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# Construction Management or Contractor – A Client's Choice

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# Abstract

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Clients within the construction industry have become more aware of benefits that exist and can be reached when going through a major construction project, benefits that invite for efficiency improvements both during construction and its pro phases. New methods of execution and their different advantages are evaluated. This change has opened the door for new business models such as Construction Management (CM) but it also demands the contractors to adapt and come up with more client-customized methods. The thesis goes further into the question of when to use which execution method and describes how the client thinks in the decision-making process. What factors affect the client when making the choice between CM and contractors? It investigates and highlights the behaviors, features and processes that affect the client in their way towards an optimal investment. It further explores what the contractors and CM firms can do in order to adapt to their clients and win their trust.

The *Analysis & Conclusion* chapter provides a summarized view of *What* the clients have in mind but also *Why* and *How* they make their decisions. Throughout the literature review and interviews we found five different parameters as particularly important:

- *Experience* – what has been done before and was it successful?
- *Availability* – how easy is it for clients to recall the different actors?
- *Relations* – optimal teamwork and collaborations or just personal relations and quick fixes?
- *Price/Risk* – what risks are included and how is that linked to costs?
- *In-House Resources* – what does the clients' own organizations look like and what resources are available?

Clients wish for a riskless, cheap and short construction process with retained good quality and without friction between organizations. On their way towards this goal they face several complex aspects as well as their own human characteristics, being affected by biases and heuristics. This thesis shows that the choice between these two business models is complex and not obvious but that improvements in the client's evaluation and decision-strategies can be made. The right business model for a projects specifics' can, in particular for redevelopment projects, give several benefits. It also shows that the execution firms can change and adapt in many ways in order to influence their situation with the clients.

# Sammanfattning

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Beställare inom byggindustrin har blivit mer och mer medvetna om de fördelar som finns och som kan nås när man genomgår ett stort byggprojekt, fördelar som ökar effektiviteten både under byggnationen men också i dess tidiga faser. Utvärderingar av nya utförandemetoder och deras olika fördelar genomförs vilket både öppnar dörrarna för nya affärsmodeller så som Construction Management (CM) men tvingar också byggtreprenörerna att bli mer kundorienterade. Denna examensuppsats går djupare in i frågan om när beställaren ska använda vilken utförandemetod och beskriver hur beställaren tänker i sin beslutsprocess. Vilka faktorer påverkar beställaren vid valet mellan CM och byggtreprenörer? Uppsatsen undersöker och belyser beteenden, egenskaper och processer som påverkar beställaren på vägen mot den optimala investeringen. Vidare utforskas också hur byggtreprenörerna och CM-bolagen kan utvecklas för att ytterligare anpassa sig till kundens behov och vinna deras tillit.

I *Analysis & Conclusions* ges ett sammandrag av vad beställaren har i åtanke vid valet men också varför och hur de tar beslutet. I vår litteraturstudie och under intervjuerna fann vi fem olika parametrar som var av särskilt intresse:

- *Erfarenheter* – vad har gjorts tidigare och var det lyckat?
- *Tillgänglighet* – hur lätt är det för beställaren att erinra sig de olika aktörerna?
- *Relationer* – optimalt teamwork och samarbete eller bara personliga relationer och enkla lösningar?
- *Pris/Risk* – vilka risker är inkluderade i de olika utförandesätten och hur är det kopplat till kostnader?
- *Interna resurser* – hur ser beställarens egna organisation ut och vilka resurser finns tillgängliga?

Beställarna strävar efter riskfria, billiga och korta byggprocesser men med bibehållen kvalitet och utan friktion mellan organisationerna. På vägen mot deras mål möter de flera svåra val samtidigt som de påverkas av olika mänskliga faktorer, så som fördomar. Denna uppsats visar på att valet mellan de två utförandemetoderna inte alls är självklart men att förbättringar i beställarens utvärderings- och beslutsstrategier kan göras. Den rätta utförandemetoden anpassad mot projektets specifika förutsättningar kan, särskilt i ombyggnadsprojekt, ge flera fördelar. Det visar sig också att utförandebolagen kan anpassa sig inom flera områden för att förstärka deras situation gentemot kunderna.

# Preface

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This master thesis is the result of our last semester in the discipline of Construction Project Management within the Master of Civil Engineering and Urban Management at the Royal Institute of Technology, KTH. The idea for our research question is based on our interest for understanding and developing the construction actors and different business models. We have picked up a lot of useful information and thoughts during our work and gained a broader view of construction client's needs, organizations and business.

First and foremost, we would like to thank all interviewees for their participation, commitment and time. This thesis would not exist without your thoughts and comments.

Secondly, we would like to thank our supervisors Henrik Gustavsson and Victor Verboog at Skanska for discussions, directions and helping us with practical stuff. Furthermore, many thanks to other employees at Skanska, especially Anna Roos, Richard Weimer, Malena Andén, Staffan Kruhsberg Nilsson and Nedim Kahvedzic, who have made our semester even more educative and fun.

Last but not least, we would like to thank Tina Karrbom Gustavsson, our supervisor at the Royal Institute of Technology, for wise thoughts, ideas and research knowledge.

Stockholm, May 2012



Daniel Lindblom



Jonathan Isaksson

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# 1. Introduction

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## 1.1 Background

The Swedish construction industry has become more complex within the last decades due to the fact that more competition has risen from different types of contracts and organizational forms as well as from a broader international market. This thesis will examine the factors that construction clients look for when choosing between a Contractor and a Construction Management agency to make their redevelopment project reality.

During the last decade, an increase in construction and project management firms has taken place that has led to a more frequent use of this business model (Gustafsson, 2006). Construction Management (CM) firms claim that this form gives more flexibility, a better project cost and more focus on the clients' needs (Walmerud, 2012; Gustafsson, 2006). CM is an international expression for planning, leading and controlling projects under a sub-divided contract. On the other hand there are Contractors, in this thesis mainly larger construction companies working with turnkey and general contracts. In Sweden there are a limited number of these companies, for example Skanska, NCC, PEAB and Veidekke. The traditional way of doing large redevelopment construction projects has been mainly through hiring one of these companies – the alternatives have been few. Due to many factors, such as financial strength and in-house knowledge, these actors are the primary competitors to CM companies for these kinds of projects.

Both sides have their pros and cons for the client when it comes to the procurement phase. Obviously, different projects have different needs, but are there any significant factors that are more common than others? To what extent do relations, knowledge, financial strength, size of organization etc. really matter for the client in large redevelopment projects?

## 1.2 Issue

Decisions can be made through well-developed routines and structured assessment but they can also be made on assumptions, feelings and be the effect of relations between parties. This thesis will investigate clients' choice between contractors and CM firms and find out which factors that are critical and how they affect the decision-making process. The research question is therefore:

Which factors affect the decision-making process when clients choose between contractors and Construction Management companies in large redevelopment projects?

### **1.3 Purpose**

Finding out what aspects and factors are affecting the decision-making process can from an overview perspective contribute to a more effective tendering process for the client as well as for the executing firms. Discovering these factors will also facilitate that the client finds the right business model to each project in order to maximize their investments. Better routines for client focus and better understanding of the clients' needs can in the long run also for example enhance communication and make the client and execution firms work more efficient together.

### **1.4 Limitations**

Our geographical limitation is the Stockholm metropolitan area. Companies that are chosen for interviews should be Swedish or well established on the Swedish market. Clients have been limited to professional construction clients that are regularly involved in redevelopment projects and a large actor in the Stockholm area. Our focus is commercial buildings and private client companies, however Specialfastigheter is partly governmental and HSB is purely a residential property owner. These sidetracks have been allowed to provide a broader view.

CM companies are limited to those in *CM-bolagen*, a trade association for Swedish companies within the field of construction management. Contractors are limited to the five largest Swedish building construction companies working with redevelopment projects.

The thesis is limited in time to a period of 20 weeks or 30 ECTS.

### **1.5 Thesis structure**

The main objective for this report is to guide the reader through different parts and finally end up with a broader view of the subject of clients' decision between CM and contractors. After this introductory section, chapter two *Method*, will go through the methods used for the research and empirical study. It is followed by chapter three *Theoretical Framework*, which gives the reader a deeper understanding of areas essential for the subject. First, the different actors and their roles will be described followed by a shorter description of redevelopment projects and the different contracts used, and finally theories concerning decision-making are examined. A compilation of the results from interviews and the evaluation can be found in chapter four *Findings*. The thesis is ended with an analysis based on the theory and findings together with a conclusion, recommendations and suggestions for further research in *Analysis and Conclusions*.

## 2. Method

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This chapter gives a better insight in our research approach. It also goes deeper into details regarding *Literature Review*, *Sampling*, *Interviews* and *The Evaluation*.

### 2.1 Approach

This thesis follows a deductive reasoning but no premises or hypothesis are stated. The work began with formulating the issue/question and was followed by two meetings with professionals to gain a better understanding of the topic. It continued with a literature review to find previous theory and then executing observations to find out how it works in practice. Parallel reference observations were carried out and after completing our *Findings* we compared and analyzed theory, findings and our thoughts. Our key issues from *Analyzes* are then highlighted in *Conclusion* and elaborated in *Recommendations*.

This thesis is based on a qualitative research method with primary and secondary data. Secondary data, given from research articles, books and reports, is complemented with primary data in order to compare theoretical and practical aspects and to finally find out how the decision-makers in the construction redevelopment market argue. Primary data is collected through interviews that have a semi-structure character in order to allow flexibility and to make it possible to focus on unexpected issues that we may encounter during the sessions (Ghauri & Grønhaug, 2010). Interviews are made in person and with people who possess authority to choose between the investigated execution forms. The selected samplings of respondents have been taken from larger property owners with experience from both contractors and CM projects and with authority to make the choice. To make comparison possible and to find differences we also interviewed both CM firms and contractors.

The qualitative method and the exploratory design are chosen because the lack of a clearly stated hypothesis, the importance of flexibility and with the need to emphasize understanding. Due to the exploratory way of handling the issue, data collection and analysis will be made simultaneously, thus producing new findings along the way (Ghauri & Grønhaug, 2010).

### 2.2 Literature Review

As for the secondary data, the literature review will give deeper insights in areas covered by the thesis. Most important is to explore and find out which factors/parameters that are affecting the human decision-making process and which conception of important aspects they consider when they contract. Further, by describing the Swedish construction industry with the different forms of contracts, as well as the two types of executions forms that will be examined, will clarify for both authors and readers. As for the authors, the literature review will create a better ground for the forthcoming exploratory research. It is made partially to

improve the formulation of interview questions and support the development of new questions in the semi-structured approach.

Our main sources are books and articles by authors in the front line of their topic. The human decision making process is based mainly on international English written books to get a broader view, as this subject is more explored internationally. Literatures dealing with type of contracts, involved actors etc. are written mainly by national writers to keep the Swedish perspective.

### **2.3 Sampling**

The chosen sampling is a non-probability *Judgmental and Purposive* sampling where elements (interviewee's) are chosen to represent a general view of the actors in the redevelopment market (Tan, 2011). The sampling frame is similar to the population and the sample does reflect the market. Initially a trustful sampling of interviewee's were examined to between six and eight, having the total amount of property owners doing large redevelopment projects in mind. Fifteen clients were contacted and finally 10 were interviewed. Contacts to five clients were given by our supervisors at Skanska and five were found through correspondence with companies that fitted into the given profile, see *Limitations*. In addition, we individually contacted and interviewed two CM firms and two contractors to provide material for comparison with what had been said by the clients. It should be noted that the sample of these four additional interviews are too few to create a general view but will give a hint of what these actors think. To increase the general opinion all interviewees are from different companies. One person from each company was also considered to be enough as they were to represent a relative small unit in each company. A list of the companies interviewed can be found in *Appendix 3*.

### **2.4 Interviews**

Collection of data through interviews will reflect complex aspects of construction projects and will handle clients' different objectives in the diverse number of possible redevelopment projects. Because of the broad research question the use of interviews will allow the answers to be more describing and will facilitate the search for more extensive answers. Another possible way of collecting data would be case studies and questionnaires. Although, the statements in *Approach*, together with the very difficult task of creating a "real" case that feels relevant to most clients, would make a case study problematic and inaccurate and is therefore excluded. Questionnaires, on the other hand, are more appropriate when ordinary people will be surveyed and when surveying is more extensive. The uses of interviews are more suitable when respondents are experts (as these people can be referred to looking at the research question) (Ejvegård, 2009).

Interviews have been made with premade questions as a base with follow-up questions. Three different categories of actors have been interviewed and therefore three different types of question papers have been put together: one for clients, another for CM firms and a third for

contractors. The question paper used with CM firms and contractors are a modified version of the client's in order to enhance chance for similar, relevant and comparable answers, see the question papers in *Appendix 1*. Questions were created with our main topics/issues in mind. In order to pick up unsaid and honest thoughts as well as finding underlying reasons for actual conduct the topics/issues were held general. Further, test interviews were carried out and questions were discussed with people within the construction industry. Our supervisor at KTH was also asked to give her opinion on the questions and to highlight important strategies when performing a professional interview.

All interviews have been carried out at the clients' office to make them feel comfortable. The *Evaluation* was sent to the interviewee's before the meeting together with an e-mail that in short terms explained the program of the thesis. The question paper was not sent because it could adversely affect their honesty and spontaneity later on. The question paper was neither before nor during the interview shown to the interviewee's in order to prevent a feeling of overwhelming and to be able to change the order questions. Two to three hours were booked with everyone in order to prevent stress and have time for introduction, one and a half hour of interview, coffee break and some distance to following activities.

All interviews have been recorded to prevent losses of any essential information and to give us, as interviewers, time to focus on given answers and follow-up questions. Notes were only made to add thoughts. All interviews were then listened through and relevant answers were collected to provide a base for *Findings* and *Analysis and Conclusions*. As some questions were, when creating them, identified as sensitive for the individuals we kept all interviewees anonymous in order to encourage honest answers. We judge that this anonymity would not affect the credibility in a negative manner.

## **2.5 The Evaluation**

The *Evaluation* was made by all interviewees (clients, CM firms and contractors) to generate a numeric material to compare with what has been said during interviews. It also creates a better material, easier to visualize. The interviewees were in each case asked to rank the given parameters by addressing 100 points in total. It was also possible to add and rank additional parameters, see the *Evaluation* in *Appendix 2*. All *Evaluations* except from two were made during the interview and the others were sent afterwards by e-mail.

When analyzing the *Evaluation* all points were summarized for each parameter including *Others*. The parameters were then ranked according to a percentage of total points. The clients' opinions were then compared with the contractor's and CM firms' in order to find differences. A ranking that, for each parameter, excludes the maximum given points from one person are also made in order to see if that has an abnormal effect on the result. If the total result between the original and the "maximum excluded"-ranking are significantly different the second one were chosen, if there is no significant difference the first one is chosen.

*The Evaluation* had prewritten factors, as we wanted to explore these parameters more in detail. These parameters are connected to the question paper and are chosen from our prior thoughts, the industry's preconceived ideas, discussions with industry experts and supervisors as well as through the literature review. In order to maintain openness and to capture the interviewee's additional thoughts they were given the possibility to add extra parameters.

Our parameters were, with respect to the client's choice of business model:

- References
- Own experience from previous projects
- The executors' knowledge and experience
- Organization (structure and individuals)
- Risks
- Price
- Guarantees/follow-up
- Relations
- Corporate data (history, credit value, liquidity, resources) Flexibility
- Type of contract
- Marketing
- Others

## 3. Theoretical framework

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### 3.1 The Three Actors

To get a better understanding of the different roles that will be mentioned in this thesis an explanation will be given in this chapter. They are: clients, Construction Management companies and contractors.

#### 3.1.1 Clients

The Swedish Planning and Building Act's definition of a construction client is:

*“A party who carries out or assigns others to carry out construction, demolition or land work.”* (PBL, 2010)

and similarly from OECD:

*“Is the natural or legal person for whom a structure is constructed, or alternatively the person or organization that took the initiative of the construction”* (OECD, 1997)

A client or developer within the construction industry can take many different forms. There is no acknowledged breakdown for all the different types, but three main groups can be derived: traders, smaller property organizations and property companies (Boyd & Chinyio, 2006). Traders buy property with a short-time perspective. They develop a plan, sell the idea to an investor, often manage the development and construction of the project themselves and then dispose the project. During this period, traders make their money from managing the project and selling the development. The next group, smaller property companies, is mainly families or small investment groups that own property for its own use or in smaller scale. This thesis will focus only on clients in the last and final group, property companies.

Property companies are described by Boyd & Chinyio (2006) as companies that use mostly stock-market long-term capital finance, retain the properties in a portfolio over a longer time period (compared to traders) and are managed by a professional corporate team with in-house employees. This group also holds different types of activities. Commercial buildings primarily consist of offices, retail (shops, convenience stores etc.) and warehouses. A mixed use between offices and retail is not uncommon, often with the ground floors occupied by retail. Residential buildings are multifamily houses (with several apartments), which are owned with a businesslike purpose. The companies are holders of the building but need not necessarily be landlords.

### Relationships

According to the Swedish Construction Clients Forum, an addition has to be made to the definition of a client to give a full description. That is:

*“The construction client is also responsible for interpreting and translating the users’ needs, expectations and desires into requirements and prerequisites for the construction project based on society’s need for a sustainable built environment.”*  
(SCCF)

The supplement from SCCF is interesting when looking at the several relationships the client has to consider. First, consider the construction part of the business. Except users’ and society’s needs and regulations, the client has to take the relationship with construction companies and its own organization/company’s needs into consideration, see Figure 3.1. These needs will definitely effect clients’ decisions when contracting for a project.

