project's characteristics have impact on the perceived value as well as perceived suitability of solutionbased offerings. Four key characteristics could be identified: project size, type of contract, degree of complexity, and sequence of project activities. These characteristics are elaborated below.

*Project size* can refer to either project volume; project length; or project budget. Larger projects are considered more suitable for solution offerings. One reason is that larger projects are subject to greater risks. For example, if something in a project does not turn out right it will have major impact on the total cost. In addition to risk, in larger projects external resources are more likely to be used as those projects often are more complex, thus it is more likely that firms lack competence and resources in-house.

*The type of contract* highly impacts the possibility to purchase solutions, according to several interviewees. Two types of contracts are mentioned: *turnkey contracts* and *traditional contracts*. A traditional contract is a type of contract under which the client is responsible for the project planning, and the contractor is responsible for the project execution. In these

projects the materials and work activities are specified by the drawings provided by the client. A turnkey contract is a type of contract under which the contractor is responsible for both the project planning and the project execution, in accordance to a certain price and certain criteria as specified by the client. Therefore, there are generally more opportunities of doing things differently in projects with turnkey contracts than in projects with traditional contracts.

*Complexity of the project* to some extent correlate with project size; some interviewees explain that they perceive larger projects to be more complex. Complex projects are those that are perceived as more difficult to execute. Some interviewees express that suppliers may have certain competence or expertise that enable the suppliers to develop better solutions compared to what could be developed in-house.

*The sequence of project activities* impact whether it is possible to purchase a larger solution from an external actor. For example, one interviewee explains that it would not be possible to purchase a earthworks from Skanska A&B if the project includes water and sewages systems. It would make it difficult to coordinate the work activities on the project site, and the benefits of purchasing the solution would vanish.

### 6.6.5 Conditions for change

The interviewees have different ideas of what needs to change in order for them to involve their suppliers to a larger extent and/or purchase solutions. Most interviewees share the belief that no intra-organisational changes are needed to purchase solutions, rather certain conditions in the project must prevail, as explained in section 6.6.4. For example, one interviewee explains that he does not think that his firm would need to change, neither does he believe that they would be interested in doing so as "[our organisation] is shaped after the prevailing conditions in the industry".

The interviewees however do not agree on how to achieve higher supplier involvement, or facilitate solution offerings. On the one hand, some interviewees share the belief that it is up to the customer firms to invite suppliers to cooperate during tendering processes and/or in assigned projects. Yet other interviewees suggest that it is rather the suppliers that should act to increase their involvement in their customers' projects. For example, one interviewee is especially interested in purchasing solution offerings from Skanska Bergmaterial, as well as involving their sales representatives more in projects to develop project-specific solutions together. He has previous experience of working in such ways with other suppliers, especially with haulers. If his firm is to work like that with Skanska Bergmaterial, he argues that the sales representatives must take the initiative: "[they should] demonstrate their competence and show [us] early on what they can do to improve the project; not just consider themselves as sellers of gravel or asphalt. They should demonstrate cost-savings, demonstrate that an alternative solution would make a better deal. Be offensive! Demonstrate opportunities that we are not able to identify ourselves. Support our projects. Demonstrate synergies. Do not be afraid to do more than sending tenders!". He further explains that it is necessary to build a "good relationship". Thereby, it is possible to assess performance and ensure that the sales representatives indeed focus on what is best for the project rather than the sales volume.

Both interviewees that have previous experiences in purchasing solutions, and interviewees that do not, believe that having "good relationships" is a condition for change. A few

interviewees suggest that it can be achieved by doing more business together with the supplier: *"to strengthen the relationship we would like to do more work for our suppliers. All kinds of jobs: operate their deliveries, let them rent our machines… things that make you grow closer".* Furthermore, the interviewees agree that solutions must be based on a win-win mindset. That is, both the buying firm and the selling firm must benefit from the business deal.

Among the interviewees that express interest or potential interest in purchasing solutions, some express little interest in purchasing solutions from Skanska A&B and/or that they do not believe Skanska A&B have the required competence. Coupled with their other responses during the interviews it seems that these firms either have deficient relationships with Skanska A&B, or that their sister companies are competitors to Skanska A&B. One interviewee explains that: *"We cooperate with another partner. It has to do with business relationships: our firm and Skanska [A&B] have not found each other yet"* and *"The supplier helps us finding the best solution [...] It is a more interactive process that is more difficult to assess but brings more opportunities. It is quite common that we work like that. But not with Skanska [A&B], they are a material supplier... Perhaps Skanska Asfalt, we do exchange smart ideas with them"*.

Because the site managers are responsible for the purchasing in most firms, the site managers are also mentioned to be important gatekeepers for change. Some claim that site managers would not be interested in purchasing solutions as they want to do thing their ways, and that they are determined to maximise the profits in their projects.

Lastly, the interviewees agree that the prices of the components must be clearly specified if they are to purchase solutions. Unless the prices are provided it would not be possible to evaluate a solution against other offerings, and thus it would not be possible to assess whether it is the better option or not. Another point of view is that suppliers would be able to exploit the customers if the prices were not clearly specified and thus making the customers pay for materials and/or services that are not required.

# 7 Successful solutions - two cases

This chapter presents two cases in which Skanska A&B have offered solutions to customers. In the first case, "Packat & Klart", a solution has been delivered by Skanska Bergmaterial. In the second case, "Illustrating a joint solution", Skanska A&B's business units and a customer collaboratively have worked out a solution-based way of conducting business that creates value for all involved parties.

# 7.1 Case 1: "Packat & Klart"

"Packat & Klart" is the name of a solution offering in which Skanska Bergmaterial carries out an earthwork and delivers a "finished surface" to the customer. The solution consists of materials and a set of activities. First, the material is delivered to the project site. Then the material is spread, compacted and graded in accordance to the customer's specification. The customer is charged per ton of material, and the price includes all materials and activities. The idea was generated by an employee at Skanska Bergmaterial, hereafter referred to as the "Project Developer", who has been responsible for the delivery of the solution to three different customers. In the following sections, the Project Developer's perspective on "Packat & Klart" will be provided, followed by the three customers' perspectives.

The Project Developer came up with the idea in relation to a certain project that was to be carried out by an internal customer. At that time, the Project Developer was responsible for the coordination of the landfill in the local area and he wanted to improve the coordination of the delivery flow. He adds that *"Ifelt that I wanted to come up with new ways of working, I wanted to come up with something new!"*. As Skanska Bergmaterial do not have their own trucks and machines, haulers and sub-contractors would have to be involved in delivering the solution. In the early stage of developing the idea, the Project Developer discussed with both haulers and sub-contractors what the solution could look like.

Since the idea was first generated, the solution has been delivered on a few occasions. According to the Project Developer, cost savings were made in the projects that he has delivered solutions to. The main cost savings were due to the optimisation of the logistics flow. The inbound and outbound traffic was controlled, and it was possible to manage return loads to a higher extent than usual. Skanska Bergmaterial could also manage their production more efficiently and increase their inventory turnover rate. Additionally, as Skanska Bergmaterial were responsible for managing the activities, it was possible to coordinate the work teams' breaks at the project site. If all the workers have breaks at the same time, waiting times are reduced and thus the work can proceed more efficiently. It is estimated by the Project Developer that the profit increased by 3 SEK per ton material when the solution was delivered to an internal customer, and by 5 SEK per ton material when the solution was deliverer to an external customer. The Project Developer explains that he has not carried out formal assessments or documentations, but that he has a *"mental checklist"*.

The Project Developer explains that the benefits for the customers when purchasing "Packat & Klart" are that the customers do not have to worry about idle machines or workers, delivery delays, the logistics, or the supervision at the project site. Additionally, as Skanska Bergmaterial could perform the work more efficiently than the customer could have if performing the work in-house, the customer saved time and money.

"Packat & Klart" has only been offered and delivered on a few occasions. When the Project Developer is asked what he believes is required for Skanska Bergmaterial to offer "Packat & Klart" to a larger extent he responds that they generally lack the competence needed for delivering solutions. The explanation given for this is that someone has to lead the implementation of solutions and that there is no one at Skanska A&B today that have the knowledge in how to do so.

#### Internal customer: Skanska Infrastructure

Skanska Infrastructure was the first customer to purchase "Packat & Klart". They mainly perform road works, bridge works, water works and sewer works. Skanska Infrastructure had been assigned a contract for constructing a bus depot. The project comprised a surface of 60 000 square meters and a total value of five million SEK. In previous projects they had purchased excavation solutions from haulers. The interviewee from Skanska Infrastructure explains that "Packat & Klart" was more complex than the previous excavation solutions. Furthermore, as the solution was executed by an internal supplier, there was more room to influence what the solution could look like. He further explains that all responsibility cannot be handed over to the supplier, but it is important that the customer has the possibility to influence the work.

According to the interviewee, purchasing the solution led to greater efficiency at the project site. Since Skanska Bergmaterial had the responsibility at the site, they were able to optimise the plan for the execution of the work. Subcontractors and one hauler were involved in delivering the solution, but the Project Developer was responsible for the coordination at the project site and therefore leadership problems and wrong decisions could be avoided. The interviewee estimates that purchasing the solution from Skanska Bergmaterial i.e. an internal supplier was approximately 30 % cheaper than using an external subcontractor, based on a comparison between their own cost calculations and the price they paid.

The interviewee explains further that Skanska Infrastructure's needs for purchasing solutions depends on their available internal capacity. In some cases, they want to carry out the work inhouse to utilise their own work force. To purchase a solution from Skanska Bergmaterial again, it would have to be in a *"large project"*, which is defined as a project that includes an area of at least 20 000 square meters. The interviewee believes that although it is up to his firm to decide if they want to purchase a solution, the supplier must inform about their ideas of solutions for his firm to become aware of what the supplier can offer.

