CHALMERS
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Joint Risk Management Processes in Construction Partnering

Studying early project processes at a SME Partnering contractor

Master's Thesis in the Master's Programme International Project Management

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Cover:
Risk Management Should not be viewed as a Project but Rather an ongoing Process (Eosensa, 2016).
Department of Civil and Environmental Engineering, Göteborg, Sweden, 2016

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ABSTRACT

Partnering is a way of jointly running construction projects in which the risks are shared between the project actors and the client, by establishing shared economic interests in the project and foster collaboration, to benefit all contractual parts. As the project actors have shared stakes and the client has a larger mandate of influence in Partnering projects, there is an increased need and the possibility of communicating risks, opportunities and consequences of actions made in the projects, jointly between the project actors and the client.

As there is not much research on Joint Risk Management (JRM) in construction Partnering projects and no existing models or processes to introduce, the purpose and aim of this study is to investigate how JRM processes can be introduced in Partnering projects and present an example of how JRM can be established in the existing processes of a company. The research is designed as a case study, investigating one Swedish SME (Small-Medium-sized Enterprise) construction contractor "Partner Inc." working solely with Partnering projects. The empirical data has been collected from interviews, document analysis and participant observations.

The results show that there are elements of Risk Management in the project processes of the studied company. However, these processes and activities lack a linkage and are not jointly undertaken by the contractual parts. From the empirical findings and with help from the studied literature a JRM process is presented and implemented into the current activities and project phases of Partner Inc.

Key words: Risk Management, Joint Risk Management, Construction Partnering, Construction Contractor, Project Management, Sweden

Gemensamma riskhanteringsprocesser i bygg-Partneringprojekt
En undersökning av tidiga projektprocesser hos en byggentreprenör

Examensarbete inom masterprogrammet Internationell Projektledning

PATRIK STRÖMBERG
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SAMMANFATTNING

Partnering är en samarbetsform för byggprojekt där projektaktörer och byggherren samarbetar genom att upprätta gemensamma mål och ekonomiska intressen i projektet, för att gynna alla projektets deltagare. Till följd av att projektaktörerna har gemensamma intressen och att kunden har ett större mandat i Partneringprojekt, finns det ett ökat behov en möjlighet att kommunicera risker, möjligheter och konsekvenser i projekten, gemensamt mellan projektaktörer och beställaren.

Eftersom att forskningen inom gemensam riskhantering i bygg-Partneringprojekt är bristfällig och att det saknas befintliga modeller och processer att tillämpa är syftet med denna studie att undersöka hur processer för gemensam riskhantering kan introduceras i Partneringprojekt. Målet är att presentera hur en gemensam riskhantering kan införas i ett företags befintliga projektprocesser. Studien är en fallstudie som undersöker en svensk mindre till medelstor byggentreprenör "Partner Inc." som arbetar uteslutande med Partneringprojekt. Empirisk data har samlats via intervjuer, dokumentanalyser och observationer.

Resultatet visar att det finns inslag av riskhantering i de studerade projektprocesserna hos Partner Inc. Dock saknar dessa processer och aktiviteter sammankoppling och utförs inte gemensamt mellan projektaktörerna i projekten. Från det empiriska resultat och med hjälp av den studerade litteraturen har processer för projekt-gemensam riskhantering presenterats och implementerats i Partner Inc.’s nuvarande etablerade projektprocesser och sätt att arbeta.

Nyckelord: Riskhantering, Gemensamriskhantering, Byggentreprenör, Projektledning, Sverige

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Preface

In this study Risk Management processes and systems have been studied at a Swedish SME construction company. The research has a case study character with qualitative research methods. Data has been collected through document analysis, interviews and participant observations, and has been carried out between January and May 2016. This dissertation is a part of Chalmers University of Technology's M.Sc. Programme in International Project Management in Gothenburg, Sweden and Northumbria University's M.Sc. Programme in Project Management in Newcastle upon Tyne, England.

The research has been carried out with Patrik Strömberg as researcher, Sjouke Beemsterboer as supervisor and Göran Lindahl as examiner. All data has been gathered at a Swedish construction contractor, referred to as Partner Inc. in the report.

Many thanks are given to Partner Inc. that have provided participants contributing with their knowledge and experience in interviews and discussions. Thanks to supporting friends and family, and to others' involved in the study. Much gratitude is also given to Sjouke Beemsterboer and Göran Lindahl.

Göteborg June 2016

Patrik Strömberg

Abbreviations

RM – Risk Management.

JRM – Joint Risk Management. Collaborative RM between contractual parts.

RMP – Risk Management Plan

LOU – Lagen om offentlig upphandling (The Swedish Public Procurement Legislation).

1 Introduction

This chapter will first introduce the reader to relevant background of the topic, both from an academic and a business point of view, describing and explaining key concepts and knowledge needed to understand the subjects. Afterwards the purpose of the research and intended output in terms of what the study is aimed to accomplish is discussed. This resolves into a description of the problem addressed, a presentation of the research questions together with a justification of the research and its contribution to the field of research studied. Lastly limitations that are outlining and framing the study will be explained and motivated.

1.1 Project Management and Risk

All projects have three common characteristics. Firstly, they are unique, the same project is never undertaken twice. Secondly, they are temporary, all projects have a start and a closure, accordingly the organisation undertaking a project is a temporarily composed entity. Lastly, projects are focused to deliver a service or product upon predetermined deliverables. Still, there is not always a definite idea of what the project is to bring or how the task will be undertaken, before the initiation of it (Maylor, 2010).

There are different levels of novelty inherent in all projects (Obeng, 2003). For example, the level of novelty clearly differs in projects set to constructing a bridge, changing company server software or traveling to the planet Mars. The uncertainty inherent in the project can affect the possibility to deliver within the pre-agreed objectives (Osipova, 2013).
It is not uncommon that projects are failing to meet their deliverables in terms of cost, time or quality. Cooke-Davies (2002) surveyed 70 large organisations on the factors that were most important when delivering projects successfully. The conclusion was that Risk Management (RM) was the most important factor to consider. In support to this, Maylor (2010) and Osipova (2008) agreed that RM has a notable impact on the project's performance.

Traditionally, important decisions made in organisations are often based upon intuition and experience by senior executives. This must not be excluded from RM, however, in order to systematically and effectively manage risks, a system must be introduced. A system fully integrated in the day-to-day management (Pritchard, 2015; OGC, 2007) which identifies and manages risk based on information and analyses, including the subjective judgement from experience and intuition (Flanagan, Jewell and Johansson, 2007).

In brief, RM systems and processes are used by organisations to manage uncertainty and to "increase the likelihood of achieving objectives, improve the identification of opportunities and threats and effectively allocate and use resources for risk treatment" (ISO, 2009) and are applicable to all projects no matter the size or complexity (Pritchard, 2015; APM, 2012; PMI, 2013).

1.2 Construction Risk Management

In the construction industry every project is economically important for a contractor as large amounts of capital are invested into few affairs, therefore the contractor has few opportunities for income (Flanagan, Jewell and Johansson, 2007). In traditional

fixed-price procured projects the contractor carries most risks, as the deliverables of the project, budget and schedule are set early in the procurement before the Design & Planning phase has started.

Usually time and costs are difficult to estimate in advance as there is not sufficient information or time to judge risks or undertake RM in the bidding process (Kadefors & Badenfelt, 2009). This problem results in that the contractor takes big risks, and to compensate for this they add contingencies in the budget which increase the costs for the client (Osipova, 2008). In addition, the contractual parts of traditional procurement include different risks and have different economic interests in the outcome of the project. This influences project actors to sub-optimise their parts of the contract and commitments in order to benefit themselves economically. This has caused an increase of conflicts in construction projects (Osipova, 2013).

In Europe, in recent years, costs from disputes caused by exceeded schedules and budgets have increased dramatically as a result of more fast-paced delivering demands from the client, bringing more risks to the contractors, sequentially generating shortcuts in the delivery and project failure. Theses affects have been costly for both clients and contractors (Allen, 2015).

1.3 Partnering and Risk Management

Partnering can be described as a way of working in which the different parties are systematically strengthening and developing their cooperation. In order to reach the project objectives the parties involved are working closely together, with common interests, goals and open-book accounting (Fernström, 2006), from which all contractual parts are supposed to benefit. It is important to realise that Partnering is not a type of procurement (as design-build or design-bid-build), it is rather a form of working and running projects together (Andersson & Högberg, 2015). Therefore Partnering can be adapted, more or less successfully, into different routes of procurement (Fernström, 2006).

In Partnering projects the budget and deliverables are set once the Design & Planning phase is completed. Therefore budgets, calculations and schedules can be made more accurate than in traditional projects (Kadefors & Badenfelt, 2009). Partnering contracts are based on the sharing of risk and opportunity, with common budget, schedules, contractual terms and shared interests in the project. No risk contingencies have to be added from the contractor which leads to the project getting cheaper for the client. Furthermore, as the project actors also have the same economic interests in project results, there is no sub-optimising.

Osipova (2008) argued that Partnering might be an optimal way of dealing with RM and to ensure that the project delivers satisfying to the stakeholders of the project, since risks and opportunities can be shared between the contractual parts.

Accordingly more responsibility is allocated to the client in Partnering projects, as Partnering requires a greater involvement and commitment from the customer throughout the entire project (Fernström, 2006; Kadefors, 2002). It is important that the customer is active as it has to take the decisions in balancing value and benefit against costs. Without full dedication from the client cost savings can be turned into pure cuts, instead of defining what generates the best value to the end user as well as finding alternative cost and efficient solutions with the same function and quality (Kadefors, 2002).

As the client is let into the decision-making and given more influence in Partnering projects, there must be a cross-sectional way of communicating risks and consequences from the actors of the project team to the client, a jointly undertaken RM process. This is something that is missing in the traditional ways of running projects and RM, as previously introducing common RM serves no purpose when the project parts are on each side of a written contract.

1.4 Purpose and Aim

The purpose of this thesis is to broaden the understanding of RM in construction Partnering projects and gain to knowledge on how Joint Risk Management (JRM) can be implemented in Partnering projects, in order to increase project value for both customers and contractors. The study will investigate RM processes undertaken by a contractor in the pre-construction phases of construction projects. Further, the study will be focused on a Swedish SME (Small-Medium Enterprise) construction contractor working solely with Partnering in their projects. Current project processes will be compared with business standards, models and best industry practices.

On RM the Association for Project Management (APM, 2012) conclude that; “there are a numerous different techniques available to assist in Risk Management and it is important to ensure that the correct techniques are selected and used” (APM, 2012, p.184) and that “there is no one size fits all approach to the selection of techniques and they will be of most value when selected to match the context in which they are deployed” (APM, 2012, p.185). Given this, the context of projects undertaken and project management at a company must be studied together with the tools and techniques that are available, before tailoring the project processes within a company. This will be investigated in a case study at a construction contractor. Furthermore, the research is looking at how a Partnering company deals with RM with the purpose of giving recommendations concerning the introduction of JRM systems and processes aligned to the research and industry standards of RM.

1.5 Problem

Research, literature and handbooks have been directed to studies in RM, its characteristics, best practices and applicability in the construction industry (see; Iftikhar & Menon, 2011; Hillson and Simon, 2012; Kalyviotis, 2013; APM, 2012; PMI, 2013, etc). The same goes for Partnering in construction projects, the field is thoroughly investigated both in Swedish and international research, as the phenomena has been studied, models and benefits examined (see; Rhodin, 2002; Kadefors & Erisksson, 2014; Kadefors, 2004; 2007; 2009; Nyström, 2005; Otter & Söderbäck, 2014; etc.)
However, Osipova (2013) argues that there seems to be a deficient understanding of how RM can be introduced into Partnering projects and how it can be undertaken jointly between all actors in a construction project.

If questions and issues related to the applicability of JRM in Partnering projects, contradictions, benefits and synergies are scantily investigated. The questions of how JRM can be implemented into Partnering projects and how JRM and Partnering interacts in a project are unanswered. There are significant differences between Partnering projects and the traditional ways of running projects.

The characteristic interaction processes between the contractual parts in Partnering projects are;

- Common goals and objectives
- Project and organisational teambuilding
- Relationship and trust focus
- Technical cooperation
- Conflict resolution
- Joint procurement
- Continuous reviewing and improvement

(Partner Inc., 2016).

In a Partnering project, the client and Partnering actors have shared economic interests and goals. They are working jointly in the project's early phases of budgeting, and planning and design work. These circumstances are unique for Partnering projects, and as the client has a greater mandate, it is important to study how JRM can be introduced to develop a way of communicating risks, opportunities and consequences of actions made in the project, jointly between the project actors and the client.

1.6 Research Questions

Given the problem described above, there is a knowledge gap of how JRM is to be performed in the pre-construction phases of a project and how Partnering in particular can be used to as a tool towards establishing JRM through collaboration and risk sharing. The research questions for this study are:

1. How can JRM be implemented and adapted to Partnering projects in pre-construction phases of construction projects?
    a. What elements of RM does Partner Inc.'s studied project process currently have?
    b. How can JRM processes be implemented, according to international standards, in Partner Inc.'s studied project processes?
2. Why are companies including RM in their Projects?
    a. What factors are affecting the introduction of RM in Partnering Projects?

1.7 Contribution

The research contributes to a couple of areas and fills a gap in the knowledge and research of RM, as there is much research on RM in traditional construction projects, but not much or very little on RM and JRM in construction Partnering projects. There are also quite many practical RM models and processes available from standards in construction RM, however, not for JRM in Partnering projects. Therefore, an example of a JRM model applicable for early phases of Partnering projects is developed.

The output of the study can give SME contractors in the construction industry, working with Partnering projects, knowledge of how a JRM system can be adapted for Partnering projects and how to communicate risks and opportunities between the project actors and the project client.

1.8 Limitations

- Looking at pre-construction phases of construction Partnering projects; Start Workshop, Start Budget, Design & Planning.

The study is limited to the pre-construction phases of the Partnering process, in which the main phases are Start Workshop, Start Budget and the Design & Planning phase. It is in the early pre-construction phases that the project goes from being a concept into a planned-out ready to be built structure. These phases are set to plan, design and budget the entire project in order to ensure efficient spending and utilisation of resources. It is a fact that the earlier a risk is realised in construction projects, the less resources, e.g. time and money, will be needed to correct problems. Moving a line or changing a length measure in a computer software is less expensive than moving an already built concrete wall.

Risks and opportunities are manageable if they are identified before they occur, therefore the benefit of RM yields most benefit as early as possible in a project. The pre-construction phases are, because of the budgeting, planning and designing work, where the entire project is structured, organised and scheduled. Realising risks and opportunities will help the development of a more optimal and accurate outlining of the project. Of course there are risks that need to be realised and managed in the construction phases of a project, but as the budget, planning and design work is undertaken in the pre-construction phases, the preconditions for the construction have to be set here. In the early phases of a Partnering project RM brings the most value and benefit as it is also where the most chances to manage risks and opportunities are. Therefore, this is the most reasonable phase to focus on examining RM in Partnering construction projects.

