“FLEXTENDER: A METHOD ENGINEERING APPROACH FOR CREATING A FLEXIBLE BID PREPARATION METHOD”

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1 Introduction

Organizations are constantly seeking for opportunities that help expand their business volume. Large organizations heavily rely tender projects where SMB organizations often sell their goods and services via regular sales channel (Flynn, McKevitt, & Davis, 2013). Tender processes are generally perceived as complex and time consuming. SMB organizations often do not have to resources to invest in such time consuming and uncertain projects, which is a shame because the tender process itself is quite simple. The customer state their product requirements, several suppliers submit their proposals and the customer selects the most suitable to do business (Lauesen & Vium, 2005). Digitalization of tender processes becomes more popular nowadays due to new European legislation. Governmental tender project become more accessible which is definitely an opportunity for SMB organizations.

Unless the number of e- tender processes increase, participation in tenders is still time-consuming. The scoring percentage of actual awarded tenders will be never hundred percent. Some industries depend highly on public tenders, especially companies in these industries can save much time by preparing their bids in a highly efficient manner.

Original tender processes are surrounded by much paperwork and in the case of a governmental tenders, legislation is also involved (McKevitt & Davis, 2013). From a buyer perspective, there are already several tools available that are supported by IT. These tools are supporting tender processes from the preparation phase until the awarding phase and sometimes also include contract management functionalities. Popular examples of these tools are Kahootz Tender Management Software, TenderNed and Negometrix. However, these tools are extremely buyer focused which results in a lack of supplier support.

An example from a tender process at a construction company: Construction projects are involved in complex procurement processes. During the bid process, the markup level is determined. Not only the profit is of importance, construction procurement knowledge and market intelligence is even more critical for bid preparation. Especially in the construction industry many different parties are involved in the bidding process including architects or engineering firms, general and specialized contractors but also material suppliers and of course the client itself (Halaris, 2001). General contractors oversee most construction projects. Most of their work, especially highly specialized work is subcontracted to subcontractors. To subcontract work, the general contractors have to follow the same procurement path as their client did: Prepare tender documents, evaluate bids from potential subcontractors and finally award. It can be seen as a sub-tender, sub-tenders contribute to the overarching tender from the general contractor.

1.1 Problem statement and objective

"Bid preparation processes are complex, extremely time consuming and therefore expensive for organizations. For suppliers it is impossible to participate in every available tender what makes the bid or no-bid decision crucial. Therefore, it is required to analyze the factors that affect a bid or no-bid decision. Besides, a highly flexible bid preparation approach is crucial in order to allocate resources efficiently. Finally, effective usage of IT tooling is indispensable in bid preparation processes in order to process large number of documents and to collaborate with colleagues."

The aim of this project is to come up with (1) a generic, but highly flexible, bid preparation reference method. In addition to this theoretical method we will come up with (2) practical opportunities to support bid preparation by making use of IT. Additionally (3), in order to structure bid or no-bid discussions a conceptual MCDA artifact is developed.

1.2 Scientific and societal relevance

This chapter elaborates on the scientific and societal relevance of this research.

1.2.1 Scientific relevance

This research is of scientific relevance for two reasons. First, a bid preparation reference method is developed. This is done by performing qualitative research. The reference method can serve as a foundation for further, more extensive, research on bid preparation.

Second, the research results, especially the qualitative research results, can be used to compare the industry point of view on bid preparation with the perspective of academia.

1.2.2 Societal relevance

Besides the scientific relevance, there is also societal relevance. We examined current bid preparation practices by interviewing a wide variety of companies. These findings in combination with literature research results are analyzed and a bid preparation reference method is developed. Organizations are now able to compare and probably improve their current bid preparation process based on our reference method.

Furthermore, we came up with practical suggestions towards bid preparation IT support. Usage of the right IT tool support set will be beneficial to the bid preparation process as a whole. Additionally, software companies offering e-tender SAAS solutions can benefit from these results by implementing them in their software.

1.3 Outline of this research project

The remainder of this research is structured as depicted in Figure 1.

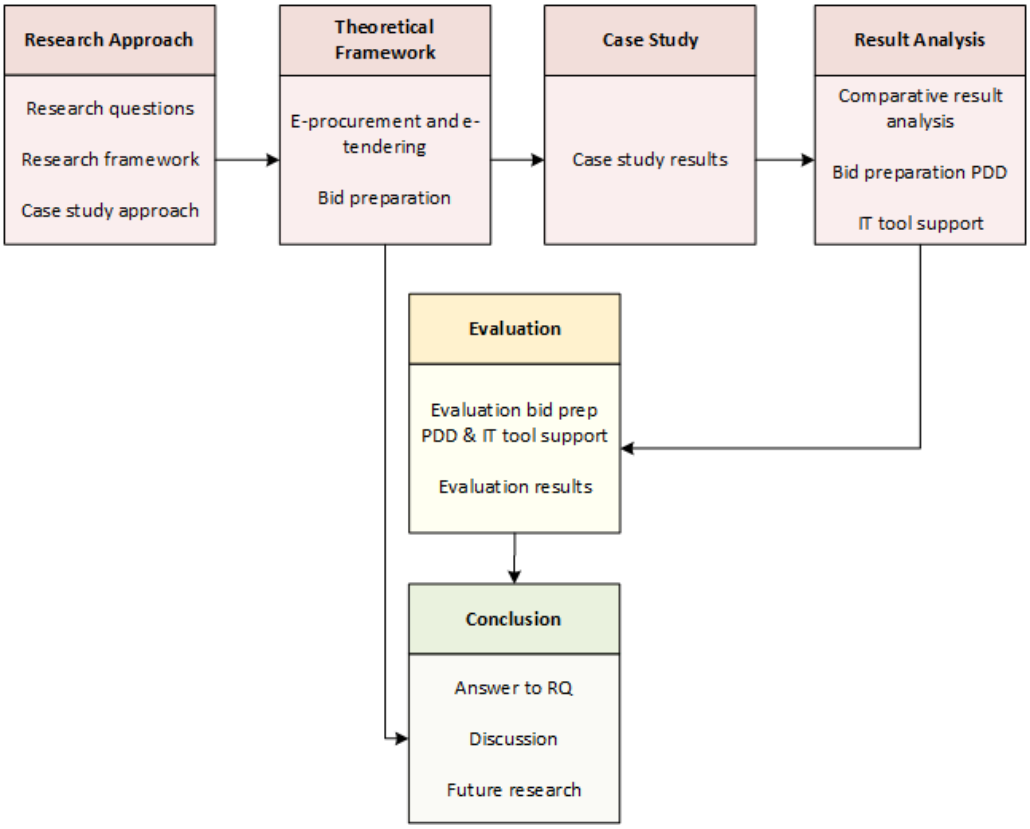

Figure 1: Outline of this research

Chapter 2, Research Approach poses the research questions and elaborates on the Research framework used. It also foresees in an extensive explanation from the literature review approach and it discusses the case study design that is used. It also elaborates on the data collection and data analysis strategies and it introduces the participating organizations.

Chapter 3 contributes to the theoretical framework by means of a literature review regarding E-procurement and E-tendering. It elaborates on tender processes in general, tender processes in organizations and about different e-tender environments. Finally, two approaches with intelligent agents are discussed. Chapter 4 discusses the actual bid preparation processes itself. It primarily focusses on the bid or no-bid decision. What factors are of influence? Additionally, bid or no-bid strategies are discussed including an experimental learning strategy for bidding purposes. Finally, four bid or no-bid decision models are explained.

Chapter 5 provides insights in the six individual performed case studies where Chapter 6 kicks off with an extensive comparative result analysis. Based on the comparative result analysis a conceptual bid preparation reference method is developed by making use of Method Engineering. After introducing our bid preparation reference method we come up with an IT tool support set in order to facilitate bid preparation processes it IT. Last but not least, a conceptual bid or no-bid MCDA is introduced.

Chapter 7 foresees in an extensive evaluation. Three structured interviews are executed in order to receive useful feedback. A final discussion is written in Chapter 8 followed by the conclusion in Chapter 9.

Finally, this thesis document is rich in figures. For the sake of clarity we tagged, by means of postfixes, each individual figure with an [E] or with an [BP]. The [E] identifies External images and the [BP] identifies the images who contribute to our bid preparation reference method.

2 Research Approach

In this section, the research approach is discussed. First, the research questions are posited. The research questions are derived from the problem statement and project objective. Furthermore, the research model used for this thesis project is presented. This model is a simplified illustration from the several research activities that have been taken. A literature review is performed to gain theoretical insight in topics concerning the research questions. The literature review method used is described extensively. To gain practical insights in bid preparation processes a case study is performed and the setup of this case study is explained briefly.

2.1 Research questions

To structure this research several formal research questions are posited. To be more precise, an overarching research question is divided into four sub questions. After the presentation of the sub questions the rationale behind each sub question is discussed.

The main research question (**RQ**) is stated as follows: "*How to facilitate suppliers in bid preparation processes by making use of IT?*"

To answer the main research question several sub questions are defined. These sub questions are listed below.

SQ1: "*What can we learn from academic research with regard to bid preparation in (e-)tender processes?*"

Sub question 1 is answered by means of an extensive literature review. A lot is written about tender processes from a buyer perspective, less is written about our topic of interest, tender processes from a supplier perspective. Two specific questions provide guidance to our literature review: *What bid preparation methods or techniques do currently exist?* And: *How can IT be supportive in bid preparation processes?*

SQ2: *"How are bid preparation processes implemented in practice?"*

In order to answer sub question 2, six semi-structured interviews have been held. Every individual interview took around 120 minutes, interviews are recorded and are transcribed for further analysis. In order to validate the interview results, three additional interviews have been held.

SQ3: "*What similarities can be discerned in different bid preparation processes and what does a reference method look like?*"

Outcomes from SQ1, our literature review, and outcomes from SQ2, our extensive case study, contribute to SQ3. By answering SQ3, we come up with a bid preparation reference method. Our reference method is modelled in the Method Engineering approach called PDD. The different development stages that our method have made are clearly clarified.