#### External customer #21

The first external customer carry out both construction and infrastructure projects. The purchasing strategy is price-oriented, but the firm also value flexibility, good personal contacts and good cooperation when they choose suppliers. Suppliers are evaluated using an evaluation form, but it is not elaborated what factors that are evaluated. Suppliers who they have collaborations with are not evaluated since they know that these suppliers will perform well based on previous experiences and good personal contacts. It is considered important to be able to call a supplier and tell them about a project, and then the supplier will solve things for them. They want to have a supplier that they can discuss ideas with and who directly tell them what the supplier who can offer the best solution for the best price will be assigned the contract. The suppliers they have more contact with are the ones that they also have better cooperation with.

When this customer purchased "Packat & Klart" it was initiated by the Project Developer at Skanska Bergmaterial, who is described by the interviewee as a person with a broad contact network who "can fix anything". Skanska Bergmaterial was responsible for the whole coordination which the interviewee explains generated huge time savings. Trust is considered an important factor for purchasing solutions, and when the customer purchased "Packat & Klart" the trust was entirely related to the Project Developer: "Today everything needs to be in a written agreement, but with [the Project Developer] a handshake is enough. Maybe not right in legal terms if something should happen, but me and [the Project Developer] would agree on it anyway if something would turn out wrong. I would never have dared to do this with any other than [the Project Developer]. Skanska is dangerous as they have good legal knowledge" <sup>14</sup>.

The interviewee is willing to purchase solutions from Skanska Bergmaterial again, but only from the Project Developer. The projects that the interviewee believes are most suitable for using solutions on are large projects, which he defines as projects that comprise at least 10 million SEK. Additionally, the projects should include project activities that are similar to those in "Packat & Klart". Solutions including asphalt or concrete are not interesting to this customer as they have the competence to carry out asphalt pavements and concrete works in-house.

The interviewee explains that time savings is the main benefit obtained from purchasing solutions since projects are considered to be under high time pressure. A key problem is how to plan projects to be able to manage all the work within the tight time frames. By purchasing a solution, the customer does not have to plan and manage the work at the project site. When the customer takes over at the project site after the solution provider, all the work is already finished. It is pointed out by the interviewee that it is important that it is one and not several site managers responsible at the project site when a supplier delivers a solution. This is to avoid errors in the different parts of the project. In terms of cost savings, the interviewee argues that purchasing solutions rarely becomes cheaper compared to carrying out the job in-house, but you are buying your own time. A solution might even be more expensive, but it entails time savings and a smooth process.

#### External customer #25

The second external operates in the construction and building industry. The interviewee says that in his firm, good service levels, collaborations and quality are highly valued qualities when choosing suppliers. Price was not mentioned as a critical factor at all; this interviewee was the only interviewee who did not mentioned that price is important. The firm uses a tool to annually evaluate their suppliers based on factors such as, for example, service level and quality.

During the interview it is explained that suppliers are sometimes involved during the bidding process, although it is rare. More commonly they collaborate with suppliers in parts of their projects where they lack knowledge. Most common is to discuss material choices with the suppliers to find equivalent but cheaper materials and ways to improve. However, the interviewee mentions that his firm is not very good at inviting the suppliers to the projects and ask for their help and he believes that their collaborations with suppliers could be improved.

<sup>&</sup>lt;sup>14</sup> In this quotation, Skanska refers to Skanska Sverige, implying that the interviewee is aware that Skanska Aggregates is part of a large corporate group with legal expertise.

They are aware that it is not only the suppliers' responsibility to extend the collaborations, but it is the customer's responsibility too. He explains that "*the construction industry is a conservative industry and you purchase products in the same ways that you always have done*". The interviewee suggests that it follows from that people in the industry are generally reluctant to relying too much on one supplier as it would reduce the level of competition and therefore it is a potential risk that the supplier increases the prices without the customer noticing it.

The customer has previously purchased "Packat & Klart", and has also purchased other types of solutions from other suppliers. What kind of solutions was however not elaborated during the interview. The interviewee explains that one prerequisite to be willing to purchase a solution again is that both parties make money on it; a solution should be a mutual collaboration between two parties. He believes that his firm will work like this again and the sustainability aspect is one reason. Because of the increased amount of environmental laws, companies will have to coordinate their projects more than they previously have done. It will be necessary to both coordinate the firm's own projects and external firms' projects. Thus, it is required to cooperate more with other actors to fully make use of the resources.

# 7.2 Analysis of case 1

The case illustrates the importance of the personal relationship between the buyer and seller. All three customers have a personal connection to the Project Developer, and they are open to discussing solutions with him. Since these relationships are strongly tied to the Project Developer, there is a risk that if or when he resigns from work, the customers' relationships to Skanska Bergmaterial will become weaker. To sustain the relationship it will be necessary to strengthen the ties between a number of individuals in the two companies. Thereby it is possible to increase the trust for Skanska Bergmaterial as a firm, rather than trust towards the Project Developer. An example of how that can be achieved will be provided in Case 2. Strengthening the relationships between Skanska Bergmaterial and the customers will further impact the potential to sell solution offerings to them, since the Project Developer's participation currently seem to determine the possibilities to sell solutions.

It is possible to identify some similarities between the external customers. Both of the external customers highly value cooperation, and have tools for evaluating their suppliers. Additionally, both of the external firms express an interest in sustainability and environmental questions. As explained in the case, one of the interviewees expresses that cooperation between firms will be necessary to meet the increased environmental requirements. The firms work with both evaluation of suppliers and sustainability which could be considered an indication that they have long-term perspectives on conducting business and that they value other things than the price.

This case also illustrates that solutions already have been successfully delivered and that it is beneficial for both involved parties. Cost and time savings are the main benefits obtained for both Skanska Bergmaterial and the customers. The savings were mainly due to that the work at the project site could easier be coordinated as only one actor was responsible for the coordination, which enabled Skanska Bergmaterial to utilise the resources more efficiently. Although the buying firms had all the competence and resources available in-house, the Project Developer as a specialist could carry out the activities more efficiently. Additionally, the cost

and time savings obtained from coordinating the production and the inbound and outbound logistics could not have been realised if the job had been carried out in-house. That is, Skanska Bergmaterial had better conditions to carry out the work more efficiently and could thereby increase their profitability without reducing the customer's profitability. Clearly the win-win situations resulted from the fact that the actor who carried out the work was in the best position to do it more efficiently.

# 7.3 Case 2: Illustrating a joint solution

This case describes how Skanska A&B and one of their customers jointly have developed a type of solution that creates value for both parties. The customer firm, hereafter referred to as Firm X, mainly carry out projects in the construction and infrastructure sectors. They have the competence required to carry out most activities in-house but choose to outsource 20-50% of their projects depending on the state of the Swedish economy. The relationship between Firm X and Skanska A&B is characterised by a long-term focus and a win-win orientation. The collaborative relationship was initiated by Skanska A&B's Market Manager and one of Firm X's Co-owners. The Market Manager explains that "it all started when we were bidding for the same project. We were interested in different parts of it and realised that if we worked together we could design a superior offering". Thus, the relationship grew out of the fact that the both parties' interests were adjacent as explained by Firm X's Co-owner: "Firm X is not interested in selling gravel - we are interested in rock blasting and producing gravel. Similarly, the Market Manager is not interested in building roads, but in selling gravel". Additionally, the Co-owner emphasises that the Market Manager's ability to "grasp the fuller picture" and understand the synergies that can be realised from viewing the business units as an integrated whole was a key factor in the establishment of the collaborative relationship.

The firms strive to do business that benefit both parties. To some extent that is achieved by working with counterpurchasing. A counterpurchase is an agreement between two companies to buy goods or services from each other, usually at different times (Farlex Financial Dictionary, 2012). Skanska A&B is a material supplier to Firm X, but also purchases material from Firm X that is produced at Firm X's project sites, such as gravel. In addition to purchasing and selling materials, the two firms engage in discussions regarding solutions and problems in projects, collaborate to win projects and communicate contacts. In a recent project, Firm X helped establish a connection between their client and Skanska A&B and thereby enabled Skanska A&B to win the material contract too. Further, The Market Manager explains that the collaboration generates large volumes of sales. Potentially Firm X could purchase material for 100M SEK on an annual basis. At the same time, Skanska A&B can purchase material from Firm X that subsequently can be sold and delivered to other customers. He explains that: "We might as well purchase the material from them. That in turns generate a greater volume for us that ultimately generate money. They are also good at accessing rock which is a great benefit". The Co-owner simply states that "We spend 25% of our revenue on asphalt, concrete, and gravel. If we can get something in return that is obviously better".

The two parties have meetings on an ongoing basis and discuss several projects in parallel. According to the Co-owner, the discussions can be lengthy and not all discussions result in the firms doing business together. He considers the continuous contact and collaboration to be important, regardless of whether the two firms are able to take on each project together or not. He emphasises that doing all business together would not be viable and further explains that transparency and honesty is required for working in such manner: it should be clear what deals can be entered together and not. Likewise, it should be clear whether other suppliers are involved or whether Skanska A&B will win the contract given that Firm X wins the contract, and vice-versa.

Firm X's Co-owner explains that the relationship has developed over time. He considers the time dimension important: "over time you get to know each other. Thereby, uphill struggles can be avoided during the start of each project. You have had time to solve conflicts and sort out disagreements". Skanska A&B's Market Manager however states that "the ambition [in the relationship] is larger than what we have been able to deliver up to this point". He believes that there is much room for developing the relationship and he believes in the idea of "integrating [the firms' activities] more, exchanging services, and utilising each other's strengths". He acknowledges that seeing Skanska A&B as one integrated unit is both a necessary condition and the biggest challenge for doing business that way. For example, a business deal could generate profit for one business unit; whereas another would only break even. Given the current organisational structure it is challenging to find a model for conducting business this way. Communicating benefits is a challenge for Firm X too. Approximately 25 people are involved in purchasing. Generally, site managers are responsible for the purchasing in their projects. Although each person may not perceive the benefits of purchasing materials from Skanska A&B, they should do so if it is reasonable regardless if Skanska A&B provide the most beneficial deal for the individual project or not. It prevents the projects to maximise each deal, but the Co-owner believes that it will be profitable in the longer run. Firm X's management strive to communicate the advantages and to implement a holistic perspective throughout their organisation. As of today, the relationship is still highly dependent on the Coowner and the Market Manager. Both however proactively work to broaden the relationship in terms of the people involved. Thereby, Firm X's Co-owner and Skanska A&B's Market Manager would become decreasingly critical for the maintenance of the relationship. It would be unsustainable if the relationship and each business deal depended on the involvement of the Market Manager. Instead, the both parties attempt to build a network of people involved in the relationship through introducing people from each firm to each other, and create connections at project levels.