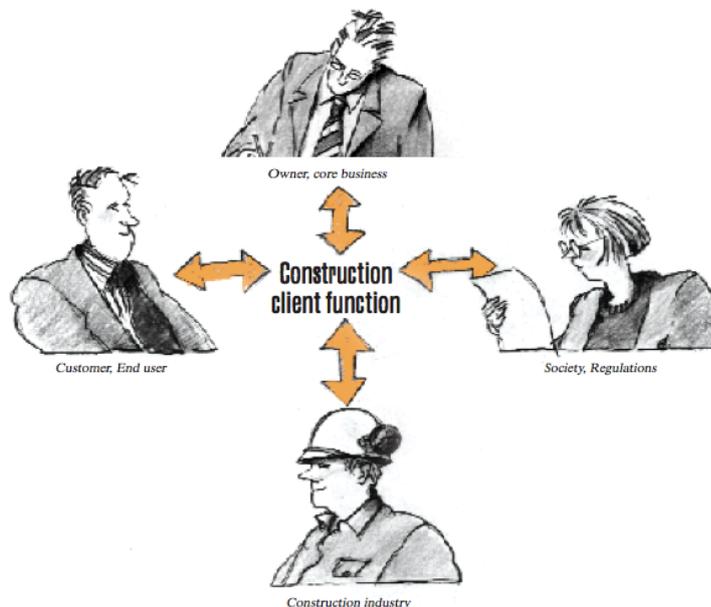
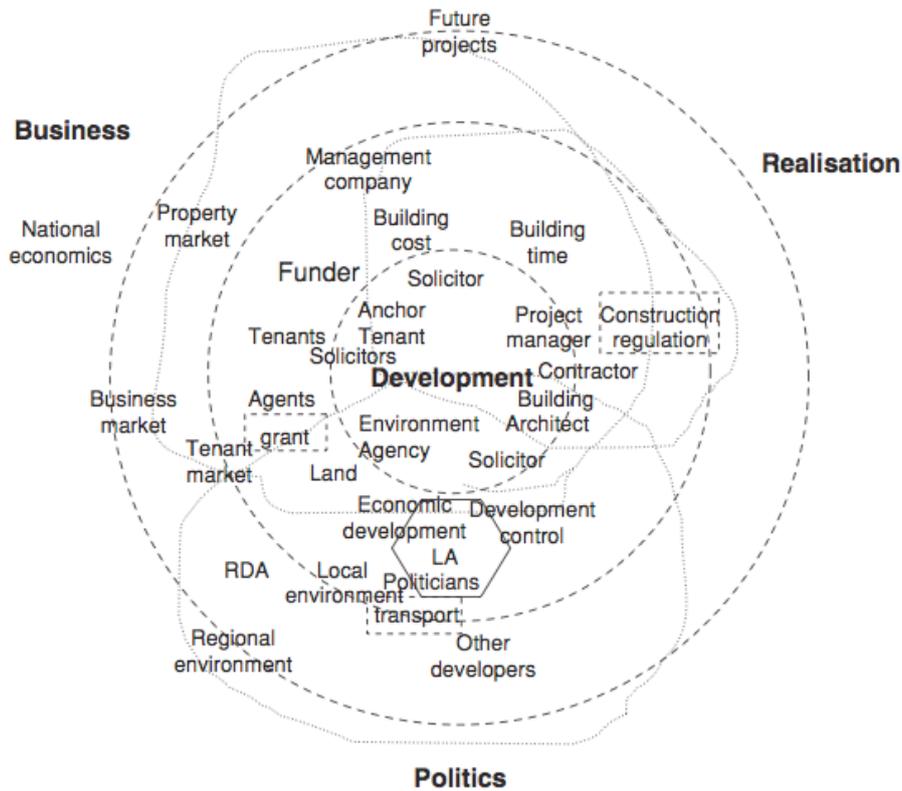


Figure 3.1 A client’s relationships (SCCF)

Second, consider the clients business as a whole, not only construction. This is a more complex picture of the actors and issues in the property development world, as demonstrated in Figure 3.2. The strategy around the business plan, the tactics around managing the politics, and the operations around realizing the building, which includes construction, has been isolated in the figure. Looking at this gives a hint of how complex the client world actually is.



LA, local authority; RDA, regional development agencies.

Figure 3.2 Map of property developer's environment (Boyd & Chinyio, 2006).

### *Corporate Issues*

Each development client is almost unique in its approach to business. However, the property owners' major occupation is to retain and manage existing buildings, whereby developments and construction becomes a smaller part of their business. The company knowledge centers are, according to Boyd and Chinyio (2006), financial management, portfolio management, development appraisal, risk analysis, structuring of leases and relationships with corporate clients. There are of course departments focused solely on construction management, but they are estimated in most cases to around 15% of the total business.

Further on, the achievement and maintenance of stability are part of many corporate organizations. Actions must therefore be justified within a rational framework. The project itself must be in-line with the company's business image, corporate governance rules, laws, and corporate social responsibility. Actions may further need to be justified for shareholders. These factors all affect how flexible a client's decisions can be. Moreover, the business of the property is essential for the investment. The development is expected to give a return on investment that is higher than the current loan rate. Therefore a return of money must be either from a capital increase in the value of the property or through a sufficient income from letting the property. Responsibility for a project is also a significant matter in larger

organizations. Higher-risk decisions can be passed around between divisions so that no one is perceived as taking responsibility or be transferred to an external part (consultant or contractor) to protect the internal system (Boyd & Chinyio, 2006).

Furthermore, property owners also need to consider their end user (known or unknown). It is of great importance to understand the consumers market, needs, wishes and economic situation. There are however limits in consumers' requirements because there must be a balance between construction, maintenance and cost in the clients decision. (Vennström, 2008)

### **3.1.2 Construction Management**

Construction management is a relatively new business model when working with middle size and large construction projects in Sweden. It is a business model that began in the US and became widely known in the early 60's. Initially the construction managers acted as experts, agents and administrators when developers and landlords carried out different construction projects. The term CM was not defined until the 70's when The Public Building Service, as a part of the General Service Administration in US, suddenly started to use construction managers in all their building projects (Stridh, 1997). Soon three large American organizations within the industry began to define the term CM and it was now mentioned in different types of standard contracts. After failing to get along with each other regarding the definition of CM they continued to develop the definition in two different ways. Today, these two definitions of CM are more equal and therefore often described as 'Advisories as an external agent', 'Construction Management' or 'Project Management'.

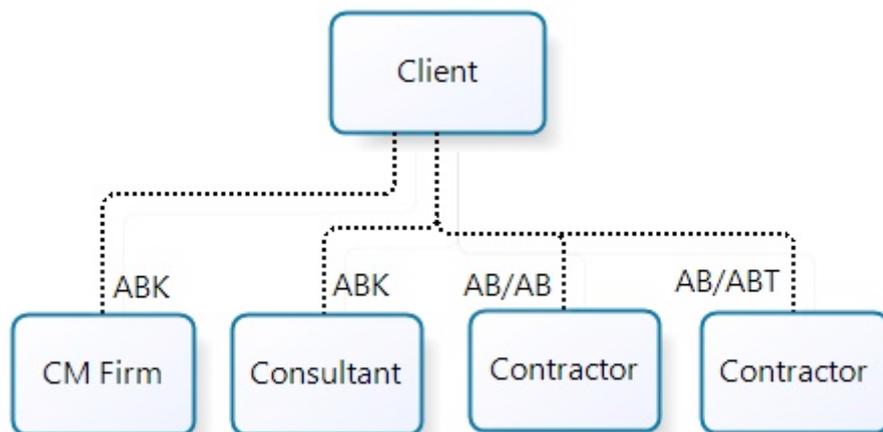
The content of CM in Sweden is very close to the US expression and the definition is defined as:

*“Construction manager is a consultant or contractor who leads, implements and administrates the production/construction phase. The production manager can sometimes be responsible for coordinate tasks during the design phase”.*

*“The project manager is a consultant or contractor that leads, implements and administrates at least design and production phases in the building process.”*  
(Råsled, 1990, Author's translation)

Looking at the CM business model from a client perspective, it could be explained as consultants on hourly basis that assist the client with knowledge, expertise and human resources that they otherwise would gain from an in-house building division. The CM firm becomes advisor, project manager and executing organization on site, working with/towards designers as well as sub-contractors. However, they sometimes also act in the initial phases to support the client in their decision-making.

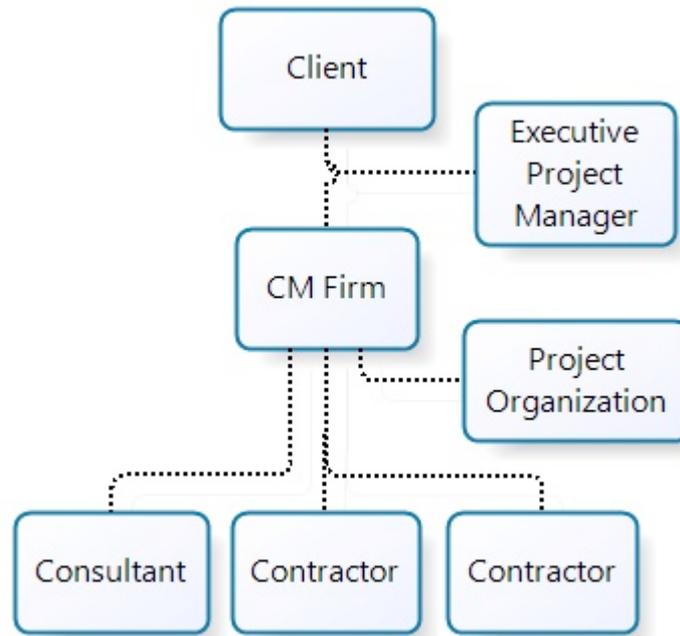
CM was, to a greater extent, introduced in Sweden by “Åke Larsson Byggare” during the 70’s (Stefánsson & Åsberg, 1998) and it has during recent years once again become more and more popular (Gustafsson, 2006). A growth of companies having CM as their core business can be seen in Sweden’s larger regions such as Malmö, Gothenburg and Stockholm. According to the Gustafsson (2006), the growth is due to the many advantages that challenge the traditional contractors. They do not possess designers and workmen in-house to any great extent, but purchase these for each contract. The CM firms are legally tied to the client with the Swedish ABK<sup>1</sup> contract and use a split or sub-divided construction contract towards the client during execution, see structure of contract and organization on site in Figure 3.3a-b. One of the model’s strengths is its fast-track possibilities that enable the project to start without time-consuming tendering (Infrastructure Alberta, 2001). More information about contracts can be found in *Construction Contracts*.



**Figure 3.3a Illustration of contract structure in a Construction Management project.**

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<sup>1</sup> Swedish abbreviation for Allmänna Bestämmelser för Konsultuppdrag inom arkitekt- och ingenjörsvksamhet (English translation: General Conditions of Contract for Consulting Agreements for Architectural and Engineering Assignments)



**Figure 3.3b Illustration of organizational structure in a Construction Management project.**

### **3.1.3 Contractors**

Contractors in Sweden have a very old and genuine business model and many of the companies have reached an impressive amount of large and well-known projects in their portfolios. Before the 90's Sweden had a lot of internationally and regionally large contractors but after the crisis during the 90's many of these, both nationally but especially regionally, had to close down due to a weak market as well as large investments in real estate. Today's market is therefore led by a few main actors who are able to take on large construction projects above approximately SEK100 million.

Generally, contractors do not work on an hourly basis as their business model is based on a certain turnover. They often have one fee for the project organization on site and one fee that is returned through percentage of turnover. However, they do not tend to take on projects that not include the responsibility and turnover of the final construction. During the past years they have focused more on early interaction and collaboration with the client in order to generate a better product and through that make better business for themselves. One way has been to introduce Partnering and Cooperation Agreement Contracts, see *Construction Contracts*.

The contractor's business model is in this thesis based on AB<sup>2</sup> or ABT<sup>3</sup> with a turnkey or general construction contract, which is further described in *Construction Contracts*. See Figure 3.4 for contract and organizational structure.

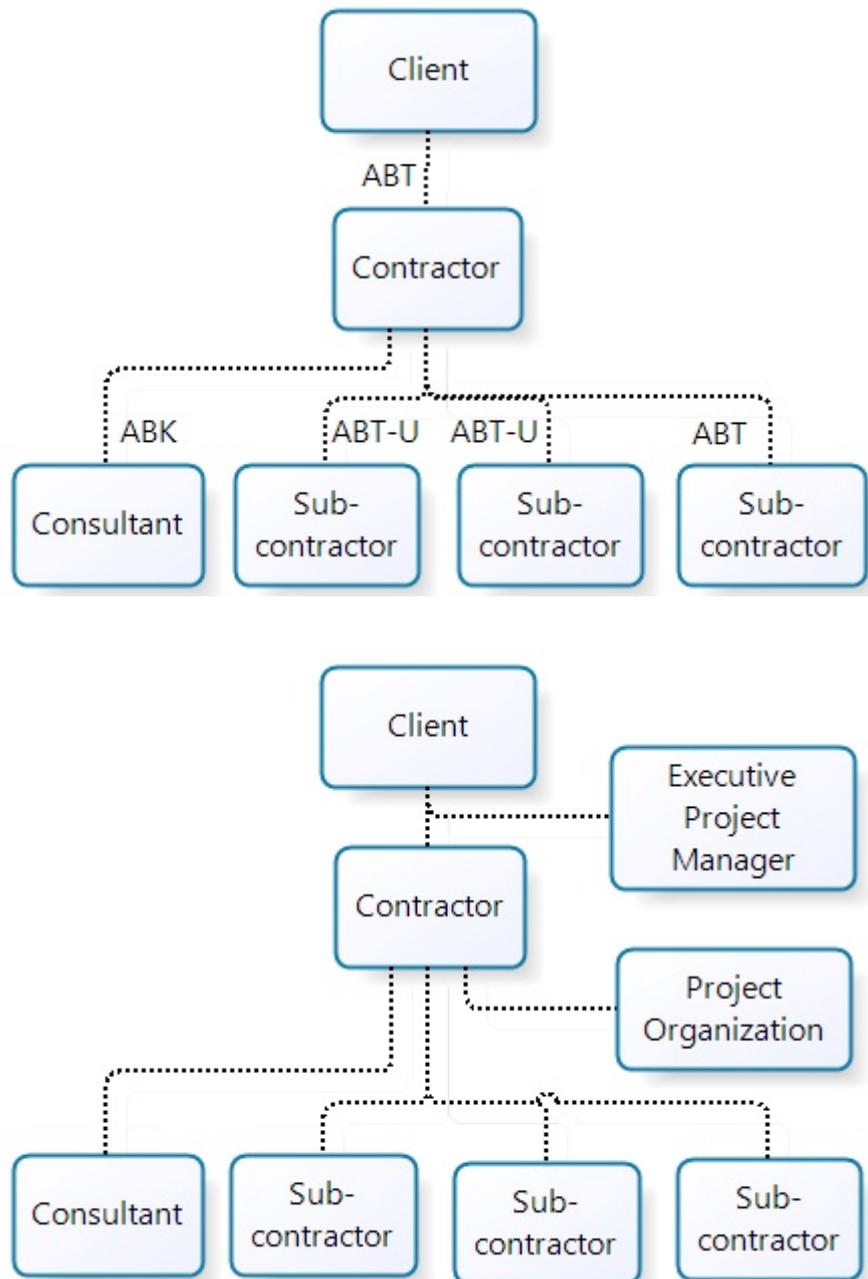


Figure 3.4. Illustration of contract (above) and organizational (below) structure in a contractor's project.

<sup>2</sup> Swedish abbreviation for Allmänna bestämmelser för byggnads-, anläggnings-, och installationsentreprenader (English translation: General Conditions of Contract for Building and Civil Engineering Works and Services)

<sup>3</sup> Swedish abbreviation for Allmänna bestämmelser för totalentreprenader (English translation: General Conditions of Contract for Design and Construct Contracts)

## **3.2 Project, Procurement and Contracts**

This thesis is focused on the client's redevelopment projects and which business model they choose to use when working in the early phases as well as the execution of construction. This part explains the definition of redevelopment, its constraints and the client's different stages.

### **3.2.1 Projects and Stages**

#### *Redevelopment projects*

The definition of redevelopment is when the building goes through an essential change. Redevelopment is for example when the building's floor planes are changed but it often includes mayor changes with, for example, supporting structure. It is sometimes used as a word for collection of activities such as renovation, restoration or even maintenance. However, the change should include more than one single building component otherwise it might be characterized as reparation (Skatteverket, 2012).

Large and comprehensive redevelopment projects are often challenging for both the executing firm and the client, due to the unexpected problems that might occur during progress on site. Problems could arise due to, for example, construction work inside a partly occupied building or work based on drawings and dimensions that differs from reality. These parameters, together with an often very short time frame, affect the execution and demand an open mindset and flexibility with different solutions and organizations for the executer (Verboog, 2012). Parameters that to a great extent also affect the client's decision, as they may face risks for economical overload and delay.

#### *Stages within a building project*

The different construction phases could be described in many ways, they are below divided into five phases with focus on the initial phases before the construction. It gives a hint of what steps the client have to keep in mind when starting a project until the construction is procured.

1. Initiative and specification:

The project is initiated out of a need from the property owner, stakeholder or the tendering business. It continues with creation of frames and identification of customer's requirements. Further on, the work focus on identifying a proper board of sponsors that, from given frames, do prioritize aspects like time, cost, quality, legal issues and impact on business. Depending on the clients' experience and the project's scope an external advisor can be hired to help out and support the process. The project scope also affects the amount of board participants. In smaller projects this board could include only the executive project manager and in other larger cases include directors, company board members, project managers among others (Harris & McCaffer, 2006).

2. Options and Decision:

Feasibility studies take place and by further analyze of value, risk and cost benefits the best solution are set to be find. Estimations of, among others, life cycle costs, investments, financing and scheduling shows if the project is feasible and also how profitable it is compare to other projects and investments. At the end of this stage the board decides whether to go ahead or to wait. It should also be noted that if the tenant takes the initiative they strongly participate in this decision, as their rent is affected. If go-ahead is given, and an executive project manager is not already appointed, the client look in-house or external depending on scope and in-house experience/capacity.

3. Develop procurement strategy:

The executive project manager continues to prepare the project and brief covering details such as work-, control- and reporting plans as well as further evaluation of risk, constraints and budget are made. Together with more detailed work in value-creating this creates a good base for further decisions regarding following progress, procurement strategy and best approach.

4. Implementing procurement:

The chosen procurement strategy is implemented and the actor with the most appropriate solution is asked to deliver the project. Business plans, project briefs and requirements are used when choosing.

5. Project delivery:

The execution is launched and from this stage the chosen project manager (from stage 1 or 2) have a major role in the project under the command of the executive project manager. The following design and construction work is developed differently depending on the chosen execution form and contract; see *Construction Contracts*. Further work is then highly influenced by the integration between the actors.

### 3.2.2 Procurement & Tendering

#### *Competition*

This thesis is not including LOU<sup>4</sup> projects but only redevelopment made by private clients. Clients in this paper are therefore not question for the legislation written by the Swedish Competition Authority (*Konkurrensverket*) as private companies are competing on free market. However, they are regulated by prohibition of collusion behavior, which would put the free market off track and lead to a decreased productivity through less innovations (Söderberg, 1998). The free market also makes it possible for the client to choose whomever they want on whatever grounds they wish. This opens an opportunity for consultants and contractors to gain contracts on a various type of aspects.

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<sup>4</sup> Lagen om Offentlig Upphandling (English translation: The Swedish Public Procurement Act)

### *Type of Tendering*

Clients are in the private market, as mentioned before, able to choose whomever they want and the tendering can therefore be closed or opened. Closed tendering is often called selective tendering as the client chooses to contact one or a few companies in order to make them able to send their bids. As the client already knows the tendering firms and their qualities they often tend to choose the lowest bid as long as it does not largely exceed their own estimations.

The opposite, open tendering, is often spread through advertising and every company is then allowed to hand in their proposal. In an open tendering it is possible for the client to make a stage tendering as a tool in order to increase the amount of bids. Due to the high amount of hours and costs that is related to tendering many companies choose not to participate if they cannot see their chance of winning. Stage tendering solves this as the bidders in the first step are assessed on organizational characteristics, financial strength, management resources, experience and references. Companies that fulfill these requirements will then be asked to proceed to the second step where requirements like key personal, workload, experience from similar projects, expertise, prior relationship etc. are evaluated. The successful bidders are lastly asked to hand in their prices that together with their other qualifications/requirements are ranked according to an algorithm. (Harris & McCaffer, 2006)

### *Aspects When Choosing*

On today's market it is getting more popular to work with and use partners, service providers and contractors with experience and references from similar projects. Actors that the client has a good relation to and which they know will stay in the same pricing. Especially on the market for professional disciplines' like project managers it is possible to note a visible trend towards choosing actors with previous successful relationship or very good recommendations. New companies on the other hand have to be carefully evaluated through investigation of their previous project results, especially if the works outcome is based on sufficient interaction and active communication.