Accordingly, the phases of Start Workshop, Start Budget and Design & Planning are where the collaboration between the project actors in the pre-constructional phases takes place, therefore these phases are also where the focus of introducing JRM is to be directed.

- Looking from the contractor's point of view.

The client benefits from undertaking RM work in its needs analysis, before the inquiry is sent to the contractor, as the contractual choices the client makes in public procurements. This will be slightly addressed in the study as the prerequisites for enabling JRM are discussed. Otherwise, the research is limited to the contractor's point of view, as it is the contractor who has the ownership and has the responsibility to deliver the project from the client's needs and realise benefit for the client. As mentioned, the contractor has the ownership of the project processes and therefore is in charge of how the projects are undertaken and executed.

- Focus on construction projects in the Swedish construction industry.

The study is limited to the Swedish construction industry as there are significant differences in various countries, as legislations, public procurement, markets, cultures, remuneration models etc. These factors can have significant impact on how construction projects are performed and what affects them. Looking at construction companies in different countries simultaneously might not give an accurate description of what a Swedish construction contractor must have in mind and adapt to.

- Looking at RM processes at a SME construction company.

The research is limited to a SME construction company, mainly as there are no large enterprises working solely with Partnering projects in Sweden today. Big companies most often do multi-range projects and are often not differentiated and specialised into one discipline as Partner Inc. Mostly because the fact that there is not a wide selection of public procurement Partnering projects today, even if the popularity of working with Partnering seems to have increased. As the study aims to give precise recommendations instead of generic findings, the case only includes one company. Otherwise recommendations to the SME studied risk being generic and not fit to the organisation. As, processes introduced in projects need to be tailored to fit the studied company and adapted to current ways of working.

2 Literature Review

The purpose of the literature review is to present key concepts, theories and ideas in a critical way that comprehensively supports the research. It is supposed to outline and define the context of the researched problem (Hart, 2005). This chapter will present the theoretical findings and the contextual settings of the studied topics to give an understanding of the empirical results. The concept of Partnering will first be presented followed by Risk Management.

2.1 Partnering

Partnering is a well-known concept, not only in the construction industry but also in other industries. The concept is said to origin in USA as a way for the contractors of protecting themselves from lawsuits and controversies regarding contractual agreements. Litigations and suing had been more common and usually ate big parts of the project budget and delayed projects. Partnering was developed to bring a win-win condition for contractual parts, allowing them to share interests and strive towards common goals, instead of writing heavy contracts to protect themselves from each other. The Americans saw the benefits from collaborating and concluded that cooperation between parties could hinder and mitigate controversies, increase quality and give an all over better result. As a consequence of these benefits, Partnering later spread to Sweden from Britain through Denmark (Svensson et al., 2005).

2.1.1 What is Partnering?

Researchers have concluded that Partnering does not have one single overall definition (Kadefors, 2002; Rhodin 2002; Nyström, 2005), even among researchers different components and conditions are said to be important or necessary (Nyström, 2005). Therefore, the definitions and descriptions of Partnering are many and relatively vague (Rhodin, 2002); Partnering is customers and suppliers working collaborative, sharing goals toward common benefits (OGC, 2003); ”Partnering is a way to create effective collaboration between the project’s actors” (Osipova, 2008, p.26). “A collaboration affair between two or more organizations which are based on openness and trust with the aim of radically improving performance”(Svensson et al., 2005, p.3).

(Rhodin, 2002) realises the lack of an exact definition, but thinks the notion should be allowed to be considered as a sensitising concept, meaning that its’ use will alter and be defined by the context. Further, since the concept of Partnering is constantly changing the definition should be allowed to do so too, otherwise a too precise definition can prevent further development. Even if there is no precise definition, there seems to be a common understanding in the industry of what Partnering is and what the guidelines for reaching a fruitful partnership from Partnering are (Kadefors, 2002).

Partnering can be separated in two levels; Project Partnering and Strategic Partnering. Project Partnering is a short-term relationship to carry out a single project, whereas Strategic Partnering is a long-term relationship alliance undertaken to execute a number of projects, creating benefits from continuous partnership, generally comparable to a Partnering programme (Svensson et al., 2005).

2.1.2 When can Partnering be used?

Typical Partnering is not suitable for small projects as more work and time needs to be invested to the early processes compared with traditional construction projects. Nor is it advantageous when the design of the product is determined and clarified, when there are low amounts of novelty and when the risks connected to the project are small (Fernström, 2006). There are Partnering models that are effectively applicable to all projects or partnerships (Kadefors, 2002), but they are not cost-worthy to all types of projects (Fernström, 2006). To get the best trade off from using Partnering the projects are preferably characterised by;

- High project complexity
- When the project needs additional knowledge, which it does not possess.
- When there is a need for creativity and finding new solutions.

(Fernström, 2006).

2.1.3 The Partnering process

Svensson, et al. (2005) presents a generic Partnering model explaining the most important activities in the Partnering process, from a client's point of view (see Figure 1.1). This model is fairly generalised and said to be applicable to typical Partnering projects.

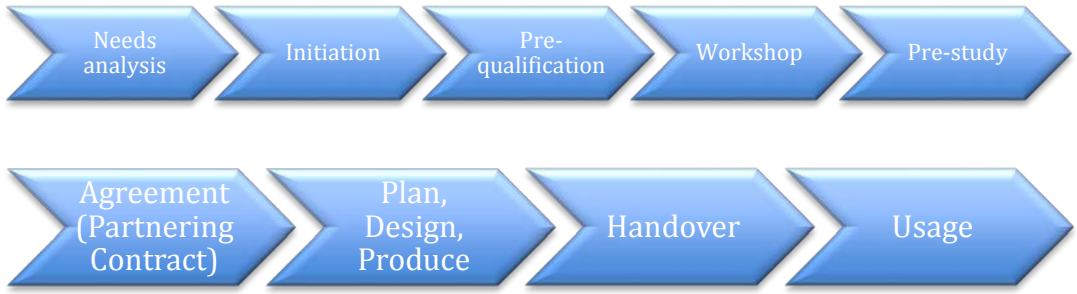

Figure 2.1 Generic Partnering project process, (Svensson et al., 2005).

Needs analysis

Firstly the needs must be carefully analysed and expressed, in order to grasp what the benefits of the project will deliver. The coming activities, operations and functions must be analysed, in order to understand the intended usage of the product, which is done by mappings the specific needs of the client. The client-organisation can do this internally or with help from external parts, preferably the main partner or partners are involved. When the project scope, the product concept and the initial design are somewhat clarified, an early rough budget is generated by the main parts (Svensson et al., 2005). It can be complicated to generate a realistic early budget before the product is fully designed, however it is very important so that there is an economic framework when starting the design work (Svensson et al., 2005).

Initiation

A definite decision to engage in Partnering is taken, supported by the intended benefits, goals and visions of what the Partnering collaboration will bring. When Partnering has been chosen, the team identifies internal knowledge and skills as a basis for procuring other partners, as contractors and consultants (Svensson et al., 2005).

Pre-qualification

Contractors, consultants and other parts are invited to bid and participate. Main actors should be chosen and contracted as early as possible in the project (Kadefors, 2002; Rhodin, 2002). In the procurement phase the client therefore evaluates constructors and consultants from criteria different from traditional procurement and contracts, in which the lowest price wins the deal. Instead the actors are evaluated by criteria such as; working model, Partnering experience, Partnering reference projects, project organisation, systems for financial control, quality systems, environmental considerations and aspects etc. (Byggherrarna, 2010).

Formerly the focus in Partnering projects has been between the partnership of the client and the main contractor (Kadefors, 2002). In recent years the benefit of including consultants and suppliers as independent parts has been realised to be equally important (Kadefors, 2002). Accordingly, most short-comings in Partnering projects can be allocated to late procurement of main partners, contractors and consultants (Svensson et al., 2005). At the end of this stage the main parts shall be acquired and the project team assembled.

Start Workshop

The Start Workshop is the definite start of the project. The workshop is set to allocate roles, formalise the business intentions, an action plan and introduce proper team building. The team building is set to infuse trust and belongingness to the group. As, it is very important that all participants have trust in each other and that there is a common openness between the parts (Svensson et al., 2005). It is critical that efforts to enforce commitment and trust through collaboration starts early. It has been proven that if this is introduced too late, relations may already have been infected, which can be something that is hard to change later in the project (Kadefors & Eriksson 2014).

The workshop will end by producing a mutual document in which all parts agree of working in the spirit of Partnering, in the interest of the project and the client's benefit. A set of formal documents is developed jointly and signed, explaining the model of remuneration and other agreements concerning cooperation.

Agreement

If the formal and contractual Partnering agreements are signed, the partners commit to undertake the project jointly and the project will enter the Designing & Planning phase of the project.

Plan and Design

Ideas and solutions are examined jointly between the parts, where the customer has full insight and decides on advice from the project actors. The decisions made will eventually develop construction documents and blueprints (Svensson et al., 2005). To extend and increase cooperation, some projects establish a Joint Project Office where main actors are seated, working together. The Joint Project Office eases communication, increases belongingness, openness and understanding between the people in the project team (Kadefors & Eriksson 2014).

Production and Handover

The construction phase is carried out and the final product is handed over to the client or end user. The project is closed, the project team dissolved and the project is evaluated (Svensson et al., 2005).

2.2 Public Procurement and Contracting

In Sweden the public sector procures and purchases goods and services for approximately 600 billion SEK annually. Public sector procurement is regulated by the public procurement legislation (Upphandlingslagstiftningen) and LOU (Lagen om offentlig upphandling). The legislations are based on EU directives and set to be the same all over the EU to ensure that all actors, no matter nationality will have the same opportunities and possibilities to compete internationally on equal terms. There must not be any selective procurement in favour for countrymen or friendships etc. A public procurement is when authorities, as national or local governments, counties and companies owned by the government, buy or rent goods, services and work (Konkurensverket, 2016).

The public procurement legislation is in particularly set to:

- Enforce cost-effective use of governmental funds
- Ensure mobility of companies between EU-countries and ensure fair competition.
- Ease the possibility for companies to do business with the public sector on equal terms
- Ensure that, in the public eye, the most beneficial companies, goods or services gets procured.
- Companies are to be measured and assessed with the principals of transparency and objectivity.

(Konkurensverket, 2016).

For construction procurements LOU gets valid and active when the total cost of services or goods exceed a certain amount of money, which is usually adjusted every other year or so. If the amount is exceeded an open procurement settlement is required, in which all contractors are able to submit tenders. The authority that are submitting the request are not allowed to negotiate with the companies submitting the tenders or make any deals or arrangements with any of the companies, outside of what is written in the inquiry. Accordingly all of the tender-submitting companies must be evaluated and assessed on the same pre-determined criteria that have been explained in the original request, to promote fair competition (Offentliga Handlingar, 2016).

2.3 Partnering Remuneration Models and Incentives

The most common models of remuneration in Partnering project are Target cost models with or without incentives, Target cost models with fixed part for profit and the Budget Model (Kadefors & Eriksson, 2014).

Target cost with incentive

In contracts using Target Cost with Incentive, a budgeted target cost is agreed between the parts. If the final end costs (real costs) exceeds the targeted cost when the

project is closed, the incentive gets active and the actors will pay the difference together, shared by a predetermined rate (as 50/50 or 70/30 etc). Oppositely, if the real cost undercuts the budgeted targeted cost, the actors will split the savings made (Byggherrarna, 2010; Kadefors & Eriksson, 2014), see Figure 2.2. The targeted cost can be raised or lowered if changes in the design are requested by the client. Which factors that change and adjust the targeted price are predetermined in the contract, usually these are increased areas, changes in materials and construction systems etc. In Figure 2.2, B stands for contractor and C for client.

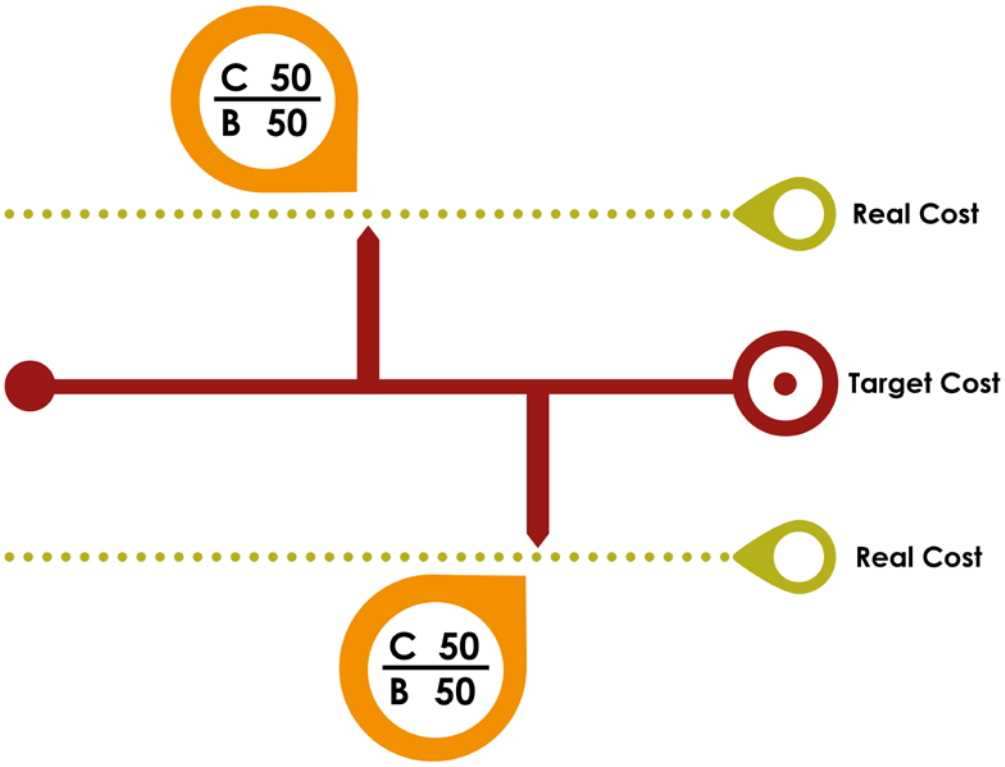

Figure 2.2 Budget Incentive, Byggherrarna (2010) (redesigned and translated)

Target cost with incentive and fixed part for profit

There are also varieties of target cost remuneration models. A similar model is commonly used, in which the targeted cost is a fixed cost covering the costs of the project, as above, but with the management costs excluded. This model of remuneration is the most common model is Sweden, but is also frequently used internationally (Byggherrarna, 2010; Kadefors & Eriksson, 2014). The management costs are usually the contractor's and consultants' management cost, as overhead costs and their profit from the project. The construction costs and resources connected to the actual construction, as labour, material and machine costs etc., are included to the targeted project costs. With this model (also called cost plus contract) the actual saving or loss from the construction is what is divided between the parts (Byggherrarna, 2010; Kadefors & Eriksson, 2014), see Figure 2.2 above.