The Co-owner explains that he wants to do business with people who think alike: people who are able to see beyond the direct benefits and understand the benefits that can only be perceived by grasping the fuller picture. It is a challenge, but the Co-owner believes that doing business repeatedly is a facilitator for establishing such a view. The Market Manager agrees that doing business together is a means for demonstrating benefits. He explains that by doing projects together and by doing them well, it will be possible to demonstrate that doing business in this

manner benefits Skanska A&B as a whole. Lastly, the Co-owner explains that it would not be possible to establish collaborative relationships with all suppliers. If that would be the case, the relative benefits would be lost and you would therefore choose to expose the suppliers to competition.

# 7.4 Analysis of case 2

Notably, the relationship described in Case 2 is de facto established between Firm X and Skanska A&B; not between Firm X and each business unit within Skanska A&B. The relationship is unique in this sense. All other relationships covered in this study are established between the customers and the respective business units, which will be elaborated further in section 8.2. If viewed from the perspective of Skanska A&B, they are both a customer *and* a supplier to Firm X. However, if viewed from the perspective of an individual business unit, they are a supplier *or* a customer depending on the individual project. In addition, if more than one business unit is supplying Firm X's project it is possible that only one is making a profit yet Skanska A&B benefits as a whole. As previously mentioned, each business unit has its own profit target hence the difficulties to demonstrate the benefits for the individual business unit.

It was described that Skanska A&B deliver material to Firm X and purchase material from Firm X that is subsequently sold to Skanska Bergmaterial' customers. For example, Firm X may purchase asphalt to one of their projects. They crush rock at the project site that is sold via Skanska Bergmaterial' sales network. Figure 11 illustrates how this scenario hypothetically could enable Skanska Bergmaterial to extend the area within which they are competitive and thus increase the annual volume sold. Put differently, doing joint business constitutes an opportunity for Skanska Bergmaterial to grow their business without substantial investments in quarries and production facilities.



Figure 12 Counterpurchasing

In contrast to Case 1, Skanska A&B do not deliver a part of Firm X's projects. Rather the firms jointly create value by utilising each other's competences and co-creates a solution. For example, Firm X are specialised in activities such as crushing rock and doing the activities included in "Packat & Klart", but they do not have their own sales network. This coincides with what was explained in section 6.6.2, namely that customers' business scope impact what types of solutions they are interested in.

It was described in the case that establishing this kind of relationships with all suppliers would make all suppliers equal and thus competitive bidding would be applied. In other words, it is perceived that working collaboratively with all suppliers would diminish the relative advantage of collaborative relationships. Another way of interpreting it is in terms of obtained value. The case illustrated that collaborative relationships require the involved firms to invest in the relationship to maintain and develop it. Skanska A&B and Firm X hold continuous meetings and discuss projects that do not generate business deals. Both firms also make efforts to widen the relationship to include more individuals, which is considered a necessary condition to achieve the objectives of the relationship. Hence having collaborative relationships with several actors would generate substantial costs and unless the obtained benefits exceed these costs the total value become negative.

Establishing, maintaining, and developing a collaborative relationship like the relationship described in the case put requirements on both Skanska A&B, the customer, and the interplay between them two. Both firms need to adopt a perspective that goes beyond individual business deals. As was illustrated in the case, the Market Manager sees Skanska A&B as an integrated unit rather than five separate business units, and focuses on what is best for Skanska A&B in the longer run. Likewise, the Co-owner of Firm X focuses on what is best for his firm in the longer run although that does not enable him to maximise profits in each project. Both firms must invest in the relationship, not least to communicate the benefits throughout their organisations. Currently, Skanska A&B's business units have individual sales targets, and different sales representatives are involved in different deals. Likewise, site managers vary across projects and thus the mindset needs to be implemented throughout the customer's organisation too to enable the focus to shift from individual projects. This emphasises that having a collaborative relationship is not a unilateral decision, but the involved firms must choose each other to enable working like in the described case. Based on the case, mutual benefits, similar mind-sets, and adjacent interests are necessary conditions for co-creating solutions.

# 8 Analysis

This chapter aims to answer the study's research questions. It is divided into six sections. The first five sections mirror the study's five research questions, and the sixth section provides recommendations for how Skanska A&B could proceed to develop their solution business.

As an introduction to this chapter, a brief discussion of what a solution is will be provided. In the light of Storbacka's definition (see section 3.4) of solutions, a solution offering is a customised offering that integrates goods, services, and knowledge components to fulfil the customer's requirements, and therefore also require relational processes. Further, Miller et al. (2002) put forward that a type of solution is value chain integration, meaning that the supplier takes over some of the customer's ongoing operations. The construction industry is characterised by project-based operations. Thus, in the context of the construction industry, a basic type of value chain integration could be that the supplier takes over some of the customer's activities in the project. In chapter 6 we learnt that Skanska A&B already provide such solution offerings, but to a small extent. For example, Skanska Bergmaterial occasionally coordinate material deliveries with return deliveries of excavated masses, which can be considered a solution offering given that the offering requires integration of components. That is, the integration of materials, material delivery, return delivery, access to a landfill, and coordination. The latter is a knowledge component that facilitates the integration of the products and services. The outcome would have been different if the components were not integrated, but delivered separately. Skanska Bergmaterial also have delivered larger solutions like "Packat & Klart" on a few occasions. Moreover, Skanska Asfalt both sell asphalt mixtures as is, and carry out asphalt pavements. On the one hand, all asphalt pavements could be considered solution offerings as Skanska Asfalt delivers a finished asphalt pavement. On the other hand, a pavement that is carried out according to a provided drawing could also be considered a standard offering as the work include standard activities specified by the customer. When Skanska Asfalt design, plan and carry out the pavement, the offering could be said to be a solution offering. The preceding discussion highlights that whether an offering should be considered a solution offering or not is a matter of definition.

# 8.1 Value generated by solution offerings

This study set out with the aim to explore Skanska A&B's potential to sell solutions to customers in the private sector of the construction industry. A fundamental aspect of solutions is that solutions should generate value for the buying firm as well as the selling firm. Therefore, the first research question of this study is *"What value would selling and purchasing solutions generate for Skanska A&B and their customers, respectively?"*.

The embedded cases provide empirical illustrations of how both Skanska A&B and customers obtain value from selling and purchasing solutions, respectively. In Case 1, the customers highlighted that purchasing "Packat & Klart" enabled them to save both time and money. Skanska Bergmaterial profited from the projects too. Further, Case 2 illustrates how Skanska A&B can do business as an integrated actor, and thereby create win-win business between Skanska A&B and their customers. Case 2 also implies that, hypothetically, Skanska Bergmaterial could extend their geographical market without substantial investments by conducting counterpurchasing with their customers. Clearly both cases illustrate win-win

businesses. It seems that these win-win situations develop when the activities are divided between the actors depending on which actor have the better preconditions for carrying out the activities more efficiently. This corresponds to why customers express that they are interested in purchasing solutions; the customers realise that the suppliers have different knowledge and capabilities than the customers have in-house, and that these can be utilised to generate better project outcomes.

The customers perceived that the value of purchasing solutions are mainly derived from time savings, cost reductions, and risk reductions. The empirical findings imply that the customers that are most interested in purchasing solutions are the ones that previously have purchased solutions and/or collaborated with suppliers to create solutions. These customers were able to explain the benefits of purchasing solutions, and also in what situations different solutions would generate different benefits. It seems that their previous experiences of purchasing solutions enable them to understand the value of solutions. In contrast, customers who have no experience with purchasing solutions nor working closely together with suppliers had a hard time visualising potential benefits associated with purchasing solutions. It is reasonable to suggest that it is difficult to imagine the benefits of something that has not yet occurred or that is considered abstract. Based on the above, the perceived value of purchasing solutions cannot fully be explained by the findings in this study. However, the findings provide sufficient basis to claim that there is a potential demand for solutions and that a majority of the customers believe that purchasing solutions would generate value. Specifically, this is implied by the findings that some customers already purchase solutions from both Skanska A&B and from other suppliers.

In the theoretical framework, it was pointed out by Miller et al. (2002) that the supplier must provide solutions that are better or more cost-effective compared to the customer and the competitors in order to profit from solutions. Similarly, the customers that participated in this study seems to agree that the suppliers can help generate more value in the projects that are large and complex, seemingly because the suppliers may be able to provide solutions that are better or more cost-effective. Different firms have different abilities and preconditions to carry out certain activities efficiently. One aspect of this is economies of scale; not all firms are able to obtain economies of scale in activities. For example, customers that are construction companies, in contrast to customers that are haulers, would unlikely be able to achieve economies of scale if they were to operate landfills. First, these firms would unlikely generate the volumes of excavated masses required to achieve economies of scale, especially as these firms operate projects in different geographical areas. Second, these firms would require different sets of skills if they would sell landfill services to other actors. Other actors, including Skanska A&B and haulers, have established sales network and provide several projects within a certain area with their materials and services. Thus these actors have better preconditions to operate landfills. Similarly, these actors would also have better preconditions to coordinate transportations between project sites than would construction companies.

In the wider perspective, selling solutions could generate value beyond the direct benefits obtained in individual business deals. Solution business models were highlighted in the introduction as a potential solution to the differentiation dilemma and thus a achieiving competitive advantage. As was illustrated in the comparison of the haulers' roles in Gothenburg and Stockholm, the Stockholm haulers have extended their role in the network. Becoming
solution providers have enabled the Stockholm haulers to take a step forward in the value chain and compete in new markets. Further, the findings reveal that competing firms are already offering solutions of different kinds. On the one hand, if Skanska A&B do not provide solutions they possibly risk to become perceived as inferior to their competitors. On the other hand, if Skanska A&B are to provide similar solutions as their competitors their offerings may again be perceived as equivalents, although the content of the offerings would be different.