Evidence of attributes below is vital, according to Harris & McCaffer (2006):

- Sufficient capacity of adviser and team for the project undertaking
- Experience in work of similar nature to the project
- An ability to demonstrate past results in terms of delivering projects to time, budget and quality requirements.
- Possession of well-qualified staff with up-to-date and relevant experience
- An ability to demonstrate sound procedures in operational management and organization, combined with financial and economic stability
- An ability to supply written evidence of health and safety knowledge and experience, and to demonstrate expertise in managing design hazards, including subcontractor design responsibilities.

### 3.2.3 Construction Contracts

This part highlights the most commonly used contracts that are used by the two types of business models that are investigated. The choice between these contracts is mainly influenced by three parameters; economy, project time, risk-taking (Söderberg, 1998). These are therefore elaborated further for each contract.

#### *Turnkey*

In a turnkey contract the client only has to procure and sign with one contractor that becomes responsible for the total design and construction, see Figure 3.5. However, it is possible for the client to have contract for other assignments that is not included in the main contract such as installation of machinery. In this type of contract the contractor is responsible for the whole design, execution and to fulfill norms, standards and client's specification.

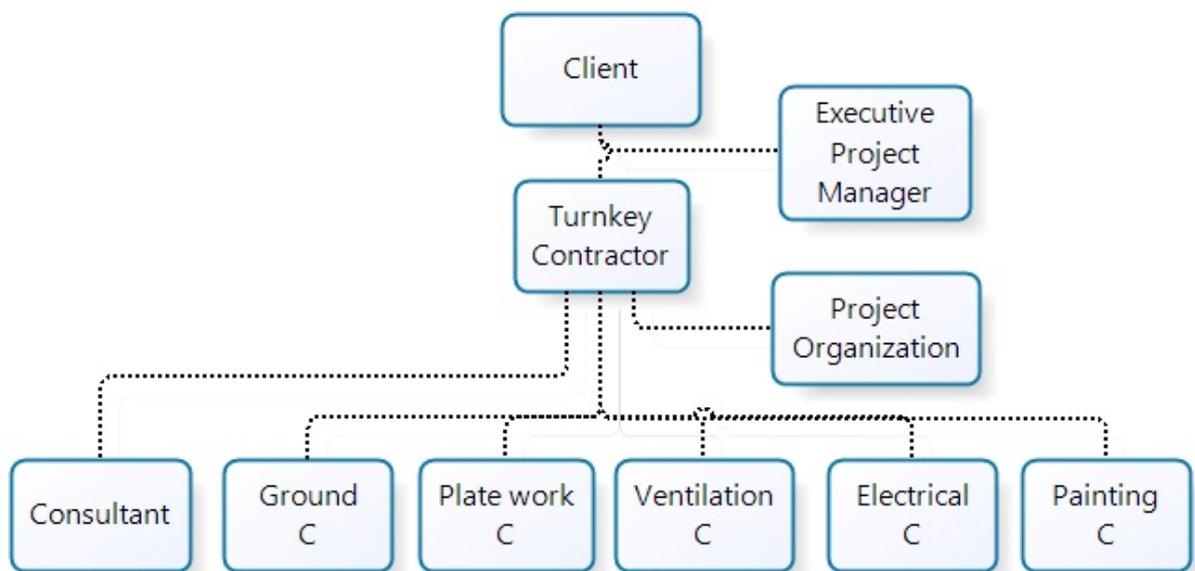


Figure 3.5 Organization in a turnkey contract.

#### *Economy*

Tendering for this type of contract requires large economical resources that limit the amounts of possible tenders. The bids are depending on the projects' complexity and become comprehensive and time consuming. Bidders may need a skillful and large tender organization as well as economic strength to be able to bid and lose, something that exclude small firms and even make it tough for large companies with small amount of free resources, to participate in the tendering. Although, according to Söderberg (1998) turnkey contracts often creates the cheapest solution for the client as the contractor choose, and are allowed to choose, the cheapest solution/services when carrying out the project. In the other hand some people mean that the turnkey contract becomes more expensive in the long run due to high maintenance- and operation costs, as the contractor do not have to take life cycle costs into account. However, the client is able to by-pass this complication by a more developed and specified contract. The specifications can be reached by referring to earlier projects with similar requirements and specifications.

### *Time*

Turnkey contracts do not, in difference from other contracts, oblige the contractor to develop such detailed and accurate design before starting the construction. This type is therefore less time consuming as long as it does not lead to increased amount of mistakes due to poor drawings and documents. Turnkey also has similarities with the sub-divided construction contract as it allows the contractor to start construction at the same time as design goes on, which can save time. Turnkey contracts may however, from a process perspective, be more time consuming than other contracts as tendering and building permit processes cannot be run simultaneously. To begin with building permits can therefore start first when the turnkey contract is signed.

### *Risks*

This type of contract is less risky for the client as the contractor is responsible for both mistakes in design and production and the fact that the client only has to negotiate with one party. Nevertheless, it demands a well written contract that highlights desired specifications in order to prevent extra costs for changes and which take life cycle cost in mind in order to generate a good long-term investment. Contract preparations therefore require good in-house or external knowledge and expertise in the client's organization. (Söderberg, 1998)

### ***General Construction Contract***

A general construction contract is similar to a turnkey contract as the client often only has one contract regarding construction and is still able to sign other contracts for mayor machinery installation etc., see Figure 3.6. The difference from turnkey is that the design is made by consultants and then handed over to tendering contractors who execute the work on site. This makes the client responsible for the coordination of designers and the contractor responsible for the coordination of construction.

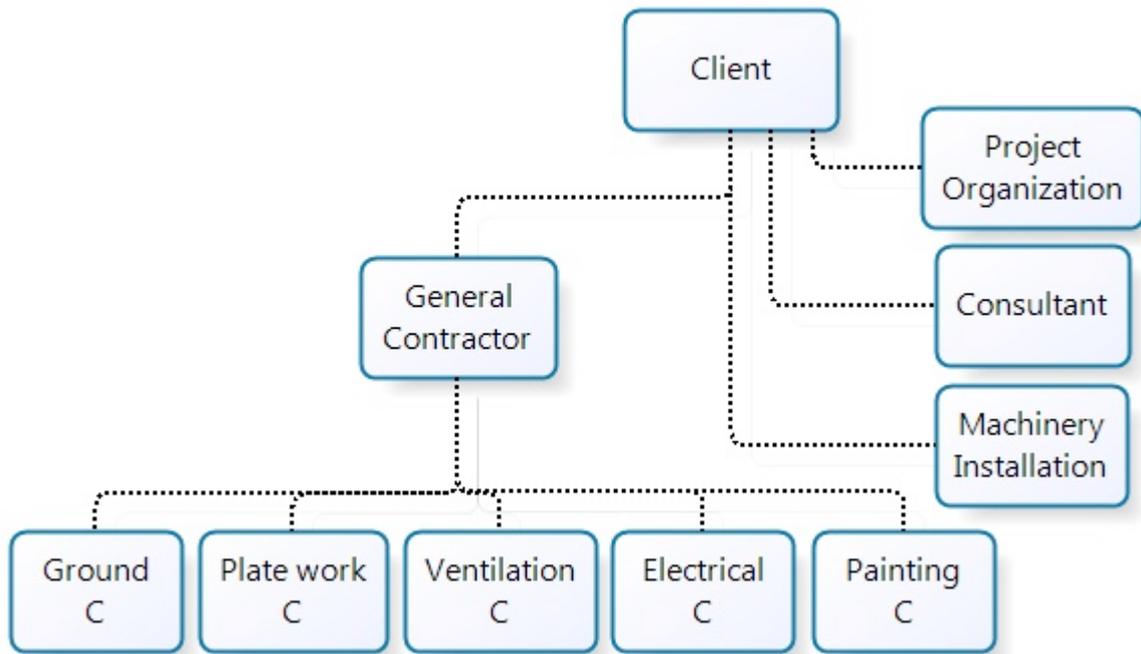


Figure 3.6 Illustration of a general contract where the client has an agreement with only one contractor.

#### *Economy*

When the general contractor produces their tendering documents they often collect preliminary bids from some sub-contractors. If the tendering later is won the general contractor start to negotiate with the previous invited sub-contractors in order to increase their margins on the sub-contractor's bids. This potential margin does not benefit the client and it also makes this type of contract sensitive as booms in the industry might make these margins disappear.

#### *Time*

This type of contract can be very time consuming as the design works as a base for the tendering process, unlike turnkey and sub-divided contracts where design and construction can be made simultaneously.

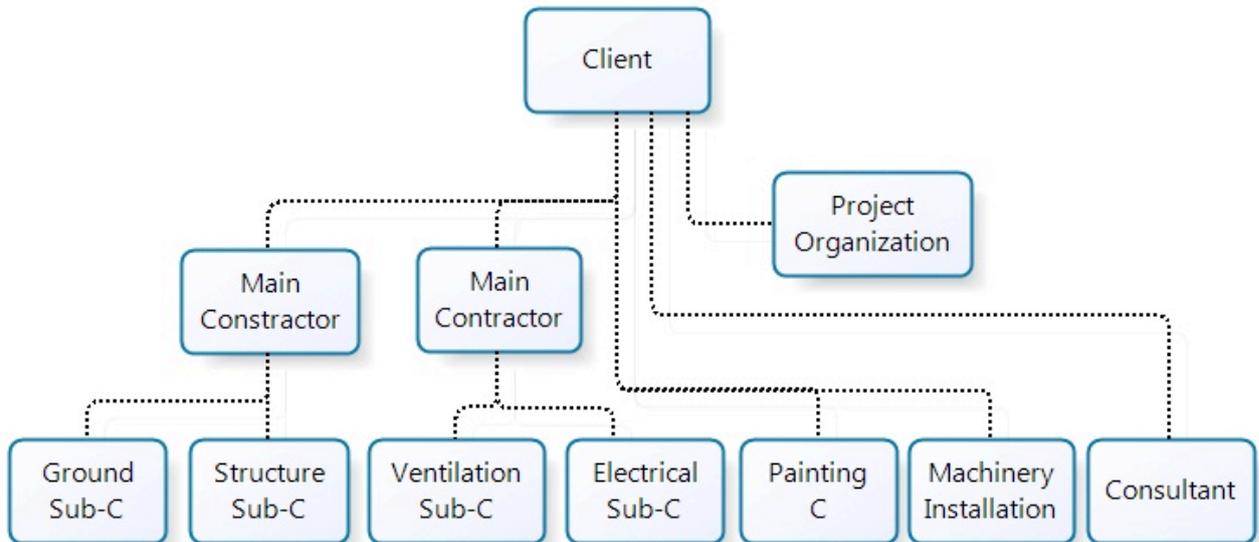
#### *Risks*

Still having one company responsible for construction at site reduces the risks compare with sub-divided contract. However, dividing design construction between different actors increases the risks for misunderstanding and additional costs due to changes. Therefore, much effort has to be invested in the collaboration and understanding between designers and contractor as well as the quality of the design documents and drawings. (Söderberg, 1998)

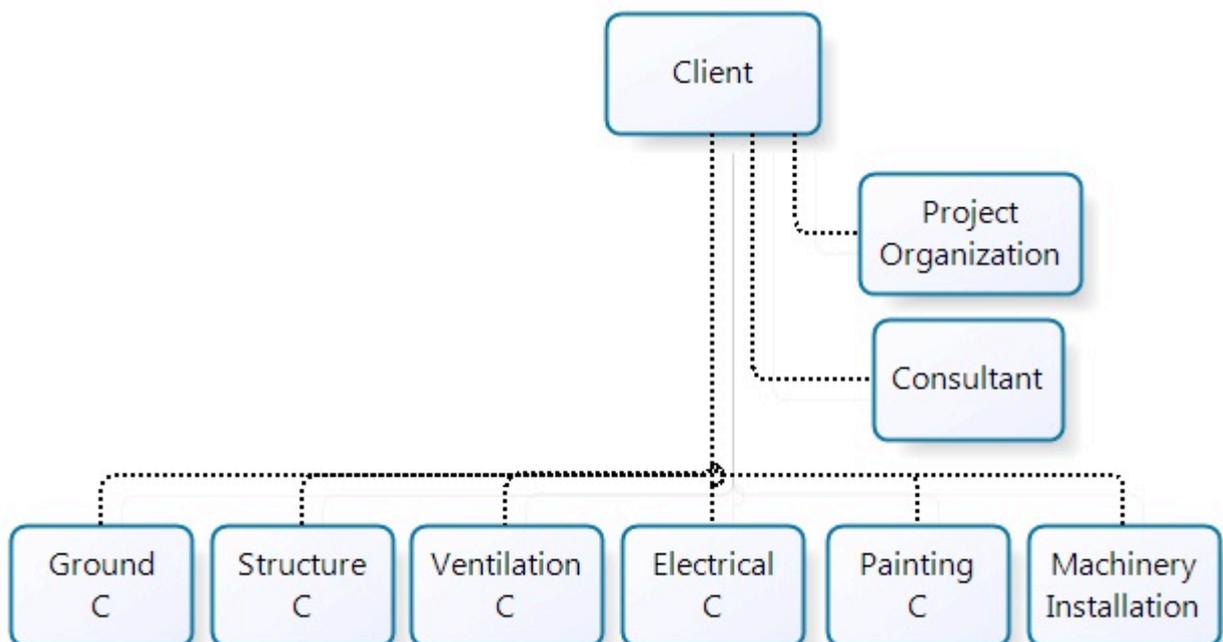
#### ***Split Construction Contract & Sub-Divided Construction Contract***

Both these contracts are divided into different activities but in different extent. For example, split contracts often have one contractor, called the main contractor, responsible for all construction and other actors responsible for different types of installations. The actors working for the main contractor is then called sub-contractors see Figure 3.7. In a sub-divided contract on the other hand there is no main actor but instead there is one actor responsible for

superstructure, one for inside walls, one for ventilation and one for electricity etc., see Figure 3.8. The ways of how these types of contracts could be altered are then everything in between. The split contract obligates the client to be responsible for all coordination except for coordination between the main contractors. This is a commonly used contract for projects using construction management firms who act as the client's representative towards the main- and sub-contractors.



**Figure 3.7 Illustration of a split construction contract where the commissioner of the building project is responsible for every contract. The building works are gathered to the construction contractor who also is the principal contractor.**



**Figure 3.8 Illustration of a sub-divided construction contract where the future proprietor is responsible for every single contract and all the designers.**

### *Economy*

This contract increases the possibilities for the client to receive many competitive bids from both large and small companies that may lower the costs. However, the gain that occurs may be lost because of increased costs for administration and coordination. If these types of contracts only have a few main contractors, instead of many individual contractors, the return on their turnover from sub-contractors will increase.

### *Time*

Like the turnkey contract these two types of contracts also allow timesaving's due to simultaneous work on design, procurement and construction. It should though be noted that if work-activities are procured in larger groups with a few main contractors instead of many sub-contractors the option for simultaneous work getting less feasible.

### *Risk*

The client is in this approach responsible for all the individual contracts with each designer and contractor. Therefore are they also responsible for any errors in the documents/drawings given to the contractors that may lead additional costs for the client due to delays, changes and construction errors. This type of contract also puts a lot of coordination responsibility on the client, something that increases in parallel with the amount of sub-divided contracts. Another risk that occurs is regarding guarantees; it is harder to find one specific actor responsible for any error and the client ends up with the overall guarantee. This can be managed by using more main contractors who then take over the guarantees for their compound and "larger" activities. However, this contract allows changes and decrease additional work in a greater extend then general contracts as sub-contractors may not be procured before the change has occurred, which gives a more flexible project organization (Hampson & Walker, 2003). In order to decrease these risks it is important for the client to have a solid and skillful project organization, either in-house or external. (Söderberg, 1998)

### **3.2.4 Partnering & Cooperation Agreement**

Partnering is created to drive change and improve the existing construction industry. It is used by contractors and based on a turnkey or general contract and therefore more seen as a new form of collaboration and project execution instead of contract type. Except from the contractually meaning of partnering, which is similar to other projects, it focuses on new collaboration, procurement and compensation forms. It was, among others, initially created for the client in order to keep budget and schedule with retained quality, decrease amounts of disputes and increase innovation and creativity in projects. It also allows the client to keep up to date with industry development as the market is constantly changing.

Of course, there are more objectives for the client and the contractor to introduce this collaboration tool. Even if it seems very promising it also demands the involved actors to be engaged in order to benefit its potential. Important when running partnering projects are among others to; know how to evaluate potential project partners, define project goals and

identify required resources to provide the partnering infrastructure. It is also essential to understand the relative benefits that come with the different types of relation arrangements.

Further, critical elements for success are

- Level of trust and commitment
- Degree of which the relationship is planned and nurtured rather than forced or required as a condition of contract
- Way in which relation is initiated, fostered and maintained as a part of an integrated procurement process
- The degree of which transparency/open-book philosophy is maintained and
- The way in which risk and reward is treated. (Hampson & Walker, 2003)

Cooperation agreement is similar to partnering but it often only includes some of the tools that are used in partnering. It could therefore be seen as a semi-partnering agreement. It should also be noted that the partnering is a commonly used expression in the Swedish construction industry even if many projects do not really fulfill all requirements above.

### **3.3 Decision-making**

All humans are exposed to situations where a decision has to be made; property clients are no exception. Their process includes many aspects and is affected by several relations and factors. This section will examine earlier research to give a broader and better understanding of the process of making judgments and taking decisions as well as describing some ways that humans are affected during this procedure.

#### ***Rational Choices***

Simon (1955) outlined that traditional economic theory saw an “economic man” as a “rational man”. This man had great, if not complete, knowledge in important aspects concerning his environment as well as computational skill and well-established preferences to reach the highest level on his preferences scale. The term rational can be described in many ways such as “intelligent”, “successful” or “sane” (March, 1994). To make a rational choice one must consider all aspects that impact the decision and also the consequences of it. It should be optimal for reaching a goal or the best outcome. A rational method for decision-making should according to March (1994) pursue logic of consequences and be preference-based. It is consequential because the decision maker analyzes the future effects of decisions being made today and sometimes also the consequences of the effects. Preference-based decisions are taken with personal preferences in mind, so the final judgment is done to what is believed as the best in the decision maker’s point of view. An ideal rationality condition is described by Cherniak (1981, s. 164) as if an agent would undertake all actions appropriate to satisfy his or her particular belief-desire set. To make a rational choice the decision maker has to answer four questions:

1. Alternatives: What actions are possible?
2. Expectations: What future consequences might follow from each alternative? How likely is each consequence?
3. Preferences: How valuable are the different consequences (for the decision maker)?
4. Decision rule: How is a choice between the alternatives going to be made in terms of value of their consequences? (March, 1994)

Another view of the definition is in a more subjective reasoning. According to Gilboa (2010), the definition of rational behavior is when a person feels comfortable with the decision made, and is not embarrassed by it, even when it is analyzed for him. This makes the choice rational for that specific person.