SQ4: "*How to facilitate bid preparation with IT?*"

The outcomes of sub question four provides insights regarding IT support in bid preparation processes. We developed an Application Overlay that clarifies what tool support is recommended during certain activities. In addition, we come up with a Multi Criteria Decision Analysis artifact that provide bid teams guidance during their bid or no-bid meetings. Finally, our conceptual, but extremely useful, artifacts create future research possibilities. These possibilities are discussed in chapter 8.

The primary research method used in this project is case study research. Case study research is applied to answer sub question two and three. Before the actual interviews took place, a literature review is performed to develop domain knowledge.

Case study results are analyzed and are used to answer sub question three. The next step is modeling a highly flexible bid preparation method, this is done by developing a reference method (Brinkkemper, 1996).

The second stage of this thesis project includes an essential IT component. To answer sub question four, IT support functionalities for the modeled bid preparation process needs to be identified. This is done by analyzing existing literature and by interpreting the case study results.

2.2 Research framework

In this section, two versions of the research framework are depicted. Both models illustrate the methodological approach that was chosen in order to answer the main and sub research questions. The first version is a simplified version of the research framework and it focusses on the different project phases. The second version elaborates mainly on the planning and deliverables produced by the project phases. Both models contribute to the intersubjective comprehensibility of this project.

The simplified version of the research framework aims to provide a holistic view of the project. The research framework is developed in accordance with the guidelines from the research model method designed by Verschuren and Doorewaard (Verschuren & Doorewaard, 2010). The research framework is depicted below in Figure 2.

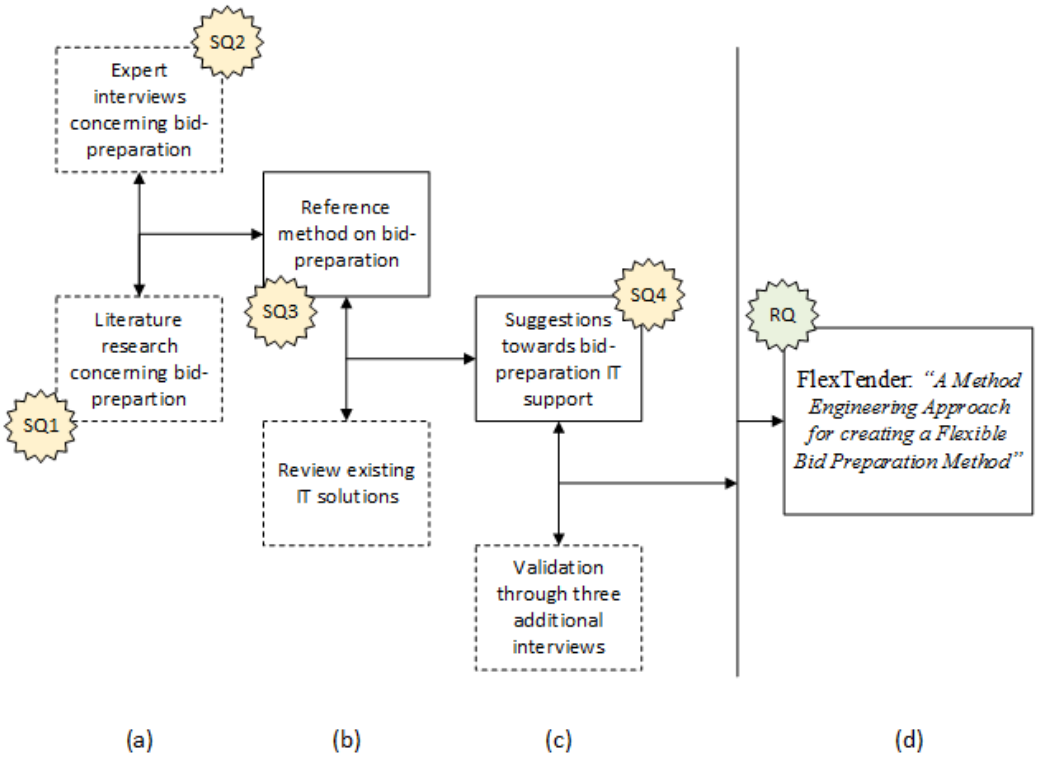

Figure 2: Research framework [BP]

This research framework is a schematic representation of the research objective and it should be read as follows: The double-headed vertical arrow stands for the 'confrontation' and the horizontal single-headed arrow for 'from this will be concluded or deduced that'. The research framework provides the different steps that need to be taken in order to achieve the different research objectives. One could state that this research framework represent the internal logic of the project. It shows how the different phases are interconnected (Verschuren & Doorewaard, 2010).

In the original research model method by Verschuren and Doorewaard there is just one rectangle type. For the sake of clarity, we introduce a dotted rectangle. The difference between both is that the dotted rectangle serves as input for the research object. The solid rectangle represents the research object itself and can serve as input for upcoming research objects.

This research project is divided into four phases, called a, b, c and d, with a sequential order. Six expert interviews with bid managers are kept, results are analyzed by means of the grounded theory approach. Together with the literature results, an initial version of the Bid Preparation Reference Method is constructed.

The initial version of the Bid Preparation Reference Method together with an in depth review of already existing IT tool support will result in an application overlay that provide guidance of how to facilitate the bid preparation process in an optimal way with IT tooling. The product from the confrontation in phase b results will be the answer for research sub question four.

Penultimate, another six semi-structured interviews will be kept in order to validate the research results. Finally, the products, or artifacts, from the phases a, b and c result in an approach towards flexible supplier support in e-tender processes, which answers the primarily research question.

The second version of the research framework is depicted in a PDD and focusses mainly on the planning and deliverables produced by the project phases, see Figure 3. PDD is a meta-modelling technique that is based on UML diagrams. In essence, a PDD consist of two sides. The left-hand side is based on a UML activity diagram, it depicts the meta-processes including its activities. The right-hand side of the PDD is based on a UML class diagram. It depicts the different deliverables, which are called concepts, in relation to its activities. The connection between activities and concepts are specified by dotted arrows (van de Weerd & Brinkkemper, 2008)

The first rounded rectangle in Figure 3 is titled Prepare project. The main activities here are writing the short- and long research proposals. The long research proposal will result in a Research approach that finally contributes to the Master thesis document.

After project preparation, a structured literature review follows. As shown in Figure 2, the literature review contributes to almost every phase in this research. In addition, the theoretical framework, chapter 3, is highly influenced by the literature review results.

The third activity is about the actual development of the bid-preparation reference method. Data for this third activity is derived from various interviews and from the literature review results.

When the theoretical bid-preparation reference method is developed, the process of identifying IT features for our IT tool support set, in order to support and facilitate bid-preparation in an efficient manner, can start. Activity 5 is responsible for validation purposes.

Developed artifacts and conclusions drawn have been validated by another three semi-structured interviews. Suggestions for improvement have been identified and are discussed in chapter 8.

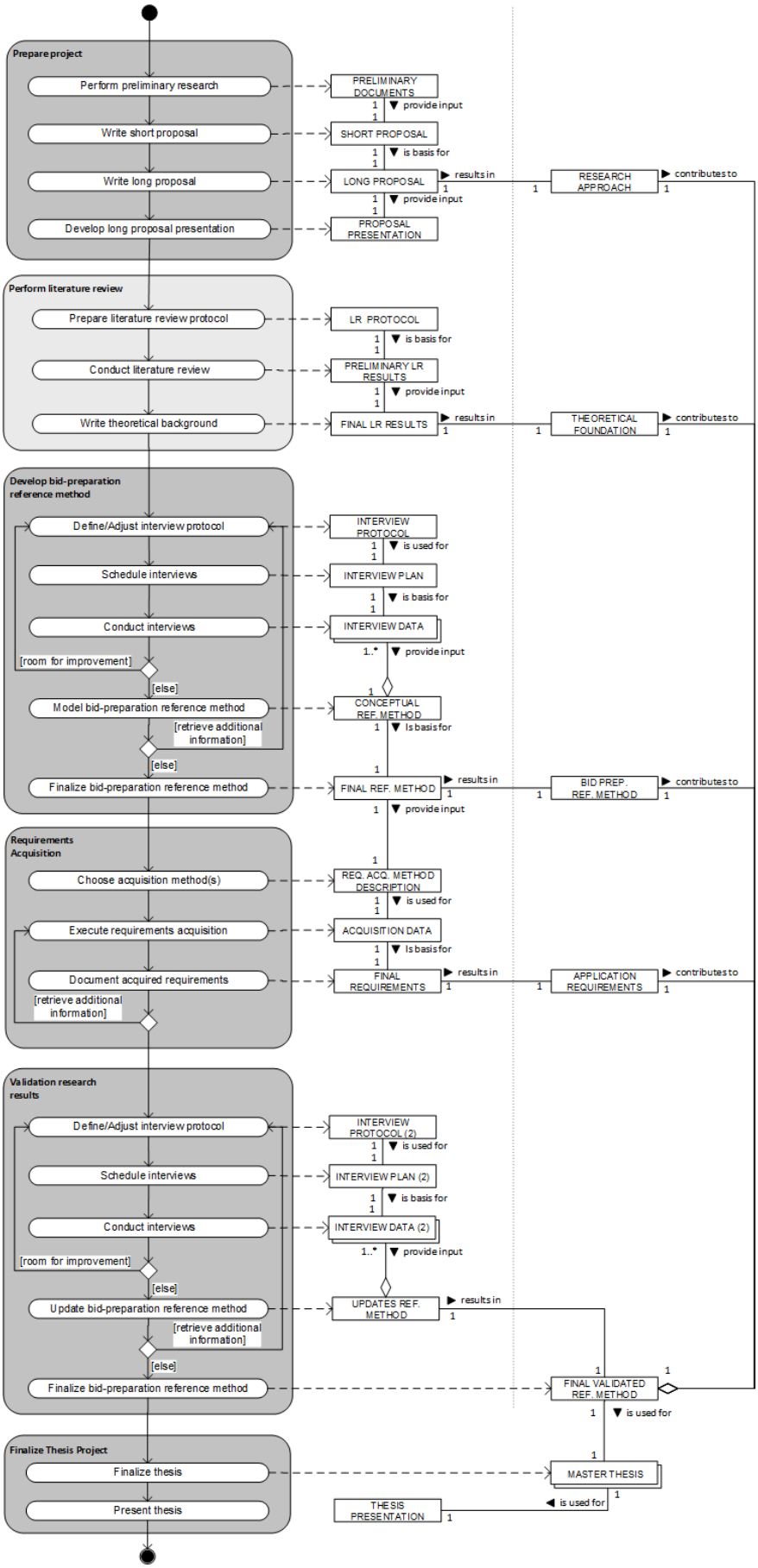

Figure 3: PDD Research Framework [BP]

2.3 Literature review

In order to identify, interpret and evaluate available research concerning the 'bid preparation' process we performed a literature review. As depicted in our research framework, besides a literature review, case study research is an essential means of answering the sub research questions.