## 8.2 Buyer-supplier relationships

In section 1.3 the word *remarkable* was used to describe that relationships are emphasised as being highly influential on the probability to win a contract, as it contrasts that competitive bidding is typically associated with transactional relationships (Anderson et al., 2009). Therefore, the second research question sought to determine the substance and function of Skanska A&B's customer relationships.

In line with previous studies of the construction industry (e.g. Cox and Thompson, 1997; Dubois and Gadde, 2000), the empirical findings suggest that a large part of the relationships in the industry are characterised by the customers' preferences to keep distant, short-term focus, and strong connectedness to the individual project. In line with what Dubois and Gadde (2012) explained, the customers' preference for arms-length relationships is due to that the customers strive to stay independent of suppliers and to encourage price competition. Notably, transportation costs constrain competition in many geographical areas. In certain projects customers are thus dependent on their suppliers regardless of their working relationships. As mentioned, the relationships are characterised by strong connectedness to the individual projects. This refers to that the firms interact and collaborate to find solutions in projects, but less outside projects, and that the contract often seem to determine whether the customers decide to involve a supplier in the project.

Although many of Skanska A&B's relationships to the interviewed customers are long-term, they seem to be irregular and intermittent, which according to Dubois and Gadde (2012) is typical for relationships in the construction industry. The interviews also suggested that Skanska A&B have different relationships to different customers. In this context, "good relationships" are understood as relationships in which the two parties frequently do business together and thereby have gotten to know each other in terms of for example working procedures and preferences. However, the substance of these relationships does not differ substantially from the arms-length relationships: most relationships seem to mainly consist of actor bonds, without any prominent resource ties or activity links. To explain the actor bonds it is necessary to establish who is defined as the 'actor'. As pointed out by Håkansson and Snehota (1995), a business relationship is established between collective actors as organisations, and the interpersonal relationships do not simply sum up in a linear way. The empirical findings suggest that Skanska A&B's relationships are established on business unit levels. If two or more business units share a customer, it seems that each business unit have their own relationship to that customer. Commonly each relationship involves several individuals from each party. It is partly due to two reasons: different buyers are responsible for purchasing in different projects; and different sales representatives operate in different geographical areas. In addition, order administrators coordinate orders and deliveries from the production plants. Thus the actor bonds between organisations as actors are weak, but the bonds

in the interpersonal relationships can be strong. This is illustrated by the provided example of one of the interviewees who suggested that if he has a strong interpersonal relationship to a sales representative, he would start purchasing from a new supplier should the sales representative start working for the new supplier. It seems that it is the interpersonal relationships between the buyer and seller that impact the possibility to win a contract, rather than the relationship between the organisations as actors.

Recall that a business relationship could be described as a 'quasi-organisation' and that its function could be described in terms of team effects, derived from the substance layers. Since there is little substance in Skanska A&B's business relationships the relationships generally have little function for both the dyad, each party, and the network. In terms of network function, it seems that the low degree of substance in each relationship result in that each relationship have little influence on the network and the interrelated relationships within it. The industry has historically been, and still is, characterised by a short-term focus, as implied by the strong project focus. The prevailing use of competitive bidding is evident in both the empirical findings in this study as well as in previous research. The best deal is sought in each project and therefore each relationship generally has little impact on the possibility to do business with other actors. The customers are generally not subject to switching costs given that they have not invested in developing their relationships.

Skanska A&B do however have relationships to some of the customers included in this study with other kind of substances and functions than those described above. First, the relationships between Skanska A&B and their haulers are distinguished from other relationships. The actor bonds are stronger, and not as characterised by interpersonal relationships. For example, the framework agreements are managed by Skanska Sverige which extends the actor bonds. There are also more activity links: operations at the production plants and the haulers' trucks are coordinated. Furthermore, haulers' devote certain number of trucks to Skanska A&B, which is an example of a resource tie. Given the different kind of substances, these relationships also have different functions. For example, Skanska A&B's delivery dependability is to a large extent dependent on the haulers, which is an example of function for the individual actor. Skanska A&B utilise a large part of the haulers' resources and thus constrain the haulers' possibilities to provide their services to others, which is also an example of function for the individual actor. Moreover, it was explained in section 4.1.1 that Skanska A&B had previously made efforts to induce the haulers to refrain from selling products and services directly to customers, which is an example of an actor bond that constrains the haulers' relationships to other actors. Another relationship that is different in terms of substance and function is the relationship to Firm X (see section 7.3). Notably, commitment and investments were required from both actors to develop the relationship which strengthened the actor bonds and thus increased the substance of the relationship. Their win-win businesses are clearly team effects.

Within individual projects, the involved actors may however extend their relationships in terms of both substance and function. Once a contract has been signed, the buying and selling firms may work together to find project-specific solutions that can benefit both parties. Activity links are created in the individual projects as the supplier, for example, adapts its deliveries to other activities on the project site, or adapts the production to produce customised materials. Generally, all actors involved in a project needs to adapt to each other and their activity links highly influence the project performance. For example, substantial costs would incur should a

material delivery be delayed. In other words, the couplings within projects are strong; whereas couplings between firms outside the project are loose, as suggested by Dubois and Gadde (2002a).

As previously mentioned, Skanska A&B have long-term relationships with many customers. However, in many cases extrinsic factors seem to influence the longevity of the relationships. That seems to particularly be the case for the relationships between the customers and Skanska Bergmaterial, which is implied by that many of the interviewees claim that they mainly base their purchasing decisions on the distance between their project sites and the suppliers' production plants. In contrast, when these interviewees talk about asphalt purchases, the customers' previous experiences of using suppliers seem to be more important. That is, previous experience of working together impact future decisions to work together, which is an example of an intrinsic factor that impact the longevity of a relationship. The relationship between Skanska A&B and Firm X stand out in this aspect, as the long-term relationship is based on a mutual understanding that doing business recurrently will benefit both firms in the long-term. That is, the longevity of the relationship between Skanska A&B and Firm X resides in intrinsic factors.

## 8.3 Relationships' implications for solutions

The third research question sought to identify what implications the buyer-supplier relationships have for the possibility to sell and purchase solutions. In line with Gadde and Snehota's (2000) reasoning, it would be overly simplified to suggest that one type of relationship is more beneficial than another, but the value that can be obtained from a relationship depends on how the relationship fits the parties' operations and strategies. Like Dubois and Gadde (2002a) put forward, the current arms-length relationships seem appropriate given the market logic of competitive bidding and standardised offerings. However, solutions are customised offerings and other types of relationships would likely be required to facilitate solutions to be designed and delivered. Previous studies suggest that selling solutions involve relational processes that enable the supplier to understand the customer firm to fulfil its needs and requirements. Since the current substances of the relationships are constituted by various inter-personal relationships between buyers and sellers, and that the relationships do not facilitate a holistic view of the customers which may impose difficulties to gain deeper insight into the customer firms.

Especially it seems essential to establish trust to facilitate selling solutions. This was certainly true in Case 1 which described that one customer expressed strong trust for the Project Developer, whereas the trust for Skanska Bergmaterial as a solution provider was weaker. It follows that the Project Developer's continuous participation in the relationship is a precondition for Skanska Bergmaterial to deliver future solutions to the specific customer. Trust was also mentioned during other interviews as a precondition for purchasing solutions. Also, the lack of trust for suppliers was mentioned as a reason for why some were *not* interested in purchasing solutions or involving the supplier to a higher extent. Recall that, for example, one interviewee explained that a condition for purchasing solutions would be that the sales representatives demonstrate that they are truly focusing on what is best for the project opposed to what is best for the sales volume.

Some customers have previously purchased solutions from other suppliers than Skanska A&B. This, however, does not necessarily imply that these customers would be more inclined to purchase solutions from Skanska A&B than would customers that have not yet purchased solutions or expressed no interest in doing so. It was described in the above paragraph that selling solutions require relationships with other substances than the current typical armslength relationships. Therefore, it can be assumed that customers that currently purchase solutions from certain firms have other types of relationships established to these firms. It was described in section 3.2 that all actors and their relationships are interrelated in the business network. Therefore, the types of relationships that the customer have with other actors impact Skanska A&B's possibilities to develop the relationship to that customer and thus also the possibility to sell solutions to the that customer. This can be illustrated by the example provided by the interviewee who suggested that he had been using the same asphalt supplier for an extensive period of time, and that he therefore had not been interested in using other suppliers, including Skanska A&B. Further, the interviews suggested that some customers that have sister companies that compete with Skanska A&B seemed less interested in purchasing solutions from Skanska A&B.

Similarly, the current relationships may need to change if Skanska A&B want to sell joint offerings. Although the customers believed that purchasing bundled offerings could be costefficient, most of them concluded that Skanska A&B do not work that way nor could it be imagined how they could. One way to interpret this finding is by relating it to the finding that all but one customer relationships are established on business unit levels. As pointed out in this study as well as in previous studies, relationships play a key role in buyers' evaluations of suppliers' abilities to satisfy buyers' needs. It is therefore reasonable to presume that the current relationships cannot serve to evaluate Skanska A&B's ability to fulfil the customers' needs via joint offerings.

## 8.4 High potential customers and projects

The theoretical framework highlighted that firms have difficulties designing and delivering solutions that generate profit. Efforts to design and deliver solutions should therefore be focused where the highest payoff is expected, which is why the fourth research question sought to answer which customers and/or projects to target with solution offerings. Based on the empirical findings, differences can be identified between firms and projects that impact the potential of selling and delivering solutions to them. This will be elaborated in the two subsections below.