*“I prefer to think of rationality as a notion of stability, or coherence of the decision with the decision maker’s personal standards, rather than a medal of honor bestowed upon certain decision makers by decision theorists.”*

(Gilboa, 2010)

The literature argues in other ways about which decisions actually are rational and which are not. For example, a more experienced person in a specific area should logically make better decisions (more rational) about problems within that area. However, in some environments evidence shows that simpler strategies are more successful. This might evolve from overconfidence in one solution (because of good knowledge within that field) (Hardman, 2009) or a strong belief in earlier lessons learnt, memories or estimates that turns out to be wrong or inadequate (March, 1994). Due to the insufficient cognitive abilities of human decision makers and uncertainty in the definition and theory of rational behavior, another perspective is given; bounded (or limited) rationality.

### ***Bounded Rationality***

All human beings have cognitive constraints which makes it difficult to handle all aspects surrounding a decision. The limited reasoning power in form of computational capacity and speed, together with the finite amount of time available, makes it impossible to survey all alternatives and all their consequences to come. Instead of making the very best (ideal) solution to a problem the agent now makes a “sufficient” choice. The choice can still be made with good intents and with a strong effort, but it does focus on some consequences and fully ignore others. Observations in the everyday life give empirical validity to this theory.

### ***Satisficing***

Simon (1955), who first proposed bounded rationality, described that rational models lack any evidence that such complete computations actually exists in human choice situations. Instead, approximate models of complex choice situations were used to give the problem manageable proportions. One of these models is the strategy of *satisficing*. Humans then tend to ignore the maximum level and are satisfied with every result that has satisfactory pay-offs. If a person is about to sell its house, a satisfying selling price may be \$50’000. If the first round of bidding

ends with a bid of \$55'000 the seller might accept this because it is satisfactory, although a larger bid could have come in the next round. The aspiration level, Simon continues, defines the satisficing alternatives. If a person finds it easy to discover these alternatives, the aspiration level rises; if they are hard to find, the aspiration levels falls.

*Expected Utility Theory and Prospect Theory*

Two well-known descriptive theories about decision-making under risk or uncertainty exist. Initially, the *Expected Utility Theory* (EUT) states that the decision maker chooses between its alternatives by their expected utility. That is, adding the values of outcomes multiplied with their respective probability to get the weighted sums, and then compare these (Mongin, 1997). Considering the following options:

- |    |  |    |                 |
|----|--|----|-----------------|
| A: | 50% chance to win \$1,000,<br>50% chance to win nothing; | B: | \$450 for sure. |
|----|--|----|-----------------|

According to the EUT, a person would choose alternative A due to the fact that  $u(1000,.50) + u(0,.50) > u(450)$  or \$500 exceeds \$450.<sup>5</sup> The theory has been widely accepted as a normative model describing rational choices as well as a descriptive model for economic behavior (Kahneman & Tversky, 1979). It has both been accepted and questioned for its elementary set as a decision rule. Kahneman & Tversky developed another model for decisions under uncertainty, the *Prospect Theory*. They found several problems were people systematically violated the EUT. One main finding, called the *certainty effect*, showed that people prefer outcomes that they believe are more certain rather than outcomes that are considered only probable. They illustrate a variant of an example that was first introduced by Maurice Allais, a French economist, in 1953. The example consists of two questions, each containing two alternatives. They were handed out to students and university staff in a questionnaire (together with numerous other questions and instructions that there were no “correct answer”).

Problem 1:

- |    |  |    |                      |
|----|--|----|----------------------|
| A: | 33% probability to get 2,500,<br>66% probability to get 2,400,<br>1% probability to get nothing; | B: | 2,400 with certainty |
|----|--|----|----------------------|

[18]

[82]

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<sup>5</sup>  $u(1000,.50)$  means that function  $u$  gives a 50% chance to win \$1000. The value outcome multiplied with its probability equals \$500.

Problem 2:

A: 33% probability to get 2,500,  
67% probability to get nothing;

B: 34% probability to get 2,400,  
66% probability to get nothing.

[83]

[17]

The compilation of data showed that 82% of the subjects preferred B in problem 1, and A in problem 2 (percentage of answers in brackets). A majority of 62% followed the modal choice and answer B and then A. This behavior when making a decision disproves the EUT because it implies, initially, that

$$u(2500, .33) + u(2400, .66) < u(2400)$$

and secondly, with reverse inequality, that

$$u(2500, .33) > u(2400, .34)$$

This change in selection behavior indicates that there is a larger reduction in desirability when the prospect is altered from being a certain gain to becoming a probable gain (Kahneman & Tversky, 1979). Some problems were produced to investigate the certainty effect on non-monetary outcomes. The results were indifferent.

In the same paper, Kahneman and Tversky propose a Value Function, displayed in Figure 3.9, which describes people attitudes towards gains and losses. It has a reference point that is defined by how a person respond to different attributes e.g. temperature and brightness but also non-sensory attributes like health, prestige and wealth. They describe the psychological responses as concave (above reference point) and convex (below). This can be explained by the following example: the difference between a gain of \$100 and a gain of \$200 is greater than the difference between a gain of \$1100 and a gain of \$1200. That is, the marginal value generally decreases with its magnitude. The same difference occurs concerning losses, except that a loss appears larger than a gain. The aggravation of losing an amount of money seems greater than the pleasure of gaining the same amount.

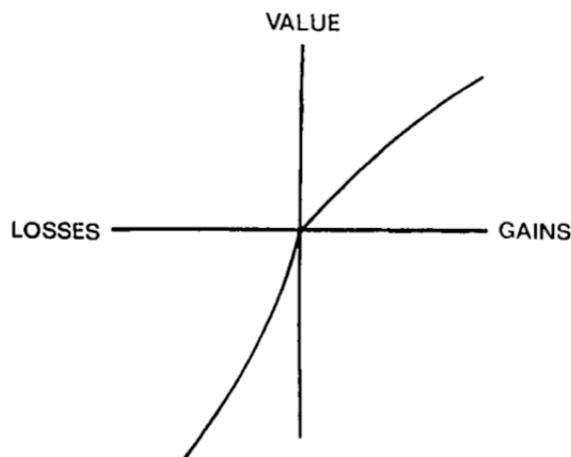


Figure 3.9 The hypothetical value function (Kahneman & Tversky, 1979)

### ***Judgmental Distortions***

There are several cognitive biases, heuristics and processes that affect humans during a decision-making procedure. One constraint of the human brain that supports the theory of bounded rationality is that concerning information. First, human agents have limited attention capability for most decisions. The easiest choices may be handled fine, but even then many signals are received and it is easy for some details to be missed. Second, there are limits within human memory. There are even difficulties when trying to read and receive stored information. If one person stores information about a special happening or decision the information then has to be read correctly by another person to be of any assistance. Thirdly, decision makers have difficulty organizing, summarizing and using information to see relevant connections between events and to get a good picture of its surrounding world. This problem of comprehension can also result in a fail to see relevant information even though it is right in front of the agent. Finally, humans are not perfect in their communication (March, 1994).

There are of course many solutions and tools to facilitate communication, e.g. mobilizing skilled personnel within organizations and knowledge databases, however, many factors like culture, language, standards, generations and profession contribute to this limitation, and hence, to the information constraints (March, 1994). Moreover, humans also use different simplification processes to deal with their decisions. March (1994) continues to set up a brief overview of these processes, summarized in four fundamental procedures: editing, decomposition, framing and heuristics.

*Editing.* Most decisions are exposed to a simplification of the problem before agents enter the process. The search for information can be simplified by limiting the search or simply skip some information that is regarded as unnecessary by the decision maker. The sequence of eliminating alternatives can also be edited, for example by starting to sort out alternatives with conditions that are important, leaving some factors unexamined.

*Decomposition.* By decomposing larger decisions or problems decision makers can solve smaller problems one by one and thus, solve the larger problem. The main issue by decomposing is that solving the components actually can make an accepted final solution. Different smaller decisions can counteract each other and the larger decision if the components are strongly interconnected.

*Framing.* Different perspectives for the diverse numbers of decision makers result in many ways of addressing a decision; the way information is collected and what dimensions that have to be evaluated. For example, decisions about who to contract will be addressed different if it is framed as redeveloping a building as green and in another way if it is framed as being very luxurious. Framing a decision by these beliefs often result in a more narrowly approach which does not consider all alternatives. Further, more recently used frames are more likely to be used again soon. The user automatically evokes them (because it was recently used) and the skills to use it are stronger than with other frames. Frames are also shared through different channels e.g. friends, co-workers, organizations or others with same profession or decisions to make.

*Heuristics.* Decision makers are strongly affected by beliefs concerning the likelihood of uncertain events and apply rules of appropriate behavior to recognized patterns. These heuristics, or experience-based techniques, are used to reduce the complex task of assessing probabilities and predicting values to simpler judgmental operations (Kahneman, et al., 1982). A more basic explanation would be rules of thumb that people use to make quick judgments. There are numerous theorized heuristics, but the two most important (for this study) will be explained here: the availability and representativeness heuristics. *Availability* appears in situations in which people assess the probability of a happening by the ease of remembering its occurrences (Kahneman, et al., 1982). The easier it is to consider instances of class Y, the more frequent we think it is. One example from the everyday life is the occurrence of flight accidents. The receiver of news reports about several incidents during one month might believe that the possibility of an accident is higher than it really is. Availability is a useful tool when assessing the probability of an event because a larger class is often easier to retrieve than smaller classes. The heuristic is however affected by other things than frequency or probability, for example its retrievability of instances, imaginability or the effectiveness of the search set (Kahneman, et al., 1982). The second heuristic, *representativeness*, is according to Bar-Hillel (2001) when the decision maker gather information of whatever they know, or believe, to be relevant, and judge the probabilities of the possible outcomes by the closeness of the match between these outcomes and whatever 'prediction model' they have built in their heads. Or, the more object X is similar to class Y, the more likely we think X belongs to Y. Tversky and Kahneman (1973) give an example about the chances that a 12-year old boy will become a scientist in his future life. We then have in mind specific characteristics that a scientist have, and evaluate how these are represented in our image of the boy. Representativeness and availability are two ways people establish an intuitive judgment of probability.

### Hindsight Bias

Both heuristics above were important in the development of the hindsight bias (Fischhoff, 2007). The bias has a few approaches but they can be summarized as different degrees of automatically assimilating outcome knowledge from past events. The event undergoing the hindsight bias has a tendency to be viewed by the agent as more foreseeable or inevitable than they actually were. This false perception could lead to blaming an unpredictable event for a negative outcome, and in turn impact future decisions. Hardman (2009) describes the hindsight bias as “a result from cognitive processes aimed at sense-making”. The process of making sense of past events is something humans do to think and act more properly in the future. Pezzo (2003) presented a theory and a model (Figure 3.10) that shows a relationship between the expected outcome of an event and the sense-making process. If the outcome is unexpected, but the sense-making process is successful (agent believe they understand why something happened), the hindsight bias will increase. On the other hand, if the outcome does not make sense, a resultant surprise will occur. In this case, the hindsight bias is reduced. Intrinsically, surprise arises when the sense-making process is not successful. No hindsight bias is activated if the outcome is congruent with the expectations because everything then makes sense. An outcome does not necessarily have to be completely surprising to evoke hindsight bias. The bias can be said to exist as long as the expectations before were lower than they turned out to be.

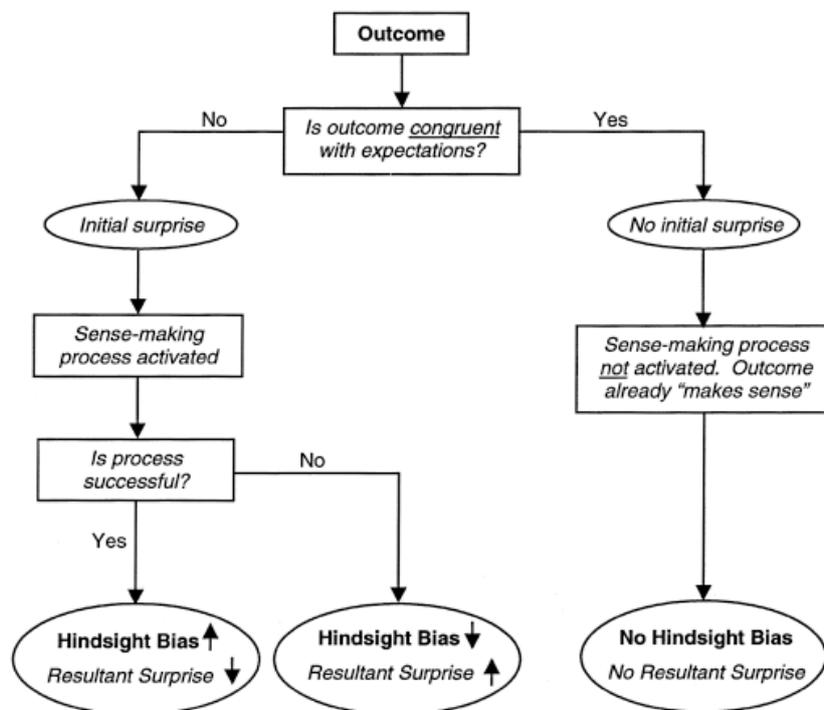


Figure 3.10 A sense-making model of hindsight bias (Pezzo, 2003)

### ***Non-cognitive Biases***

The cognitive biases are not the only one affecting an agent. A person might think that there is only one rational choice, but nevertheless choose it. For example, to stop smoking is perceived by most people to be a rational choice but is still be ignored by many. Strong emotional impulses affect us in many decisions and can be seen as motivational bounds of behavior. (Gigerenzer & Selten, 2011)

## 4. Findings

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This part of the thesis includes all the primary data collected through interviews. It is a compilation of what has been brought up and focused on the content that is linked to our main question, the client's decision-making. Altogether, this primary data has been collected through ten interviews where all individuals are from different companies and where the common picture is divided, highlighted and presented in specific parts. Common opinions as well as those that only have been mentioned once are included and given in order to visualize both the wide and narrow spans of thoughts. In every part there are also shorter comments of how the execution firms, both CM and contractors, interpret what the client think about the issue that is stressed. At the end of this chapter there is also a summary of *The Evaluation* that further covers this area.

Initially a broader image is presented of what type of companies and which representatives that has been interviewed. Further, a shorter description about the specific companies can also be found in *Appendix 3*.

### *Companies*

As mentioned in the method chapter an important aspect was to get a broad spectrum and a general opinion that is accomplished in these ten companies with different profiles. All companies included in this thesis are large in a national perspective and a few of them do business abroad. They consist mainly of administrative focused real estate owners with a long investment horizon and redevelopment is primarily made if building permits are included in an acquisition or if their current/upcoming tenants require it. All companies have operation and properties in Stockholm but most of them also have activity in other parts of Sweden. The main focus is in commercial buildings and some of them are focusing on central business areas in Stockholm, some mainly work with older properties with potential and a few are having industrial properties as their core business. The difference between tenants' focus varies a lot. A few are oriented on prime locations and with tenants that pay a higher rent and therefore have higher expectations on quality and on the other hand there is a small group that focus on low rent areas and therefore prioritize cost instead of quality. Between those two there are also a group that try to combine attractive rents and locations with appealing quality. Even the ownership varies a lot where some are private owned and some are owned by funds that sees property investments as a good complement to other investments. A common thought that is mentioned by many is their intention to create cluster around specific business streets, shopping areas or geographical spots.

Large differences between the companies are seen in their amount of in-house resources and their drive to perform all initial work in upcoming projects by their own. However, almost

every company hires external consultants for specific expertise and for additional time-consuming work such as cost estimations and time planning. Some project managers are also hired to be responsible from project initiative to closure. Companies that are not prioritizing their building department often highlight beneficial objectives like less responsibility, more flexibility without employees and easier to find people with project specific skills.

Reference companies are all some of the largest in their category. The two Construction Management firms are both working with professional clients mainly in the Stockholm area but also on other locations in Sweden. They have had a significant growth the past years and they are now handling larger residential, retail and office redevelopment projects. The two construction companies also have Stockholm as their main business area but they are widely spread in Sweden as well as in Europe. Their clients are professional and often owners of resident-, retail-, or office properties.

Because of the company size of all four firms they are able to take on highly complex and large-scale projects even if the amount of employees differs a lot due to different business models.

#### *Company Representatives*

A recurring background profile among the interviewed people is a career within construction companies. Nine out of ten have started their career and have spent a larger part of their career within construction companies. Only one started the career at a CM company but some continued into consultant firms as project managers after being contractors. Some even started their own companies with project management as a core business. Several of them currently hold decision-making positions such as executive project manager, business unit director or similar. All interviewees are men and the average age is 45 years old with a range between 33 to 67 years. According to those interviewed, 45 years is also the average age among the project leaders within the different companies and it is also a result of the criteria that project leaders and executive project managers are preferred to have a genuine background with experience from both contractor and consultant companies. While it at some companies is required to have a civil engineer degree or similar several mention that they are thinking about hiring younger talents in order to get new perspectives and people who are eager to work.

The experience from working abroad is in general small and no one has been positioned on a foreign project. Some have experience of working with foreign actors from the construction industry and from being involved in projects abroad through their work task in Sweden.

#### *Reference Company Representatives*

These four males have a similar background as the ones working for the client. They have mostly been active in construction companies both in the beginning of their career as well as most of their industrial life and hold the average age of 45 years, but a smaller spread of age. They currently hold positions as executive project manager or business unit director and are therefore highly involved in tender work and discussions with clients.

## **4.1 Decision-Makers**

When the decision is to be made there are several ways to proceed. The most commonly used is that the project manager from the client's organization makes the decision. This person is often most familiar with the project and its details such as estimations, calculations and other documents. Nevertheless, the decision-maker needs a good portion of experience and competence to make this selection. Therefore many of the clients only hire people with a good portion of experience to make the process more independent.

Project size affects the decision in some companies. For larger projects (the limit for large varies from above SEK1-10 million) an approval by the board or top management is a must. This involves other actors that may have other areas of interests, for example board members, president, vice president or head of administration. Some companies do not include the board but instead top management in larger projects e.g. executive project managers (head of several project managers) and head of construction department. These persons often have a deeper and more comprehensive experience from past projects. Three of the interviewed client companies have an explicit steering committee that gathers to make the decision. These committees consist of a mix of both top, middle and project management. The advantages of being a group making the decision is that more experience, competence and views are present. A discussion about the best alternative as well as agreeing before proceeding gives a better foundation to stand on. The overall given picture is however that the conclusion of the choice given by the project manager often is accepted as the best one, due to the project knowledge described above.

One company gives the property management the final call before deciding on an execution form for a project. It is considered more as a formality because there have been no discrepancies with the project managers during the last five years or so. It is nonetheless important, because they are the ones to manage the building after the project.

## **4.2 Factors Affecting the Decision**

The diverse number of companies with their different profiles, clients, projects and individuals result in a variation of approaches and opinions. This part will assemble all gathered information concerning the decision between CM firms and contractors.