Before conducting the literature review, a review protocol is established. The review protocol specifies the research questions being addressed and the methods that will be used to perform the literature review. It also defines the search strategy to ensure detection of as much as possible relevant literature. Another motivation for a proper search strategy is to allow readers assess the rigor, completeness and the repeatability of the process.

The literature review is performed in two stages. First, a systematic literature review is performed that is based on the review process by Kitchenham and Charters (2007). Then, the snowballing approach is performed described by Jalali & Wohlin (2012). The snowballing approach is performed to minimize the chance of missing relevant papers (Webster & Watson, 2002).

An activity from the literature review-planning phase is to formulate research question that guide the literature review. The research questions posited below are derived from our research framework. Literature results retrieved from question one (LR-SQ1) contribute to SQ1, results from question two (LR-SQ2) contribute to SQ4.

1. What bid preparation methods or techniques do currently exist?
2. How can IT be supportive in bid preparation processes?

After positing the research questions for the literature review, literature sources were determined. We choose to make use of the meta-search engine Google Scholar. Google Scholar is able to query multiple relevant journals at once and it combines the results. Another advantage of Google Scholar is that the search results are automatically sorted based on their relevance (Howe & Dreilinger, 1997). This allows us to use the first 20 result pages instead of scanning through each individual result page, which is impossible due to time constraints. By making use of Google Scholar we use the proxy provided by Utrecht University[1]. This proxy service increases the chance of retrieving the full version of articles found. It needs to be said that digital library search are almost impossible to replicate (Kitchenham & Charters, 2007).

In the next step specific search terms are were established. Since the literature review contributes to almost every research phase, we specified specific search terms for every area of interest. Per research question, several search term groups are defined. Then we assigned the actual search terms to the different groups.

[1] http://scholar.google.nl.proxy.library.uu.nl/

LR-SQ1	electronic tender	electronic tender OR electronic tendering system OR electronic tender framework OR electronic tender model OR electronic tender reference model OR electronic tender reference method OR electronic tender process OR e-tender OR e-tendering system OR e-tender framework OR e-tender model OR e-tender reference model OR e-tender reference method OR e-tender process
	bid preparation	bid preparation OR bid proposal OR procurement OR e-procurement OR electronic procurement OR tender offers OR bid preparation reference model OR bid preparation reference method OR public procurement
	bid markup decision	Efficient Bidding OR bid no-bid OR Strategies in Bidding OR competition strategies OR pre-bid analysis OR bid reasoning model OR bid decision support system OR bid markup decision model OR bidding method OR tendering gateways OR risk and price

Tabel 1: Search terms for LR-SQ1

LR-SQ2	acquisition support via crm	acquisition support software OR acquisition software crm OR acquisition sales support OR acquisition crm OR acquisition sales
	project management information systems	Project management OR project evaluation OR project management tooling OR project management it support
	contract management tooling	Contract management OR contract management tooling OR contract management it support
	Knowledge management tooling	knowledge management OR knowledge management tooling OR knowledge management it support OR knowledge base

Tabel 2: Search terms for LR-SQ2

After selecting relevant search terms, study selection criteria are determined. Study selection criteria are set to identify those studies that provide direct evidence about the research questions (Kitchenham & Charters, 2007).

Inclusion criteria

- Peer-reviewed papers
- Studies that are written in English or Dutch
- Studies that are published after 1990

Exclusion criteria

- Studies that cannot be retrieved via the proxy service provided by the Utrecht University
- Studies that are not related to the research questions for this literature review

After preparation of the literature review strategy, the actual review is executed by following our literature review protocol. The literature review protocol consists of four steps:

1. Identify relevant studies through keywords
2. First selection based on title and abstract review
3. Second selection based on full text analysis
4. Final set of relevant studies
5. *Snowballing approach*

Figure 4 provides an overview of the number of extracted studies throughout the complete study selection funnel. The extracted studies are specified per step.

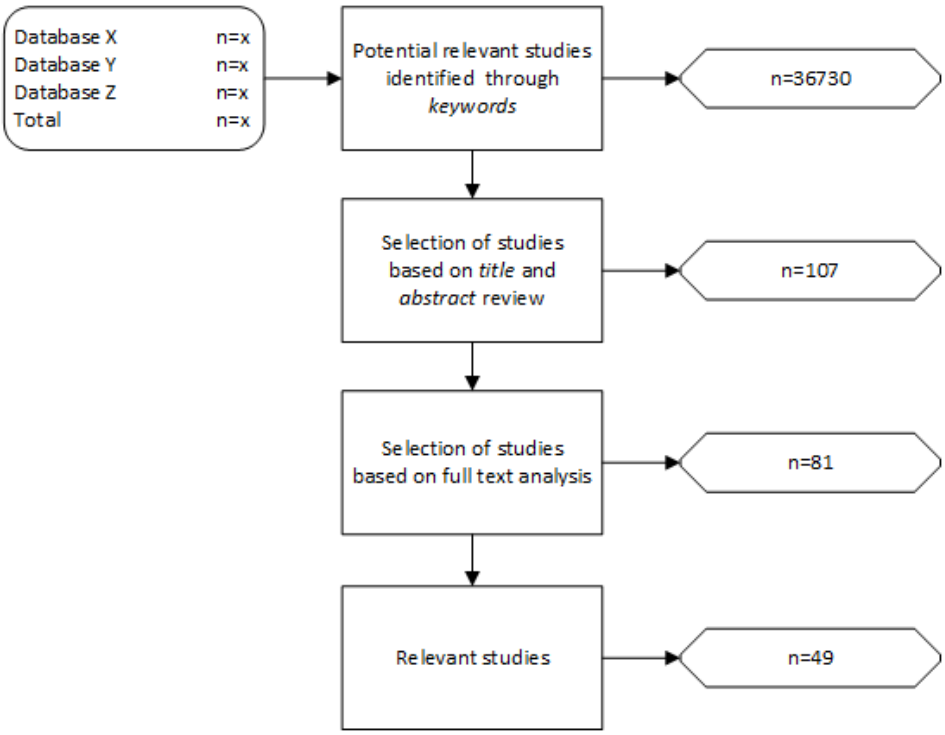

Figure 4: Literature review extraction overview [BP]

Chapter 3 contributes to the theoretical framework of this research project. It provides an overview of what is written about tendering, e-tendering and digital procurement, which is necessary for understanding of the rest of this literature review that has a strong focus the bid preparation process. Furthermore, it elaborates on the supportiveness of IT in daily business processes and about possibilities to towards a gap analysis.

2.4 Case studies

This chapter elaborates on the motivation for choosing the case study research methodology. It also elaborates on the research method itself and the process steps described by Yin (2009). The following sub-chapters elaborate on case study design, data collection, data analysis and validity.

There are three reasons why the case study research methodology is an appropriate choice for performing this research. First, half of the research questions, stated in chapter 0, start with “how” or “why”. Mostly, “how” and “why” questions can perfectly be answered by performing a case study. Second, the focus of this research is on bid preparation processes that take place in a real-life context. Third, the researcher has no or little control over events. For this project we investigated how bid preparation processes look like in various company types (Yin, 2009).

Classically, case study research is considered a “soft” form of research. The extensiveness of the real-life context requires case study researchers to cope with a technically distinctive situation. There are much more variables of interest than data points. A tactic to overcome this phenomenon is using multiple sources of evidence were data needs to be converged in a triangulating fashion. In this manner, case study research can become “hard” (Yin, 2009).

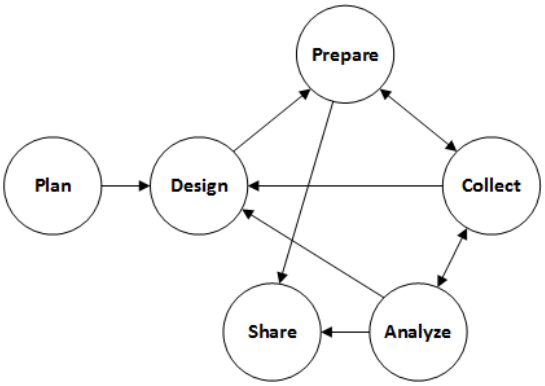

Figure 5: Case study, a linear but iterative process [E]

2.4.1 Case study design

A case study design represents the logic that links the data collected and the conclusions drawn to the initial research questions. Four critical case study conditions related to the quality of the case study design are construct validity, internal validity, external validity and reliability. Validity concerns are further elaborated in chapter 2.4.4.

Yin (2009), distinguished four case study design types following a 2 x 2 matrix, see Figure 6. The first pair consists of single-case and multiple-case designs. The second pair is based on the unit (or units) of analysis to be covered and can occur in combination with either of the first pair. Every pair allows analyzing contextual conditions, which is depicted as dotted lines. The boundaries between the context and de case are not likely to be sharp. The second pair made also a distinction between holistic (single-unit of analysis) and embedded (multiple units of analysis) designs. If the case study examines the nature of an organization or organizational process, a holistic design would be appropriate (Yin, 2009).

Multiple-case designs have advantages and disadvantages in comparison to single-case designs. From an evidence perspective, performing research on multiple-cases is often more convincing than one single case. The overall study is therefore considered as being more robust (HERRIOTT & FIRESTONE, 1983). However, to conduct research by making use of multiple-case design can require much more time. Additionally, multi-case designs are suitable when not much is known about a certain phenomenon. Often, multi-case studies offer the advantage of richer details from the actual cases and their context (Graaf & Huberts, 2008).