### 8.4.1 High potential customers

In section 6.6.1 it was established that the customers that expressed similar views on purchasing solutions shared other characteristics and views as well, and by coupling these similarities it was possible to categorise the customers. The customers in the higher categories seem more inclined to purchase solutions than does the customers in the lower categories. The categories were compared and contrasted, and analysed with support from the theoretical framework, and thereby it was possible to identify a set of characteristics that influence the customers' conditions for purchasing solutions. These characteristics are: view on change; time

perspective; view of suppliers; type of relationships to suppliers; perceived value of solutions; and organisational characteristics. Table 7 below provides details on the characteristics.

Characteristic	Explanation
View on change	Purchasing solutions may require changes in the purchasing process, in the supplier relationship, and in working procedures.
Time perspective	Transactional relationships require no or little investments; whereas relationships with more substance require investments to be developed and sustained. Benefits of developed relationships are often obtained long-term.
	Some solution offerings generate value in the individual project; whereas other solutions generate value long-term.
View of suppliers	If all suppliers are perceived as equivalents, it will be difficult to assess how a supplier could contribute to the success of a project, or assess different suppliers' knowledge and capabilities.
	For example, view of suppliers as possible collaboration partners, or as opponents that want to exploit you.
Type of relationships to suppliers	Certain types of relationships are required to facilitate solution offerings to be designed and delivered. For example, the supplier must have insight to the customer's needs and requirements. Relationships enable the customer to evaluate the suppliers' offerings.
Purchasing orientation	Customers can be more inclined to focus on price, or on total cost or value.
Perceived value of solutions	The perceived benefits must outweigh the associated costs, including the price.
Suitable organisation	The buying firms' organisations are organised in ways that to different degrees are suitable for purchasing solutions. For example, the organisation of purchasing impact what the customer can purchase. Other aspects that have impact are the firm's business model and strategy.

Table 7 Characteristics that impact the customer's conditions for purchasing solutions

The identified characteristics are interdependent. For example, a customer that solely have transactional relationships with their customers are more likely to consider all suppliers equivalent, than are customers that have different kind of supplier relationships. It follows from another finding of this study, namely that relationships facilitate evaluations of suppliers and their offerings. The different characteristics also have different influence on the conditions for purchasing different types of solutions. For example, if a customer has a strong focus on maximising profits in each project it is suggested that the customer have a short-term perspective. It follows that the customers do not currently have the conditions to work collaboratively with suppliers in such ways that Firm X does, as the benefits are obtained long-term and not necessarily in each project. However, the customer may still be able to purchase solutions similar to "Packat & Klart" since the benefits are obtained in the given project. In summary, the characteristics do not only impact the customers' conditions to purchase solutions in general, but also what kind of solutions in particular.

Based on the above, it has been established that different customers have different conditions for purchasing solutions. However, to assess which customers that potentially could be targeted for solutions the perspective of the supplier must also be considered. Therefore, the term "potential" will be introduced. A customer's "potential" does not reflect its explicitly expressed demand or interest, but integrates the characteristics that have been identified as influencing the conditions for purchasing solutions, as well as the supplier's conditions for selling solutions to the given customer. For example, why a firm wants to purchase a solution influences a customer's potential. Some firms are mainly interested in purchasing solutions when they have insufficient resources to carry out all activities in-house. Consequently, the demand will be dependent on the number of contracts assigned to the buying firm, which is in turn impacted by the state of the Swedish economy. Thus, whether investing in relationships, and in customising solutions to suit these customers needs, will pay off or not is dependent on factors that are beyond the control of the supplier. Other firms' interest in purchasing solutions is grounded in strategic intent. Increased outsourcing and efforts to work closer with certain suppliers imply that these firms are increasingly aware of the potential strategic value that can be generated by supplier-relationships (Gadde and Snehota, 2000). These customers may invest in developing certain capabilities of their own and specialise in certain activities, and choose to outsource other activities to suppliers that have specialised in those. Therefore, these firms are likely to be more open to develop new kinds of relationships and thus also have higher potential.

The customers are all unique and have different combinations of characteristics and views. The characteristics are also present to different extents in different firms. Therefore, categorising customers in accordance to these characteristics would provide a too simplified picture of the customers and their behaviours. Instead, it is suggested that customers should be arranged along a continuum, as illustrated in Figure 13 below. "Lowest potential" anchors one end; "Highest potential" anchors the other end. The further to the right a firm is positioned, the higher is the firm's potential. Each characteristic could be illustrated as a continuum of its own, and the sum of the characteristics constitutes a firm's potential. The further to the left, the more of the characteristics in the left textbox below are present; the further to the right, the more of the characteristics in the right textbox are present.



Figure 13 Continuum of firms

It should be emphasised that no clear-cut ranking of the customer firms can be made since the characteristics could not easily be measured, and the different characteristics have not been assigned any weights. Whether a customer have the characteristics presented in this section cannot easily be observed, but it requires insight to the customer firm. Therefore, these

characteristics cannot be used in a general way to predict whether a customer have potential or not. It should also be emphasised that the continuum illustrates a customer's "general potential" of purchasing solutions, rather than specifically purchasing solutions from Skanska A&B. In the light of the discussion in section 8.3 the specific relationship between the customer and Skanska A&B as well as interdependencies in the network also influence the customer's conditions to purchase solutions from Skanska A&B. Therefore, "targeting" customers and/or projects is not a unilateral decision but an interaction process through which the selling and buying firms mutually choose each other. However, the continuum constitutes an analytical tool that could be useful to use as a basis for assessing customers' potentials.

### 8.4.2 High potential projects

The empirical findings suggest that certain conditions must prevail in a project for it to be interesting for the customer to purchase a solution. Four characteristics were identified in section 6.6.4: project size, type of contract, complexity, and sequence of project activities. Simply, these characteristics impact whether the customers recognise that there are opportunities for the suppliers to deliver solutions that generate better project outcomes, either in terms of costs or end-results, than what other offerings could.

Each of the characteristics will influence the kind of solutions that are possible to design and deliver. It follows from that the characteristics influence the customers' requirements and thus also what materials, services and knowledge that are needed to fulfil these requirements. For example, in a traditional contract the requirements are clearly specified, and thus the solution would have to be designed in accordance to these. It would perhaps not be possible to exchange the prescribed material for a cheaper material, yet it could be possible to optimise the processes at the project site. This emphasises that the materials should not be the focus of the solution offering. Project size and degree of complexity are relative characteristics. That is, what is perceived as a large project or a complex project is dependent on the individual firm's capabilities and its business scope. Moreover, it is possible that customers could increase their business scope by purchasing solutions, as it enables them to carry out projects that require knowledge and resources that they do not have in-house, but can be provided by supplying firms that are specialists in those areas. The benefit of purchasing solutions for some projects or part of projects is that it enables the buying firm to focus on other projects or part of projects. Doing things repeatedly generate learning effects that enable the buying firm to become a specialist on their own. As previously described, the best results are obtained if each activity is carried out by the actor who has the best conditions for doing it most efficiently.

The project's characteristics cannot alone determine the project's potential but the customer and the customer relationship must be taken into consideration too. Therefore, project characteristics should not be used to judge project's potential in general, but can be used to judge certain customers' projects. Moreover, to assess a project's potential it is necessary to consider the suppliers' internal capabilities. It is the internal capabilities that determine the supplier's ability to deliver a solution that generate better project outcomes than what the customer or other actors could achieve. Recall that the interviewees explained that the suppliers are able to suggest material alternatives that can lower the material costs. Skanska A&B's business units are primarily considered *material experts* that can provide the customers with *expertise in the materials* that in turn generate benefits for the projects. As long as the material expertise is the essence of a solution, the scope of high potential projects will be limited as Skanska A&B will have limited abilities to deliver superior value.

Location is another aspect to consider, especially if Skanska A&B are to sell joint solutions that include materials from more than one of the business units. The project site must be within, or at least not be far outside of, the radii of the business units' production plants in order for more than one business unit to be involved in delivering materials in the solution. To bypass this situation, Skanska Bergmaterial could possibly increase their area by purchasing material from project sites, and subsequently sell it to other project sites, as described in section 7.4. Thereby, the area in which Skanska A&B can deliver joint solutions is also extended as they become able to deliver solutions to projects in locations that would otherwise not be profitable.

## 8.5 Key challenges

Firms within other industries that have adopted solution business models have experienced many challenges. Among other things, previous research emphasises reorganisation and increased inter- and intra-firm collaborations as potential preconditions for becoming a solution provider. Therefore, the last research question aimed to capture internal and external challenges related to implementing solutions in the studied industry.

### 8.5.1 Demonstrating value

It has previously been described that there is a prevalent willingness among customers to play suppliers off against each other, which possibly could limit the possibility to sell solutions. Standardised offerings are a precondition to evaluate offerings solely based on prices and thereby obtain the lowest price possible. This behaviour is rooted in the idea of maximising profits in each project. Buying firms that evaluate offerings solely based on prices do not take into consideration that the price solely constitutes one part of the total costs, which also depend on the time and resources required to carry out the work. Further, total costs could also integrate aspects such as, for example, environmental impact. Moreover, the price reflects the content of what is purchased. It follows from the definition of a solution that it contains components that are not easily valued; a solution is more than its included products and services which generally makes pricing of solutions complex. Therefore, it will be a challenge for Skanska A&B to demonstrate in what ways their solutions generate superior outcomes in terms of cost-savings and/or end-results. Few of the customers have established formal procedures for evaluating suppliers and many customers primarily assign contracts to suppliers that offer the lowest prices. This imply that many customers possibly will have difficulties evaluating solution offerings in terms of value. Even among the customers that expressed interest in purchasing solutions some voiced that a condition for doing so would be that the price of each element is clearly specified so that the solution could be evaluated against alternatives, yet the included elements are not easily valued. Currently cost-based pricing is used, and shifting to value-based pricing has been found to be challenging for many firms (Anderson et al., 2009).