### **4.2.1 Project Specifics**

When it's time to make the decision the most important factor is the specific conditions for the particular project. Most companies in this study have no templates or guidelines for making the decisions and therefore have to analyze the conditions from the known information and with help from earlier experiences. Some of the specific conditions mentioned by clients are, for example budget, flexibility (both in terms of cost and execution), knowledge about the building and final product as well as the complexity of the project.

There is one company that stands out in terms of guidelines for their project managers. The template has been produced mainly as supporting documents for junior managers, although it works as a good framework or checklist for senior managers to not miss any important aspects. This guideline consist inter alia of these paragraphs

- How well can the tenants define what they want?
- How well do we know what the tenants want?
- Which persons are involved in the project and what qualifications do they have?
- How well is the final product defined?
- Time duration for design relative the volume and complexity of the project?
- Time duration for production relative the volume and complexity of the project?
- Is the building empty/partly empty of tenants?
- How accessible is the construction site?
- How can logistics and space planning be executed?
- Technical conditions and complexity of the project?
- How available are our own organization and project managers?
- The economic situation, market, competition and accessible resources on the market?

Looking at these factors gives a good overview over the project and the discussion can then take place on which of the executing forms that will be chosen.

One collective view on the choice is that simpler, more common or standardized constructions are better suited for a turnkey contract using contractors and on the other hand CM for complex redevelopment projects with more unknown factors and demanding time limitation. This can be explained by how defined and certain the documents are in the procurement phase. If they are very clear and certain it is easier to procure the project in a turnkey contract where the client can let go of some control and insight whereas in a project where a lot of uncertainty is present, the CM process is perceived as more flexible.

Many clients point out that the flexibility of using CM is their greatest advantage. The client then has control over all processes and their consequences, can change direction whenever wanted and have the possibility to put pressure on the contractors when controlling payments. Another flexibility is to be able to start construction in an early stage, for example with demolition work. If the project specifics are not totally clear, procurements can also successively be made on some contracts to get the project going. One example from Respondent A<sup>6</sup> showed that an initial seven-week delay was turned into a successful project in terms of budget and time, with the use of CM. The similar flexibility of CM is said to be

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<sup>6</sup> Interview respondent A – Vice President

achieved by successful collaboration projects using contractors, where clients have a better insight in projects.

Comments from CM:

- They do not believe that clients have templates or certain routines concerning this decision.
- Believe that the decision-makers personality and what they prefer determines the choice.
- Choosing CM can be a difficult choice for many clients, some are “project cowards” who believe it is more secure with a contractor by their side.
- CM is more flexible when it comes to late decisions, organization, time and resources in the project. Gives the client more influence in the process and takes place after the clients wish.

Comments from Contractors:

- One thinks that price and previous experiences have the greatest effect on the decision while the other believes traditions within the company and relations.

#### 4.2.2 Price

The budget is in many areas viewed as one of the most important parts that have effect on how to choose. However, some of the answers given here have proven that price do not have a greater impact on this specific decision. The price issues are more significant in a later stage when opposing members of the two groups towards each other. For example, if a contractor A's tender is SEK5 million lower than contractor B's, it has a weighty importance. If, on the other hand, a CM firm claim to be able to cut costs by 5-10% compared to any contractor, the other factors affecting the decision are of greater importance (most often flexibility).

*“If you're about to invest SEK1 billion in a property you don't necessary want the one with the lowest bid, but rather the one who can do it best for a reasonable price.”*

- Interview respondent A<sup>7</sup> (Author's translation)

There are of course differences due to the companies profile and operation as well as what type of project they face. For some projects the price is the essential factor that can determine if there will be a project or not. In this case there is a split view among the interviewees. Some companies prefer the turnkey contract where the final cost is set and is perceived as a more confident method. The final cost works as a good target price and provides a sound basis for decisions and budgets (unlike CM firms' target prices' that most often do not have any legal obligation). Even when a contractor is on a variable compensation the target price is

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<sup>7</sup> Interview respondent A – Vice President

trustworthier. Physically constructing buildings is their everyday business and major occupation unlike CM firms that mainly manage projects.

The less complicated the project, the less uncertain are the costs. There are however always changes and additions in a construction project due to unforeseen events or parts (especially in redevelopment projects). Some clients therefore prefer some kind of agreement for cooperation, with variable compensation together with incentives to meet or go below a target price.

The other side claims that when costs are important they are more willing to use CM because every contract is more exposed to competition and costs can be cut. Interview respondent H<sup>8</sup> concluded this as *“Look at the bids from different contractors on all the subcontracts in a construction project. If you sum up the lowest bids on each part it will be e.g. SEK10 million in total, the median bids will be SEK14 million and the most expensive will be SEK18 million. That is almost the double sum.”* (Author’s translation). Contractors can also use the competition but some of the clients sometimes feel there is laziness involved when they procure. CM has further advantages if a project is complicated. The changes and additions mentioned in the previous paragraph can be handled in a better and more flexible way. The contractors are instead perceived to take this opportunity to add costs to the project (and therefore make a better profit) while CM has no use doing so.

#### Comments from CM:

- Both companies claim that a CM arrangement most often is a cheaper solution than using a contractor; estimated to 8-10% cheaper.
- Smaller construction companies can see a balance of power when cooperating with CM firms that affects price levels in a positive way.
- CM companies must have the courage to divide the project into many smaller subparts and use the existing competition; otherwise it will be similar to using contractors.
- They also note that fixed prices are difficult to set in an early stage, although some clients prefer it this way. It may be good in new production of residential buildings.
- Contractors have good agreements with suppliers but it creates suspicion when it does not benefit the client.
- Contractors are also believed to seize opportunities to increase their sales and make profit on their fee or by looking for changes. There will always be a contraposition using them, however it is arranged.

#### Comments from Contractors:

- Contractors do better purchases due to larger quantities and can bypass wholesalers.

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<sup>8</sup> Interview respondent H – Head of Property Development

- Have the possibility to put pressure on the market because of their size. Profits due to this often equate us with CM concerning price levels.
- One company never do fixed price projects because this is the lowest price possible and lead to contractors trying to get more profit on changes, errors in documents etc., which is bad for the relationship.
- Contractors can arrange to take on costs if the project cost exceeds a certain level, due to their financial strength.
- In an early stage of a project CM advantage from their hourly-based compensation. For this to be viable for contractors, they more or less need to know that they get the construction part afterwards.
- CM can sometimes be cheaper, estimated to 5-6% maximum.

#### 4.2.3 Organization/Individuals

A very important aspect for a construction project to be successful, observed in all interviews, is the project organization and in particular the different individuals within the organization.

Many clients point out that a known skilled project manager in one organization can determine not only the choice between companies, but sometimes also the choice between CM and a contractor. Clients want to decide as far as possible by themselves which persons will be in a project to assure the best line-up possible. *“I care very little about if it says Skanska, Peab, Forsen or Projektbyrån on the back of their jackets. It’s the specific persons that will be out on site that we’re trying to ensure are competent”* (Author’s translation) summarizes respondent H<sup>9</sup> and is backed with similar statements from other client decision-makers (except ‘jackets’ was replaced by helmets, hats, vests etc.). Not all, but a majority, assures that all future persons involved therefore are interviewed and checked to secure the right persons at the right project. One client has even tried to use a social scientist to get the perfect match. A continuous control is also done easily by using other people in the client employee’s network. *“We simply call up people in our network and ask ‘have you used them in any project?’, ‘how is he/she as a project manager?’ etc.”* (Author’s translation), says respondent H<sup>8</sup>. Respondent C<sup>10</sup> explain that the industry is pretty perspicuous and they have a good eye on who builds what and when as well as who is successful and why. The competent and knowledgeable individuals are good at controlling and planning a project and therefore more often than not end up with a cheaper and better final product, regardless of execution form.

The use of a social scientist indicated that the cooperation between the client and executor are a central part of a successful project. Clients want the executors to be more responsive towards the clients, tenants and the third party. It is also important that everyone understands what the client wants to achieve with the project. If shared goals are accomplished, there will

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<sup>9</sup> Interview respondent H – Head of Property Development

<sup>10</sup> Interview respondent C – Regional Manager

be no losers in a project. A common view among the clients is that CM is more cooperative than the contractors. The former is more of an “internal construction department” with no incentives to counteract the clients’ wish. They are seen as more responsive, have a better split vision and to see clients’ ideas and thoughts. A contractor on the other hand will always be a counterpart; although partnering and collaboration projects have increased in the last years. These forms are seen as a way of getting closer to the client and to be more open during the project. With financial incitements for project costs it surely challenges the CM arrangement (where this is more difficult to use) and is seen as a positive mix with the best from both sides. It has some weaknesses according to the clients. For example, the culture within some contractors is still always to see their company’s best whereby it is hard to be open. To look at shared goals and at the same time bring back a certain percentage of profits creates contradictions. Some clients are pretty sure this is a generation issue, and that it will change within five years.

The structure of the organizations also differs due to the type of contract. A CM consultant is always on an hourly rate while contractors sometimes are fixed-price and sometimes on variable compensation, but always with a mark-up/fee on work and material expenses. This difference has a major effect on the organizations. CM firms make their profit on worked hours and therefore want to, according to some clients, add employees to the project even though it might not be necessary at the moment. This can lead to an unstructured and confused organization with too many opinions and decision-makers as well as made up roles that could be handled within other positions at the project. On the other hand, contractors on fixed-price do not want to add too many employees to a project even though it might be necessary. This would lead to more expenses on the contractor’s side and therefore less profit in the long run.

Although organizations might be different according to what execution form the client chooses it is still very difficult to actually know how it will end up. Asking the different companies about their organization and structure at presentation meetings always ends up with the same answer; “we have a very good organization and structure for this project and we are flexible”. Therefore individuals are often seen as more important than the organization as a whole. Some clients however mention that the turnover within the construction industry is relatively high and they therefore also have to look “behind” individuals to be all right even though a certain person becomes sick, goes on paternity leave or end their employment. Looking at the human resources, contractors are seen as more “safe” and are believed to handle this problem better (often because they are larger firms with more employees in back-up). Companies that can keep their employees have a great advantage because it leads to several benefits for the client; trust, knowledge of procedures, decision-making capacity etc.

Furthermore, the client’s internal organization and its individuals also influence the choice. First, their competences play an important role. Using a contractor for a turnkey contract requires the client to be aware of cheap solutions or if anyone is trying to add costs that

should be included. The more sophisticated the project is, the more knowledge is needed by the client to control the contractor's work (this applies for CM too). Second, the client's current workload also makes a difference. A CM project is, according to all clients, more demanding for the client's organization than a turnkey contract. Because the client holds all contracts by itself it needs to be more dedicated and have a deeper insight for the project to become successful. Or as interview respondent A<sup>11</sup> describes it "*you need to unscrew the lid of the jam-jar and dip your fingers in it*" (Author's translation). Therefore, if a project manager is less busy (less overall workload) the CM concept is more preferable than otherwise. On the contrary, if a client is very busy, the turnkey contract offers less work with only one part to contact that has an overall responsibility for the project.

Respondent H<sup>12</sup> however stated that if you have a truly competent and experienced internal organization that can handle project management, procurement, changes etc. it does not really matter what type of execution form you use.

#### Comments from CM:

- CM firms are the clients own construction department.
- More and more clients have become aware of some CM companies when the organization has grown. With more resources available, clients can see them as good competitors for larger projects.
- The largest risk with a CM arrangement is that the organization is put together randomly and not carefully selected; the project organization makes the difference.
- There can be up to one hundred different contracts for the client, not one as with contractors.
- Partnering may be suitable for the Swedish cast of mind were people are afraid of conflicts. It is best on very complex projects like building a bridge or constructing on a very short schedule.
- The larger contractors are strong business organizations and thus give an uneven relation between them and the client.
- Those companies that mainly work with CM have a strong internal organization with focus on property development.
- Clients familiar with projects turn to this arrangement. Individuals and relations are therefore important because these clients want to handpick organizations.

#### Comments from Contractors:

- Using CM result in both more work and responsibility for clients.
- A contractor takes more of the responsibility and the client only has one contract and one contact.

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<sup>11</sup> Interview respondent A – Vice President

<sup>12</sup> Interview respondent H – Head of Property Development

- CM firms are better at helping the client in an early stage while contractors are better in the constructing phase.
- Both contractors do work with and see advantages with collaboration structures, but partnering is less used.
- One claims that a certain framework and distance to each other is good, although a good climate and shared goals are essential.
- The organization is more important in collaboration projects than in turnkey projects.
- CM firms make money on hours. In some projects there have been 3-4 persons from the client's side and 10-15 from the CM side, which do not create value.
- It lies in a contractor's nature to get things done; CM companies are better at writing reports.
- More clients want more collaboration in projects because they can see its advantages.

#### **4.2.4 Previous Experiences**

When looking at the individuals and organizations a lot comes down to earlier projects. Has earlier collaborations worked smoothly and with a satisfactory result? If the answer is 'yes', many clients point out that this, of course, has a large influence on the choice between CM and contractors. Others add that it primarily affects the decision of what company to use, and therefore only has consequences in a later stage. The construction industry is anyway said to be an industry based on trust. Two interview respondents clearly claim that one poorly executed project has a stronger effect on the decision-maker than several good projects. In addition, if the time to procure is very short it gives the trustworthy side, as well as the ones they have a good relation to, an upper hand. The client is then quite sure they can deliver and therefore cut across in the procurement process.

References of earlier projects and assignments are also used to guide the client in their choice. As mentioned above, it is hard to get under the skin of the executor during presentations and tendering. Therefore references give a good picture of earlier work and how well it was executed as well as contact persons that clients can ask specific questions. This is said to be more important for CM companies since they are the upcoming method and not as proven as the more commonly used contractors. It is also believed that contractors have better prerequisites to maintain clients' confidence due to larger resources (financial, human etc.) and a longer history of operation. However, some clients press the fact that it was this trust that failed earlier and once invited CM companies to the market. Another aspect brought up once again, is the project specifics. It differs a lot if you are redeveloping an office building in Stockholm, which most firms have done before, or a laboratory building, where references play a major role.

Although previous experiences and references are commonly used to help decide, a fear of using too few actors exist. Several clients talked about avoiding "inbreeding" and inefficiencies by using the same company again and again. The inefficiencies occur when

both parts get comfortable and clients lose the sense of competition. According to the clients, this is an opportunity to venture new execution forms and companies.

Relations from previous projects are not the most significant aspect here but have influence in certain cases. It is mentioned for example that when time for decision is short, it is easier to contact a person the client has a relation to. Also, if there are no major differences in which executor to choose, both negative and positive relations can determine the choice. The relation aspect is however closely linked to clients' outspoken importance of individuals. A good relation gives an advantage for these individuals.

Comments from CM:

- Decision are probably not rational, continue in a pattern.
- Clients are affected by experiences like all of us. Also talk and marketing.
- One company wanted to buy our company because they were so tired of the contractors, so experiences are very important.
- Clients are good at feedback that gives a possibility to become better.
- It is an industry of trust for sure. Which hairdresser do you go to? The one you trust!

Comments from Contractors:

- Previous experiences and background is of great importance for the decision, especially for collaboration projects.
- A lot comes down to relations, who can manage this the best way?
- It is hard to get back if there has been an unsuccessful project.
- The trend for CM has increased earlier but is now stagnant. Unsuccessful projects may be a cause.
- Takes a long time to build up a reputation, and a second to become unpopular.
- Clients are good at feedback that gives a possibility to become better.
- The decision is probably affected by company tradition and strategies.

#### **4.2.5 Risks**

Redevelopment projects are in general riskier than constructing new buildings because nobody knows exactly what to do or what hides behind the walls. The overall opinions from the interviews are that a CM arrangement is more risky than with contractors, although none is considered safe. In the latter form, as described earlier, clients only have one number to call when trouble arises. The contractor is in turn responsible for all contact and troubles with their subcontractors, which reduces the risks for the client. The ABT<sup>13</sup> contract used with contractors also gives better juridical support, a more defined division of responsibilities as well as an incredible practice in proceedings. This reduction of risks, together with a fixed

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<sup>13</sup> Swedish abbreviation for Allmänna bestämmelser för totalentreprenader (English translation: General Conditions of Contract for Design and Construct Contracts)

price, is seen as very positive by some clients' board members who want to maintain corporate stability.

In a CM contract, on the other hand, it is the client who is responsible for all contracts and if anything falls through the cracks it is the client's duty to find who of all the contractors is accountable for it. Most interviewees state clearly that this is an area that CM companies must work with. They know that some of them are, but no one is sure of what they are doing. One respondent have heard of insurances that clients can get, but they have only acquired subsidiary insurances on their own. Further, issues concerning for example occupational safety and health (OSH), insurances and contractors going bankrupt also fall under the clients' roof. This, together with the fact that CM firms do not have the possibility to take financial responsibility for projects makes the basis for the clients' opinions. The CM organization consists of consultants that charge their time and are not able to take responsibility, concludes Respondent C<sup>14</sup>. This is however not only negative, some decision-makers see the benefits in having more power to decide and control over the project. With all contracts in their hands they have the possibility to put pressure on the different contractors and also make economical profits, which you do not have in a turnkey project. A common view is also that a CM organization is more responsive to the client's ideas and thoughts, which makes them seen as more on the client's side than a contractor.

Another aspect is guarantees after the construction period. Many once again feel that contractors are the more secure option between the two. Larger contractors have their size as an advantage, which make them sounder and less prone to bankruptcy. This makes clients believe that they are more secure; they will be there when the time comes. The view is split when it comes to CM and guarantees. The majority declares that they perceive less commitment after the construction period and that a lot ends up in the lap of the client. *"My experience from CM is that they are unwilling to rummage in old guarantee matters"* (Author's translation), says interview respondent H<sup>15</sup>. On the other hand, respondent A<sup>16</sup> says that their experience is that CM has better routines for handling the aftermarket, is easier to work with and takes good responsibility. Further, respondent E<sup>17</sup> says that nothing really proves that contractors manage these things smoother, but CM firms has to show better routines because of the preconceptions that they are worse at it. These preconceptions are assumed to arise from the circumstance that clients only have one contact when using a contractor, which is perceived as easy. Respondent G<sup>18</sup> concludes that *"my experience is that contractors feels safer when it comes to guarantees, but you can of course discuss with CM companies to assist you during the guarantee period"* (Author's translation).

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<sup>14</sup> Interview respondent C – Regional Manager

<sup>15</sup> Interview respondent H – Head of Property Development

<sup>16</sup> Interview respondent A – Vice President

<sup>17</sup> Interview respondent E – Executive Project Manager

<sup>18</sup> Interview respondent G – Executive Project Manager

#### Comments from CM:

- The greatest risk is the CM organization itself. It has to be carefully assembled.
- Are working on a new contract where details about responsibility are more clear. An important aspect if there are one hundred contracts.
- Clients can at any time close the contract without reason if the job is not done.
- The problems with the interface between sub-contractors are usually easy to solve with insurances that costs way less compared to profits made on CM.
- Sub-contractors are often smaller companies that want to do a good job for future possibilities.
- Clients often believe that contractors are safer than CM. When problems occur it affects the client direct while contractors can take the hit by themselves.
- Clients should set an amount aside for guarantees when using CM. Contractors set aside a percentage of the contract sum for this.
- Risks are dependent on type of project and can be less with CM in a very complex project.