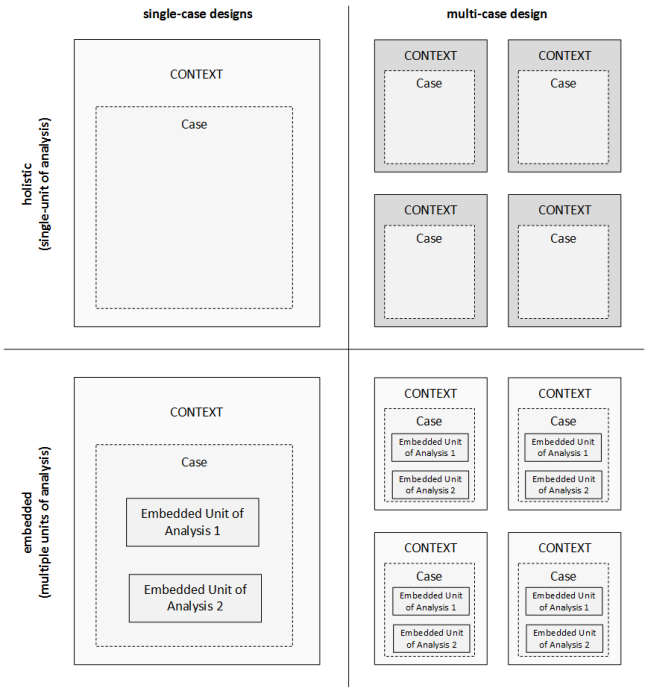

Figure 6: Basic types of designs for case studies [E]

Since we would like to come up with a generic, but highly flexible, bid preparation method it is necessary to investigate different bid preparation processes in practice. Therefore, we need multiple organizations (multiple contexts), and from every organization we need one subject matter expert (one unit of analysis) who is able to elaborate on his organizations bid preparation process. For this research, the holistic multi-case design seems to be a suitable choice.

Yin (2009) came up with a case study replication approach. The approach is depicted in Figure 7. The first step consists of theory development. Then case selection and the definition of specific measures are essemtial steps in the design and data collection process. Each case should be seen as an individual case. After case preparation, data collection and data analysis, individual case reports need to be written. Finally cross-case conclusions need to be drawn that result in a cross-case report.

The number of literal case replications depends on the certainty a researcher want to have about the multi-case results. The more replicated cases involved, the greater the certainty. According to Yin (2009), if the case theory is subtle or if you want a high degree of certainty, you need at least five or six replications.

For this research, two series of case studies have been executed. The first case study series answered SQ2, the second case study series is included for validation purposes which is also depicted in the Figure 2: Research framework.

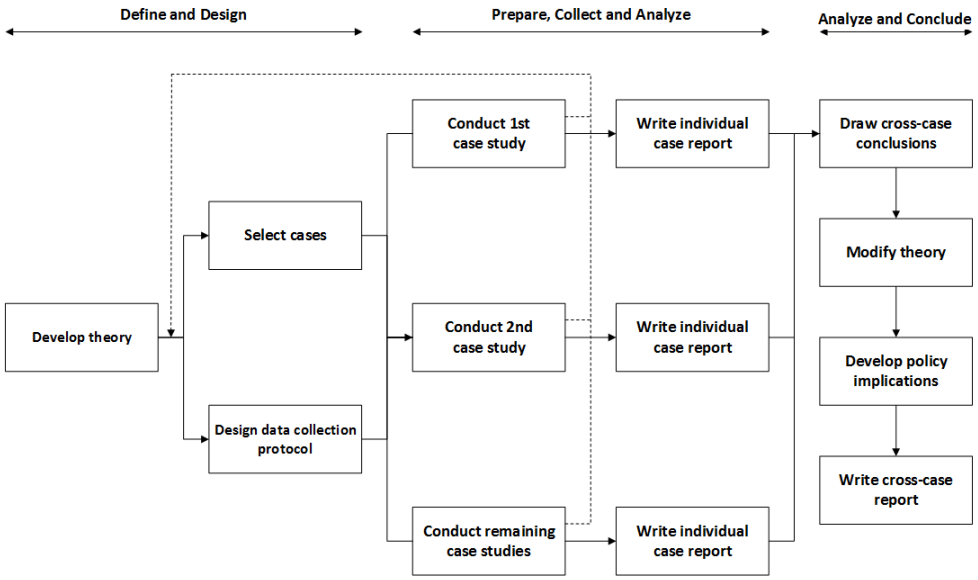

Figure 7: Case study replication approach [E]

2.4.1.1 Case selection

Before the actual case studies can be executed, it is essential to have a well designed data collection protocol including enough participating case companies. The data collection protocol used consists of well-formatted interview guidelines. The interview guidelines for the first case study series are added to the appendixes see Appendix E: Interview guidelines (Version 4).

Eisenhardt (1989) mentioned that a minimum of four case studies are required for theory building using case study research. Four up to ten case studies would be desirable. For this case study, participating companies should be medium to large sized, should have a professional sales organization with at least a dedicated bid-manager and a significant portion of their turnover should be gained via tender projects. It is not necessary to operate within the IT domain. Ideally, there is mix of medium and large sized companies with various sized sales organizations operation in a variety of sectors.

For the first case study series six medium to large sized companies have been selected in accordance with the aforementioned requirements. Most of the companies operate in different sectors and the year of establishment vary from 1948 until 2005. The set of six companies contains one apparently smaller

organization that is called C.S.C. Except C.S.C., every other case company has over 2.500 employees. The largest organization, Atos, has even 93.000 employees worldwide. Three companies, Atos, Axians and ManpowerGroup operate Worldwide. ManpowerGroup for example operates in at least 82 countries. Two out of six, Axians and Ordina, organizations operate solely within Europe from which Ordina, a large Dutch IT Consulting firm solely operates within the Benelux. C.S.C. operates within The Netherlands itself.

CASE	ORGANIZATION	SECTOR	EST,	EMPLOYEES	TURNOVER	COUNTRIES
A1	Ordina[2]	IT Consulting	1973	2.884	€ 366,9 million	3
B1	Atos[3]	IT services and staffing	2000	93.000	€ 11 billion	72
C1	Axians[4]	IT networking services	1993	7.000	€ 1,6 billion	15
D1	C.S.C.	Construction Sports Facilities	2005	30	Not available, privately held company	1
E1	Telindus[5]	Datacenter services	1969	2750	€ 618 million	6
F1	ManpowerGroup[6]	Staffing	1948	30.000	€ 18,5 billion	82

Table 1: Case companies first case study series (phase A in research framework)

CASE	ORGANIZATION	SECTOR	EST,	EMPLOYEES	TURNOVER	COUNTRIES
A2	CGI	ICT Consulting	1976	65.000	$ 9,9 billion	40
B2	Verdonck, Klooster & Associates	ICT consulting and staffing	1994	125	Not available, privately held company	1
C2	TELE2 Wholesale	Telecommunication	1993	5000	€2,6 billion	9

Table 2: Case companies second case study series (phase C in research framework)

2.4.1.2 Case study analysis

The first set of case studies contains six individual cases. Every individual case contains a whole study form which conclusions can and have been drawn. Besides individual analysis per case, we performed a cross-case analysis. The multi-case report will contain multiple narratives covering each of the single cases, presented in separate sections. In addition, a separate section covering the cross-case analysis and results is included (Yin, 2009).

Conclusions or discoveries drawn from individual case analysis may affect the initial case study design. In some scenarios, this might require redesign from the initial case study guidelines. Yin (2009) mentioned the necessity of redesign from case study guidelines in his case study replication approach, Figure 7.

Table 3 contains an overview of the redesign iterations from the case study interview guidelines throughout the first case study series. Due to the incremental improvements, the effectiveness of the case study interviews increased continuously throughout the case study series.

[2] https://nl.wikipedia.org/wiki/Ordina
[3] http://atos.net/en-us/home/we-are.html
[a] http://www.computable.nl/artikel/nieuws/diensten/vinci-energies-bundelt-alle-ict-in-axians.html
[5] https://en.wikipedia.org/wiki/Telindus
[6] https://nl.wikipedia.org/wiki/Manpower_%28uitzendbedrijf%29

VERSION	CHAPTER	AFTER CASE STUDY	MODIFICATION
1	-		• Initial version
2	1.2	1	• Added explanation at two bid-preparation factors • Blacked out 13 bid-preparation factors which were too directed to the construction industry.
3	1.2	2	• Removed Appendix B "Bid-preparation factors". The list with bid-preparation criteria was too focused on the construction industry and is therefore not generic.
4	1	3	• Removed the "Internal and external bid-preparation factor" introduction text. • Changed terminology: "Bid evaluation" must be "Bid qualification".

Table 3: Modifications interview guidelines

2.4.1.3 Case study preparation

Before case study research was executed, the entire case study proceeding was documented in a well structured Case Study Protocol (CSP), see Appendix 11.4. A CSP elaborates on the aim of the research and on the methodological approach. The CSP structure is derived from Pervan & Maimbo (2005). A well-documented CSP establishes the quality of the research significantly; it contributes to the construct validity by strengthening the chain of evidence.

First, a CSP provides a preamble, information about the purpose of the protocol, guidelines for data and document storage as well as publication. After the preamble, general information with an overview of the research project and case research methodology is shared. Third, the CSP informs about the procedures to follow while conducting each case study, these procedures ensure uniformity in the data collection process. In section four from the CSP, the research instruments used are explained followed by data analysis guidelines in section five. Finally, an appendixes is added to the CSP with a participation request letter for the interviewees. This letter is used to invite participants to participate in this case study research.

Eisenhardt (1989) and Yin (2009) bot highlighted the necessity for a CSP in order to guide case research. However, despite the importance of CSPs it is seldom used within the disciple of IS according to Pervan & Maimbo (2005).

As well as mentioned in section Case selection, the researcher used a more lightweight CSP during the actual interview sessions, also known as Interview Guidelines, in order to guide the sessions itself. The interview guidelines are added to Appendix 11.5.

2.4.2 Data collection

According to Yin (2009), case study evidence is commonly gathered via six type of sources: documents, archival records, interviews, direct observations, participant-observations and physical artifacts. This list is not exhaustive; a complete list would be quite extensive. None of the sources has an advantage over the others. In fact, the sources are highly complementary.