It is not uncommon that the incentive factors affect the contractual parts differently when exceeding the budget, as 70/30 or 80/20 in favour for the client. As the initial budget is difficult to establish that early, the calculations are often made using

standard pricing or unit prices to estimate cost in the reimbursable contract (Byggherrarna, 2010).

The Budget Modell

Early in the project the Partnering team (client, contractor and consultants) jointly creates an overall project budget, declaring all parts' economic compensation, including: The total project cost, fixed remuneration of profit, administration and overheads, and compensation for costs incurred (Byggherrarna, 2010).

In this model for remuneration the contractors' and consultants´ fixed price part of the budget including management, overheads and profit, are excluded from the target costs but set as a percentage of it. Usually this fixed percentage payment does not change until the targeted cost has exceeded or cut by a certain percentage (maybe 5-10%). The budgeted targeted costs are meant to change only if the customer wants to add, change or remove something from the product. What factors that changes the targeted costs, except for the client's requests, should be agreed in advance when writing the contracts. These can be; increased or decreased areas, additional or removed work, changes in currency, market conditions etc. (Byggherrarna, 2010).

During the Designing & Planning phase of the project, the customer can chose to change the extent, volume or scope of the project. If circumstances in the context of the project change, the project team can jointly change the product to fit the financial constraints while still regarding the quality needed. If the budget is changed, the fixed remuneration to partners for profit, administration and overheads does not change as this is set as a percentage initial budget (Byggherrarna, 2010).

As the project proceeds, the budget is used as a living and a changing forecast of the final cost. All savings made, by contractors and consultants from procuring products, services, material and sub-contractors goes back into the project. All costs charged laid on the project from the project actors are net costs, without surcharges. First as blueprints, construction documents and the project Design & Planning phase is completed, the budget is finally determined and the construction phase starts. First at this point the targeted budget is set and gets valid.

In the Budget Model the budget is divided into three parts, the first two parts are dynamic parts that consist of direct and indirect net construction and operation costs. The third part is the contractor's (or consultant's) revenue, set as a predetermined percentage of the total project cost (the dynamic parts of the budget), see Figure 2.3 below. The predetermined percentage for contractor revenue is converted to a fixed amount before the construction phase begins.

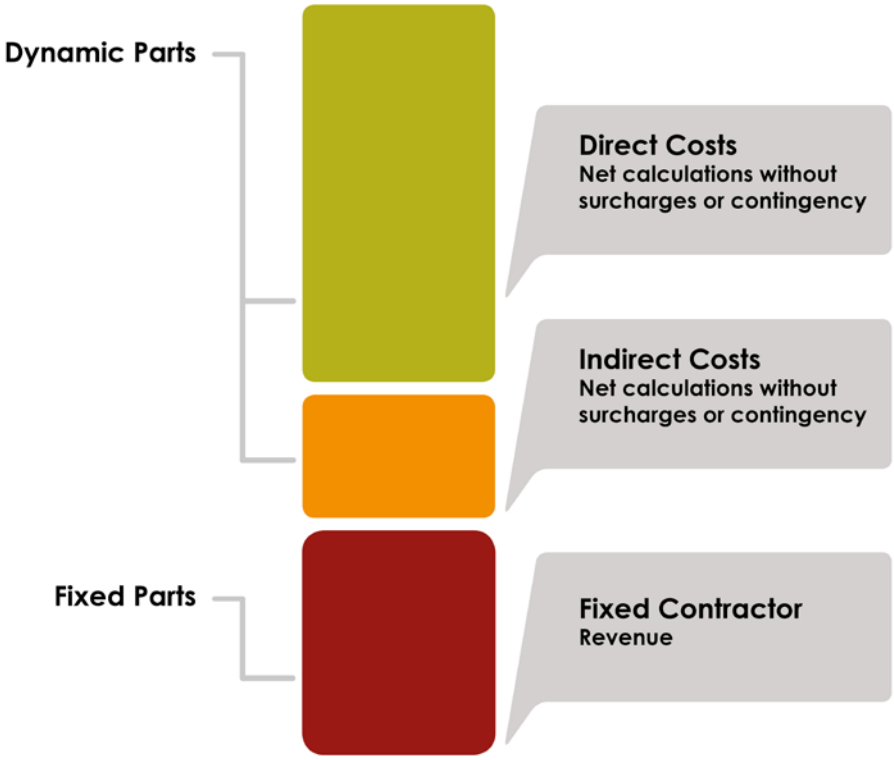

Figure 2.3 The Budget Model.

The fundamental idea/concept of the model, is that the project group is jointly focused on making the project better for all actors. All parts' profit from making smart choices improving cost, time and quality benefits everybody in the project. (Byggherrarna, 2010). Incentives and bonuses can be added and realised if the project time or cost is reduced, these are usually set as a percentage from the initial project budget or time schedule (Byggherrarna, 2010). Andersson & Högberg (2015) say that the "Budget Model" without incentives is the only model that truly strengthens and favour partnership and Partnering projects.

Affects from using incentives

When discussing positive effects gained from using incentives, researchers, specialists, professionals and companies disagree. Incentives are applicable to all of the presented models of remuneration above, but their benefits are often debated. Some researchers (Kadefors & Eriksson, 2014; Andersson & Högberg, 2015; Nyström, 2005; Byggherrarna, 2010) argue that incentives damages the fundamental principles of Partnering; openness, trust and common goals. Whereas others (Fernström, 2006; Lindkvist, 2005; JM, 2016, etc.) advocate the use of incentives, to motivate efficient working, time- and cost-savings.

It is hard to develop an honest cooperation between actors with different interest and stakes (Kadefors & Eriksson, 2014). Research shows that further than using contract incentives, trust and reliability between actors in partnerships can be harmed by even smaller things as securing paragraphs, insurances and obligations between the parts and display distrust in the other part. How tenders and contracts are written and formulated can easily be perceived as holds on the contractor, which shows contradicting intend that the customer will not trust the contractor (Andersson & Högberg, 2015). Accordingly, expectations of and a somewhat naive thinking from

executives often simplifies the process of creating collaboration friendly surroundings, teamwork and conflict-free partnerships (Kadefors & Eriksson, 2014).

2.4 Risk Management

The nature of projects is different from ongoing operations and "business as usual" in corporate organisations. Projects are temporary endeavours which have to deliver within a series of conflicting constraints. They have varying degree of novelty, complexity and are unique, as the same project is never undertaken twice (PMI, 2013). In addition, the internal and external environments of projects are constantly changing. The fundamental characteristic of projects' are embedded with uncertainty and risk (Flanagan, Jewell & Johansson, 2007; Maylor 2012; Hillson and Simon, 2012).

In early 1980, researchers in various fields, institutions and other organisations started to realise the needs of systematic approaches and systems to undertake management of risks. An international research community the Society of Risk Analysis (SRA) was established and in 1981 SRA published Risk Analysis: An international Journal (Zachmann, 2014). In-house company RM was recognised and introduce in commercial companies in the end of 90's. Usually as an overseeing senior committee, risk manager or risk officer (Dionne, 2013).

2.4.1 Definitions

The definitions of risk vary slightly from Body of Knowledges and standards. The American Project Management Institute (PMI) defines it as "an uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives such as scope, schedule, cost, and quality" (PMI, 2013, p.301). Most researchers and organisations have fairly similar definitions. The UK-based *Association for Project Management* (APM) differentiates risks at two levels; Project level risks, which is "an uncertain event or set of circumstances that, should it occur, will have an effect on achievement of one or more objectives" (APM, 2012, p.178); and Programme and Portfolio risks, which is "exposure of stakeholders to the consequences of variation in outcome" (APM, 2012, p.178). Project level risks are of concern for the project manager and the project team, whereas programme and portfolio risks are of concern for programme managers, senior executives and strategic decision makers. Programme and portfolio risks are connected to what programmes and projects to undertake, designing project's scope requirements and deciding what the project is. Project level risks are concerned with meeting objectives and deliverables within the frame of the project (Hillson and Simon, 2012). Given this, RM has the job of creating a framework in which risks can be identified and managed to increase the chance of a certain and desired outcome (Maylor, 2010; Osipopva, 2013).

It is important to distinguish between risks, issues and problems, as risk are connected to uncertainty whereas issues and problems are not. Therefore risk is proactively manageable whereas issues and problems are not (Hillson and Simon, 2012). Issues might have been risks once, which now have been realised. The term issues is frequently mistaken for risk, accordingly issues are of a negative character and are somewhat synonym to problems. Problems are also, as issues, risks that have occurred. Although, both issues and problems can bring further uncertainty with risks imbedded, the main difference between problems and issues are that problems, by

definition propose that there is a solution connected to it. Whereas issues are somewhat not manageable and out of reach for treatment (Hillson and Simon, 2012).

In recent years the importance of managing opportunities has been realised and integrated into RM, in traditional RM downside risk was only considered (Maylor, 2010; Hillson and Simon, 2012). As risks can have both positive and negative impact, considering opportunities are as important as considering threats. Hillson (2012b) claims that it is very important to keep the RM process as simple and understandable as possible and argues that RM is about understanding six simple questions and transforming the questions into a simple understandable process.

1. What am I trying to achieve?
2. What might affect it?
3. Which are the important ones?
4. What can I do about them?
5. Did it work?
6. What has changed?

An efficient RM system is beneficially able to manage risks and opportunities together, using the same process and resources to minimise threats and maximise opportunities (Hillson and Simon, 2012). ”It is important to understand that RM is not only a method to reduce losses, but also to convert threats into potential profit” (Flanagan, Jewell and Johansson, 2007, p.5).

As all projects face risks, there are two different types of risk; known and unknown risks. The known risks can be identified, managed and assessed. Unknown risks are those who are dangerous as they cannot be foreseen. An important part of RM is to reduce the amount of unknown risks as they cannot be handled proactively. Therefore the RM system must also be designed to effectively manage them as they occur. However, foreseeing all risk is impossible, there will always be unknown risks in projects (Hillson and Simon, 2012).

2.4.2 The Risk Management Process

There are a number of standards and models presenting the RM process in various formats, (see; OGC, 2007; Hillson and Simon, 2012; APM, 2012; PMI, 2013) which all share the activities of Identifying Risks, Assessing Risks, Responding to Risks and Monitoring Risks, although the steps are differently named in each model.

Before the initiation of a project a RMP (Risk Management Plan) must be declared by the organisation (PMI, 2013). The RMP is a document that describes the processes of the RM system. The plan can be a one-size-fits-all model that is used in all projects of the organisation. But preferably the RMP is adapted individually to each project and developed in a Workshop environment. The RMP is supposed to be a comprehensive document “that records the parameters of the risk process for a particular project, including: the scope and the context of the risk assessment; objectives to be considered; methodology, tools and techniques to be used; roles and responsibilities” (Hillson and Simon, 2012, p.241).

Identifying Risks

In order to manage risk in projects, risks need to be identified. The identification is a process of documenting and categorising risks and their characteristics. How comprehensively this is done, what tools and approaches to use differs from the size of the project and its complexity (PMI, 2013).

There are many different information gathering techniques as checklist analysis, assumption analysis, brainstorm- or Delphi-approaches, individual interviewing and expert judgements (PMI, 2013), their appropriateness depends upon factors as size, complexity, novelty and number of actors involved in the project. Input and documents for the risk identification can be, the RMP, the project budget, the project timetable and the risk registers from previous projects (Hillson and Simon, 2012).

For medium- or major-seized projects (Hillson and Simon, 2012) advocates a one- or two-day workshop where these techniques, carefully chosen, are undertaken by supervision of a RM facilitator. The main output of the identification step is called Risk Register, Risk List or Risk & Opportunities List, in which all identified risks are described, categorised and reported. Hillson and Simon (2012) argue that many organisations are identifying risks without further assessment or management. As a result, after the Risk Register is created it is usually stored on a server forgotten and never used again.

The Risk Register is to be treated as an open and dynamic document, used throughout the entire project. The list is updated with new risks as they are identified and taken away as they have passed. The extent, design and use of the Risk Register shall be determined in the organisation's RMP. Necessary information to include is at least; a description of the risk, what objective it impacts, who owns responsibility of the risk and what actions to take in managing the risk. (Hillson and Simon, 2012).

If responses and actions can be planned and allocated at the time of the identification, these are to be written down and used as input for the Assessment and Analysing in the next step of the RM process (PMI, 2013).

Assessing and analysing risk

In this phase the identified risks are further assessed and analysed. The scope of this phase is to fully understand the risks identified and to prioritise the risks in order of importance. Probability is usually mapped on a scale using numbers from e.g. 1 - 5, or expressed with words from e.g. very unlikely - very likely. Impact can be mapped in the same way with numbers on a scale or using words.

There are two types of risk analysis; qualitative and quantitative. The qualitative assessment is based upon subjective judgements from e.g. project member's perceptions, experience or expert judgement of the risks. The different risks can be judged differently by what objective they may affect. A commonly used tool for plotting and grading risk is the Probability-Impact Matrix (Maylor, 2010). The judgement of impact and probability will place each risk in one of the matrix boxes and give the risk a colour. In this matrix green-marked risks have low impact and low to medium probability. Amber risks are graded medium impact with high probability. Red risks have high impact with low to high probability. The red-marked risks are graded as most important and crucial, therefore they are most important to manage and often treated first. The design and extent of the matrix differs, more steps can be added to the scale, but both upside and downside risks (threats and opportunities) are to be plotted in the tool (Maylor, 2010; Hillson and Simon, 2012), see Figure 2.4 below.

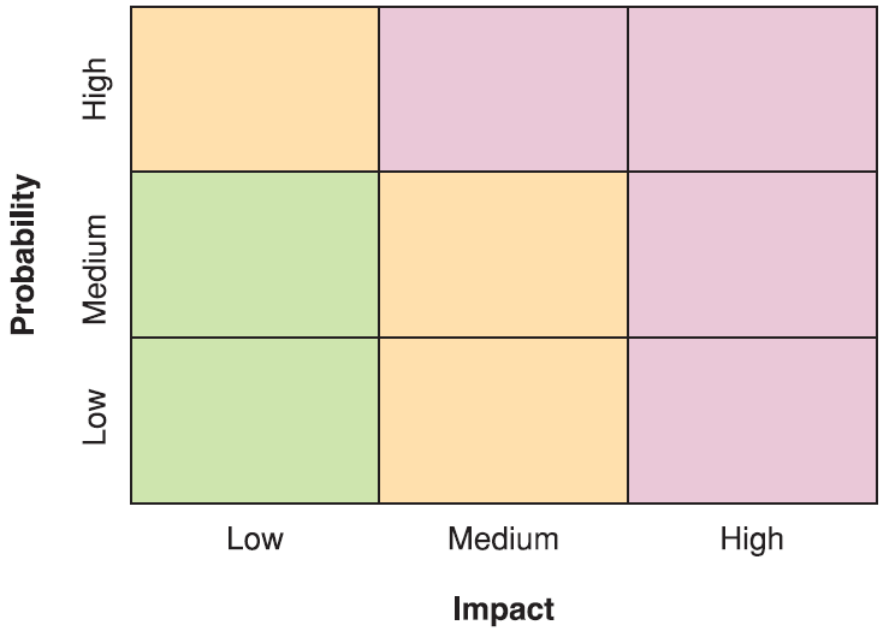

Figure 2.4 Probability-Impact Matrix, (Maylor, 2010)

Quantitative risk analysis are computer-powered mathematical models to calculate scenarios and outcomes, which includes too many variables to make sense of and grasp by the human brain (Maylor, 2010). Frequently used tools are; Monte Carlo simulation, probability distributions and PERT.