#### Comments from Contractors:

- Using a contractor give the client only one contact and one contract. Must have an eye on contracts, which contractors most often have.
- One believe that the difference in guarantees are important, but are ignored by some clients. The other believes CM is as good contractors but it is easier with one contact.
- Consultants do not feel the same responsibility. CM firms want some kind of incitement to be more engaged.
- Contractors are more prone to take risks and get paid for it. Therefore clients feel more secure and leave us with most of the work.
- More resources to throw in if it get rough.
- Risk reduction using contractors is partially false. Clients are still liable for documents and error in those.

#### **4.2.6 Marketing**

The most common marketing method used in the Swedish construction industry, according to the interviewees, is by using networking or relationship marketing. It is most common to invite certain important client employees to seminars, lunch meetings, fairs, site visits and other informational events. Here they inform/promote their way of working, new technologies, green building, guarantees or other relevant areas. Most clients appreciate these events because they broaden perspectives, although it is often little time to participate. Another way of marketing is to maintain personal relations through lunches. Opinions are split here and some think it is all right and others do not. Those clients who think it is a good alternative do point out that ethics are very important and the attendance should not be extraordinary by any kind.

Most clients gives the picture that contractors are more active in their marketing, possibly due to more resources and a larger contact area but they sometimes also have a greater need to fill their order books. CM companies are not seen as that active and this could be due to the fact that their order books might just be filled at the moment. Others said that if a client wants to use CM the client has to contact them, not the other way. The answers do however differ between the companies. A few clients cannot see a difference in the marketing activity between the two and others think there is too little marketing overall.

Most do agree on one statement, the marketing is in general bad and amateurish. Construction companies are very poor when it comes to selling. One respondent do not even believe that many of these companies have a marketing plan; instead they start contacting clients when jobs are needed. Some perceives this as bothering; most clients want to take contact themselves when they need help. Respondent B<sup>19</sup> expressed it as *“the executors probably think that we’re dead boring because we don’t throw ourselves over the ice cream, but we want to know the company we work with and want to choose by ourselves”* (Author’s translation). There is often worthless to call if there are no known jobs coming up. Again, not all clients agree. One company would want a more aggressive marketing and estimates that they take contact nine out of ten times.

Finally, successful or larger companies do not need to market themselves to the same extent according to some clients. The successful ones are marketing their business by doing a good job and the large companies are so well known that clients do not forget them as an alternative.

Comments from CM:

- With larger projects and organization comes more publicity. Successful projects are the best way of getting new jobs.
- Have one regular meeting once a year with clients. More systematic with larger customers. Micro events with all customers due to the decentralized organization.
- To call a client and book a meeting was you show some slides about the company gives no dividend at all.
- People who quit from executing firms go almost exclusively to clients. One of the CM companies has alumni to keep in contact.
- Important to be active at universities. Here students hopefully get a good picture of the company from the beginning.
- Events, seminars and lunches. Profile themselves at customers is important, but no direct marketing.

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<sup>19</sup> Interview Respondent B – Executive Project Manager

Comments from Contractors:

- Try to have regular contacts with our customers. Marketing towards new customers is only made intermittently because main clients are more central.
- Market themselves in many ways. Invite to seminars, activities etc. These events do not give new jobs but an information and discussion channel.
- Successful projects are the best marketing.
- Believe that CM companies are better at marketing because they get more projects in an early stage, but do not know the reason why. CM companies have profiled themselves more in later years and, by also taking on larger projects, they get more attention.

#### **4.2.7 Competition**

The number of possible actors on the market influences the choice in some ways. All but one client state that the competition is poor in Stockholm for larger redevelopment projects (roughly over SEK100 million) and is limited to three or four actors on the contractor side and two or three actors on the CM side. The number of actors increases when looking at smaller projects, but some clients still believes that the competition is limited around MSEK30-100 million.

Companies on the contractor side are said to be easier to put against each other, even though the competition is limited. It is seen as more difficult to do this with CM companies. If a client want to use CM it is more common that they simply contact a person they rely on without competition. This might depend on the difficulties in evaluating CM firms on price; it is the organizations/individuals knowledge and experience that makes the difference.

CM companies are seen as too few and are not always believed to have the knowledge or experience to build larger projects. It is clear however, that the CM concept creates competition in the construction industry. Respondent E<sup>20</sup> thinks that more clients might be able to choose CM if they get more experience from the market, which depends on some clients to venture this form. Another thing that is in favor for the CM method is that contractors have gone from property owners with a construction department to project developers without own properties. This makes contractors pure competitors to the clients, according to respondent A<sup>21</sup>.

Comments from CM:

- Believe that clients want more competition and that CM can contribute to this in larger projects. There will be more CM companies on the market.

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<sup>20</sup> Interview Respondent E – Executive Project Manager

<sup>21</sup> Interview Respondent A – Vice President

- To meet the competition contractors use collaboration projects with more focus on soft parameters.
- Very poor competition on the market with three large actors. Has completely discarded the competitive procurement process.

Comments from Contractors:

- One of the contractors believes that the competition is good on the market, although not in larger projects.
- The competition will increase, especially in larger redevelopment projects. Foreign companies will enter the market.
- The ratio between CM firms and contractors will remain the same.
- Clients probably see CM as a complement in large projects, but it requires previous experiences with them.

#### **4.2.8 Difficulty and Duration**

Although the results show that many aspects have to be considered, most interviewees conclude that the decision is perceived to be easily made. Most clients said that given a certain competence and experience - which most decision-makers have - the choice is often rather intuitive and clear. The choice can however alter over time when the client becomes gradually more familiar with the project.

Decisions are mainly taken in an initial stage of construction process, often before or in an early stage of the design phase. In some projects the executor is included from the very beginning to support the client with the design. The time it takes to decide whether to use CM or a contractor differs, but according to the clients it is not a very long process. A decision can emerge in a continuous process during a few months, or if necessary, be settled in an afternoon. If different companies from both sides are invited to present their strategy and organization for a project the decision period is often prolonged. One example took three months to carry out. It all comes down to when the decision actually has to be taken for the project to proceed. This can be dependent on several factors like a board decisions, documents from executors or unforeseen events or changes.

*“If you have a week, it will take a week. If you have a month, it will take a month”*

- Interview respondent B<sup>22</sup> (Author’s translation)

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<sup>22</sup> Interview Respondent B – Executive Project Manager

### **4.3 Future Development**

The clients were also asked about the outlook for improvements and changes in their work and others as well as an overall outlook for the industry.

As for themselves, time is a limitation and a tough parameter. It is often very restricted and projects should have been constructed “yesterday” according to some clients. To plan for and allow a little longer period of exploring the project and its conditions would result in much better documents (and in time) and consequently less troubled projects. Further, allowing time for interviews or presentations with executors, which are seen as very positive, would improve the decision on what arrangement to choose.

Contractors need to work further on their organizational culture. They are by some clients still seen as reactionists that have an old-fashioned way of working. The worst thing is people saying “that’s not possible”. The focus on collaboration should continue if the employees are ready for it. Variable compensation methods give opportunities to work closer. Team building is brought up as important for many clients; they want to have a united project organization. Working with new solutions and ideas shows on engagement from the contractor. In turnkey projects clients may have encouraged new ideas but not want to pay for it, which they have to change.

CM companies on the other hand have to work on risks to create a security for clients. There are however no specific solutions to this problem. Other aspects mentioned are increased marketing and to be more creative with solutions. The future for CM is by some believed to be good and by others stagnant. It is not seen as topical as it was a couple of years ago although several companies are in need of an external construction department when focus has gone more towards managing buildings. Most clients believe the use of CM will increase in the regions of Stockholm and Malmö. One concern is that the competence suffers due to the fast growth that has been possible through hiring younger and more inexperienced employees.

The overall competition is thought to be undersized. There are space for more actors, especially in Stockholm where price levels are higher. The clients also note that new actors are on their way in, both in the middle and large project segments.

Finally, more focus should be on the aftermarket in the business. To follow up on projects and be a helping hand for the client when problems arise. One client state that executors should look at the car industry, where most money are made on the aftermarket. Executors should try to build for the future, not only the guarantees. Certification by different known systems is a good way of securing some kind of sustainability for the client.

Comments from CM:

- Better contract forms are important were responsibilities are more clear.
- Clients should get checkpoints and be better to describe what they want.
- The CM arrangement will continue to grow and contractors will find methods to approach this.

Comments from Contractors:

- Clients are often too optimistic about the time. The procurement process is often too short and a change here will give better documents, well thought out tendering and even lower costs.
- Contractors want the client to be more open minded for alternatives and new collaboration methods. Contractors feel they start up hill because clients are often suspicious towards them in an initial phase.
- Contractors must be better in an early stage. Now clients are afraid of “going to bed” with a contractor because they feel forced to continue later.
- Will be more and more about collaboration projects that makes projects better, more fun and to a lower cost.

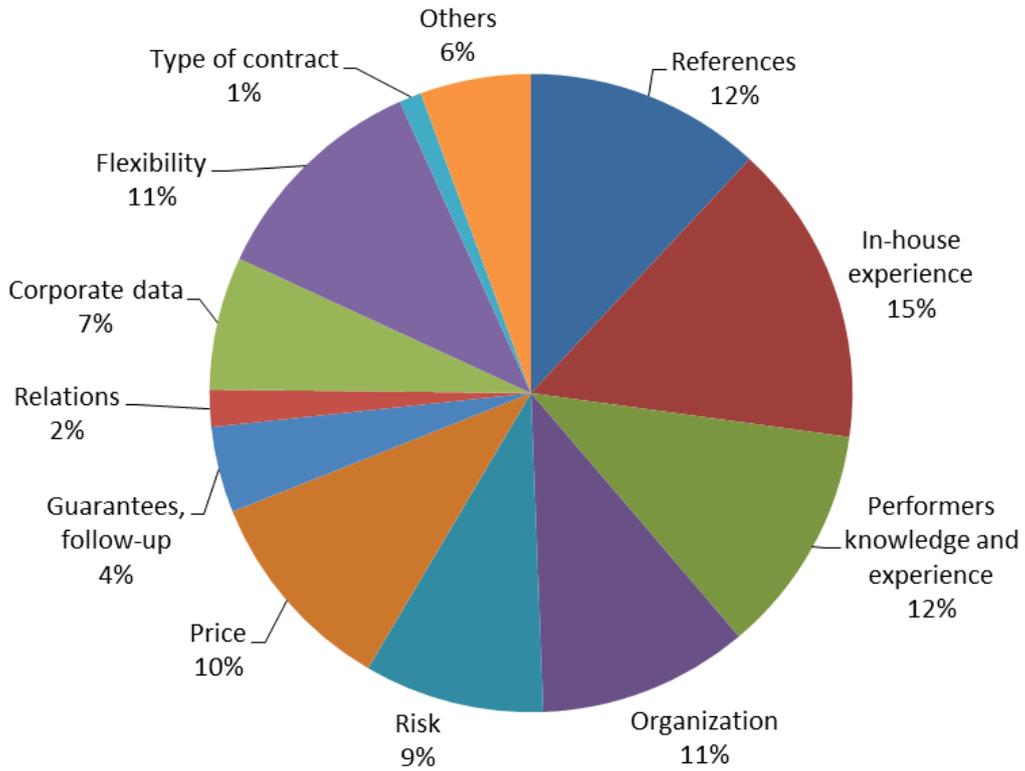
#### **4.4 The Evaluation**

One part in the interview was to rank different parameters that the client considers during the decision-making between CM and contractors. One hundred points were divided between 13 given parameters and, if the client wanted to, an unlimited number of additional parameters added by the person interviewed. The result is visualized in the pie charts below (Figures 4.1-3). Points for each parameter has been summarized and turned into a percentage where those who have not received more than 1 point in total are removed as they are seen as insignificant.

##### *Client's Opinion*

The charts below in Figure 4.1 show which parameters the clients prioritize and focus on during the decision-making process regarding CM or contractors. As seen in the pie chart, the clients opinion with or without extreme values (see explanation why extreme values are removed in *Method*) are similar but still differs at some parameters. *Type of contract* and *Relation* are two parameters that differ approximately 100 percent while *Others* vary as much as five times. *Price* and *Guarantees/follow-up's* are also showing a notable change within 20-30 percent. Comparing these differences with the total sum of points or percentage makes them small enough to be neglected and the result of *The Evaluation* will therefore be focused on clients' opinion with all points included.

### Clients' opinion



### Clients' opinion without extreme values

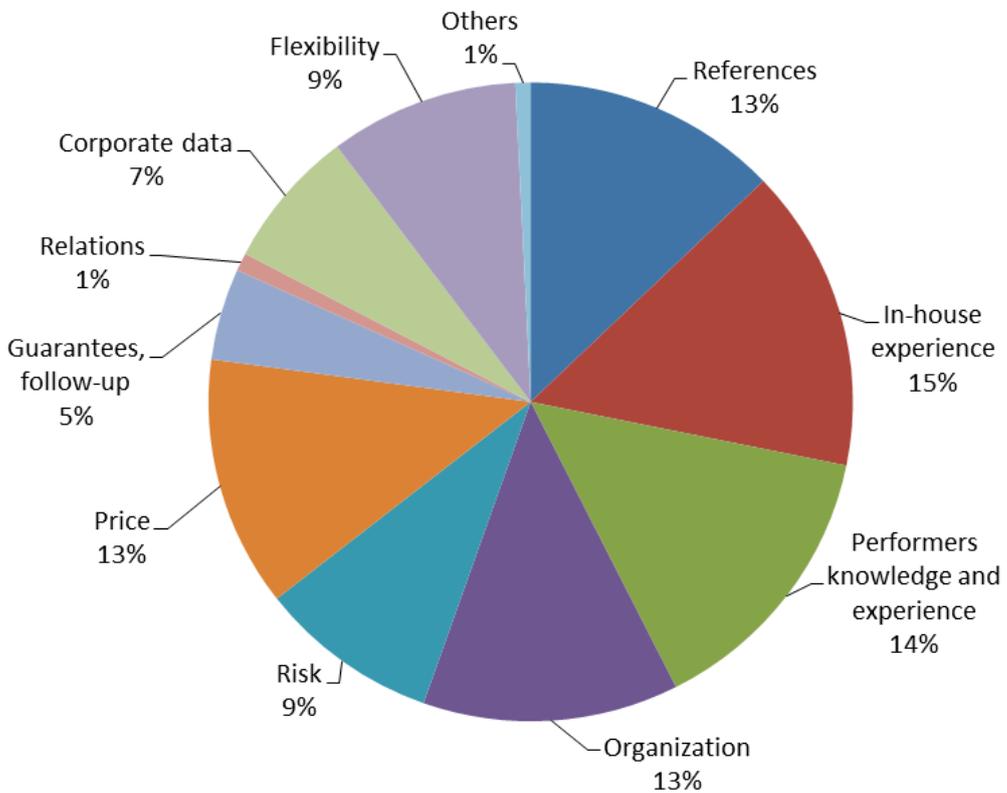


Figure 4.1. Visualization of how the clients rated different parameters. The top chart includes all values while extreme values are excluded in the bottom one.

As the pie chart shows the factors that determines the decision is not depending on one specific parameter. *Previous experience* has received 15% of the total points and further on *Performers knowledge and experience* and *References* are given 12% close followed by *Flexibility*, *Organization*, *Price* and *Risk*. Something that was noticed from the evaluation with interviewees was that they to a great extent did not add additional parameters but ranked those given in the paper. Further on it is noticeable that three out of ten persons marked and put together the first four parameters into one; *References*, *Previous experience*, *Performers knowledge and experience* and *Organization*. The others however mentioned orally that they shared this opinion regarding the merging of the first four parameters. Many expressed the same opinion regarding *Price* and *Risk*.

Responses given from the interviewees has sometimes been that the given parameters do not affect the choice between a CM firm and a contractor, but rather the choice between suppliers in each category, for example *Corporate data* and *Type of contract*. It has also been mentioned that some of the parameters are irrelevant, for example *Marketing* and *Relations*. Marketing is therefore not included in the client opinion's pie chart, as it did not receive any points.

Following thoughts/parameters were added under *Others*:

- Work environment
- Competition
- In-house resources
- Time pressure
- Project specifics

#### *CM vs. Client's opinion*

The evaluations made by CM firm and contractor correspondents were only carried out in two cases each, to provide some type of comparable data. The pie chart below, Figure 4.2, show that the two CM employees thoughts of how their clients evaluate these parameters are similar to reality, although it has some differences at *Price* and especially *Relation* that is very low ranked by clients but highly ranked by the CM employees. Also the importance of how the *Performer's knowledge and experience* are evaluated differs a bit between clients and the executing firm.

Additional parameters that has been added by CM in *Others*:

- In-house resources and knowledge
- Product specifics

## CM firms' expectations

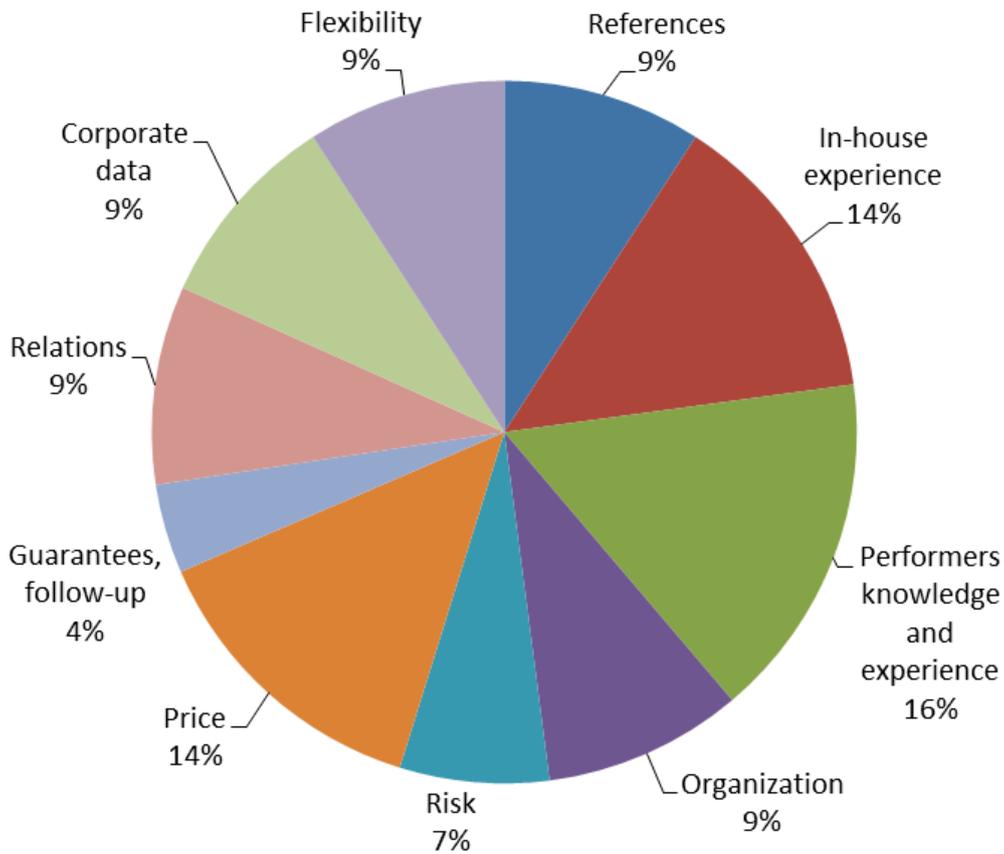


Figure 4.2 Visualization of the CM firms' expectations of how clients would rate these parameters.