In addition to these sources, some overriding principles are crucial for any data collection effort. First, there is the principle called multiple sources of evidence. Data from at least two different sources needs to be collected in order to converge on the same facts and findings. Second, a case study database needs to be maintained. A case study database can be seen as a formal assembly of evidence that is distinct from the final case study report. Finally, the chain of evidence links among the questions asked, the data collected and the conclusions drawn. The quality of a case study, especially the construct validity, will increase substantially when these principles are incorporated. Validity tests are further elaborated in chapter Plan validity 2.4.4.

For this research project, two of the six mentioned sources of evidence are used. By making use of minimal two source of evidence, we could state that we comply with the multiple sources of evidence criteria. The primarily source for data collection were expert interviews. While preparing the interviews documentation such as related presentations, a company's website or other available relevant informative information were read. This served as a second source of evidence (Tellis, 1997; Yin, 2009)

2.4.2.1 Semi-structured interviews

For this research, in the first case study series, six face-to-face interviews have been conducted where the researcher interviewed one respondent at a time. In the second case study series, three validation interviews have been conducted. Both interview series were semi-structured. The semi-structured interviews served as primary data collection method in this research. During the interviews, the researcher used a list with carefully worded questions who forms the basis of the interview (Lethbridge, Sim, & Singer, 2005; Yin, 2009).

An advantage of semi-structured interviews compared to structured interviews is that there is enough room for discussion in between listed questions. Besides, semi-structured interviews allow interviewees to share unexpected types of information and the researcher has full control over the data collection process as he participated actively in it (Lethbridge et al., 2005; Yin, 2009).

In-depth, semi-structured interviews are time consuming. Contact with the interviewee needs to be scheduled and usually the researcher has to travel to the meeting (Lethbridge et al., 2005). Most interviews took 1.5 up to 2 hours. Each interview of the first case study series is fully transcribed and a case study report is written from each individual semi-structured interview. Case study reports can be found in chapter 5 Case Study Results.

Table 4 lists all the participating experts for the first case study series. Except the first participant has every participant over 10 years of experience in a Bid Managers position. Four out of six interviews took more than 115 minutes. It was quite a challenge to motivate six interview participants to invest approximately 2 hours of their time in this research since every participant has an extremely busy schedule. Interview participants for the validation interview series are listed in Table 5.

CASE	PARTICIPANT	POSITION	EXPERIENCE	IN COMP. SINCE	DURATION
A1	1	Sales Manager	5 years	2010	115 minutes
B1	2	Bid Manager	15 years	2000	120 minutes
C1	3	Bid Manager	15 years	2014	120 minutes
D1	4	Bid Manager	30 years	2000	115 minutes
E1	5	Bid Manager	17 years	2008	75 minutes
F1	6	Sr. Bid Manager	10 years	2013	115 minutes

Table 4: Overview interview participant's first case study series

CASE	PARTICIPANT	POSITION	EXPERIENCE	IN COMP. SINCE	DURATION
A2	7	Bid Manager	5 years	2007	115 minutes
B2.1	8	Partner	18 years	1998	90 minutes
B2.2	9	Bid Manager	8 years	2008	90 minutes
C2	10	Bid Manager	10 years	2006	90 minutes

Table 5: Overview interview participant's second case study series

Results from the validation interview series have been processed in chapter 7 Evaluation 'Bid Preparation Reference Method'. Interview results are presented differently, compared to the first interview series, due to its validating purposes. The different statements made by the interviewees are listed in tables and are individually qualified by the researcher. Abnormal results have been discussed extensively.

2.4.2.2 Document study

A document study contributes to the principle of multiple sources of evidence. In preparation on each individual interview, the researcher reads various document sources in order to gather knowledge regarding the participating company. The document study mainly focuses on sources such as a company's website, available brochures and available annual accounts. Besides interview preparation purposes, available documentation is also used to verify and complement information that was not discussed in during the interviews.

Incidentally, the researcher received documentation regarding bid-preparation related business processes from a participating company. Bid preparation documentation received from case study A1 was extremely useful. It gave in depth insights in the companies formally described bid preparation processes. Unfortunately, most participating interviewees were not allowed to share such in-depth documentation regarding their own bid-preparation processes because of its confidentiality.

2.4.2.3 Case study database

In order to store the gathered data during this research and in order to make the gathered data accessible for other researchers a case study database has been maintained during this research. The case study database contains the original audio recordings from every interview kept as well as transcriptions from every interview. In addition, interview nodes has been added including documentation for the document study such as annual accounts and information gathers via the websites from participating companies.

The case study database consists of two storages. Each case company has a dedicated folder containing the before mentioned documents. Besides this local folder, each company has virtual folder in the application called NVivo. NVivo is used in order to analyze the interview transcriptions. The figures below illustrate the structure from the case study database. The entire case study database can be acquired via the researcher.

The distinction between a separate case study database and a case study report has not become an institutionalized practice in the majority of the performed case studies according to Yin (2009). Too often, the critical reader has no recourse if he or she wants to inspect the raw data that led to the case study's conclusions. Without a case study database, the raw data may not be available for independent inspection.

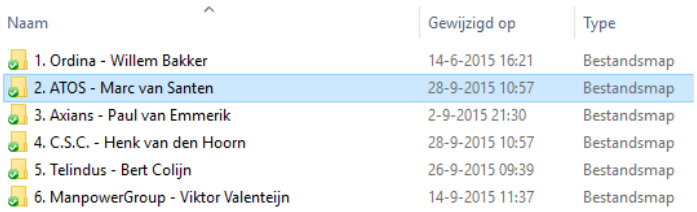

Figure 8: Sub-directories from the Case Study Database

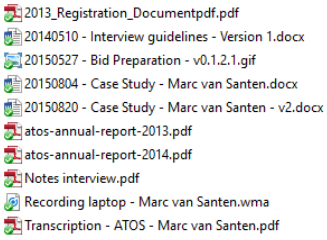

Figure 9: Content from the directory "2. ATOS - B1" [BP]

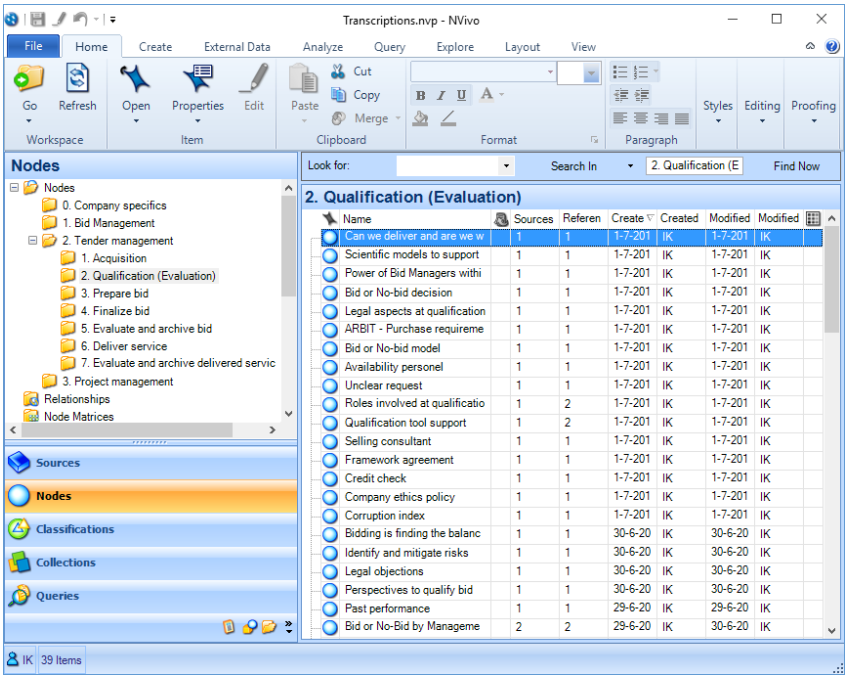

Figure 10: Impression of the virtual Case Study Database directory in NVivo [BP]

2.4.2.4 Chain of evidence

The last data collection principle is the chain of evidence. The principle behind the chain of evidence is relatively simple but highly recommended to strengthen construct validity. A chain of evidence allows the reader to follow the rationale between various evidence sources, from the initial research questions to conclusions drawn. The different research stages are traceable in both directions, from conclusion back to initial research question and from questions to the conclusions (Yin, 2009).

For this research, the CSP and the Interview Guidelines were of importance. The CSP links the initial research questions with the interview questions defined in the Interview Guidelines. It was required to update the Interview Guidelines throughout the different interview sessions in order to optimize the interview results. Obtained findings have been used in further interview sessions.

Both, the CSP and the Interview Guidelines contribute to the understanding from where the evidence is derived from and are therefore essential elements in the chain of evidence.

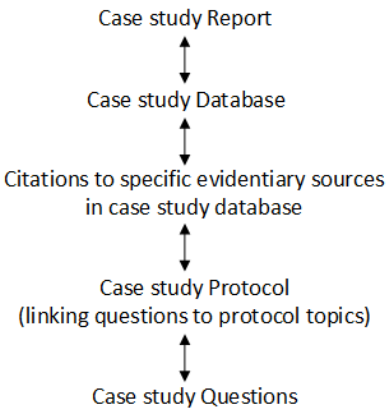

Figure 11: Chain of evidence [E]

2.4.3 Data analysis

Boeije (2002) state that researchers often remain vague in describing the way they came to their research results. This however is essential for traceability or verification purposes. It also increases the credibility of the research results. In this chapter, we elaborate on how we plan our data analysis.

Our data analysis approach founds its origin in two data analysis methods. To a large extent, our approach is based on the grounded theory interpretation by Adolph, Hall, & Kruchten (2011) and the Constant Comparative Method (CMM) by Boeije (2002). The approach from Adolph, Hall, & Kruchten (2011) is a derivative from Glaser, B.G., & Strauss (1967) and describes their experiences using grounded theory in software engineering research.

Interviews are the primarily source for retrieving data. To analyze interview data in a systematic way, (recorded) interviews need to be transcribed. For analyzing the text that resulted from transcription, we applied a lean version grounded theory.