Responding to Risks

When the significances of the different risks are assessed, actions and strategies of how to optimally manage the risks are to be planned. There are important factors connected to each risk to consider before planning actions:

- The risks manageability: Is the risk manageable and to what extent.
- Impact severity: How severe is the impact, can the risk be allowed or consumed, or are further actions required.
- Recourse availability: How much resources are available and can be allocated to the actions?
- Cost effectiveness: How much is it worth to allocate on risk response, the cost must be justified towards the probability and impact of the risk.

(Hillson and Simon, 2012).

The process of responding to identified risks is the most important in the process, as the opportunities and threats are supposed to be treated to beneficially affect the project. Just identifying risks changes nothing (Hillson, 2009). There are four types of responds applicable to managing threats; Avoid, Transfer, Reduce and Accept; and four responds for opportunity; Exploit, Share, Enhance and Accept (Hillson and Simon, 2012), see Table 2.1 below. The response is determined by the wanted outcome.

Table 2.1 Priorities for selecting response strategies (Hillson and Simon, 2012).

Priority	Threat Strategy	Opportunity Strategy
1	Avoid	Exploit
2	Transfer	Share
3	Reduce	Enhance
4	Accept	

Threats

Avoiding a threat means that actions are taken to erase the impact or probability of the threat. Threats to avoid are usually the most critical problems and of top priority, therefore changing the project plan and taking alternative routes are often the actions taken (Osipova, 2013; Hillson and Simon, 2012). Transferring a risk means allocating the threat to someone outside of the project. Transferring the risk does not change it, but it can be allocated to someone better dealing with the risk or someone willing to take it. Actions to transfer risk can be; taking insurance at insurance companies, out-sourcing the activities connected to the risk or relocating the risk to an internal project part which has the knowledge and resources to better avoid or reduce the risk (Osipova, 2013; Hillson and Simon, 2012). Reducing a threat is planning actions to lower the impact or probability from it. Actions can be to allocate more resources as staff, research or time.

Opportunities

As opportunities contains desired outcomes, they are treated opposite to threats. Opportunities are; exploited to increase the probability and positive impact; shared with project external or internal actors that can help to better enhance or exploit the opportunity; enhanced by actions to increase likelihood and effect of the opportunity. Minor threats and opportunities which are of low impact and probability can be accepted and consumed, as sometimes actions are not worth enhancing the opportunity, or there might be no actions to take as the probability and impact cannot be altered (Osipova, 2013; Hillson and Simon, 2012).

Monitoring Risks

The phase of monitoring consists of updating, controlling and monitoring the risks. RM must be an iterative process including all of the previous steps. As new risks occur and are identified, they are to be analysed, get actions planned and monitored. When in the monitoring phase the whole process repeats itself constantly as new risks are identified (OGC, 2007). The job of monitoring risks usually means following how risks develop and controlling risk.

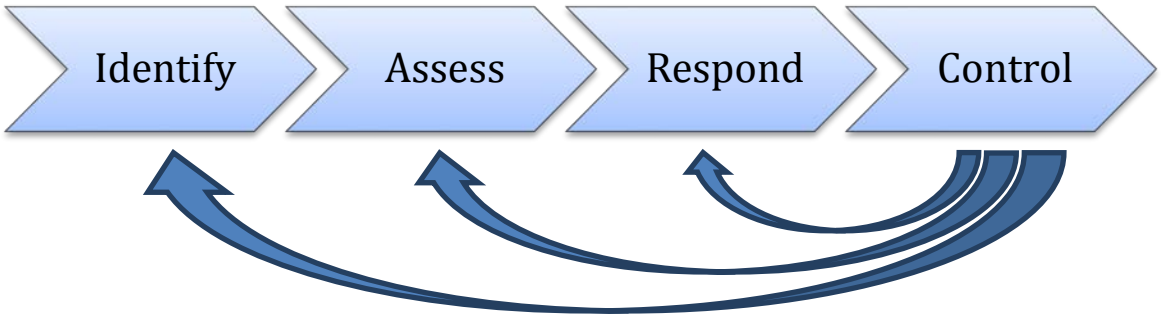

Figure 2.5 Iterative Risk Process

Project Risk review

A project's main purpose is delivering the intended benefits to its stakeholders, but projects also have a secondary mission which is contributing to organisational learning (Hillson and Simon, 2012). Organisational learning means that the organisation learns from operations undertaken and closed projects. Its main purpose is to share knowledge from single entities, project teams and individuals to benefit the entire organisation (Danforth, 2015). Post-project reviews and lessons learned-sessions are known to be the least well-performed phase of projects (Hillson and Simon, 2012). For project-based companies organisational learning in RM is organising risk reviews from the closed project. These can be a part of the regular post-project review, but must be undertaken as an extensive and rigorous appointment. The meaning of the review is to gather knowledge gained from the project that can benefit future projects (Hillson and Simon, 2012).

The risk review is set to evaluate the RMP, the process itself and the tools used. Identified risks are analysed, both risks that occurred and not. All knowledge gained shall be recorded in an organisational body of knowledge available to the entire organisation (Hillson and Simon, 2012).

2.5 RM Methodology and Standards' Criticism

Power (2007) strongly criticises the notion that detailed process-driven systems and methods can be introduced to deal with risk, as he suggest that these processes only truly work if all risks are known, which is not the case in the complex and ambiguous world that organisations and projects live in. Following rule-based processes and handling risks in mechanical ways, creates a problematic mentality. The usage of checklists, templates and detailed standardised processes, substitutes real thinking, perceptions of risks and how to manage them (Power, 2007). Power (2007) claims that organisations efforts of complying with frameworks, methodologies and following rigid processes are lurking them into a false sense of security and safety. RM "is an illusion of control" (Power, 2007, p.98).

Criticism Re-organisation

Other criticists' say that the implementation of RM into organisations is just a reorganisation and re-coordinating of already existing sub-disciplines and governing functions, to create a rational distinguishable relation for RM (Kloman, 1992). Before RM was introduced in the management field, the different departments managed their risks independently and locally in the organisations. This fragmented RM occurred naturally as the different functions in the organisation handled risks connected with their functions and operations, e.g. financial department managed financial risk, operations management department handled quality and production risks etc. Organised like this each department and function developed their own set of tools, methods and practices individually, tailored to their line of work (Bromiley, et al., 2015).

Reputation as a driver for Certification

Over the last two decades reputation has been an increasingly important motivational force to strategic management of corporations (Power, 2007). This has been displayed over and over again by the constant self-reinvention of organisational practice

(Chambers, 1999). Reputation has been used by various standardisation organisations to "problematize existing organisational practices and the nature of the field in which organisations operate". (Power, 2007, p.149). In this way, the different standard organisations and management methodologies are self-justifying their own existence. As a result, organisations have to spend much resources and time to make their reputation "easily readable and auditable by outsiders who are conceptualized as sources of vulnerability are fear" (Power, 2007, p.150). It is a "language of self-description" (Power, 2007, p.100) to display reliability, accountability, responsibility and good governance towards clients (Simon, 2002).

Certification Standard, Models, and Methods self-validation

Management trends, best-practices and methodologies in Quality, Risk, Value, and Benefits Management are constantly replaced by each other and something new. Simon (2002) argues that there are no enduring rational ways of managing organisations as change is constant and inevitable. Accordingly the methodologies and ways of working are transient fads, which legacies fade over time and get replaced by something new (Brunsson, 2000).

"The form of these efforts to organize uncertainty may have little to do with dangers themselves and more to do with the state of trust in organizational and political life" (Power, 2007, p. 180-181). He (ibid) states that there might be no realised need in the organisations to introduce RM. Instead the introduction of it is a way of following the trends in the management-field which the certifying bodies demand and a way of outwardly displaying good management and reliability. This is a trend in which consultants, standard organisations, commercial standards and methodologies have exploited to "articulate proprietorial versions of generic principles. New models of organisations and regulations have emerged and consultants and professional service firms are conspicuously the creators and carriers of templates for managing risk, seeing opportunities for using risk to re-define their strategic significance." (Power, 2007, p.99).

3 Methods and Materials

This chapter will outline the philosophical positioning, the research methodology, research design and strategy of the research. It will describe and justify methods and paths chosen to conduct the study. The framework of the research will be declared, approaches and strategies used will be explained and discussed. Lastly the trustworthiness and the ethical considerations will be considered.

Research is "a decision-laden activity and not something that can be done without thought and interpretation" (Hart, 2005, p.278).

In this study RM practices and procedures will be studied at a construction contractor working with Partnering projects. Due to the fact that traditional RM is focused on traditional ways of running projects, this study will examine how JRM can be applied into Partnering projects. The fact that there are limited amounts of literature on RM in Partnering projects and no models to directly apply into the project processes, shows that there is a gap in the knowledge of how RM can be undertaken jointly between the contractual part of Partnering projects. Accordingly, in Partnering there is a need for including the client in the RM processes and to communicate threats, opportunities and consequences to it.

3.1 Research Philosophy

The research philosophy is set to explain the researcher's philosophical view and positioning when approaching the research. What philosophical stand the researcher takes will answer for various views in ontological and epistemological considerations. According to Bryman (2012), epistemological considerations are questions regarding what is acceptable as knowledge and if the social world can be studied with the same principles and procedures as those of the natural sciences'. In which positivism, advocates that methods used in natural science can also be used when studying the social reality. Contrary an interpretivist positioning discredits the same, as it means that the social world needs different methods because human and human behaviour deviates from the natural order of nature. Neuman (2007) stated that research with an interpretivist positioning tries to study and understand (interpret) human behaviour, not predicting and generalising cause and affects. Ontological considerations concern questions as if social entities should be considered as created by the social actors (constructionist ontology) or if the social actors should be seen as objective entities that have an external reality (objectivist ontology). (Bryman, 2012). A constructionist view is therefore that "meaning" is a social construction therefore there can be more than one, maybe many truths and explanations to the same problem (Parylo, 2012).

This research has an interpretivist epistemological positioning and is of exploratory nature, set to understand how RM can be undertaken jointly in the social setting of a Partnering project. In line with Neuman's (2007) arguments, this study tries to understand how people behave in group and how to enable collaboration between contractual parts. Given this, a constructivist ontological position has been taken.

3.2 Methodology

"Research Methodology is a systematic way to solve a problem" (Rajasekar, Philominathan, & Chinnathambi, 2013).

Given the philosophical standpoint in the previous Chapter 3.1 and the nature of the research, a qualitative research strategy has been undertaken. Qualitative research emphasises on words studied in social settings (Bryman, 2012).

The research has an abductive approach called Systematic Combining, which is somewhat a mixture of inductive and deductive approaches (Dubois & Gadde, 2012). Systematic Combining can be used in abductive research, when there is a need of constant interplay between the gathering of data and reviewing theory. Accordingly this was conducted already in the initial phases of the research. As both the subjects of RM and Partnering were novel to the researcher, the aim and scope of the research was constantly refined. The initial idea to first conduct a literature review and then gather data had to be reconsidered, as findings in the data collection directed the study into alternative paths which were not substantiated by the literature. Therefore the literature review progressed simultaneously with the data collection. As more empirical data was gathered, more literature had to be studied, which along the way of the study altered the interview schemes and the focus of the ethnographic observations. Even the research questions were revised as the research progressed. This is typical for abductive approaches and systemic combining in exploring-oriented studies, according to Dubois & Gadde (2012).

3.3 Research Design

Research design is the structure and the framework for the entire study and must be created to support all phases of the research; collection of data, the analysis and enable the researcher to address the research questions in a correct way (Hart, 2005).

The study has adopted a case study-design. A case study is an intensive and detailed study in which the researcher is trying to understand the complex nature of the single case (Stake, 1995). Most commonly case studies are connected with studying a community or an organisation (Bryman, 2012).

In this study a single organisation has been chosen as the case. Partner Inc. has been picked, as studying implementation of JRM in Partnering projects, seem suitable in a company that solely works with Partnering projects. Partner Inc.'s projects differ from each other in project scope, size, location and team constellations. Also, each project has different clients and project partners. Given this, choosing Partner Inc. enabled the gathering of empirical data form a wide spectra of projects.

The methods used for data collection have been interviewing and document analysis. The research also has elements of ethnography, in which the researcher has collected data from observing behaviours, listening to conversations, attended meetings and observing actual work, in accordance with how Bryman (2012) characterised ethnographic research.

Main areas of data collection:

- Interviewing
- Document Analysis
- Participating observation

Interviews

Key project members from Partner Inc.'s projects have been chosen for interviews. The interviewees had different backgrounds and experiences and were chosen on advice from Partner Inc.'s senior management, assumed to be most knowledgeable of the topics and therefore being able to contribute most to the research. In total nine interviews have been held, out of which two interviews were undertaken with senior executives in the end of the research, after the main data collection phase.

The first seven interviews were designed as semi-structured interviews with questions designed to bring descriptive answers, through open-ended questions. The interviews followed a predetermined set of questions and had sub-questions, (as why, how and when,) to get as much information and context understanding from the interviewees as possible. Accordingly, the researcher saw a need to have more flexibility than structured interviewing, yet keep the opportunity to guide the questions in order to make best use of time, typical to semi-structured interviews (Harrell & Bradley, 2009). These interviews also had elements of unstructured interviewing as the researcher allowed the interviewees to drift away from the main topics into discussions, when the researcher thought that this could increase the contextual understanding of different matters. As a result of the Systematic Combining approach (explained in chapter 3.2) the focus and the scope of the research changed as findings from data was gathered, accordingly the interview-questions also changed slightly between the interviews.

As the researcher conducted the study alone he saw benefits in voice-recording the interviews. The main benefit was to be able to actively listen and to fully focus on getting such a comprehensive and content-rich interview as possible. In this way, the researcher believes he managed to get the most out of the interview but at the same time get the possibility to compile the results later. Another benefit has been that the researcher had the possibility to listen to older interviews and compare the result from these with newer ones. The interviews lasted for 45 to 55 minutes and were held at Partner Inc.'s offices. See interview compilation below in Table 3.

The latter two interviews were designed as unstructured interviews to get input and reflections from senior managers in the analysis and the comparison between the literature and the empirical findings. In these interviews, with discussion-characteristics, the potential benefits of JRM and shortcomings in current project processes were mainly discussed.