Some of the customers have good conditions for purchasing solutions. However, it is believed that site managers might be sceptical towards purchasing solutions since they are responsible for the purchasing in their projects, and therefore have a large impact on the selling firm's potential of selling solutions. Bargaining is a prevailing custom among many site managers as

they want to maximise the profits in each of their projects. As has previously been described, purchasing solutions may be more expensive if only the price is considered; whereas the total cost may be lowered. Additionally, purchasing a solution for the first time entail higher risks since no experience can help evaluate the supplier's ability to deliver solutions. Given that the site managers are generally responsible for the projects' budgets they will likely be accredited the associated risks. Since different people within the customer firms are responsible for purchasing in different projects, it will be a challenge to communicate the benefits throughout the customers' organisations. Especially if the benefits of the solution are not tied to the individual project, but is obtained long-term, as in Case 2.

A certain degree of internal scepticism towards selling solutions was identified, especially towards selling joint offerings across the business units. It was expressed that it is difficult to envisage how a bundled offering could be designed and that the business units' different materials and services are procured and used during different project stages. The scepticism towards selling solutions both individually and jointly could possibly be attributed to three factors. First, joint sales efforts are rare and solutions are rarely offered at present. It has previously been argued that it may be difficult to assess the benefits of something yet unknown. Second, the current organisational structure does not support joint sales efforts or joint solutions. Rather, the five business units are organised as separate profit-driven firms. Third, becoming solution providers would likely induce changes that would impact the interviewees' work and the awareness of that can possibly have impacted the interview results. Needless to say, the internal stakeholders greatly impact Skanska A&B's possibility to sell profitable solutions and thus the internal stakeholders must also be convinced of the value of selling solutions. Communicating benefits internally will thus also be a challenge.

### 8.5.2 Acquiring new competence

Becoming a solution provider requires different competences than does being a product and service provider. For example, in the theoretical framework it was explained that solution providers are expected to act as problem solvers. In Case 1, the Project Developer was able to deliver superior value as he had more expertise and better preconditions to execute the project activities more efficiently. Similarly, in Case 2 it was described that the Market Manager had the ability to realise benefits from viewing Skanska A&B as an integrated unit. Moreover, some sales representatives are frequently involved in project-specific solutions. Evidently some people within Skanska A&B already do have the problem-solving skills and other type of competences that are required to design and deliver solutions. It is likely that more employees have these skills too but as the business units mainly sell product and service offerings, these skills are possibly not fully visible and thus possibly not fully utilised.

It has been deduced that the scope of high potential projects is currently limited due to that Skanska A&B are primarily considered material experts by customers. To broaden the scope of high potential projects, Skanska A&B need to identify new areas in which to develop their expertise, and focus on an area in which they are, or could become, superior to other actors. As previously described, the actors in the network have different preconditions to carry out certain activities more efficiently. For example, operating landfills was mentioned as one thing that Skanska A&B could possibly do more efficiently than could other actors, assuming that they would be able to obtain economies of scale. Furthermore, it was described in section 1.1 that

there is an internal belief that selling bundled offerings could become a unique selling point, given that Skanska A&B are able to offer their full range of products and services from the five business units. However, both internal and external interviewees perceive the five business units as separate actors, and many cannot visualise how a bundled offering could generate superior value. Moreover, many customers perceive the products and services to be equivalent to those of competitors, and the different materials are often purchased during different stages of the projects. Thus, bundled offerings do not seem to be considered to be beneficial per se. However, some customers expressed that they could possibly be interested in purchasing a solution including both compacting, asphalt pavement, and road markings; which constitutes a joint solution. Although Skanska A&B are experts in these materials and services, they are not experts in combining the components into solutions to create value. It would possibly be an opportunity to specialise in coordinating the products, services, and expertise that are available in-house to create joint solutions. Case 2 provides a good example of how coordinating products and services from the different business units can generate value for both Skanska A&B and the customers.

### 8.5.3 Unique projects call for flexible solutions

As previously pointed out, the strong project focus is a prevailing characteristic of the industry. Therefore, flexibility is required with regards to solutions. At the same time, repetitive operations enable specialisation and thus efficiencies. Although each project has its unique features by the definition of a project; several activities are common across projects within the industry. In addition, previous research suggests that *"the focus on individual projects and competitive tendering makes each project far more unique than is necessary"* (Dubois and Gadde, 2000, p.213). For example, the Project Developer delivered a similar solution to three different projects. Thus, a challenge will be to find a balance between treating projects uniquely, and obtaining a certain degree of repetitiveness to allow for efficiencies. Especially since the most efficient allocation of work between actors may vary across projects due to the projects' different prevailing conditions.

It has been established that certain conditions must prevail in both the customer firm, the network, the buyer-supplier relationship, and the project, to enable solutions to be developed and delivered; and that a solution contains both material, service, and knowledge components. Therefore, it is suggested that a solution can be illustrated as consisting of two layers: the conditions layer, and the components layer. Each layer can be divided into four blocks, as is illustrated in Figure 14 below. The conditions layer is positioned below the components layer to illustrate that the conditions layer constitutes the foundation of the solution, upon which the components can be integrated to form the solution.



Figure 14 Illustration of the conditions and components layers of a solution, and their components.

The conditions layer consists of four blocks: customer conditions, relationship conditions, project conditions, and network conditions. These conditions have previously been described. The prevailing conditions set the scope for the components layer. Simply, the conditions impact what the customer is interested in purchasing as well as what the selling firm is able to deliver. Similarly, the components layer consists of four blocks: knowledge components, material components, service components, and external components. Although solutions will be unique, it will be possible to develop generic components that can be integrated in recurrent solutions. The solutions will be designed by combining these components into different combinations in accordance to the conditions layer. By including the external components block it is emphasised that all components must not be available in-house, but external components can be integrated into the solution too. External components are materials, services, and competence provided by customers and/or third-parties.

The solution model can be further explained by using "Packat & Klart" as an example, as illustrated in Figure 15 below. The customer was a high potential customer and the buyer had a good relationship to the Project Developer. No interdependent relationships in the business network blocked the working relationship between the two actors. The project to be carried out had a sufficient size, suitable sequence of activities, and Skanska Bergmaterial' resources matched the project activities. These mentioned conditions formed the conditions layer, and defined the scope for the designed solution. The conditions defined the scope of project activities that the Project Developer would be responsible for. In accordance to this, the Project Developer designed the solution. The material components were aggregate products. The service components included planning activities, and a site manager that managed the activities during the delivery of the solution, including subcontractor management. The knowledge components included coordination of workers' breaks, coordination of deliveries, and strong

leadership. Lastly, external resources were utilised in the solution: transportation services, landfills, work teams, and machines.



Figure 15 Illustration of the conditions and components layers of "Packat & Klart"

#### 8.5.4 Mutual adaptations between Skanska A&B and their customers

Skanska A&B's sales processes matches their customers' purchasing processes, and vice versa. The sales representatives explain that they have adapted to the customers' preferences for how the relationships should look like. The offerings are fairly standardised and each element is clearly specified in tenders, in accordance to the customers' preferences, to enable the customer to evaluate the offerings from different suppliers. Both private and public clients procure projects based on competitive bidding, which is an explanation for why Skanska A&B's customers must also strive to obtain the lowest prices possible, which they believe is obtained via applying competitive bidding. Also it was suggested that bargaining always pays off, implying that sales representatives may have adapted their pricing practices to the bargaining behaviour of customers. Moreover, the sales representatives are experts in the materials that they represent, something that customers emphasised as being very important. Clearly, the adaptations of Skanska A&B and their customers result from the long continuous process of interactions between the firms, as well as with other actors in the network. Therefore it is likely that inter-firm adaptations would be required if Skanska A&B were to provide solutions and/or joint offerings to a larger extent than they are currently doing. It has also been deduced that the relationships may need to be developed in terms of substance in order to sell solutions. For example, trust was found to be a precondition for purchasing and selling solutions, respectively. Case 2 also illustrates that establishing a relationship with different substance and function than the common arms-length relationships requires investments from both actors. Neither interfirm adaptations nor the development of relationships are unilateral decisions, but require mutual interest in carrying out the changes. It was explained in the theoretical framework that adaptation behaviour is influenced by the managerial orientation of firms, and therefore the prevalent preferences for transactional relationships and treating all suppliers equally may discourage new types of relationships to be developed. The empirical findings suggest that Skanska A&B are waiting for their customers to involve them; whereas the customers are waiting for Skanska A&B to provide them solutions and/or become increasingly involved in their projects. Thus it seems that both Skanska A&B and the customers must take initiatives to initiate changes. It should however be pointed out that some customers evidently have good conditions to purchase solutions, and that these customers possibly are organised in ways that enable them to purchase solutions from Skanska A&B. Since the inter-firm adaptations are impacted by their inter-firm adaptations with other actors in the network, it is not possible to predict how the firms in the network would adapt to each other should Skanska A&B initiate any changes. The key issue to address is that Skanska A&B cannot control the development of the network itself, and thus it will be a challenge to induce inter-firm adaptations and development of relationships to support the transition to become solution providers.

### 8.6 Creating a path forward

Solutions are already sold and purchased in the market that Skanska A&B operates in, suggesting that there already is an established market for solutions. The customers' needs and requirements are not perfectly known, especially since each project is unique. Furthermore, the customers are not aware of the possibility to buy solution offerings since Skanska A&B currently do not offer solution offerings to a large extent. Thus, interaction will be required to both develop solutions and to further develop the market for solutions. In line with Snehota (2004) it is argued that the market for solutions is evolutionary and that it will evolve via the interactions and changes in the network, induced by both actors and exogeneous changes. Skanska A&B will be able to influence the development of the market by starting to offer solutions. What the customers demand is uncertain, but by interacting with customers and selling solutions Skanska A&B will become increasingly aware of the customers' needs and requirements and their offerings can be developed accordingly. Skanska A&B will also learn what kind of solutions that they can be superior in compared to competitors, and thus make profit from. Similarly, the customers will become aware of Skanska A&B's offerings which will allow for the demand for solutions to grow. Further, for the solution business to offer differentiation potential, Skanska A&B need to consider what solutions their competitors are offerings. Otherwise their offerings may again be perceived as equivalents, although the content of the offerings would be different.