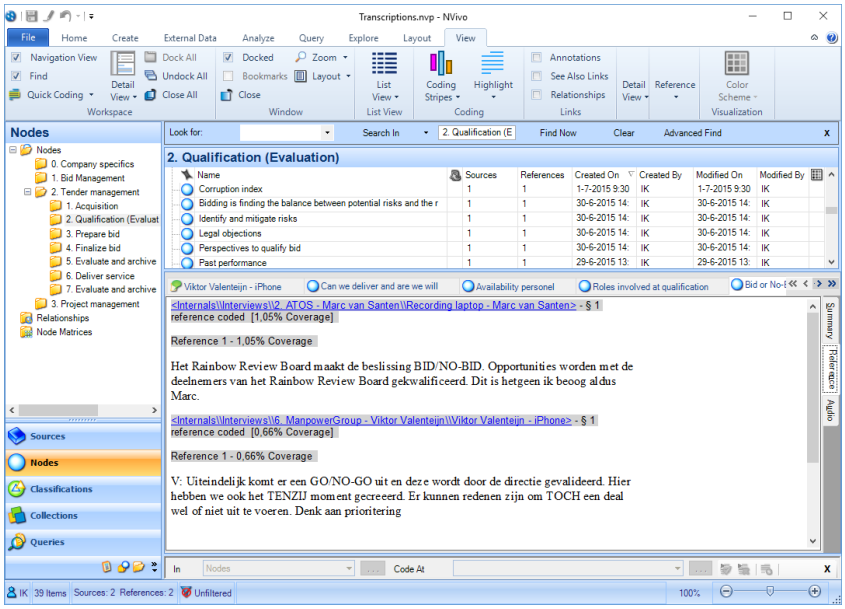

Figure 12: Coding interview transcription [BP]

While analyzing the text, relevant lines or paragraphs needed to be tagged with codes, this phenomena is called open coding. Open coding results in a list of provisional codes which is actually the beginning of the process of conceptualization. Codes are also used for clustering into concepts and categories. In fact, open coding generates building blocks for the theory.

Interview transcriptions are also used as reference within the description of the research outcomes in chapter 6 Result Analysis. Figure 13 shows to process from text to code, to concept, to category, to conclusion.

Figure 13: Coding approach applied (form code, to concept, to category, to conclusion) [BP]

During the process of coding, it is required to write memos. Memos capture and preserve the ideas emerging from an analyst's preconscious processing as the data are analyzed (B. G. Glaser, 1998). If an analyst skips memoing, he or she is not doing any form of grounded theory (R. Glaser, 1987).

Important to mention is that data analysis immediately starts after data collection. In this manner, analysis results can serve as input for upcoming interviews. This will be beneficial for the data collection process as a whole.

2.4.4 Plan validity

The purpose of this chapter is to elaborate on the four often tests used in social science research methods. The four tests are generally used to establish the quality of empirical research methods. Case studies are one form of empirical research, so these four tests are relevant to case studies (Yin, 2009).

Design Tests	**Case Study Tactics**	**Research phase in which a tactic occurs**
Construct validity	• Use multiple sources of evidence • Establish chain of evidence	Data collection Data collection
Internal validity	• Do pattern matching due to coding approach	Data analysis
External validity	• Do cross-case analysis • Use replication logic in multiple-case studies	Data analysis Research design
Reliability	• Use case study protocol • Develop and maintain case study database	Data collection Data collection

Tabel 2: Case study tactics by Yin (2009) *and* Gibbert, Ruigrok, & Wicki (2008)

2.4.4.1 Construct validity

According to Denzin & Lincoln (1999), construct validity reference to the extent to which a study investigates what it claims to investigate. Yin (2009) stated that one of the main challenges for case study research is the development of a well-considered set of actions instead of selective judgments.

To ensure construct validity we apply two tactics. First, as already mentioned in chapter 2.4.1 we triangulate multiple sources of evidence. The primary source will be the interview transcriptions. The second source will be company documentation and archival sources such as presentations, whitepapers, and a company's websites etcetera. This second source is also used in the interview preparation phase.

Second, we establish a chain of evidence. The chain of evidence allows the reader to reconstruct how the research went from the initial research question to the conclusion (Yin, 2009). The chain of evidence is further elaborated in chapter 2.4.2.

2.4.4.2 Internal validity

Internal validity refers to the presence of causal relationships between variables. It is also called “logic validity” (Thomas, Donald, Hastjarjo, & Quasi-, 2008).

In this study, internal validity is covered through pattern matching. Empirically observed patterns, trough interviewing, transcribing and coding, are compared with earlier processed interview data stored in the central case study database (Denzin & Lincoln, 1999; Yin, 2009)

2.4.4.3 External validity

Often heard criticism about external validity at case studies is that case studies offer a poor basis for generalization. Neither single nor multiple-case studies allow for statistical generalization. Key in this situation is the difference between statistical and analytics generalization. Statistical generalization refers to the generalization from observation to a population. Analytical generalization refers to generalization from empirical observations (Yin, 2009).

According to Eisenhardt (1989), case studies can be used for analytical generalization. He suggests performing a cross-case analysis involving four to ten case studies. It is of importance to report the rationale for the selection of a case study carefully. This allows the reader to appreciate the researchers’ sampling choices (Gibbert et al., 2008). The replication logic suggested by Yin (2009) ensures the multiple-case studies are performed in an identical fashion.

2.4.4.4 Empirical validity

Reliability ensures the same study results when a study is performed two or more times. Transparency and replicability are crucial words for this test. Transparency will be enhanced through strategies such as well-described research procedures and careful documentation and clarification. Authors are also encouraged to make reference to a case study database (D. Leonard-Barton, 1990).

3 E-procurement and E-tendering

To render large procurement projects efficient, transparent, non-discriminating and accountable, (e-) tender procedures are often required (Liao, Wang, & Tserng, 2002). For many industries, the tendering phase is most critical and important throughout the project lifecycle. The tendering phase is responsible for shaping contractual and legislative agreements between different project stakeholders (Vee & Skitmore, 2003). A traditional tender phase is extremely information intensive and much paperwork is involved. Before the actual tender procedure can start, potential bidders need to be informed about the upcoming project and its requirements. Information such as a compilation and analysis of project data, outline and final proposals, health and safety agreements, bills of quantities and others needs to be collected (Choen & Lou, 2009). Once the tender documentation is ready, it can be distributed to the different bidders. Often, human errors occur during the distribution process of tender documents. Errors such as insufficient copies, mix up of documents, incomplete information and even leakage of restricted information were not rare (R. Du, Foo, & Boyd, 2006).

To overcome the aforementioned problems, electronic documentation could be used. Automation of tender documentation as well as the complete tender workflow is called e-tendering (Nitithamyong, Skibniewski, & Clark, 2007). To be more precise, e-tendering is a means of electronically notifying, involving, vetting and selection suppliers. E-tendering relieves the workload not only for buyers but it is also beneficial for sellers. Sellers are able to bid more efficiently for contracts, for instance the e-tender environment could suggest them with the bid or no-bid decision. The primary benefits of e-tendering are the reduction of costs from tender documentation production, it shortens the tender period and it foresees in a secured method of sending and receiving requests and offers (Forbes-Pitt & Katherine, 2006). According to European legislation, electronic tendering is required in 2016 (Pianoo, 2015).

E-tendering is not the only form of e-procurement. De Boer, Harink, & Heijboer (2002) identified six e-procurement forms: e-MRO (Maintenance, Repair and Operating), web-based ERP (Enterprise Resource Planning), e-sourcing, e-tendering, e-reverse auctioning and e-informing. By describing the e-procurement forms they derived the definition of e-procurement from Van Weele (2010) and it is stated as follows: “Electronic Procurement (EP) can be defined as using Internet technology in the purchasing process”. They notice that the definition is narrow in the sense that it excludes old applications like ordering by fax and telephone. On the other hand, the definition could be interpreted as quite broad because it not only encompasses the use of internet applications in purchasing processes, it also includes the use of extranet applications and even the use of internet applications (de Boer et al., 2002).

The first e-procurement form is called e-MRO. E-MRO is used within organizations for creation and approving purchasing requisitions, placing purchase orders and receiving services and goods. The goods and services bought via e-MRO are non-product related but relate to maintenance, repair and operating supplies. An e-MRO system that actually offers an ordering catalogue is often available for all the employees within the organization. The e-procurement form for product related services and goods is called web-based ERP. In most organizations ordering via web-based ERP applications is done by employees of the purchasing department (Tarantilis, Kiranoudis, & Theodorakopoulos, 2008).

The third e-procurement form is e-sourcing. E-sourcing is a way of identifying new suppliers for specific product categories. E-sourcing is often done by browsing over the internet, no additional software is required. By identifying multiple possible suppliers, competitiveness in tender processes will increase substantially. Working with multiple suppliers will also decrease the supply risk (de Boer et al., 2002).

According to de Boer et al. (2002), E-tendering concerns the process of sending an RFI (Request For Information) to the marked after which interested suppliers can submit their offers. This process is fully supported by internet technology. Nowadays e-tender applications become more mature and contain extra functionalities. Not seldom e-tender application include analysis and comparison functionalities. In essence, e-tender applications smoothens the tactical purchase process without focusing on the actual content (T. C. Du, 2009).

Before we describe the penultimate e-procurement form, e-reserve auctioning we elaborate on the most popular auction forms. Preston McAfee & McMillan (1987) defined auction as “a market institution with an explicit set

of rules determining resource allocation and prices on the basis of bids from the market participants". First, we distinguish the English and Dutch auction, both are available in different variants. Most popular is the regular English auction, also called "open outcry". In an English auction, the auctioneer opens the auction by announcing an opening bid. Then he accepts increasingly higher bids from the floor or participants. An open outcry auction is open and transparent. The highest bidder has at a certain moment the standing bid. This bid can only be displaced by a higher bid from a competitor. If no competing bidder challenges the standing bid within a certain timeframe, the standing bid becomes the winner. A Dutch auction works different. In a Dutch auction, the price is decreasing until a participant is willing to accept the auctioneer's price. Another popular auction form is the reverse English auction. In a reverse auction the role of the seller and buyer are revered, the sellers compete to obtain business from the buyers. Prices will decrease as sellers undercut each other. E-reverse auction is an online reverse auction as discussed above. Usually there is a strong focus on the price of the goods to be auctioned (Teich, Wallenius, & Wallenius, 1999).