The last two interviews were held over telephone, therefore unable to voice-record. The other seven interviews were held face-to-face and voice recorded.

Table 3 Interviews

Interviewee	Position/Title	Interview type	Date
No. 1	Programme Manager	Face-to-face	2016-03-04
No. 2	Programme Manager	Face-to-face	2016-03-10
No. 3	Programme Manager	Face-to-face	2016-03-14
No. 4	Project Site-Manager	Face-to-Face	2016-03-14
No. 4	Project Engineer	Face-to-face	2016-03-15

No. 6	Programme Manager	Face-to-face	2016-04-08
No. 7	Project Manager	Face-to-face	2016-04-14
No. 8	Executive Senior Manager	Telephone	2016-04-26
No. 9	Executive Senior Manager	Telephone	2016-05-17

Document Analysis

A comprehensive document analysis was conducted. The documents studied were in particular governing project management documents, project process explanations and descriptions of how Partner Inc.'s projects are to be undertaken and managed. In addition, meeting protocols, tools and documents have been studied. It is important to realise that descriptive materials, process charts and governing documents explain how the executive management wants the projects to be executed. They are not necessarily corresponding with how the projects are actually carried out.

Participant Observations

The researcher has attended meetings (out of which five were Tender Meetings and two Manager Meetings), participated in a company education programmes for Time & Cost Management and listened to discussion in various informal forums. Tender Meetings are meetings in which a group plans the tender work before submitting a project tender. Manager Meetings are monthly information meetings in which Senior Management informs Project Engineers, Project Managers and Programme Managers of the company and the project progress, and news. The Tender Meetings and the Manager Meetings were approximately two to three hours each, whereas the Time & Cost Management education lasted for three full working days.

However, the participant observations should be seen as complementary and subordinated to the other methods of gathering data in this research. As the data collected from participant observation have had minor influence of the results and empirical findings, as the researcher has not been able to attend or observe much work in the project phases studied (Start Workshop, Start Budget, Design & Planning). Although, the participant observations have clearly helped in getting a contextual understanding and an understanding of Partner Inc.'s Partnering philosophy and how they work.

3.4 Trustworthiness

Lincoln & Guba (1985) (cited in Bryman, 2012) argue that trustworthiness should be used to determine how competent a qualitative study is. The criteria of trustworthiness are related to the criteria of measuring quality of quantitative research, which are; internal validity, external validity, reliability and objectivity. Lincoln and Guba (1985) (cited in Bryman, 2012) further argue that the quality measures of quantitative research, reliability and validity takes for granted that there is one single answer and truths in the social world (as the objectivist ontology), which is against the research philosophy in this research. There can be more than one, perhaps several, simultaneous explanations to phenomena sometimes. Therefore the quality measures of quantitative work are not appropriate in qualitative research. Instead, a qualitative research is to be assessed by the criteria of trustworthiness, which are;

- Credibility – Are the findings reasonable?

- Transferability – Can the finding be applied into other contexts?
- Dependability – Are the findings the same at some other time?
- Confirmability – Has personal values influenced the research?

(Bryman, 2012)

Credibility

Bryman (2012) describes the measure of credibility as ensuring that the research is executed in accordance to guiding principles of good practice and to what extent the researcher has understood the studied social setting. In short, if the findings are reasonable and that the "correct" conclusions have been made from the findings. A way of securing this is Respondent Validation, which can be done by submitting the findings to the participants, for them to validate that the researcher has understood how something is perceived from the respondents view.

The findings have to some extent been validated by the interviewees, as the researcher has sometimes summarised and repeated his understanding and perception of what the interviewee have told back to them, to avoid misunderstandings.

Accordingly, after the main data collection the main findings were discussed with two senior managers. This was partly confirming the understanding and the credibility of the findings, but on the other hand the perception of senior managers might differ from the respondents' active in projects. Also, this is no guarantee that the conclusions made from the data are credible, instead only that the findings from the different data gathering methods are credible (to some extent). Furthermore, before the research were published the senior managers was given an opportunity to review the report.

As the output of the report contains rather speculative suggestions for improvement the credibility of the report is hard to assess, the only way to judge it is by implementation.

Transferability

The measure of transferability can be described as how externally generalisable the findings are (Guba & Lincoln, 1994) and therefore applicable in other contexts. Bryman (2012) claims that qualitative studies often go in-depth in narrow topics with rather high contextual uniqueness, therefore the transferability can be limited.

Firstly, as Partner Inc. has a rather unique and special niche, only undertaking Partnering projects, the transferability seems low as there are no other contractors (known or discovered by the researcher) that differentiated into Partnering in the Swedish construction industry. Also, as the study focuses on applying JRM into the existing processes of Partner Inc., the transferability is probably even lower as all companies undertake their projects differently.

The fact that only one contractor has been chosen in the study, is because of the belief that it is important to fully understand how one company works, its strategies and processes. As companies have different types of procurement, remuneration models and systems, investigating several companies might end up in a comparison rather than an in-depth investigation. In that case, the recommendations and improvements given from the study are at risk be too generic, to not fit one organisation. In the spirit of PMI's statement that "There is no one size fits all approach to the selection of

techniques and they will be of most value when selected to match the context in which they are deployed" (APM, 2012, p.185). Given this, the transferability is estimated to be low in this research.

Dependability

Dependability is looking at the likelihood of the same findings reoccurring in the same context at some other time (Bryman, 2012). Shenton (2004) argues that it is hard and complicated to make qualitative studies dependable.

The researcher has explained the research process, presented the supporting literature and explained empirical findings, to make the research as dependable as possible. Although as Partner Inc. and its interviewed employees are anonymous, the same research is almost impossible to conduct by another researcher at another time. Thus, the dependability is rather good as the researcher tries to be detailed in the presentation of data and explaining the research methods and materials, however the study will be practically complicated to undertake again. Therefore the dependability of the study is difficult to assess.

Confirmability

Confirmability is regarding how objective the approach of the researcher is and if the researcher's personal believes and values influence the research and the presentation of empirical data (Shenton, 2004). Bryman (2012) adds that it is impossible to approach research with complete objectivity.

As this research has an interpretivist epistemological positioning (explained in Chapter 3.1), the purpose of the research is not to be fully objective. Accordingly the researcher cannot avoid personal interpretation, as the results are partly an understanding and an interpretation of the data that has been gathered from observations, discussions and interviews. However, data presented from interviews are presented in an as objective manner as possible.

The confirmability is therefore rather low, as the researcher cannot interpret how things are without influence from personal believes and values.

3.5 Ethical Considerations

As the research studies one company's processes, working models and methods for undertaking and executing projects, there can generally be a risk of publishing and spreading commercially sensitive material. To eliminate the risk of publishing company-sensitive information, the executive managers of Partner Inc. have agreed and signed a document allowing the researcher to publish what is in this research. The studied company is given anonymity and will be referred to as "Partner Inc.

Although, as there are not many contractors working with Partnering projects solely in Sweden, there is a possibility of the company being identified. Although, this is something that the company executives are aware of and do not have objections against.

Employed people are participating in the collection of data in terms of interviews. All employees are granted anonymity, accordingly every research participant has read and signed a "Research Participant Consent Form". The form is saying briefly that they agree to participate in the research, understand the purpose of it, have discussed anonymity and confidentiality with the researcher (no participant demanded

anonymity, but all are anonymous in the research) and that they agree that the interviews are being voice recorded. These actions are considered to be ethically correct to both the participants and to the researcher and erase risks of juridical penalties or other problems for the participants and the researcher.

The interviewees are referred to as Programme Manager 1, Programme Manager 2, Project Manager 1, etc. in Table 3 Interviews, which can possibly hint to who said what internally in the company, but this is important to include as there can be significance and interest in the roles connected to each answer. This is also something that the participants are aware of. In all voice-recorded interviews the interviewee was aware of this and agreed to it, before the recoding started.

4 Results

Reconnecting to the research questions in the thesis, the study looks at implementing JRM processes in the early pre-construction phases of a Partnering construction project. The results presented are from data gathered through nine semi-structured interviews, observations from attended meetings and document analyses. The studied company is referred to as Partner Inc. The results chapter presents how Partner Inc. works within their Partnering projects.

4.1 The Partner Inc. and its Partnering Philosophy

Partner Inc.'s Partnering philosophy is core in all the projects undertaken, there is a big focus on openness, building trust and collaboration between the client and the project actors. The way they work, the transparency they want to achieve is visible in the processes and efforts they take in the early phases of the projects, along with the throughout involvement of Partnering actors and the client.

Partner Inc. only undertakes projects in which Partnering is adopted and is mostly niched into public sector projects. Usually these are schooling, healthcare and industry facility projects. Private sector projects as housing projects are also undertaken, but not as frequently. More complex projects as school, healthcare and industry facility projects seem to benefit more from the Partnering's involvement of the client and the end user into the projects, as they are often more complex in design and installations. These projects also seem to have more special requirements form the client and the end user. Therefore, the fundamental idea is to include the client and the user and giving them decisive power regarding the design, materials and interior etc., to ensure that the clients get satisfied and get most value for their money.

Partner Inc.'s management system is certified towards a number standard organisations. The main reason for this is, according to senior executives, that in some project inquiries, regulated by LOU, a contractor is able to get a higher evaluation score if it is certified by a management standard. Therefore, if a contractor does not have a certified management system or process, they will lose points in the evaluation of contractors, which directly decides who will get the job in public procurements.

> *"Before we got certified we lost points in a number of project. In some inquiries the client ask directly, as an evaluation criterion, not only if we are certified but also how we work and what project processes we have. . Some clients have also started to demand processes for RM" (Executive Senior Manager No. 1).*

If companies are not certified by a standard, they must be able to show and describe how they are working within the project phases and processes, which is not easy as these processes are often intertwined, according to Executive Senior Manager No. 1.

4.2 The Project Partnering Process

Partner Inc.'s standardised project process will be outlined and explained below. Where the focus is directed to the studied phases of Start Workshop, Start Budget and Designing & Planning. An In-depth explanation of how the operations are undertaken in each of these studied phases will follow. Partner Inc. divides their projects into two overarching phases; Phase 1 and Phase 2. In Phase 1 all pre-construction work is undertaken, Phase 2 consists of the work during and after the actual construction.

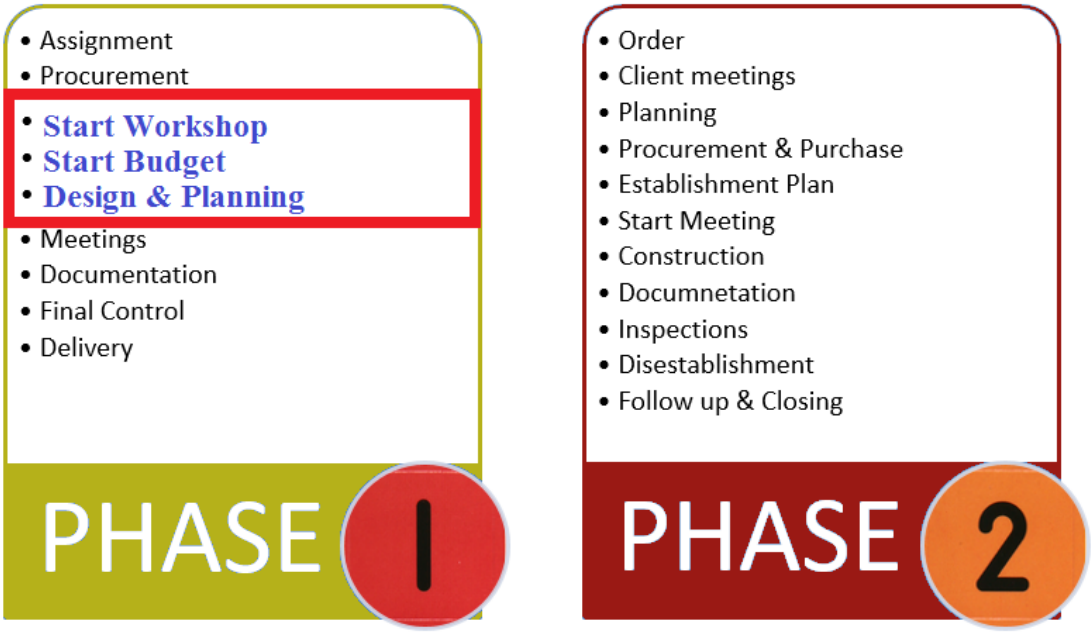

Figure 4.1 The Studied Project Phases

Before starting the project, Partner Inc. (the main contractor) with the overall project responsibility, signs a Partnering Contract with the client. The Partner Inc. suggests the other partner contractors and consultants for the project team, with insight and approval from the client. Which actors to involve early is usually dependant on each project, what is being built, how technically advanced the functions of the intended operations are and which actors are important to involve in the early Design & Planning phase. For instance, in a hospital project, consultant with knowledge of healthcare technology can be beneficial to involve in the designing phase. If the building designed is located close to an airport or railway it can be a good idea to involve sound and vibrations specialists. In general, partners early procured are architects, structural engineers, electricity, plumbing, ventilation and control technology consultants.

4.3 Start Workshop

When the Partnering Contract for the first phase of the project (Phase 1) is written and the main actors are procured, the initial Partnering Start Workshop is performed. The workshop is an early project seminar directed by a Partnering Facilitator. In the seminar the main contractor, project members from the contracted partners, consultants' representatives from the client and other important stakeholders are present. The intentions and aim of the workshop are letting the project members and the people involved in the project getting to know each other through personal presentations, project information, and also to start the team building process towards the formulation of joint project goals. Time is also given to enable mingle and informal talking.

There is one session of the Start Workshop, in which a special meeting method is used, called "The Café Model". The Café Model, is a way to arrange dialogue in large meeting groups by splitting people into small discussion groups. The small groups are called "Focus Groups" and are given different tasks, with different themes to discuss

and resolve. Usually the issues and matters regard topics as design, project planning, installation, communication etc.

The Focus Groups are usually put together as theme-groups such as technology, construction, design etc., containing actors that will work closely and who are dependent on each other later in the project, for example structural design engineers, installation engineers and architects etc. Each group is given a topic, theme or a project phase to discuss and analyse matters, problems collaboration or whatever the Partnering facilitator have assigned them.

When the Focus Groups have been discussing for a while, they are temporarily split up into new groups called "Reference Groups". The Reference Groups are formed by assembling one person from every working group. In this way the new Reference Groups are as many as the Focus Groups originally were. In each group every person presents, one at a time, what topic they have been assigned, what they have discussed and what they have come up with. After this, they are given feedback from the other participants in the Reference Groups. When everybody in the Reference Groups have presented their discussions and been given feedback, the groups are disbanded and the original Focus Groups are formed again. Now every group member presents the feedback they have been given and further discussions take place. Afterwards, each Focus Group presents the output from their discussions to the other groups. The interviewed employees at Partner Inc. state that this is a good way to get initial input to the Design & Planning phase. It is also an efficient way to involve all project actors in solving problems, discussing goals, aims and objectives and to spawn ideas and suggestions.