### *Contractors vs. Client's opinion*

The contractors' evaluation of how the clients value these parameters highlights some differences see Figure 4.3. Four parameters, *Type of contract*, *Flexibility*, *Price* and *Organization* are overvalued and *References*, *Risk* and *Corporate data* are undervalued. Overall this comparison shows that contractors' evaluation is focused more on some specific parameters and the clients' are homogenously spread between many.

Additional parameters that has been added by contractors in *Others*:

- Time pressure

## Contractors' expectations

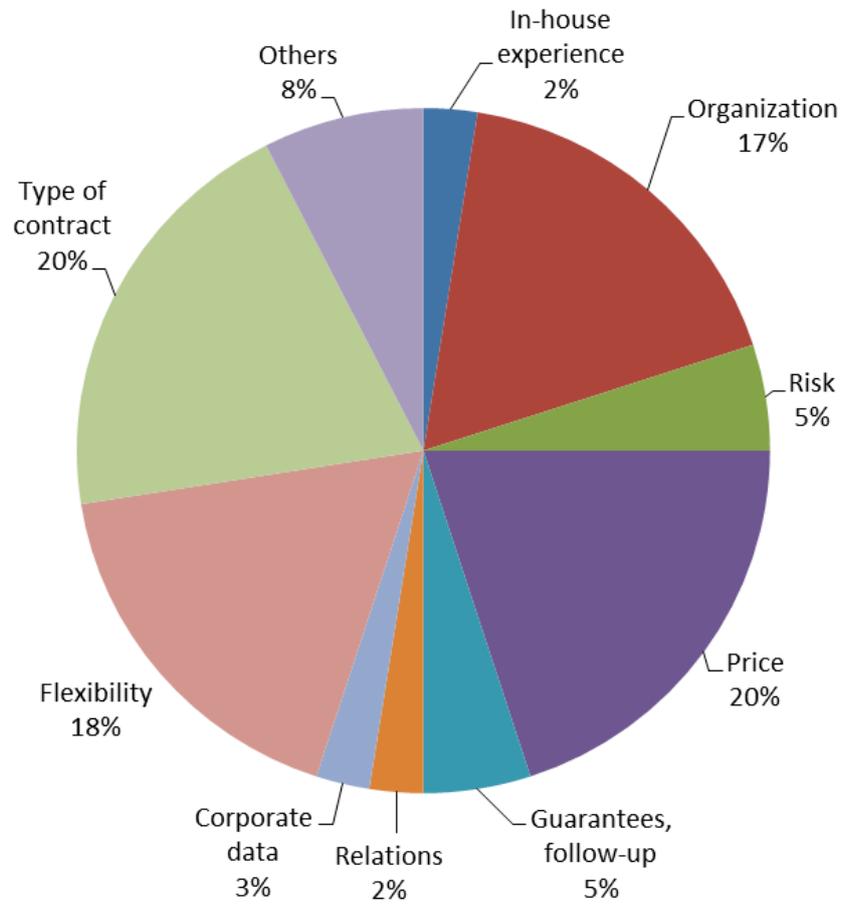


Figure 4.3 Visualization of the CM firms' expectations of how clients would rate these parameters.

## 5. Analysis and Conclusions

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### 5.1 Why?

To begin this analysis chapter, one may wonder why the decision between CM and contractors has to be made? The choice generally increases the spectrum of competition that a client could use for their upcoming project and will enable the use of advantages from the different sides. A more active decision from the client can make the choice more custom to the project's preconditions and therefore increase the possibilities for a successful project.

The next section, *What?*, will analyze and elaborate on the most interesting areas seen in this study. It will finally be followed by *How?* where the strategy for the decision is analyzed.

### 5.2 What?

#### 5.2.1 Experiences

A decision-maker always has, more or less, previous experiences, feelings and relations that influence their decision. In our findings, clients' trust in executors being able to deliver has been pointed out as an important aspect. This trust is mainly built up through earlier successful projects. It is shown that the contractors have been more successful in creating this kind of trust, from experience, through their broad business knowledge and diversity of well-performed projects. However, if a project has not been successful, this can erase a lot, if not all, of the trustworthiness that has been created. Some clients mentioned that an unsuccessful project has a larger effect on them than a successful one. This could lead to an incorrect (at least not the most optimal) selection next time, where the execution form that failed once, no longer is relevant. Clients' decision-makers might then be affected by the representativeness heuristic, where they judge the probability of a successful project by what they believe is important in their prediction model. If a project with one form of execution has failed they expect that using this arrangement again would probably lead to the same results.

Furthermore, some clients do not have so good experiences with one or the other side of the executors. If the outcomes were not congruent with the expectations, the problems could be due to the executor, unexpected events or maybe because the client was not familiar enough with the project or the execution form. Have these experiences been thought through properly? What things actually made that certain project unsuccessful? This could need an extra thought from the person making the decision. If the sense-making process of why it happened is perceived to be successful, and it points out the executor as the problem, it should increase the hindsight bias on this event. This leads to a perception that this arrangement for the project was bad from the beginning. Using follow-up's after projects could lead to a more general picture and therefore give a better understanding of the problems.

The circumstance that decisions mainly are taken, or at least prepared by one person also makes the effects of this heuristic more significant. This person's experience has an impact on projects to come. The effects on the choice are probably decreased if several people are involved in the discussions about the choice. Not only by receiving an approval from the board (who are probably not that familiar with the project) but instead using other employees in the company, with the same decisions to make, as a sounding board. One company uses meetings every second week that include the company's regional decision-makers. Through this forum problems can be brought up and discussed to gain a broader view.

Some clients have mentioned that they thoroughly use references as guidelines to examine CM firms and contractors. An increase in the use of references could reduce the preconceptions from only one person's experiences; the view would be both broader and less biased. Many clients have a good picture of the contractors, but have less knowledge when it comes to CM firms. If they would do a more thorough check of the references from these companies, they might change the view of their experience and previous work.

### **5.2.2 Availability**

Looking at the competition between the two forms shows that several things make contractors more available for the clients.

These aspects are

- *Strategies*: using contractors as an executor is often the standardized overall strategy for clients' because of its less risky approach. This form of framing the decision will affect most employees in top and middle management due to conversations with co-workers, directives from above or from ongoing projects.
- *Marketing*: contractors are seen as more active in marketing their business. Seminars, fairs, and events highlight their work and their existence but also increase the amount of mouth-to-mouth information being spread.
- *Projects*: the size and complexity of different projects also has an effect; some of the contractors have very large or spectacular projects that are widely talked about.
- *Tradition*: the Swedish way of constructing has for long been with the use of contractors. Even though the CM arrangement has been around for a couple of decades, it is not seen as a well-defined or known way of working.
- *Individuals*: most of the decision-makers have a background from contractor firms. Many of the clients' decision-makers were formed within the contractors' world and before CM got widely known as a worthy competitor. This increases the possibility of knowing people within these organizations as well as more knowledge of how they work.

These aspects add to the recollection of contractors. The availability can affect a decision because clients have contractors more accessible in their mind. The absence of competition for larger projects also increases this fact. Clients do not forget these major contractors because they are so present in their everyday life.

Decision-makers might also interpret the strategies given by the company as very strict. It can lead to the use of decision simplification processes, such as editing, and therefore skip some information that is regarded as important. These persons might hesitate to suggest an arrangement that is contrary to policies that have been set up.

CM is perceived to be a riskier form due to several reasons such as financial responsibility and knowledge. Because some clients already have in mind that this is riskier, the overall mindset will be supported in the occurrence of an unsuccessful project. It can also be observed that the Value Function, in Figure 3.9, describes that losses appears to be perceived as larger than gains. Transformed to match this situation, unsuccessful projects appear worse than successful ones (this is supported by two of the clients' views on projects successfulness). This observation leads to the possibility of a client choosing a less risky form because they want to be safe. It also reduces the chance of being held accountable in front of the company board for exceeding the budget or time.

Although contractors have a lead concerning the availability today, it will probably change dramatically in the coming years. The past generation is being replaced by younger colleagues that are less affected by earlier working methods and more prone to try new arrangements. A larger proportion of clients' employees will also have a background in CM firms, which will affect a majority of the availability aspects mentioned above.

### **5.2.3 Relations**

Another interesting aspect is relations within the construction industry. Some clients mention that relations are important in some cases, when time is of the essence and they have to choose quickly or when choosing CM. In the latter case, it could depend on the fact that CM organizations more often are included in an earlier stage than a contractor and clients therefore choose them due to relation instead of other aspects. Furthermore, clients said that personal relations matters more when it comes to choosing a company instead of the choice between CM or a contractor. In an early stage, the first decision could however affect the latter. If the client chooses an external company by their side in an even earlier stage, the choice between CM and contractor might not be evaluated in the same way.

Our findings and theory shows that methods for different kinds of cooperation and collaboration, such as CM, partnering and cooperation agreements, are getting more popular and are also seen as tools to enhance the industry's efficiency. Something that could be related to the interviewee's opinion '*it is all about the individuals*' when creating a winning project organization. The construction industry, its projects and even the decision-making are,

as mentioned before, strongly affected by trust. The decisions-makers may therefore actively choose partners that they trust and have good relations to. Although we believe that choosing some of these work-methods mentioned above does not necessarily lead to better products even if they are based on trust and relations. Instead, the decision of what execution form to use should focus more on creating an optimal work-group as the project's final result often relates to the success of collaboration. The success of collaboration is often realized by individuals' personal skills and their respect for each other, qualifications that are important for improved brain merge discussions. This is easier said than done, but our findings show that this issue already has been touched upon as some client's want to use psychologists to create the "perfect" team. The construction industry could and should perhaps, due the fact that it is an industry based on trust and collaboration, look further into social science and its benefits.

With respect to the trust based on relations we have seen that CM firms are more successful due to the non-counterpart relation created by the contract structures and business interests (it is still the clients 'affair'). When a client is using CM most of the control remain with the client; therefore they do not have to trust in another part to same extent as with contractors. Because of the less confidence and responsibility needed by CM, it may be interpreted as they are trustworthier towards the client. Contractors, on the other hand, take over some of the control from the client. This gives a more clear trustee/trustor relation that forces the client to trust that contractors do their job. If opinions differ, for example in guarantee issues, the contractors' relation will be more damaged.

Some clients' see the CM organization as their own building department that results in better commitment and openness between the two parts. This trust is based on a belief that CM firms will ensure the clients' best with regard to their needs, compared to the contractors as seen in *Experience*, who enhance the client's confidence through past projects and knowledge.

#### **5.2.4 Price and Risk**

As the findings show, price is often mentioned when it comes to different building projects. Noticeable is that price is seldom connected to the choice between CM and the contractor but instead are essential for the choice between two or more suppliers within the same group. Our finding shows that the client, with a genuine background and personal knowledge, often is well aware of what kind of product they will get in relation to the price. Instead of looking at the price with a tunnel vision they therefore focus on getting the best product out of a reasonable price and with enhanced risk control.

A lot of material from the findings as well as from discussions during interviews indicates that the clients are well aware of what is included in the contractor's fee on turnover; such as risk taking, guarantee commitment, responsibility for the final product, costs for overhead and support functions as well as contract management. Some clients also push on the fact that the price for a CM firm's site organization and contractor's site organization is equal. The amount

of people and their way of managing construction projects do not differ significantly. Furthermore, they mean that the difference in price comes from the percentage levy on turnover that covers the overall responsibility for the product, risks and guarantees.

Opinions of which executing firm that is the cheapest alternative are many, some think that CM is less expensive due to removed fee's and some say that contractors are cheapest as they are able to gain profit through better procurements and purchases. Whichever is cheapest, the customer is in many cases aware of what they are paying for. Figure 5.1 shows that CM and contractors have two different business models, where CM firms do not charge for entering contract agreements, risks for budget overload, guarantees etc. but contractors do. The clients are often aware of this situation and it opens up for the client to choose the most preferable model for each project. It could be compared with property investments where the owner has a higher rate of return on an office building than on a residential building due to higher risks. A balance that is obvious for property traders and appraisers.



**Figure 5.1 Visualizing how the different business models' include or exclude responsibility for risk and guarantees for the client.**

However, we believe that decision-making is connected to price as risks are related to costs. Even if they do not evaluate price as an important parameter when choosing between CM and contractors they become influenced by their internal risk management that is supposed to reduce the risk for additional costs. Some handle it by putting up guidelines for which type of execution form to use, others use templates in order to prevent missing any parameters when taking the decision, a few prioritize low price in procurement and some handle it by looking back at their experience and knowledge. Looking at the Prospect Theory, and its thoughts on people's behavior affected by chance of losses and gains, also raises the question if the clients as individuals are less keen on choosing the more "unsafe" alternative.

Important to highlight is the fact that each specific company's risk management is strongly related to their types of customers and geographical location. For example, some clients find it more important with high quality and satisfied customers as they are backed-up by higher margins and as their tenants are more demanding, but also less price sensitive. However, we think that even if risk management is one parameter that strongly affects the decision it should be handled individually in different projects. For example, redevelopment projects are different from new constructions and a company-wide procurement strategy or template is not always optimal. Risks should of course be identified and evaluated but by working with risk control/management in redevelopment projects it opens possibilities to reach project specific benefits that give the best product to the lowest price.

### **5.2.5 In-House Resources**

A great part of the interviewees feel, which the CM firms confirm, that CM is related to additional amount of in-house work for the client. Increasing the capacity by internal or external employees often solves the additional work. We believe that this increased workload, related to CM, could be one important aspect when choosing between CM and a contractor. Especially as some clients have project managers' who are responsible for fifteen to twenty different projects running in parallel. Our findings also show that the amount of in-house resources including human capacity, knowledge and experience differ a lot from between different clients as they focus on different businesses and customers. In some cases this orientation of business and customers also affects their procurement strategy or at least the way of evaluating different parameters in the decision-making process.

We do not have any comments on the strategies concerning the use of in-house or external resources in clients' organizations. It may still affect the choice between CM and contractors; a decision that should depend mainly on the project specific conditions. However, we think that evaluating and investigating the client's present organization and capacity is an important aspect for CM and contractors before participating in a tendering process or even before marketing themselves in order to adopt and come up with a good proposal. It becomes even more important as many of our interviewees stress the fact that, especially contractors, have to be more responsive to the client's need and interests.

## **5.3 How?**

### **5.3.1 Multiple Aspects**

Our findings show that only one client uses a template to facilitate the decision-making process and to ensure a deliberate decision. On the other hand, the evaluation pie chart in *The Evaluation* chapter shows that almost all our given parameters are seen as important when making the decision. It also indicates a quiet homogeneous distribution of the points among all clients. The fact that almost no client highlighted any other parameters, than the ones we chose, raises some questions. The clients even continued to stress the project specific conditions as vital in discussions regarding the decision of which execution form to use; but which parameters are then evaluated? The judgmental distortions theory, mentioned in

*Decision-making*, states that the human brain has different weaknesses when it involves a lot of information. Looking further at the theory about satisfying, which said people are more easily satisfied if alternatives are harder to find, forces us to ask if all project specific parameters really are evaluated. Is it possible that these experienced people believe they are satisfied when they should not be? Do they remember all aspects that are vital for an optimum decision or are only those parameters popping-up at the moment seen as the most important? Are the clients evaluating each parameter individually one by one (decomposing) or are they evaluated as a whole?

The fact that one or perhaps two people without any templates would, to start with, remember and take into account those twelve aspects which are mentioned in the findings chapter (at least), and furthermore, evaluate them in a proper way without being too biased from previous experiences, previous patterns and availability is for us hard to see. It should however also be mentioned that, according to our findings, almost every interviewee says that the decision and choice between CM and contractor often is easy to make, almost obvious and intuitive. The latter is truly a contradiction to the fact that there are a lot of parameters to take into account.

### **5.3.2 Decision Strategy**

According to our findings, the strategy for the decision differs at some points, for example persons involved, templates used and ease of decision-making. These different strategies can be assembled to one, more improved, strategy. The use of a relatively simple template, developed by the most knowledgeable employees, can secure that the decision-maker at least glances at all parameters. A too complex system or model would probably not be used anyway because of the large number of existing templates within the industry. Together with this, clients should also introduce, or keep, some kind of Decision Discussion Board. The framework for this could clarify when meetings should be held (e.g. during the initial phase, just before the decision, after initiating the design phase), who should be involved (e.g. people in project, all other project managers at the company, the board members) and for what projects this should apply (e.g. over SEK10 million, projects for important tenants). These discussions, designed properly, would most definitely erase some biases and open up for the best solution. It is important with openness and commitment from members of the board and not only to accept what the project manager presents. This strategy would facilitate to make a more justifiable decision without any significant addition in time.

The decision-maker may sometimes view a more formal analysis of the decision as unnecessary because they have already made up their mind. They view it simply as a window dressing, doing it but not using it. However, the analysis could gain advantages and have a legitimate purpose. First, psychologically, it can corroborate the decision-maker's feelings for the decision. Secondly, it can help when the decision-maker is about to communicate his decision to others. Thirdly, it can be used as advocacy and prove why this was the right decision. In addition, maybe the most important, is that the decision-maker might get more

insights than he had before and see other alternatives that might be better than his first thoughts.

Many decision-makers are also influenced by their corporate strategies for using one execution form over the other. These are effective if the company has a distinct business with similar projects. In this case, concerning mainly redevelopment projects, these strategies can be misleading. The many uncertainties in these projects are better suited for a “project specific”-strategy, which gives a more unspecified base for the decision. A separation for new construction and redevelopment might be a good solution.

## **5.2 Conclusions**

A construction client will today, in nearly all projects, be exposed to the choice between using a construction management organization or a contractor when initiating a construction project. The results of this exploratory study are not necessarily useful explicitly for the decision-making, but can provide the actors with a significant insight into the situation.

The three actors mentioned build up the base for the context in this thesis, all with different organizations, contracts, individuals and business. Clients have their desire of a riskless, cheap and short construction process with good quality and without friction between organizations. The latter is similar for the two executors, but they also use different business models to get projects and make profit. Contractors are known to be less risky, more experienced and with advantage in resources. CM on the other hand is flexible, more customer-oriented and often perceived as cheaper. A difference in obtaining clients’ trust can also be seen. Contractors are trustworthier for their building knowledge and experience while CM firms are reliable due to a non-counterpart relation between them and clients. These different aspects are all of interest when clients are about to start a redevelopment project. Especially as redevelopment projects most certainly will have unexpected problems that occur during the progress on site.