The last form of e-procurement distinguished by de Boer et al., (2002) is called e-informing. E-informing is not directly associated to the e-procurement process itself, e-informing concerns the information provision. It is responsible for gathering and distributing purchasing information from and to the different stakeholders via internet technology.

3.1 Tender process from a buyers perspective

Tender processes can be seen from two perspectives, from a buyer and from a supplier perspective. In this section, especially the buyers perspective is discussed in order to understand the role of the supplier in tender processes, which concerns our research topic. PIANOO, an Dutch expertise center in tender procedures distinguishes three phases, each of them is described in the remainder of this paragraph.[7]

Phase 1 is responsible for the preparation of the procurement order. As soon as there rises a demand for a certain product in an organization, it needs to be translated into a procurement order. By setting up a procurement order, the buyer is investigating the market, he chooses a procurement strategy and defines the procurement conditions. After determining the procurement conditions, it is crucial to investigate which tender legislations are applicable for this specific procurement order and which procurement procedure needs to be followed. Then, specific conditions for potential suppliers needs to be determined and the buyer has to decide about how he specifies his procurement project and optionally, how the market can participate by setting up the procurement specification. According to PIANOO, the following ten steps needs to be followed in phase 1:

1. Determine procurement requirements;
2. Applicable procurement legislation?;
3. Obliged to tender?;
4. Set procurement strategy;
5. Set policy goals in procurement;
6. Set awarding criteria;
7. Set supplier selection criteria;
8. Specify procurement project;
9. Decide whether to evolve market while specifying procurement project;
10. Select right procurement procedures.

In phase 2, the chosen procurement procedure is executed. The first step in phase 2 covers the publication of the actual procurement order. Depending on the to follow procedure, procurement orders need to be published on TenderNed, TED or other publication platforms. Governments maintain thresholds that indicate whether procurement projects needs to be published on TenderNed or TED, TenderNed is used for national procurement projects and TED is used for international procurement projects. The purpose publication is to stimulate potential multiple suppliers for making a quotation in accordance with the determined procurement requirements. After receiving the quotations, offers can be evaluated in accordance with the earlier determined awarding and selection criteria. According to PIANOO, the following ten steps needs to be followed in phase 2:

[7] https://www.pianoo.nl/inkoopproces

1. Announce procurement project on publication platforms;
2. Allow potential suppliers to subscribe themselves in potential suppliers queue;
3. Compare and select potential capable suppliers;
4. Allow suppliers to create and submit their offer and quotation;
5. Verify which offers are in compliance with the criteria posited in phase 1 and award the project;
6. Sign contracts and publish results tender procedure;

Phase 3, project execution. Projects are executed based on contractual agreements, these contracts needs to be managed throughout a projects lifecycle. Contentment from the internal customer needs to be verified after delivery together with the contractor's delivery performance. Further evaluation sessions should be kept each year in order to monitor the contractual agreements.

3.2 People, process and organization

Organizations need to decide whether they implement e-procurement or not and if so, what form of e-procurement suites best to the specific situation. Employees, or the people within an organization, are the determinant force in deciding the success or failure of e-procurement uptake. Ideally, there is an innovation champion among the employees. The innovation champions, together with motivated managers are key actors to drive the desire to change from the old ways (Neef, 2001).

De Boer et al., (2002) mentioned four dimensions of impact that should be considered by implementing a certain e-procurement solution. The first perspective is about the impact on a firm's primary and supportive processes. Since the different processes within a company work closely together, adoption of e-procurement will affect them all. Some processes may diminish, others may need more time and some new activities could arise. In such scenario's it is almost obvious that the organizational structure may change too which is in fact the second dimension: Impact on the organizational structure used to coordinate the procurement processes. The third dimension concerns the impact with existing IT-systems. Every new application to support business processes needs to have a decent fit with current applications, systems and the network. Finally, the fourth dimension is about effectiveness. The new application should contribute to the goals of various stakeholders within the firm. An internal marketing approach targeted at the various stakeholders should ease the implementation phase of new technology (Dorothy Leonard-Barton & Kraus, 1985).

Tanner, Wölfle, Schubert, & Quade (2008) performed a survey about the trends and challenges in e-procurement faced by procurement managers from the top 200 companies in Switzerland in 2008. This survey focusses on all the above discussed e-procurement forms and not solely on e-tendering. However, most of the concerns discussed are relevant for the e-tendering form of e-procurement. The survey results are shown in the graph below.

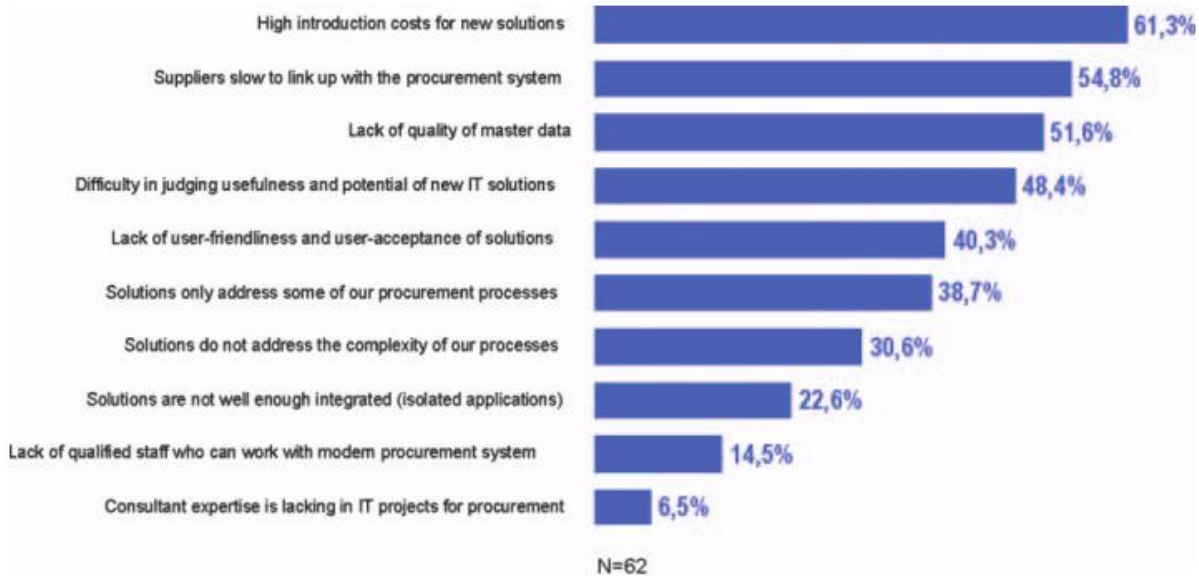

Figure 14: Main difficulties in the use of IT for procurement [E]

Most of the interviewees, 61.3 percent, said that the introduction costs for e-procurement where high. Slightly less, but still a high percentage of 48.4 percent said that it is difficult to judge on the potential usefulness of new IT solutions in procurement. This shows that IT plays a role of importance but the expectations are not completely fulfilled (Tanner et al., 2008). Another result concerns the usability of e-procurement applications. No less than 40.3 percent of the interviewees said that current applications lacks user-friendliness which results in low acceptance of these new solutions. More than one-third of the respondents noticed that just specific parts of the procurement process are covered by the e-procurement application, instead of the whole procurement cycle. 22.6 percent of the e-procurement application where loosely coupled. There was almost no integration with other applications.

3.3 E-tendering environments

3.3.1 Web-based tendering architectures

Several e-tender procurement systems are described in literature. In this chapter, we elaborate on the architecture of e-tender procurement systems. Herby we start comparing an e-tender application especially developed for military purposes by Cheng, Liao, & Chen (2003). After that we elaborate on an prequalification e-tender application developed by Noor & Mohemad (2008). Then, a modern e-tender architecture from Heddad (2013) is described.

Every year the Taiwanese government invests billions of dollars in their military. In 1993, an enormous procurement corruption scandal became known followed by internal complicated incidents related to military procurement. Thereafter, the Taiwanese government has taken serious reform measures. One of them includes the reorganization of its procurement organization and procurement systems. As a result of the reform measures a web-based e-procurement system and architecture is developed. The architecture is depicted below in Figure 15 (C.-H. Cheng et al., 2003).

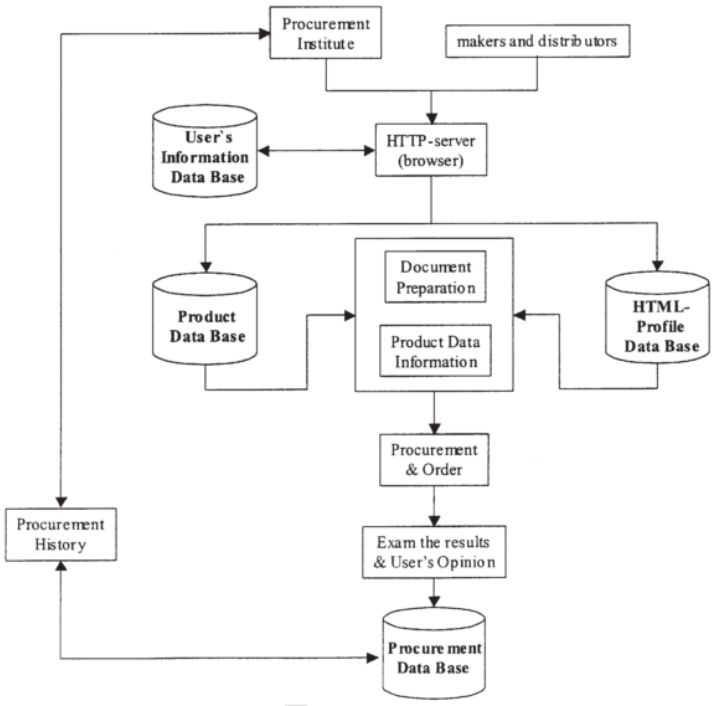

Figure 15: Architecture of e-procurement system by Cheng et al. (2003) [E]

Users can access the e-procurement system by accessing it via an internet browser. Based on their login credentials user information will be displayed. The system distinguishes two user-groups, the military procurement organization users and the makers and distributors who wish to tender a bid. When the procurement organization wants to carry out procurement works, they have three options to easy their job. First, they can browse through historical data for inspiration. Second, they can access an extensive product base and third, they can make use of sample documents. When a tender is created and published, suppliers can access it via a web based portal where they also can answer tender questions. Then the tender results will be examined by an evaluator or the buyer after which the tender will be awarded and contracts can be signed. Finally, the tender results are archived in the Procurement Data Base for template purposes and history (C.-H. Cheng et al., 2003).