Interviewees think that the Start Workshop is very important to align the project members in order to get a common understanding of the conditions and potential in the project. It is also a chance for the client to describe its' expectations and visions of the project and possibly initial ideas. Interviewees describe the workshop as setting the foundation for further cooperation and the first preparations for the initial design work. Usually the workshop is undertaken as a two-day activity where the first day is set to introduce the project's present state, generating and discussing common goals. The second day of the workshop is allocated to look at design and planning issues and design details through methods as the Café Model. The workshop ends with the parts signing a joint statement called "Partnering-avtal" or "Samverkansavtal" (Partnering agreement), including the aim, objectives and a summary of how to proceed working with the project.

4.4 Start Budget

After the initial Start Workshop the budgeting work begins. According to the principles of the "Budget Model", the budget work starts with the main contractor (Partner Inc.) establishing a rough early project budget. The early budget is based on estimations from experience-costs, key ratios as price/m^2 and unit prices based on what type of functions the product needs and what operations the building is to accommodate. This early budget is reconciled with the client and if approved, used as a target price for further designing work. After this, the Partnering sub-contractors and consultants start their calculations and budget work with the main contractor's rough

budget in mind, trying to suit their costs to what has been calculated. If the calculations exceed the budget, the project team and customer gather to investigate how to lower the costs or re-design, alternatively the client can accept the increased costs. This is where the Risk Register is introduced, a document that is made for projects actors to identify risks in terms of threats and opportunities and to present changes made will affect the budget, the Risk Register will be explained further down in this chapter.

The calculations and budget is constantly refined as the designing work progress, as the project comes further into the Designing & Planning phase the budget gets more precise, as what is actually being built gets clearer. During the project the client might want to do changes in the design or extent of the project, e.g. there might be a realised need of higher capacity of the hospital or school developed, or there might be additional use discovered for a school, that can bring extra value or income for the client, as revenues from higher rents or operations. In Partnering the client has the possibility to change the product to fit the needs realised on the run. As most changes affect the budget, the project team can calculate how much extra the changes or alternative solutions will cost to make the project output satisfying to the customer. The customer has the possibility to be involved in details during the design phase, as choice of materials and interior, if desired.

Changes made after the contract budget is written require that adjustments or changes in the budget are reported and signed by the client. A change can be e.g. that the client wants to change coatings, materials etc., outside of what is decided in the designing documents or blueprints. These are changes that raise the target price. Adjustments are usually smaller corrections, as that the price of materials have increased, but still hve to be noted in the budget and its forecast.

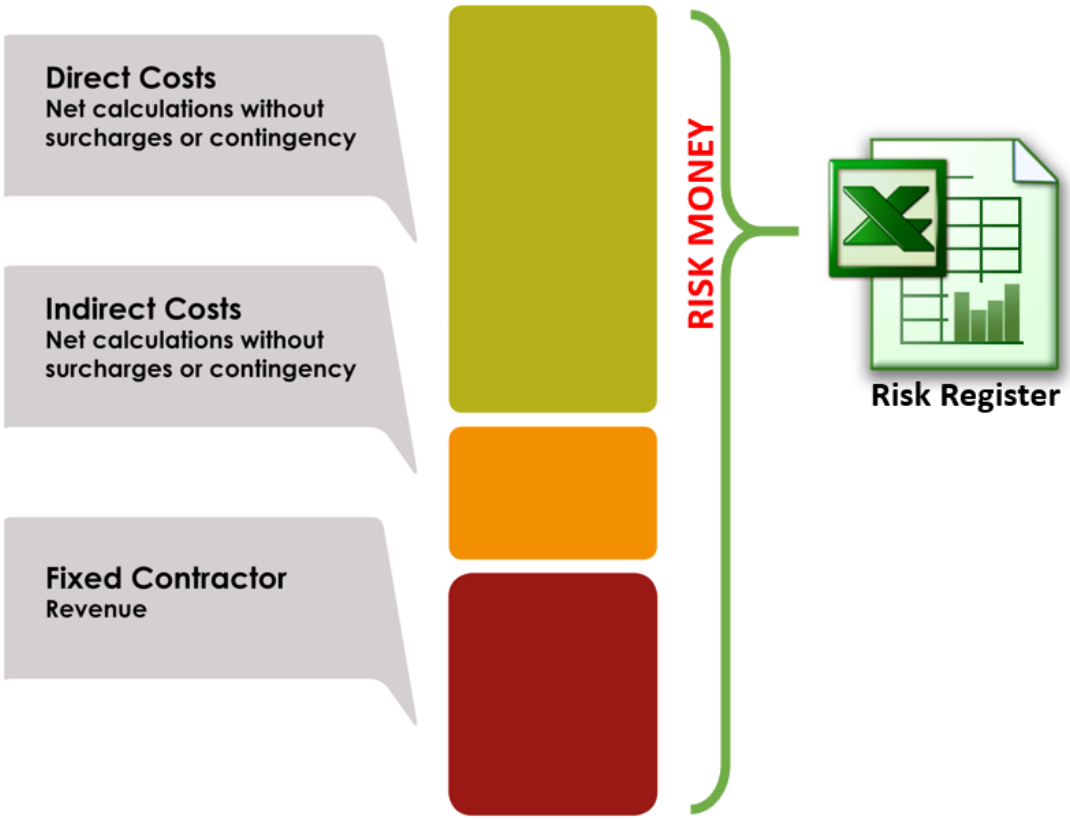

Figure 4.2 Budget Model & Risk Register

In Partner Inc.'s desired model for remuneration, the Budget Model, the project budget is divided into three parts:

1. Direct Costs. Dynamic part without any surcharges added from contractors or consultants, all cost are net costs (own costs).
    a. Includes purchase of materials, labour hours from contractors and consultants, and all other direct costs.
2. Indirect Costs. Operating costs. Dynamic part without any surcharges.
    a. Includes indirect project costs as, facilities, electricity, equipment etc.
3. Fixed contractor revenue. Fixed number, initially set as a percentage but converted into a fixed amount after the Design & Planning phase is completed.

The risk money is excluded from the budget and stored in a risk buffer, the Risk Register. It is only introduced if the risk plays out. Why this is important will be explained further down.

In the first phase of the project, Phase 1, the contractors and the active consultants only charge the client on running accounts, net costs for laid down work and hours. The budget is a living document until the Design & Planning phase is over. In the end of Phase 1, when the client is satisfied with what has been designed and the documents from Phase 1 are more or less completed, the contract budget is written and signed. The Phase 2 contract budget is a target budget for Phase 2, which changes if the customer wants to add or change something in the design or if identified risks are realised. When the construction work begins, Phase 1 ends and Phase 2 starts.

Risk Register

In the calculations and budget work there is a tool called “Risk- och Möjlighetslistan” which is an Excel-document Risk Register, designed to list and manage opportunities and threats, excluding their costs from the budget. The main intention behind the list is that the contractors and the sub-contractors are to identify risks and opportunities using the tool. As described above, project actors are not supposed to add “risk money” or contingencies in their calculations to the budget when using the budget model for remuneration.

In traditional bid-build projects the contractor takes most of the risks, as it is contracted to perform and undertake a project in exchange for a fixed amount of money, determined in the budget contract. A total project budget is set before initiating the project, direct costs, indirect costs, money for profit and overheads are included. Accordingly as the contractor takes risks when estimating time, resources and costs and, the contractor needs to surcharge all activities, procurements and laid down hours in the budget, to secure itself against all the uncertainty and the possible outcome of losing money. Allocating and transferring this risk to the contractor is expensive for the client. The client will therefore pay the contractor for the risks it is taking, and of course also for risks that never occur. Instead in Partnering, when procuring a contractor, the profit the contractor will make is determined in a separated part of the budget, set as a percentage project budget.

> *“In Partnering the contract budget is set first when the design is more or less completed, therefore all calculations are more accurate and the contractor takes less risk. This also makes the project cheaper for the client as it does not have to pay for the “risk money”. (Project Manager No.1).*

All profit made from undercutting the budget is given back to the client. No costs or risk margin needs to be added for work performed, as the contractors and consultants knows that they will get their profit from the fixed part of the budget. Purchases made or hours worked, everything is calculated and charged as net costs to the budget. The intention is that the contractors and consultants are only to make their profits from the predetermined percentage of the project budget, therefore the contractor does not have to surcharge the customer for the uncertainties that the project is facing, as they are not taking the risk.

The identified risks and costs of risks, identified by the project team, are separated from the budget and stored in the Risk Register. Only if the risks occur they are introduced into the budget, affecting what the client will pay. In this way the client will only pay for risks that get realised. If adding all the risks identified, directly into the budget, the contractor would get an increased profit made in the fixed revenue part, even if the risk or opportunity never occurs.

> *“The Risk Register can allow us to identify and communicate risks together with the client and is used as a base to discuss what to include in the budget” (Programme Manager No. 2).*

Partner Inc. is also trying to make their Partnering actors and consultants to use the Risk Register in exactly the same way. Identify and document risks in the Risk Register, not adding risk money in their budgets. Partner Inc.’s Risk Register template is attached in Appendix 1.

How is the Risk Register really used?

"Most often we identify risks, try to estimate a cost of them, then we wait for them to occur or not" (Programme Manager No. 3)

The Risk Register is used to different extents in the different projects. In some projects the Risk Register is used more frequent while in other it is not used much. The lack of use can be seen in the company database, where project documents are stored. When studying the Risk Registers of the different projects' it can be seen that many of the projects have identified very few risks at few different occasions. The risks identified also have inadequately filled information. Many of the information columns are not used at all. There are often no cost allocated to the risks or opportunities identified. When asked why the Risk Registers are not sufficiently filled out most of the interviewees thought that it is hard to estimate costs for the risks.

"We need to be better to estimate and allocate money to each risk, but it can be difficult. When a risk is identified, there is often no idea of what things might cost. If so, the risk is often identified without any cost attached." (Programme Manager No. 6)

Some interviewees think the use of the Risk Register should be developed, used in the different phases overrunning the different phases of the projects. While others' argue it should be allocated to the budget work only. This also shows how the Risk Register is used differently in the different projects, as the perception of how and when to use the document also differs.

Affects from Remuneration Model and incentives on RM

"The cooperation will be lower with incentives. Parts start to sub-optimise for themselves." (Programme Manager No. 2)

Partner Inc. run their projects with the Budget Model, and strives to erase all types of incentives and bonuses. According to all interviewees, the remuneration model chosen affects RM and risks faced in a project. As they describe it, the purpose of Partnering is not reached if not using the Budget Model or if incentives are attached to the projects. All interviewees say that the Budget Model is a prerequisite for Partnering no matter the project, as there are no vested interests created or contractual parts that will benefit differently depending of the project outcome. They further claim that the same goes for incentives. If incentives are set which favour the project outcome differently for different actors, teamwork and collaboration will be negatively affected and hinder JRM. The interviewees believe that JRM can be enabled by having the same economic interests and cooperating closely together in trust and that Partnering is a prerequisite for JRM.

"Incentives are creating conflicts, adds additional meeting time and consumes time to discuss what should change and update the targeted price. It has nothing that helps to make the product better and it creates different economic interests. At each meeting the incentives are discussed." (Programme Manager No. 3).

4.5 Design & Planning phase

Partner Inc., other contractors, consultants and project actors active in the Design & Planning phase, are located at a Joint Project Office at the construction site. Joint Project Offices are commonly used in Partnering projects.

> *"We minimise risk because we are all seated close together on the same project office, one can just open the door and ask questions, in this way we eliminate a lot of risks."(Project Site Manager No.1).*

According to Partner Inc. the benefits of using a Joint Project Office are many:

General benefits

- More efficient project process when gathering all competences in one place.
- Increased cooperation in the project organisation.
- Informal meetings solve many matters and problems.
- Enables faster decision making and easier communication flow, leads to reduced response time.
- Actors get a better overview and grasp of the project, cross-sectional insight.

Design & Planning phase benefits

- Assured document delivery and quality of deliveries between the project actors.
- Cross-discipline design work is easier undertaken
- Simplified communication channels, which makes it easier for the designers to work with the contractors to discuss detailed solutions such as constructability.

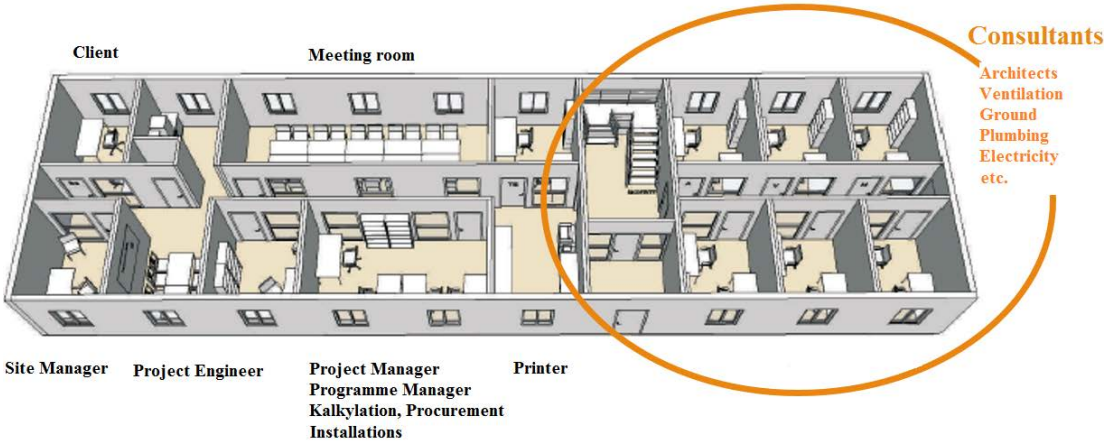

Figure 4.3 Joint Project Office

Visual Planning

Visual Planning is a tool and method of working which is used at the Joint Project Office, in the Design & Planning phase of the Partnering projects. The idea is that all questions and issues that arise in the Design & Planning phase are written on a post-it notes which are placed on the Visual Planning Board. On the post-it notes the person who has the question will sign his name, the current date, to whom the question is addressed and what the question is. When a question is raised for someone, two identical post-it notes are written, one is put up on the board and the other is given to

the person that the question is directed to. In this way, every actor can bring their notes along, even when they are not present at the project office. The system gives everybody the responsibility to call off the information needed for themselves to progress. No one can say "I don't have the information" or blaming issues on somebody else, as the system forces everybody to raise the questions they have directly to the project member with the answer. It is also a way of making sure that the actors get the information they need. The Visual Planning Board is designed as a matrix, where each project actor has a row and a column. The row on which a note is placed is showing who asked the question, the column on which the same note is placed indicates to whom the question is addressed (see Figure 4.4 below).

Figure 4.4 Visual Planning Board

The Design & Planning meetings are held each or every-other week, depending on how many actors are involved and how big and complex the project is. In-between the meetings, project actors are to sit at the joint office in groups, trying to resolve the issues raised on the board. The aim is that there should be no notes on the board. According to the interviewees, the Design & Planning meetings are more efficient with visual planning, and as a result meeting times are shortened.