Case 1 and Case 2 demonstrate how both Skanska A&B and their customers can benefit from solution offerings. These cases thus exemplify that it is possible to demonstrate value of solution offerings via reference projects. Reference projects also make it possible to identify areas in which Skanska A&B are able to become specialists, and enable learning effects that increase their efficiency in delivering certain solutions. Over time, reference projects will also enable Skanska A&B to find the balance between treating projects uniquely and include components that resemble some degrees of standardisation. Thereby Skanska A&B will be able to develop and utilise their capabilities and allow for economies of scale. Successfully completed projects enable for trust to be established between parties and also for benefits to be scrutinised and communicated. It follows that reference projects could help Skanska A&B to overcome the described key challenges. Skanska A&B could create a first reference project by

carrying out a pilot project collaboratively with a customer, which would allow for joint learning. In addition to learning the benefits and subsequently communicate these, the involved parties would learn about what competences are required. They would also learn how they could allocate work and/or integrate their firms' activities to create win-win situations.

As previously described, there is no formal documentation available from the previously delivered "Packat & Klart" solutions. However, documentation would be necessary to demonstrate the benefits of purchasing and selling solutions. It was emphasised in the theoretical framework that it is a challenge to design and deliver solutions in a profitable manner. Documentation will enable assessments of the profitability associated with selling solutions. Furthermore, documentation would enable Skanska A&B to learn from previous solutions and evaluate how things could be done differently to improve the performance in future projects. Thereby documentation allows for organisational learning and knowledge sharing.

Although it is recognised that Skanska A&B will likely have to carry out changes in their organisation if they choose to pursue the solution path, this study cannot answer what those changes may be. In this study, many customers agreed that it would not be possible to purchase solutions in each project, and some expressed that they would not be interested in purchasing solutions at all. Further, some customers were concerned that Skanska A&B would become competitors should they start selling solutions. It follows that many of the business deals will be organised as they are today. Therefore, it may be beneficial to preserve the current sales organisations since they are adapted to facilitate these types of transactions. Rather than reorganising the sales organisations, one option could be to assign a certain work team or department responsible for developing the solution business. Evidently there are people within the organisation that have the required capabilities to develop and deliver solutions, and could thus be part of developing the solution business. That would allow for the organisation to both serve the needs of customers that want to purchase standard offerings, as well of the needs of customers that are interested in purchasing solutions.

A somewhat negative aspect of the current sales organisations is that Skanska A&B do not have a collective view of each customer, but several, which arguably impact their ability to understand the customer's full range of needs and requirements. Likewise, each customer has several views of Skanska A&B, and can thereby not use the relationships to the different business units to evaluate Skanska A&B as an integrated actor. This reduces Skanska A&B's possibility to take advantage of their broad in-house expertise and portfolios of products and services to deliver joint offerings. Other firms have managed to become more customer-centric by adopting key account management programs (Guenzi and Storbacka, 2015). The current KAM roles in Skanska Betong and Skanska Machine are established on business unit levels. One possibility is to establish KAM roles on a Skanska A&B level to facilitate an integrated view of the customer. Also, it would possibly make the customers view Skanska A&B as one actor rather than five. Recall that in Case 2, the Market Manager represented Skanska A&B and had the overall responsibility, but the business units' local sales organisations were responsible for the respective projects. The Market Manager's overview enabled this way of doing joint business across the business units, made the customer view Skanska A&B as one actor, and ensured that the local perspective was kept. The latter is important given that local

preconditions, such as the location of production plants and local business networks, largely impact the projects' conditions.

Clearly, different internal individuals would be involved in the process of designing and delivering solutions and thus new requirements regarding cross-functional coordination arise, especially if joint offerings are to be provided. Tuli et al. (2007, p.9) found that customers viewed the lack of cross-functional coordination to be a major weakness of solution-providers, as illustrated by the following quotation of an interviewed CFO: *"These big conglomerates just didn't have their act together. Their people simply didn't talk to each other. I had to do their talking. It made me wonder whether I am providing them a solution or they are providing me a solution"*. Furthermore, incentives may be needed to facilitate joint business that do not benefit each business unit individually, but benefit Skanska A&B, as the business units currently have individual profit targets. Therefore the board of directors would have to be part of creating such incentives.

Establishing collaborations with third-parties to develop and deliver solutions is also an opportunity. Both haulers and customers expressed that they are interested in developing collaborations to create solutions and/or work procedures to work in a more solution-oriented way. If third-parties' resources and knowledge are utilised, Skanska A&B do not have to specialise in the third-parties' areas of expertise, but will be able to further specialise in other areas. Especially it would be an opportunity to collaborate with the haulers in Gothenburg. Although they are aware of the opportunity to deliver larger solutions to their and Skanska A&B's customers, they have not chosen to pursue that path since they would prefer to collaborate with Skanska A&B rather than becoming their competitors. Collaborating with the haulers would also reduce the risk of taking a step back in the value chain as has partly happened in Stockholm. This can be related to Case 2 in which it was described that the collaborative relationship between Skanska A&B and the customer is based on that the two parties' interests are matching and that a prerequisite for continuous collaboration is that the parties' interests remain complementary and without overlaps. In the Gothenburg area, Skanska A&B's and the haulers' respective interests are still adjacent whereas the Stockholm haulers' interests are overlapping those of Skanska A&B's.

Lastly, an important aspect of collaborating with customers and third-parties relates to sustainability. Collaboration between actors in the network is a precondition for utilising the resources more efficiently. Among other things, coordination of transports and excavated masses between projects both within and across firms will reduce the number of transportations needed and thus reduce the negative impact on the environment. Reducing the negative impact of transportations would be a step towards Skanska Sverige's aspiration to be carbon neutral by 2050<sup>15</sup>.

<sup>&</sup>lt;sup>15</sup> Read more about Skanska Sweden's sustainability work on http://www.skanska.se/om-skanska/hallbarhet/gront-byggande/

# 9 Conclusions

This study aimed to explore Skanska A&B's potential to sell solutions to the private sector in the construction industry. It further aimed to provide insight to what distinguishes high potential customers and projects, and how solutions could be designed and delivered to customers to generate value for both the customers and Skanska A&B. Lastly, it aimed to identify challenges associated with the transition from selling basic product and service offerings to selling solutions.

Skanska A&B have good potential to sell solutions should they decide to develop their solution business. The interviews reveal that many customers are interested in purchasing solutions, and that they believe it would generate value derived from cost reduction, time savings, risk reduction, better project outcomes, less actors involved, and environmental benefits. Through the embedded case studies "Packat & Klart" and "Illustrating a joint solution" it is empirically illustrated that it is possible to sell solutions both by single business units and jointly by the business units, and that it creates value for both Skanska A&B and their customers, thus further suggesting that Skanska A&B have good potential to sell solutions. The cases illustrate that solutions generate value when activities are divided between the actors depending on which actor have the better preconditions for carrying out the activities more efficiently. Although the market for solutions is still immature it would be an opportunity for Skanska A&B to develop the market. Further, becoming a solution provider could possibly enable Skanska A&B to differentiate their offerings provided that they develop solution offerings that are different from those of their competitors

Different customers have different readiness for purchasing solutions and characteristics that distinguish customers with high potential were identified. A customer's view on change, time perspective, view of suppliers, type of supplier relationships, purchasing orientation, perceived value of solutions, and organisation impact a customer's potential. However, the customers are clearly unique and therefore it is suggested that customers should not be categorised. Instead, the characteristics can be used to arrange the customers along a continuum that reflects their potentials. To assess the potential of a customer, the selling firm's perspective must be taken into consideration too. It should be emphasised that the ranking of customers is not definite, but the continuum constitutes an analytical tool that can be used as a basis for assessing customers' potentials.

A project's potential is dependent on the project's characteristics as well as on the selling firm's knowledge and capabilities. It was identified that the project's size, type of contract, complexity, and sequence of activities impact whether a customer is interested in purchasing a solution or not. Currently Skanska A&B are primarily considered to be experts in their materials and thus the scope of high potential projects is somewhat limited.

In addition to a customer's and a project's general potential, purchasing and selling a solution require that certain conditions are present in the buyer-supplier relationship. Most of the current relationships are of the "arms-length" type, with limited substances and functions. These relationships will likely need to be developed to enable solutions to be sold. Developing relationships is not a unilateral decision, but a mutual decision by the involved firms. The development is also dependent on relationships to other actors within the network and thus conditions in the network also impact the possibility to sell solutions.

The customers' business scopes, in-house knowledge and capabilities, and strategic intent determine what types of solutions that they are interested in purchasing. A conceptual model for how to design and deliver solutions was suggested. The model constitutes two layers: the conditions layer and the components layer. It emphasises that the conditions in the customer firm, project, relationship, and network set the boundaries for what solutions can be designed and delivered. Further, the solution is designed by integrating knowledge components, service components, material components, and third-party components. The latter emphasises that a solution can integrate knowledge, material, and services provided by third-parties, including the customer.

Four key challenges associated with becoming a solution provider were identified. It will be necessary to demonstrate the value of solutions to both customers and to people within the internal organisation. Further, becoming a solution provider would likely require new competences. However, it is likely that several employees have these competences, yet they are not fully visible nor utilised since they are currently not providing solutions but standard offerings. To profit from solutions the income must offset the associated costs and thus it will be a challenge to find a balance between treating projects uniquely, and obtaining a certain degree of repetitiveness to allow for efficiencies. Lastly, Skanska A&B and its customers have adapted to both each other and to other actors in the network as a consequence of continuous interactional processes. Thus, becoming a solution provider would likely impose changes that the actors would have to adapt to. These adaptations are not unilateral decisions or something that Skanska A&B can fully control, given the interdependencies in the network.