In addition, the clients’ decision-makers are also affected by biases and heuristics as all human beings. It is impossible to make a completely rational choice as this choice is affected by several more or less complex factors. It might however not always be necessary to make the perfect decision. A limited rational choice that satisfies the client can be made better if the decision-maker is aware of the different things that affect the decision, compared to making it without any awareness at all. But which are the affecting factors really? And how is the actual decision supposed to be performed?

The conclusion is that among all the aspects and factors, these five are seen as the most important:

- *Risk aversion* – a company always wants to be sure of the risks involved in using one or the other executor. Knowing these risks, and what risk strategy they want, can help clients make a decision that can be specified to match the projects conditions.
- *Availability* – decisions are affected by the ease with which the alternatives come to mind. Factors seen in this study are mainly marketing, company tradition, strategies, individual background and projects.
- *In-house resources* – clients’ own resources in human capacity, knowledge and experience greatly matters. The different organizational structures of the two alternatives are more or less applicable in different situations.
- *Experiences* – earlier collaborations and the successfulness of those strongly affect clients’ decisions. The effects are increased by the fact that one single person often outlines the way for the decision whereby that persons experience becomes majorly decisive.
- *Relations* – different relations have been found important when time is short and when clients choose in an early phase of a project. It probably affects people within the industry more than the results show here, and more effective work within this area would facilitate future work.

Having these in mind, together with other factors that are of less importance but still significant, makes the choice rather hard. The suggestion given is that clients start to use simple but effective templates to avoid missing out on factors unnecessarily. Further on the use of Decision Discussion Groups, with other decision-makers, can help them be more aware of circumstances affecting the decision. These proposals together will make the decision, between Construction Management or a contractor, better evaluated, more carefully considered and more project specific.

### **5.3 Recommendations**

This section includes our suggestions for change and development concerning the client’s choice. It is divided into three parts, one for each actor involved. The recommendations for CM firms and contractors are written as improvements towards the clients’ needs.

#### ***Client***

- *Procurement strategies* – the client should develop one procurement strategy for new construction projects and one for redevelopment projects in order to better evaluate and consider each project’s specifics. These different strategies and their material should be used in order to find and take advantage of the different business model’s pros and cons accordingly in each specific project.

- *Decision-making* – the client should use new forums and media for decision-making in order to interact/discuss with better results. The decision should be made with all accessible parameters in mind and by several persons in order to choose the best available business model for each project.

### **Contractor**

- *Responsiveness* – the contractor should be more adoptive to the client’s need as well as to their in-house organization. They should listen and then act to increase the sense of responsiveness and to be able to meet and support the client. It is however important not to promise too much as this could lead to client disappointment if not fulfilled.
- *Responsibility* – the contractor should continue to work with partnering and cooperation agreement and push on the fact that they do take responsibility for risks and guarantees. Making the client understand that they are a sound and secure partner is important, for example by making a clear statement that they will take the cost if a mistake or dispute arise due to the contractor.
- *Client Project Development* – the large contractors could create a department in-house that works with project management and construction management. A department which is separated from the construction divisions and are able to work in early phases without the need for later turnover. A department that hires people from in-house and take advantage from knowledge and resources from the head construction divisions. This is viable since the CM firm’s and contractor’s business models are different and both have diverse advantages, especially when it comes to redevelopment projects. This would create a more complete actor who is able to solve all clients’ projects in the best way. It would also allow the contractors to get into early phases and create further business.

### **CM**

- *Marketing* – CM firms should market themselves and their different projects to a greater extent. Showing both current and future clients who they are, what they have done and what they are able to achieve would further increase their market share and strengthen their existence.
- *Responsibility* – CM firms should together improve their processes and management regarding risks and guarantees. The most important aspect is to clarify for the customers that the CM firm is not responsible for risks and guarantees however they will gladly support the client in handling it. That is the business model of CM and rather favors than disfavors the client in suitable projects. One way is to appoint a responsible person for these issues towards the client. That person would do all the investigation and adjustments when defaults occur.

## **5.4 Validity and Reliability**

The thesis has been based on interviews from ten different clients to increase the dispersal of thoughts and to decrease the impact from a single client. The interviewees have been allowed to be anonymous so that they could speak freely without any concerns of what other actors would think. Interviews have further been recorded to lower any loss of information in the transfer from interviews to written words. The use of both interviews and an evaluations also give a triangulation effect were the results from the two methods can be compared.

The choice of different parameters for the evaluation was made with help of others, but was affected by what the authors wanted to examine. The possibility to add extra parameters were not used to the extent hoped for. Further, interviewees were sometimes in the mindset of the choice between companies, and not the execution form. They were mostly guided back to the right track although some answers can have pointed at this choice rather than the researched one.

Supervisors at Skanska gave the contact information to five of the client companies. This may have had an effect on their answers, but the anonymity and the prerequisite of experience for both CM firms and contractors should decrease that effect. When choosing the other five clients and three execution firms we wanted to create a general view of the market based on our profile in *Limitations*. Errors regarding this sampling will therefore depend on the quality of the authors' judgment.

Some of the findings and conclusions could be transferrable to new construction and outside the commercial area. However, the reader should keep in mind that these have not been focused on in this thesis.

## **5.5 Limitations and Further Research**

The contributions of this research were the necessary first steps towards understanding some of the factors that affects clients' decisions between CM and contractors. The research has been set to only look at companies in the Stockholm metropolitan area. Both actors however exist in other places in Sweden, for example in Malmö. Other Nordic countries have also been excluded although it would have been interesting to see how they act.

Large projects and actors has been the focus for this thesis. The same research question could have been applied on smaller/medium projects and companies where the competition might be greater at the moment.

The theory, which the secondary data reflects upon, covers the most important areas. However, theory about group decision-making would have been another aspect that may have helped to further elaborate on the Decision Discussion Board and its advantages. Partnering and Cooperation agreements are another area only briefly described here. It is however a

current area that contractors work consciously with and may compete more with CM than turnkey and general contracts.

Several aspects have been examined in this report but further work will increase the knowledge and development processes for the different actors. We suggest more thorough research into these areas:

- *Relations* – this part concerns many different relations, corporate or personal, good or bad. People talk about the importance of trust, collaboration and connections but how are the decision-making and businesses affected by relations between people?
- *Marketing* – as of today, both clients and executors believe that the marketing within the industry is poor, but also difficult to implement in a successful way. Are there any specific marketing tools that could be applied to the construction industry?
- *Guarantees for the CM arrangement* – compared to contractors, many clients have noted that CM feels more risky due to the lack of responsibility for guarantees. How could insurances or guaranties be designed to help clients with this part? Can contracts be changed or businesses be developed to facilitate the work with issues that slip through the net?
- *Early-stage department within a contractor's organization* – could it be an alternative for the contractors to start a department working with project management in order to be a more attractive partner in early phases? Would it be profitable and competitive and how would it affect the core businesses?

# Bibliography

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- Bar-Hillel, M. (2001). Subjective Probability Judgments. *International Encyclopedia of the Social & Behavioral Sciences*, pp. 15247–15251.
- Boyd, D., & Chinyio, E. (2006). *Understanding the Construction Client*. Oxford: Blackwell Publishing Ltd.
- Cherniak, C. (1981). *Minimal Rationality*. In D. W. Hamlyn, *Mind* (Vol. 90, pp. 161-183). Oxford, UK: Basil Blackwell, Publ. Ltd.
- Ejvegård, R. (2009). *Vetenskaplig metod* (Vol. 4:2).
- Fischhoff, B. (2007). An Early History of Hindsight Research. *Social Cognition*, Volume 25 (The Hindsight Bias), pp. 10-13.
- Gigerenzer, G., & Selten, R. (2011). *Books: Bounded Rationality*. Retrieved February 21, 2012, from MITCogNet: <http://www04.sub.su.se:2984/library/books/view?isbn=0262072149>
- Gilboa, I. (2010). *Rational Choice*. Hong Kong: Massachusetts Institute of Technology.
- Ghuri, P., & Grønhaug, K. (2010). *Research Methods in Business Studies*. Fourth Edition. Harlow: Pearson Education Limited.
- Gustafsson, F. (2006). *Construction Management; CM som genomförandeform ur beställarens perspektiv*. Master Thesis, Trita-IEO.EX 2006:73. Stockholm: KTH.
- Infrastructure Alberta. (2001). Retrieved April 20, 2012, from [www.infrastructure.alberta.ca:2984/content/docType486/Production/ConstMgmt.pdf](http://www.infrastructure.alberta.ca:2984/content/docType486/Production/ConstMgmt.pdf)
- Hampson, K., & Walker, D. (2003). *Procurement Strategies: A Relation-based Approach*. Oxford: Blackwell Science Ltd.
- Hardman, D. (2009). *Judgment and Decision Making - Psychological Perspectives*. West Sussex, UK: BPS Blackwell Publishing Ltd.
- Harris, F., & McCaffer, R. (2006). *Modern Construction Management*. Chicago: Wiley-Blackwell .
- Kahneman, D., & Tversky, A. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, Volume 5 (2), pp. 207-232.
- Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, 47 (2), pp. 263-291.
- Kahneman, D., Slovic, P., & Tversky, A. (1982). *Judgment Under Uncertainty: Heuristics and biases*. Cambridge, UK: Cambridge University Press.
- March, J. G. (1994). *A Primer On Decision Making*. New York, NY: The Free Press.

Mongin, P. (1997). Expected Utility Theory. In J. Davis, D. Hands, U. Maki, & eds., *The Handbook of Economic* (pp. 342-350). London: Edward Elgar.

OECD. (1997). *OECD Main Economic Indicators - Other Methodological Analysis Publications*. Retrieved February 14, 2012, from OECD: <http://www.oecd.org/dataoecd/49/4/2372435.pdf>

PBL. (2010). *Plan- och bygglag (2010:900)*. Retrieved February 14, 2012, from lagen.nu: <https://lagen.nu/2010:900>

Pezzo, M. (2003). Surprise, defence, or making sense: What removes hindsight bias? *Memory*, Volume 11 (4-5), pp. 421-441.

Råsled, B. (1990). *Upphandling av byggnader och anläggningar*, Stockholm, Byggförlaget. Cited in Stridh, J. (1997). *Construction Management - from the perspective of Swedish CM companies and owners*. Lund: Technical Institute of Lund - Lund University.

SCCF. *The Role and Mission of the Construction Client*. Stockholm: Swedish Construction Clients Forum. Report.

Simon, H. A. (1955). A Behavioral Model of Rational Choice. *The Quarterly Journal of Economics*, pp. 99-118.

Skatteverket. (2012). *Fastigheter, byggnader 955. Page 3*. Retrieved February 17 from [skatteverket.se](http://www.skatteverket.se): <http://www.skatteverket.se/download/18.18e1b10334ebe8bc8000115051/kapitel>

Stefánsson, I., & Åsberg, M. (1998). *Construction management: Appreciation of construction management as a form of procurement*. Avd. för byggandets organisation and ekonomi.

Stridh, J. (1997). *Construction Management - from the perspective of Swedish CM companies and owners*. Lund: Technical Institute of Lund - Lund University.

Söderberg, J. (1998). *Att upphandla byggproject*. Lund: Jan Söderberg och Studentlitteratur.

Tan, W. (2011). *Practical Research Methods*. Singapore: Pearson Education South Asia Pte Ltd.

Vennström, A. (2008). *The Construction Client as a Change Agent*. Luleå: Luleå University of Technology.

### **Personal communication**

Verboog, V. (2012). District Manager. February 10<sup>th</sup>. (Isaksson, J. & Lindblom, D., Interviewers)

Walmerud, Michael. (2012). Board member at CM-bolagen. February 24<sup>th</sup>. (Isaksson, J. & Lindblom, D., Interviewers)

# Appendices

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Appendix 1: Interview Questionnaire (pp.67-70)

Appendix 2: The Evaluation (p.71)

Appendix 3: List of participating companies (p.72)

## **Interview/Discussion**

Master Thesis

Architectural Design and Construction Project Management, Civil Engineering and Urban Management, KTH.

Location: Stockholm

Time:

Participants: Daniel Lindblom, Jonathan Isaksson & Company:

### **Explanation**

CM Construction Management

C Contractor

### **Förutsättningar/Conditions/Approach**

Öppen dialog

Open dialogue

Anonymitet

Anonymous

Målsättning att påverka branschen positivt

Objective to affect the industry positive

Större ombyggnadsprojekt

Focus on large redevelopment projects

## Frågor/Questions

*Bakgrund, företag och intervjuperson/Background, company and interviewee's*

1. Er historia, erfarenheter från tidigare projekt?  
*Your history, experience from previous projects?*
2. Vad står/betyder CM (Construction Management) för er?  
*What does CM (Construction Management) mean for you?*
3. Vad står/betyder E (Entreprenörsbolag) för er?  
*What does C (Contractor) mean for you?*
4. Er internationella erfarenhet?  
*Your international experience?*
5. Kan ni beskriva er verksamhet avseende verksamhet, företagskultur, profil etc.?  
*Can you describe your firm regarding business, company profile, company culture etc.?*

## Beslutsprocessen/Decision-making process

*Organisation/Organization*

6. Hur ser er organisation ut vad gäller ansvarig för projektet som helhet, för upphandling, projektledning (intern/extern), experter och uppföljning av projekt?  
*How are you organized when it comes to the project as a whole, regarding procurement, project management (internal/external), experts and project follow up?*
7. Vilka är med i beslutsprocessen gällande val av utförandeform?  
*Who are acting in the decision-making process regarding choice of execution form?*
8. Vilka har befogenhet att ta det slutgiltiga beslutet?  
*Who have authority to take the final decision?*
9. Beslutsfattarnas medelålder (5 års intervall)?  
*The average age among the decision-makers (five-year intervals)?*

*Process/Processes*

10. Hur ser denna beslutsprocess ut? Finns eventuella modeller eller rutiner?  
*How is the decision making process organized? Is there any models or routines?*
11. Hur väl förankrade är era beslut och er värdering av utförandebolagens kvalifikationer?  
*On which base do you take decisions and evaluate the execution firm's qualifications?*
12. I vilken fas tas beslut angående utförandeform (initiering, utvärdering av alternativ, upphandling)?  
*In which phase do you decide which type of execution form to use (in initiating, evaluation of alternatives, procurement)?*

13. Under hur lång tid pågår beslutsprocessen?  
*How long does it take to make a decision?*
14. Vad ser ni för fördelar resp. nackdelar med CM?  
*What kind of positive and negative aspects do you see with CM?*
15. Vad ser ni för fördelar resp. nackdelar med E?  
*What kind of positive and negative aspects do you see with C?*
16. Finns det en strategi för upphandling av flertalet projekt (parallella eller framtida) eller behandlas varje projekt individuellt?  
*Is there a strategy for procurement of several projects (parallel or future) or is every project handled individually?*
17. Hur, och i vilken omfattning, påverkas era beslut av tidigare erfarenheter/projekt?  
*How, and in which extend, are your decisions influenced by previous experience?*
18. Hur värderar ni risker i CM respektive E?  
*How do you evaluate risk in CM and C?*
19. Vad har ni för tankar om ansvarsfriheten vid E?  
*What is your thoughts regarding discharge using C?*
20. Hur ser ni på fastpris kontra rörligt pris för E respektive CM?  
*What is your opinion of lump sum versus variable prices for C and CM?*
21. Hur ser ni på utförandebolagens storlek och kapacitet?  
*What is your opinion about the execution firm's size and capacity?*
22. Hur ser ni på garantier och uppföljning?  
*What is your opinion of guarantees and follow-up?*
- Relationer, marknadsföring/ Relation, marketing*
23. Hur upplever ni att byggföretagen uppvaktar er (aktivt/passivt)?  
*How do experience the construction companies' courtship (active/passive)?*
24. Hur marknadsför sig företagen mot er? Skiljer det sig mellan aktörerna?  
*How do the companies market themselves toward you? Does it differ between the actors?*
25. Hur skulle ni vilja bli uppvaktade?  
*How would you like to be courted?*

### **Utveckling/Development**

26. Får beslutsfattaren feedback efter projektets genomförande angående valet av utförandebolag?

*Do the decision-makers get feedback after project closure, regarding the choice of execution firm?*

27. Vilka möjligheter anser ni finnas för att bli mer effektiva i er upphandling och i era utförandemetoder? Har ni en plan/strategi för fortsatt utveckling?

*Which possibilities do you see to get more effective in your procurement and your execution models? Do you have a plan/strategy for further development?*

28. På vilka sätt kan byggbranschen utvecklas för att tilltala er bättre?

*In which way could the construction industry develop to appeal you more?*

29. På vilka sätt tror ni företagen försöker möta era behov/önskemål?

*In which way do you think the companies try to meet your need/desire?*

30. Känner ni av en växande/minskande trend mot användningen av CM och hur påverkar det er?

*Do you notice a growing/ falling trend towards using CM and how does it affect you?*

31. Vad tror ni om framtiden för CM?

*What do you think about the future for CM?*

32. Hur ser ni på konkurrensen inom byggbranschen (antal aktörer, kunskap, utförandeformer etc.)?

*What is your opinion about competition in the construction industry (amount of actors, knowledge, execution models etc.)?*

33. Hur ser ni på konkurrensen mellan CM-företagen?

*What is your opinion about competition between CM companies?*

34. Er syn på partnering/samverkansavtal?

*Your view on partnering/ cooperating agreement contract?*

## **Övrigt/Misc.**

## Bedömning/The Evaluation

Vad påverkar ert beslut kring valet av utförandeform?

Totalt 100 poäng får fördelas fritt på parametrarna nedan. Vid denna bedömning ber vi er tänka i ett generellt perspektiv dvs. hur ni bedömer dessa parametrar oavsett projekt och dess komplexitet.

*What effects your decision when it comes to execution model?*

*Totally 100 points may be distributed freely on the parameters below. In this evaluation we ask you to think in general perspective i.e. how you evaluate these parameters regardless of project and its complexity.*

- |  |  |
|--|--|
| > Referenser<br><i>References</i>  | > Relationer<br><i>Relations</i>   |
| > Egna erfarenheter från tidigare projekt<br><i>Own experience from previous projects</i>  | > Företagsuppgifter (historia, kreditvärde, likviditet, resurser)<br><i>Corporate data (history, credit value, liquidity, resources)</i> |
| > Kunskap och erfarenhet hos utföraren<br><i>The executors' knowledge and experience</i>   | > Flexibilitet<br><i>Flexibility</i>   |
| > Organisation (struktur och individer)<br><i>Organization (structure and individuals)</i> | > Kontraktsform<br><i>Type of contract</i>   |
| > Risk<br><i>Risks</i>   | > Marknadsföring<br><i>Marketing</i>   |
| > Pris<br><i>Price</i>   | > Annat: _____<br>_____  |
| > Garantier, uppföljning<br><i>Guarantees follow- up</i>                                   | <i>Others:</i> _____   |

Utveckla gärna svaren ovan med text:

*Please, develop your answers above in text:*

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**Stort tack för ditt deltagande!**

*Many thanks for your participation!*

## **Participating Companies**

### **Clients**

Diligentia

Fabege

HSB

Hufvudstaden

Humlegården Fastigheter

KF Fastigheter

Klövern

Kungsleden

Specialfastigheter

Vasakronan

### **CM firms**

Forsen Projekt

Projektbyrå

### **Contractors**

Skanska

Veidekke