> *"For large projects [not using Visual Planning], project planning meetings can become incredibly long, resulting in 10-page protocols. In addition, we minimise the risk that issues are forgotten and re-realised at the meetings, as the issued are constantly displayed on the board. (Project Manager No.1)".*

One reason is that all questions and issues do not have to be discussed at the meetings. If a question-note is placed on the board, sometimes the person who got the question can answer it before the meeting. Then the question and answer only needs to be mentioned and not discussed in the whole group, or possibly an answer can be prepared before the meeting. As an answer is given to a question, the post-it note is taken down from the board and the question together with its answer is documented in

the “Projekteringslogg”, an Excel-document stored in the project document database. This log works as a traditional meeting protocol for decisions made, but only includes the questions raised on the board and their answers. The answers given are considered and treated as decisions.

5 Analysis

In this chapter, empirical findings from each of the studied project phases will be analysed and compared to theory. The analysis will be separated into three parts. Firstly, focus will be directed to what elements of RM there currently are in the studied project processes of Partner Inc. The second part will analyse how JRM can be practically introduced to these processes. Lastly, what affect public procurement legislation and remuneration models have on JRM will be investigated.

5.1 Current Elements of RM in the project processes

Generally Partner Inc. does not have an overall plan for how to manage risk or a defined way of working with RM. There are risk mitigating actions and processes in the way Partner Inc. works and execute their projects and the tools they use. All these are risk mitigating to some extent as they are set to increase the chance of project success, but they are not labelled by RM terminology per se. In general, Partner Inc. is mitigating much risk in their projects, but they are not managing risk regarding the definitions from the literature.

The RM tools that are in place are not explicitly explained in terms of how they should be used, for what or when. As a result, the perception of how to use them is varying among the staff, therefore the tools are used differently in the projects. There is generally a lack of understanding for RM among the staff. Interviewees agree that discussions about what RM is and how to undertake it, together with the establishing of a RMP would benefit the projects.

5.1.1 Start Workshop

Partner Inc. has no direct elements of RM in the Start Workshop phase. The workshop it is rather oriented to create conditions for good teamwork and collaboration, how to solve conflicts in the group and to start preparing initial design work. The discussions held are touching upon topics as challenges and difficulties connected to the project.

If Partner Inc. is to implement RM, there is a need to discuss its meaning, purpose and intended benefits. Also a framework needs to presented, in which the company can communicate specifically how they want to undertake RM and the scope of it, as (PMI, 2013) suggested.

5.1.2 Start Budget

In the Start Budget phase the Risk Register is a tool directly allocated for identifying and managing risk connected to the budgeting and calculation work. According to Hillson and Simon (2012) the Risk Register is supposed to be treated as an open and dynamic document, used throughout the entire project, so that new risks constantly can be identified and managed. In Partner Inc., the Risk Register is used mainly for calculations and budgeting work only. Therefore risks identified are not routinely carried into new project phases and only economic risks are considered.

There is also a problem with the design of the Risk Register. The Risk Register was initially developed and designed by the senior management, to address all types of risks across the project phases, in accordance with Hillson and Simon (2012). Currently staff thinks the Risk Register is supposed to be used in the Start Budget phase and therefore only to identify risks in the budgeting and calculation work. The current design of the Risk Register is more suited to address various types of risks and

opportunities, throughout the entire project as a traditional Risk Register. Not only economical risk in the Start Budget phase. Therefore it is considered superfluous, messy, confusing and not fit for its purpose. As a result, many of the list's columns and rows are not used at all. In addition the use of the Risk Register is inconsistent in many projects.

Partner Inc. needs to decide how to use the Risk Register and for what purpose. If it is supposed to only be used in the calculation and budgeting work, it has to be designed accordingly to be fit for its purpose. If so, Partner Inc. must also find a way of carrying the risks further into new project phases and another tool and process for identifying and managing all various types of risks in accordance with how APM (2012), PMI (2013) and Hillson and Simon (2012) described The Risk Management Process in Chapter 2.4.2.

5.1.3 Design & Planning

As in the previously described phases, there are obvious elements of RM in the Design & Planning phase as well. The Visual Planning Board is mitigating risks as it eases communication and makes all actors obliged and accountable to ensure that they receive the information and answers they need.

The Visual Planning system is directed to solve matters and answer question, there is no direct tool for identifying and managing risks. A few projects are using the Risk Register in the Design & Planning phase, bringing it to the design meetings using it to discuss risks. The projects that are not, either thinks that the Risk Register only serves the purpose of allocating costs for the budgeting or that it is just additional unnecessary work to use the Risk Register in the Design & Planning phase. Therefore, risks realised in earlier project phases can be lost in transition, as there is no process or tool that ensures that realised risks are carried between the phases.

5.1.4 Summary and general problems

Although, Partner Inc. does not have a spoken linked system of approaching RM in the organisation, there are risk mitigating activities in the phases of the projects, some are explicitly named in accordance with the RM terminology. There are also forums and methods of working which are risk mitigating and opportunity realising. But as RM is creating a framework in which risks can be identified and managed (Osipova, 2013; Maylor, 2010), there is no RM system, regarding its definition.

The tools used and the processes for RM are vaguely connected and are fragmented between the processes and activities. They are not clearly linked throughout their entire projects, as a result there are no natural ways of transferring and communicating identified risks between the project actors and phases. Also as the interviews showed, some of the tools are used differently or not as frequent in the different projects and that interviewees cannot really answer how and when they are supposed to work with RM.

5.2 Introducing JRM processes

In this second part of the analysis the attention will be directed to how the realised problems can be addressed with implementation of JRM as described in the literature.

The identified problems are summarised below in Table 5.1.

Table 5.1 Identified Problems

Problems to address		
Start Workshop	Start Budget	Plan & Design Phase
Lack of understanding for RM	How and when is the Risk Register supposed to be used?	No direct forum or tools for managing risk
Lack of understanding of how to undertake RM	The identified risks are not transferred further in the projects	Previously identified risks are not considered
	The design of the Risk Register is confusing and seem to serve multiple purposes	

In general, Partner Inc. needs to primarily introduce RM into the organisation by raising an understanding for what it is, what it is supposed to achieve and how to practice it, through discussions and education.

To clarify and explain how to work and what to do, a RMP can be introduced, which can add and connect the current elements of RM and tie them together in an explicit project processes.

5.2.1 Start Workshop

The fundamental prerequisites and foundation for teamwork and cooperation in Partnering projects are being built in the Start Workshop, in which all project members, the client and important stakeholders are present. Therefore, the Start Workshop is a good opportunity to introduce RM into the projects and can be done in the same way as the concept of Partnering is currently introduced to the project members.

Before doing this, Partner Inc. has to introduce a RMP into the governance of projects. The plan's purpose is to define the RM process, its scope, tools and techniques and how to report and communicate risk in the projects. The plan is also to connect all the current elements of RM and tie them together and integrate them in the project processes and phases, in accordance with what PMI (2013) APM (2012) and Hillson and Simon (2012) advocated in chapter 2.4.2. Hillson and Simon (2012) pointed out that it is important to include RM from the start of the projects and explicitly decide how to manage risk during the entire project, and advocated that the RMP should be presented in the Start Workshop. This can address the problem that project members do not know how to undertake RM and the fact that risks are managed differently in the projects. In connection to the presentation and discussions

about the RMP, a dialogue about why RM is done, why it is important and what the intended benefits are etc., can also be added to the Start Workshop. To raise an understanding and acceptance for RM. Topics as “what is risk”, “why manage risk” and “how can risks be managed” can be relevant to discuss.

When RMP has been presented and discussions about RM have been held, the Joint Risk Register can be introduced. In accordance with Partner Inc.’s Start Workshop-routines when the project members are divided into small “Focus Groups” discussing and looking at different matters in e.g. design, planning, collaboration of the project. The Focus Groups can be allocated to look at risks connected to different activities and project phases.

The groups can be divided randomly or grouped considering profession. Preferably, the groups are put together in ways that actors which will work closely together in the project (as the contractor and ground contractor, the architects and the structural engineers) are grouped, looking at special solutions to e.g. design or installation risks in their own line of work. Representatives from the end user and client can identify risks and opportunities related to their needs and intended outcome of the project. To simultaneously address the problem that many have difficulties with identifying opportunities and positive risks and to introduce the use of the Joint Risk Register, the groups can be assigned to e.g. identify at least ten risks and ten opportunities. By doing this the participants can train their abilities and thinking to identify both threats and opportunities in the project, which is important according to Hillson and Simon (2012) and Flanagan, Jewell and Johansson (2007), Chapter 2.4.1.

When the Focus Group has identified a number of opportunities and threats in their groups’ Risk Register, one from each group forms a new groups, “Reference Groups”. In the Reference Groups all participants present the identified risks from their Focus Group, explain what types of risks or in which parts of the projects they have identified risks. Each person in the Reference Groups then gets feedback from the others. Maybe some risks have not been identified, perhaps someone in the Reference Groups has a great solution for avoiding or taking advantage of the risk, or experience of it. These activities of identifying risks and opportunities can give direct input to the latter project phases. After this session the Partnering Facilitator gather the Risk Registers created in each group and compile them into one Joint Project Risk Register.

It is important to have in mind that the client and end user may already have had a Risk Analyse or Risk Assessment session and identified risks, before the contractors and consultant were procured. If so, the output of this session and the identified risks can be very important to include in the project’s Joint Risk Register. In the interviews it was apparent that in many projects risks were identified, documented in the Risk Register and then left on the shelf, without further assessment or action. Hillson and Simon (2012) said that this is usually what happens in projects, see Chapter 2.4.2. But only identifying the risks is not enough, the risks will need assessment, prioritising and get responses allocated.

By now, all project members, the client, end users, representatives and other stakeholders have contributed with identifying risks, the Joint Risk Register has gotten much input. Anyhow, in the projects, it is the project team together with the client that are mainly running the project and therefore managing risks. Preferably the project team and the client can compile the Joint Risk Register and introduce a smaller workshop to further asses the risks. The smaller workshop, can offer the

project members to further practice the use of the Joint Risk Register, understand its meaning and how it should be used, in accordance with the main RMP, with guidance from the Partnering Facilitator.

Instead of doing complex calculations on the overall impact and probability, Maylor's (2010) Probability Impact Matrix can be used. The matrix simplifies the assessment and seems to be a good tool for a workshop, quick and easy to understand and graphically easy to understand. This can educate the project group to think about risk probabilities and impacts as well as effects of risks on the project. It also becomes easier to prioritise and identify what risks are more important to manage, as a result of the probability and impact assessment. Accordingly, when considering probability and impact one has to start thinking in terms of risk consequences, which is also important. After this, the workshop group can plan actions for how to avoid, transfer, reduce or accept identified risks and exploit, share, enhance or accept identified opportunities, see Table 2.1 in Chapter 2.4.2. In this way risks, threats and opportunities are raised early in the project. Partner Inc. also gets the opportunity to forward and underline how important they think the Joint Risk Register is, and make every actor in the project aware of this. In addition the project members get trained to use the Joint Risk Register as it is intended to be used.

5.2.2 Start Budget

According to Hillson and Simon (2012) a company's Risk Register should be adapted to manage risks throughout the entire project. In Partnering projects using the Budget Model, the Risk Register obviously has a very important function, extracting risk money and contingencies from the project budget. Therefore it can be designed to both serve this purpose and the purpose for managing various project risks throughout the project. Because, to understand the possible impact of a risk the cost-affect still has to be considered. Therefore the Risk Register can be used between all the studied project processes as the Hillson and Simon (2012) suggested, and used jointly between the project actors as a Joint Risk Register. This creates a possibility to make the Joint Risk Register serve dual purposes and therefore make it simpler and probably increase the usage of it.

Exactly how the Joint Risk Register can be re-designed is not examined in this research, but the need of a new design is apparent from the interviews. When the Joint Risk Register is re-designed, a way to connect the RM activities and risks identified between the phases of the project needs to be found. As suggested, when the Joint Risk Register is introduced in the Start Workshop, early identified risks and their planned actions are easy to bring into the Start Budget phase where the Risk Register is already being used. This gives early risk input to the project team from both internal and external stakeholders.

5.2.3 Design & Planning

Visual Planning

The easiest way of implementing JRM into the Design & Planning phase, is integrating it with the already existing ways of working with Visual Planning. As, joint work between the actors is concentrated to the Visual Planning Board, it naturally has a central point in meetings, planning and work. Therefore adding management of risks to the Visual Planning Board can make it easily and naturally

adopted. One way of doing this is to extend the bottom of the board with two extra rows for risk, one for threats and one for opportunities.

As the Visual Planning Board is the tool used in the Design & Planning meetings identified risks can, as the questions raised are handled, also be identified and placed on the board on one of the rows for risk. The green-dashed rectangle is for identified opportunities and the red-dashed rectangle for identified risks, see Figure 5.1 below.

Since every column on the boards is allocated to one of the project actors, the identified risks can be allocated to a person. If a threat or opportunity is identified a post-it note (coloured green for opportunities and red for threats) is placed on one of the rows for risk that cross the column of the project actor to whom the identified risk is addressed. Accordingly the risks can be raised, discussed and managed at the Design & Planning meetings, in exactly the same way that questions are raised (see Chapter 4.5 Design & Planning phase). In this way no additional documents are introduced, the team will work as usual but risks will also be raised and managed. Risks will be treated in the same way as questions are written on the post-it notes and when answered documented in the "Projekteringslogg". Accordingly, the risks identified and managed can be stored in the Joint Risk Register. This is an easy way to introduce JRM into the methods and tools that are already used in the phase, which will not revolutionise the established ways of working.