Skanska A&B can pursue different paths should they decide to develop their solution business. They are recommended to identify one or a few lead customers with whom to develop reference projects collaboratively, to allow for the value to be scrutinised and demonstrated both internally and to customers. It seems beneficial to retain the current sales organisations given that many of the customers will continue to purchase materials and services separately. It is suggested that a separate work team could be assigned the task to develop the solution business. Further, it would be an opportunity for Skanska A&B to develop and deliver solutions in collaboration with the haulers in Gothenburg. It is acknowledged that collaborating with customers and third-parties will be a precondition for utilising resources more efficiently and is arguably also a precondition for sustainability.

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# Appendix 1 Internal interview guide

The sales organisation

- 1. Please describe the sales organisation?
  - a. How many sales representatives are there?
  - b. How are the customers divided between the sales representatives?
  - c. Is/how is the product portfolio divided between the sales representatives?
- 2. Please describe the sales process?
  - a. What internal and external actors participate in a sales process?
  - b. Interviewee is asked to draw the sales process and the sales network
  - c. Are any/ how large share of the deals include intermediaries?
- 3. Please explain how your sales organisation relates to the other sales organisations within Skanska A&B?
  - a. Do you share customers?
  - b. If you share customers, are there any coordinated sell activities related to these customers?

Products, services and offerings

- 4. Please describe the product and/or service portfolio?
  - a. Are the products/services adapted to the customers?
    - i. If so: how, how frequently, and to what extent?
  - b. Do customers adapt their production to the products/services?
- 5. Do you offer any types of solutions to customers?
  - c. Can you give any examples of delivered solutions?
  - d. Which actors are/were involved in solutions?
- 6. How is the price determined?

### Customers' purchasing behaviours and purchasing processes

- 7. Please describe the customers' purchasing processes?
  - a. If different purchasing processes, what processes are most common?
  - b. What processes suit you better and why?
  - c. How do customers specify their requests?
  - d. Do requests include materials from other business units' portfolios too?i. If so, how are such requests dealt with?
  - e. In a project, are materials purchased at one time or in sequences?
    - i. What suits you better and why?
- 8. Please describe the tender processes?
  - a. How many competitors participate?
  - b. What knowledge do you have about the competitors?
- 9. What factors determine which supplier is chosen by a customer?
  - a. How does that show?
  - b. Does it vary among customers?
- 10. What kind of agreements do you have with your customers?
  - a. How common are framework agreements?
- 11. Please describe what kind of purchasing organisations your customers have?

- a. What is most common?
- b. What is better for you and why?
- c. Who is involved in purchasing?
  - i. Different purchasing roles?
  - ii. Does it vary across deals/projects?
- d. Are the purchasers knowledgeable in your products/services?

#### Customers and customer relationships

- 12. Please describe what kind of customer relationships you have?
  - a. Who are involved in a relationship?
  - b. Short-term or long-term relationships?
  - c. Are the relationships tied to the projects?
  - d. What means of communication are used?
  - e. What information do you share?
- 13. Which are your most important customer relationships and why?
  - a. Could you please describe these relationships?
  - b. How do you work in these relationships?
  - c. Are these relationships considered to be as important by these customers?
- 14. Do you have any relationships to the clients?
- 15. Describe how you work to maintain customer relationships?
- 16. Are the relationships impacted by external actors?
- 17. Do you have any collaborations with customers?
- 18. What kind of impact do customers have on Skanska A&B?
- 19. What kind of impact do Skanska A&B have on its customers?
- 20. Why do customers choose Skanska A&B as a supplier?

### Transportations

- 21. Describe how the transportations are organised, and by whom?
  - a. Are the transportations adapted to customers?
  - b. How and to what extent?
  - c. Are the customer time-sensitive?
- 22. Do you move material from project sites with the same trucks that deliver the material?
  - a. Is it done frequently?
  - b. Is there customer demand for moving material from project sites?
  - c. Are there any obstacles to moving materials from project sites?
- 23. What are the transportation costs' share of the total cost?

### Changes in the market

- 24. Have you observed any recent market trends?
  - a. How does that show?
  - b. What is the impact on Skanska and the market, respectively?
- 25. Have there been recent changes on the market and/or in the industry, or do you expect any changes?
  - a. How does that show?
  - b. What is the impact on Skanska and the market, respectively?
- 26. Would you agree to the claim that the industry is becoming increasingly customeroriented?

- a. How does that show?
- Ideas on new offerings
  - 27. Is there anything your customers request or require that you are currently not offering? a. Do other actors offer that?
  - 28. What do you think the customers are missing in your current offerings?
    - a. Do other actors offer that?
  - 29. Do you have any ideas on how your current offerings could be improved?
  - 30. If bundled offerings or solution offerings were offered:
    - b. What internal obstacles could there be?
    - c. What external obstacles could there be?
    - d. What is required to change in order to offer such offerings?
  - 31. Do you have any ideas on how such an offering could look like?
  - 32. Do you think such offerings would be attractive to customers?
  - 33. Which customers do you think would be interested in such offerings?
  - 34. Among your customers, which customers would you say are most progressive and open to change?

### Competitors

- 35. Is there anything that your competitors do better than you?
- 36. Please describe the relationships you have with your competitors?
- 37. What/how much knowledge to you have about your competitors' offerings?
- 38. What makes your offerings different from those of your competitors?

# Appendix 2 Customer interview guide

Details about the customer and the interviewee

- 1. Please describe your role in the company?
- 2. Please describe what kind of projects you carry out?
- 3. What materials do you purchase from Skanska A&B today?
  - a. Do you purchase and/or rent [concrete, aggregates, asphalt, rental services, Infraservices] from other suppliers?
  - b. Why do you not purchase/rent these products/services from Skanska A&B?

### Purchasing

- 4. Please describe your purchasing process?
  - a. Please describe your purchasing organisation?
  - b. Who are involved in purchasing?
  - c. Does it vary between different products/services/projects?
  - d. Are framework agreements used?
    - i. What are the most important parts of the framework agreements?
- 5. Who is the decision maker?
  - e. Does it vary between products/services/projects?
- 6. Please describe your purchasing strategy?
  - f. How would you like your purchasing strategy to be developed?
  - g. How could you work with purchasing to increase the value in the projects?
- 7. Does the client have any impact on your purchases?
- 8. At what stage of the project do you contact your suppliers?
  - a. Why is that?
  - b. Would it be possible to involve the supplier at an earlier stage?
- 9. Do you always ask more than one supplier?
  - a. Why is that?
- 10. What factors are considered important when you choose suppliers?
  - a. What factors are determinants?
  - b. Does it vary across projects?
  - c. How are the suppliers evaluated on these factors?
- 11. Are different types of materials and/or services purchased separately, or can they be purchased via the same request?
  - a. Why is that?
  - b. Are there any advantages or disadvantages related to that?
  - c. Would there be any advantages or disadvantages of purchasing more types of materials and/or services from one sales representative?
- 12. At what stage of the project do you purchase the materials and/or services needed?
  - a. Are all materials and/or services purchased at the same time, or at different stages of the project?
- 13. Please describe the sales organisations that you purchase from?
  - a. What sales organisations do you prefer?

- 14. When you leave a request for materials and/or services, do you consult with the supplier regarding what materials and/or services that are needed or that could be used as alternatives?
  - a. Why/ why not?
  - b. If yes, do you discuss with the supplier prior to or after the contract have been assigned to the supplier?
  - c. If no, would you be interested in doing that?
- 15. Please describe what roles the suppliers have in your projects in addition to delivering materials?
- 16. Please describe how the transportations are organised?
  - a. Do you or the supplier coordinate the transports?
  - b. Are any other logistic solutions offered in addition to the transportation services?

### Supplier relationships

- 17. Please describe how you work with your suppliers?
- 18. Do you use many suppliers?
- 19. Are all suppliers equally important to you?
  - a. What makes a supplier important to you?
- 20. Please describe how you work in a supplier relationship that you consider to be a good relationship?
  - a. E.g. Who is involved in the relationship? Do you/ how do you collaborate?
- 21. How many contacts do you have at each supplier?
  - a. What do you prefer?
  - b. How many people from your firm have contact with each supplier?
- 22. Please explain why you use Skanska A&B as a supplier?
- 23. Are Skanska A&B an important supplier?
  - a. Why and in what ways?
- 24. Please describe the relationship between your firm and Skanska A&B?
- 25. Do you have contact with one or several sales representatives at Skanska A&B?
  - a. What do you think about that?
- 26. Do you perceive that the contract have high influence on the work?
  - a. Do you perceive that you are provided with help beyond what has been agreed upon in the contract?
  - b. In case of problems, do you solve these together?

### Ideas on new offerings

- 27. Is there anything that you would like to be different when you purchase from your suppliers?
- 28. Is there anything you need or want that is not currently offered by your suppliers?
- 29. Are there any changes or trends in the industry that affect you?
- 30. [If the customer have not mentioned time-pressure previously during the interview]: Do you agree with the claim that the time-pressure is increasing in projects?
  - a. How and why?
  - b. Are there any inefficiencies related to how you work with your suppliers?

- c. Is there anything that the supplier could do to help you with the time issue?
- 31. What do you think about the current logistic solutions that are offered?
  - a. Is there anything that could be different?
  - b. In a logistic solution, what creates/ would create benefits for you?
- 32. What do you think about the idea of purchasing more than one type of materials and/or services provided by Skanska A&B from one sales representative or via one quotation?
  - a. Would you be interested in purchasing in such ways?
  - b. What materials and/or services could you imagine purchasing in such ways?
  - c. What would the disadvantages be?
  - d. What value would you obtain?
- 33. What do you think about the idea that the sales representative is increasingly involved in your project; for example discussing/providing solutions, discussing material choices, discussing the coordination of inbound and outbound transportations.
  - a. Would you be interested in such type of support from the supplier?
  - b. What value would you obtain?
  - c. Are there any disadvantages?
  - d. How would you prefer it to look like?
- 34. What do you think about the idea of purchasing solutions?
  - a. Would you be interested in such types of offerings?
  - b. What would the disadvantages be?
  - c. What value would you obtain?
  - d. How would you prefer it to look like?
- 35. We have discussed four ideas related to different types of changes. Would anything in your organisation need to change in order for you to adapt to any of the discussed changes?