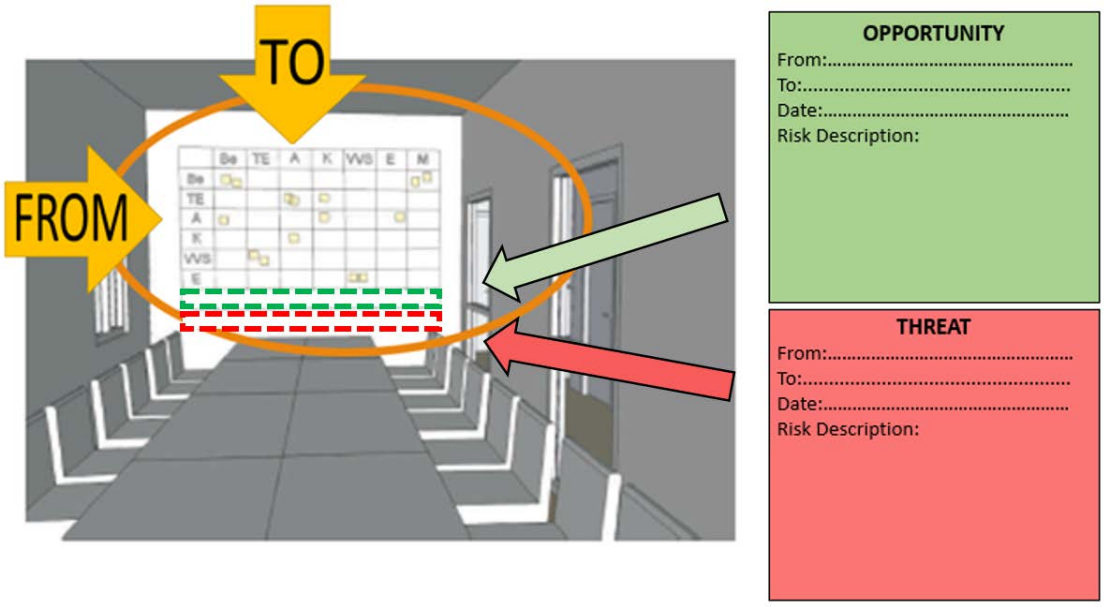

Figure 5.1 Risk Management in Visual Planning

5.3 Affects form remuneration models and LOU

The interviewees claim that the choice of the remuneration model and the incentives has a great impact on creating the conditions needed for JRM. In projects where the Budget Model is not used or when incentives are connected to the budget and end result, two main problems are identified from the interviews that are affecting RM;

1. The project actors add contingencies and "risk money" in their budgets

2. JRM is hindered as different terms and conditions are created between the contractual parts

The project actors add contingencies and "risk money" in their budgets

According to the interviewees, if the Budget Model for remuneration is not used or if there are incentives connected to the end result, contractors and sub-contractors have to add contingencies for the risks they take into the project budget. This is the same problem that is created in traditional construction projects, as the contractors are taking big economical risks of exceeding the budget. The clients are adding the incentives to allocate risk to the contractors, accordingly they are making the project more expensive for themselves. Resulting in that great benefits of Partnering are cancelled out.

This is against the fundamentals of Partnering, laid down work is meant to be calculated from actual costs, because the fixed part of the budget is where the contractors and consultants are to be make their profit. Incentives create situations where project actors look at their own part of the project. Subsequently, the actors try to sub-optimise for themselves, as they have interests of their own. The intentions from this behaviour are said not only to earn extra money, but also to secure themselves from cost increases of the total project. If the budget is generously calculated (if contingencies and risk money is added) it is less likely that it will be exceeded, as overrunning the budget will make the contractors pay fines. Also adding incentives to the Budget Model are not only making the client pay money for risks that do not even occur, the profit part in the budget (calculated as a percentage of the budget) will also increase, therefore the client will pay for risks repeatedly without getting additional value (see Figure 4.2 Budget Model & Risk Register). Originally the clients use incentives to make sure that the costs are held low but the effect is the opposite, according to the interviewees. The project gets more costly for the client and contractors take more risks.

JRM is hindered as different terms and conditions are created between the contractual parts

The second problem identified created from not using the Budget Model and from attaching incentives to the contract, is that RM is not able to be undertaken jointly, which it can be in Partnering projects, according to Osipova (2008; 2013). The actors are rather playing the risks against each other. Identified risks are not talked about, the different actors tend to hide the risks they take or see from each other, as they can earn money from the different outcomes and what the risks are. Incentives and remuneration models which are not based on shared interests, create different economic outcomes for the actors, therefore the actors can have different interests of how a project is to play out. Different economic interests therefore damage teamwork, trust, and openness as the actors will benefit for sub-optimising the outcome in their favour.

It seems important that incentives are not introduced in the contract, they seem to inhibit JRM and collaboration in general. Important points of using Partnering are lost to create different interests when the result of the project provides different benefits to different parties, therefore the benefits of using Partnering are not achieved, and the prerequisites for undertaking mutual cross-section RM are lost.

Affects from LOU on RM

As the design of the contract and remuneration model chosen is decided by the customer in the project inquiry and regulated by LOU. The contractor is unable to affect, change or negotiate the contractual conditions after the inquiries are sent and made public. Although, this is possible in the non-public sector in which LOU is not regulating procurements and contracts.

In an LOU-regulated procurement, which is written in the original request, is what has to be applied into the project. There are no possibilities to deviate from the contracted remuneration models or added incentives. The interviewees say the understanding and importance of using Budget Model has increased among their clients lately. The interviewees also state that some authorities have understood that the use of incentives in Partnering projects actually seem to affect the projects negatively and create risks in cooperation and collaboration between the actors. Therefore, the creation of a project environment in which JRM is to be as beneficial as possible is not only in the hands of the project members. The client must understand the consequences of adding incentives or uneven remuneration models as it can affect the creating and establishment of JRM.

6 Discussion

The discussion chapter will look at how the outcome from the analysis can be used to answer the main research questions and aims at reflecting and answering the main research questions of the study.

6.1 JRM implementation in pre-construction phases of construction Partnering projects

This section will discuss the first research question of how JRM can be implemented and adapted to Partnering projects in pre-construction phases of construction projects.

Partnering seems to be a way to create the conditions that form the basis for JRM, as several of the factors that define Partnering, also appear to be crucial conditions for the creation of JRM. Accordingly, JRM seem to require cooperative routes of procurement, as for Partnering to be functional. However, the introduction of Partnering in a project does not ensure that the sufficient conditions for JRM are achieved, in the same way that Partnering does not guarantee that collaboration, openness or trust is accomplished in projects. Certain types of Partnering contracts, remuneration models and the use of incentives rather seem to hinder JRM. It seems doubtful that a successful implementation of JRM is even feasible in traditional ways of undertaking construction projects (as Design-bid-build or Design-build) in which the actors do not have common interests in the project, but still are strongly dependant on each other.

Generally the standards and models for RM, available in the management world, seem to be applicable in Partnering project. In the Partnering projects' studied there were already a few signs of JRM resident that involved the project actors and the client, specifically in the budgeting and calculation work.

When it comes to how JRM can be introduced, the obstacles seem to concern matters of creating the right conditions in the project environment. These conditions seem to be dependent on external factors (direct client decisions in the procurement phase), but also factors in the internal context of projects. The factors, external to the contractors that clearly prove to affect the introduction of JRM in this study are;

- Choice of remuneration model
- How the contracts between the parties are written
- LOU – (Public Procurement Legislation)
- How risk is allocated between the contractual parts.

Also internal soft factors, between the project actors and the client, have been proved to be important, as;

- Openness
- Honesty
- Trust

To be successful in implementing JRM, there needs to be a project environment created from which all project actors are able to conduct open dialogues, communicating risks, opportunities, and cooperating jointly to towards what is best for the project.

6.2 Why are companies introducing RM in their projects?

Power (2007), Bromiley, et al., (2015) and Kloman (1992), criticise the introduction of RM processes and systems and argue that they were only re-organising already existing functions from different departments into rigid processes to manage risk. There might be some truth in this, anyhow that does not mean that there are no gains. In traditional organisations or organisations where projects are not core to the operations, e.g. manufacturing companies, internal projects can have big budgets, be very important etc. Although these organisations often have specialised and supportive departments as Research & Development, Human Resources, Sales, Business Development, Manufacturing etc., all of which are probably working with RM embedded in their operations. Therefore extracting these processes from their departments into specialised risk entities might do nothing, which is one thing Power (2007), (Bromiley, et al., (2015) and Kloman (1992) criticise. Accordingly, they (ibid) claim that the specialised departments also have developed these tools, methods and processes tailored to their operations, therefore extracting these can be harmful for the organisation.

In companies where projects are core operations (companies which make their revenues from projects entirely) as in this research a construction company, these suggested different organisational departments often do not exist. Of course this depends on how the company is organised, the size of it etc., but in the construction SME studied, there is only a supportive administrative office for administration and economical management, similar to a Project Management Office.

In construction projects, risks are handled internally by the project members. There are often no departments or entities, specialised and divided into different organisational functions that can handle different types of risk, as in non-project-driven organisations. The available knowledge is basically the one of the project members. On a programme and portfolio level this probably does not apply, accordingly the part of the organisation that is managing programmes or portfolios is no temporary constellations either. Maybe the need for RM processes is greater in project-driven organisations. And as the actors in Partnering projects are more dependent on each other's performance and input to succeed, JRM probably yields more benefits and is more important in these projects. Accordingly, Flanagan & Jewell (2007) state that especially in the construction industry, each project is very important for contractors as they invest great amounts of money into few affairs that yields few opportunities of income.

For Partner Inc. it seems important to defragment and assemble the currently existing elements of RM to the core of the projects, accordingly introducing a more explicit and most importantly joint RM. This seems important not only for displaying good governance and reliability to improve reputation or get higher scores in client evaluation, but also for creating forums in which all project actors and the client can spread and communicate threats and opportunities with each other. Even if Partnering is a collaborative way of running projects and there is a Joint Project Office in which the project actors are located together, all work is not undertaken jointly and all project actors are not present in all activities of a project. Therefore creating a forum in which all project actors are present and can undertake JRM is strengthening Partner Inc.'s projects.

Reputation

A standardisation or certification is supposed to be an evidence and proof of good governance, reliability and responsibility. What standardisation organisations and certification claim to be “best-practice” seem to directly affect how companies are working and running their projects. This is evident in this study, as some clients more or less require that companies they hire are certified by one of the major standardisation organisations, described in Chapter 4.1. The reasoning Power (2007) and Chambers (1999) have, seems to be correct in this case. It is obviously very important for organisations to demonstrate good governance and to work in accordance with Best-Practices, as reputation seem to have importance for businesses and how one is viewed in the eyes of the public. In this case of Partner Inc. though, public reputation was not the main reason for getting certificated. It was the fact that some customers demanded that they were certified. This is probably also an indirect effect of the importance of reputation, and a sign of how influential the standards organisations are.

Although, this does not mean that their models and processes are no good. The RM practice, proposed by PMI (2013), APM (2012) and Hillson and Simon (2012), are based only on qualitative methods of Risk Assessment, as experience and subjective judgments, which it no different from how decisions are traditionally made in projects. Although, suggested RM processes are more systematically ensuring that risks are regarded and managed. In Partner Inc. there is an expressed need from senior management to include RM, as they also believe that this can benefit the projects. This belief can of course also be based in the blind faith that the public seems to have for standardisation organisations.

Powers (2007) argues that introducing rigid processes can be dangerous to some extent as it can replace thinking. Standardising and relying on processes too much can probably be risky. Therefore, it is important that organisations do not give up well-established ways of working, for some new "management trend" as some of them might be just trends, as Simon, (2002) argues. Instead, they must take a critical look at what they are doing and what the standards require. The standards and models do most probably contain good elements and ideas as well. Accordingly it can be beneficial for companies to be able to display their processes and how they work, both towards external clients and internally. When clarifying and explaining processes for others, you are at the same time giving the organisation an opportunity to reflect on what and why things are done in some ways. Internally it creates an understanding and unity of how projects and operations are undertaken, that also eases governance for the executive management.

Moreover, as the critics implied there seems to be a “Management-Dilemma” in which various theories, models and processes, in all branches of management, are moved around as new trends for concepts and functions arise, e.g. Risk, Quality, Value, Benefit etc. And maybe, some of these are only renaming existing knowledge in new terms and repackaging them to call them something new that will “ensure” conceptual quality, safety, value, benefit etc. All processes and tools that are introduced must be helpful, add and create value. Blindly adapting to trends and uncritically embracing models and standards is short-sighted. It is not good if the standardisation and certification organisation forces companies to do this.

7 Conclusion

There is a deficient understanding of how RM can be introduced into Partnering projects and how it can be undertaken jointly between all actors in a construction project, as Osipova (2013) says (Chapter 1.3). Previously researchers have targeted RM in traditional projects and organisations, but as collaborative types of procurement have been increasingly popular recently, more research has to be directed at JRM. In particular, how to communicate risks and consequences between project actors and the external stakeholders of a project, as the client, in collaborative procurements as Partnering. This is necessary in Partnering projects due to the increased mandate of the client. The client needs to get sufficient information to be able to understand the potential risks and consequences from actions and choices in order to balance risk against profit and value contra cost.

This investigation has studied a Swedish construction contractor that works solely with Partnering projects. Project processes have been investigated and reviewed by elements of RM. The purpose was to identify RM processes and compare them with existing research, industry standards and models in RM. To establish and provide recommendations for how a SME construction company can implement JRM in their project management processes and how to entangle theses with existing standards and models in a simple and efficient way.

It has been shown that in order to succeed in creating JRM a number of project-internal conditions have to be met. These conditions seem to be fulfilled when pursuing Partnering in an as open and honest form as possible, on equal terms and trust. There are also external conditions which are out of reach and therefore beyond influence for the project manager and project team. These factors are based on how clients design contracts and project conditions before the project inquiry is published. The design of the contract can prevent as well as hinder JRM.

Theoretically this research fills a gap of knowledge in how the JRM can interact and cooperate with Partnering projects. The practical contribution is an exemplification of how a SME contractor working with Partnering projects can implement JRM in early pre-construction phases of construction projects.

Recommendations of improvements

The study has brought a number of suggestions of how to implement and enable JRM in Partnering projects, with the studied Partner Inc. as an example.

Risk Management Plan

- Establishment of a RMP, that presents how to work with RM in the project processes.

Start Workshop

- Launch RM in the projects at the initial Start Workshop by introducing RM discussions, to raise an understanding for RM. Topics as “what is a risk”, “why manage risk” and “how can risk be managed” are relevant to discuss.
- Introduce the RMP to the project group and to the stakeholders present at the workshop.

- Introduce the project Joint Risk Register, by setting up an exercise in which the attendants get to understand the intentions with the list by practising the use of it.

Start Budget

- Bring the Joint Risk Register with identified risks from the Start Workshop.
- Introduce the Joint Risk Register in the Start Budget phase using it to identify risks and extracting their costs from the project budget. Introduce the Joint Risk Register on meeting agendas to create a forum and an opportunity to use the list.

Design & Planning

- Bring the Joint Risk Register with its identified risks from previous phases. Risks and opportunities are particularly important to consider in the designing and planning.
- Introduce JRM in Visual Planning, by extending the Visual Planning Board to manage risk.

Figure 7.1 Project Risk Management

7.1 Research Limitations & Future Research

Limitations

This study is limited to investigating and studying the project processes of one company. With this in mind, it must be recognised that companies have different ways of working and running project. Therefore in future research, it would be interesting to do the same study at another contractor working with collaborative routes of procurements, or a large enterprise in the same segment of the construction industry.

Another limitation in the research is confined in looking entirely from a contractor's point of view. The interviewees are employed by the same company, for this reason it would be appealing to include project actors in other fields of profession and the client. As there might be consensual opinions and believes in a company. Company culture, executives, leadership etc., are factors that might affect the perception and opinions among staff.

The study is focusing on pre-construction phases of construction Partnering projects. As this does not include the entire project, it would be interesting to further study how JRM can be implemented in later stages of construction projects and how JRM can be carried over from the pre-construction into the construction phases of a Partnering project.

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