The application database consists of four sub-databases. There is a Users' database that contains all the basic information regarding the procurement organization, bid makers and distributors. For example organization name, address, telephone numbers etcetera. The second sub-database is the Product Database. It contains data such as product names, types and product specifications. The third database is what they called the HTML-format database. Various template documents are stored in it such as financial contracts, labor service contracts, bid-inviting instructions and so forth. Then there is the fourth database that is called the Procurement Database. It stores case information and it contains three parts: problem, solution and the result of a case (C.-H. Cheng et al., 2003).

Noor & Mohemad (2008) developed a conceptual web-based tender management system (PreQTender) including decision support features, regarding prequalification of contractors, for the Malaysian government in an attempt to optimize the use of ICT infrastructure. Most Malaysian governmental departments already use web-based systems in their daily practices. However, for complicated processes such as tender procedures in construction, they still use the conventional way of processing documents.

Within the prequalification tender process, qualified contractors are identified based on criteria. Tender documents need to be screened in order to select a compliant contractor. A manual prequalification phase is highly labor intensive but is essential because it minimizes the risk from for example, construction projects. PreQTender is expected to benefit in terms of security, efficiency and transparency. Tender documents will be processed electronically which increases efficiency and ensures transparency. When all the tender documents are loaded into the system, PreQTender will take care of the contractor selection process. It provides an

automated decision-making function and no human intervention is required anymore. An overall workflow of PreQTender is depicted in Figure 16 (Noor & Mohemad, 2008).

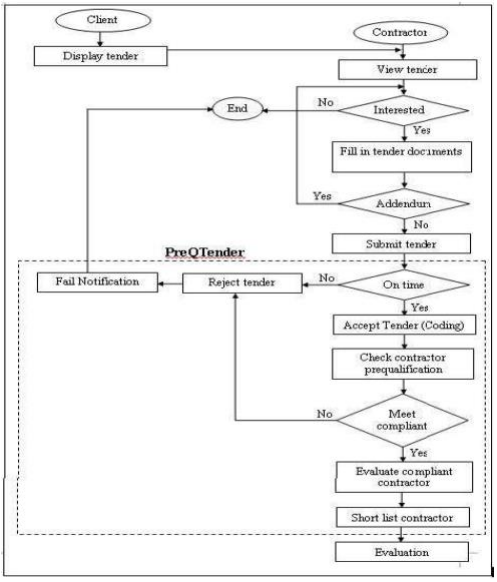

Figure 16: Overall workflow of PreQTender (Noor & Mohemad, 2008) *[E]*

Extensive research has been done on prequalification practices and criteria. Practices and criteria differ between countries according to the rules, regulations and procedures to be followed. Palaneeswaran & Kumaraswamy (2001) examined several prequalification practices in Australia, Hong Kong and USA. Frequently used prequalification criteria are technical, financial, time performance, quality assurance, human resource management, skill level, experience, workload support functions etcetera.

PreQTender makes use of Analytical Hierarchy Process (AHP) to evaluate tender criteria. AHP is a powerful and flexible weighted scoring decision-making process. AHP takes care of both, qualitative and quantitative aspects of a decision and it even helps people to determine the right priorities for making a weighted selection. AHP also facilitates group decision making. Problems are broken down into a hierarchy of smaller parts and are systematically solved by following the AHP steps (Cziner, Tuomaala, & Hurme, 2005; Taylor, Banaitiene, & Banaitis, 2006).

Like the e-procurement system architecture from Cheng et al., (2003), PreQTender provides its prequalification decision support functionalities also via a web-based service. An advantage from web-based solutions is that they do not require any specific support from additional software. Moreover, web-based sofware is also easily accessible and provides an interactive and unique interface. The software architecture of PreQTender is depicted in Figure 17.

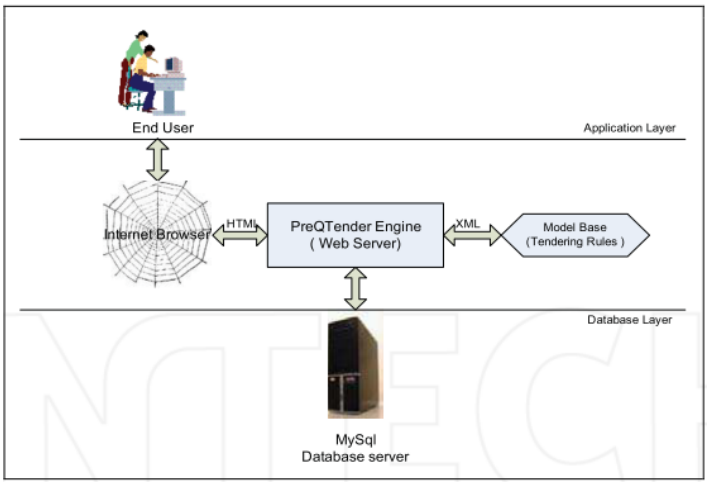

Figure 17: Software architecture of PreQTender (Noor & Mohemad, 2008) *[E]*

To access PreQTender the user needs to use an internet browser. The internet browser triggers the webserver via HTTP requests who processes these requests using a Gateway Interface Script (CGI). The CGI handles model processing, SQL generation, post-SQL processing and HTML formatting. Then requests from the application server are send to the database server. JavaScript and Hypertext PreProcessor (PHP) are used to improve the display of results and for user interaction functionalities (Noor & Mohemad, 2008).

The heart of the PreQTender system is the tendering engine. It is a collection of software procedures written in PHP and is hosted on an Apache webserver. The webserver will receive input from the model-base were all the tendering rules are stored. Based on the rules in model-base, all the tender documents will be processed after which they are stored in a MySQL database. The results of the analysis will be returned to the user via its internet browser.

Heddad (2013) came up with an e-tender system architecture, called E-tendering transaction and submission system (ETTS), that could be used by Libyan governmental organizations. Libyan governmental and private sector companies have become demanded to use internet technologies seeking its potential financial savings. Sirte Oil Company (SOC), a large company in the Libyan Oil Industry, owned by the government, is used as sample in the application and implementation of the e-tender web application due to its high volume procurement exchanges. For example, SOCs current procurement workflow to issue a purchase order takes more time than the actual delivery. It takes the company three till five months in order to receive an order under normal work practice instead of one to two.

SOC already made an innovative step to publish tender announcements and invitations on their company website. However, there is no digital interaction with customers possible. Tender related documents are submitted by post or by authorized representatives. The architecture developed by Heddad (2013) attempts to shorten purchasing time and stimulates the transition to digital communication in order to improve information exchange with vendors.

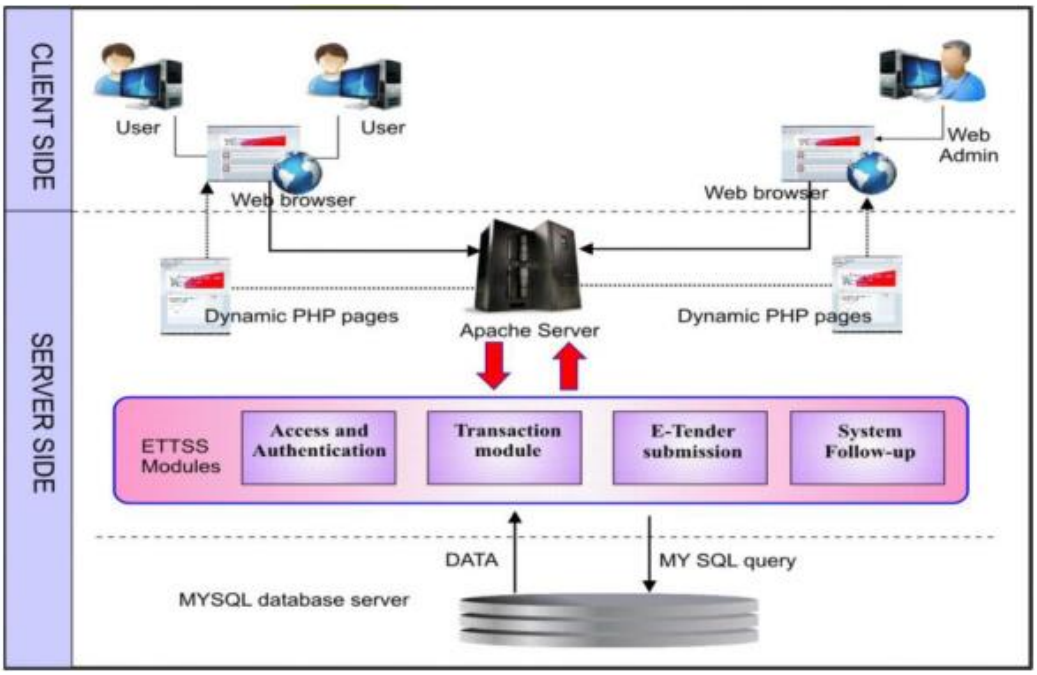

Figure 18: ETTS architecture (Heddad, 2013) [E]

The ETTS multi-tier architecture is depicted in Figure 18. It consists of two sides, has various modules and different servers are required. Due to its layered architecture, changes can be made per layer without affecting other layers.

Just as the proposed tender application by Noor & Mohemad (2008), also the proposed tender application from Heddad (2013) makes use of an MySQL database server and from an Apache webserver. Dynamic PHP pages are used to store and execute business logic and HTML in combination with CSS and Javascript is used to present the actual web-pages to the users.

The first module within the ETTS architecture is responsible for Access and Authentication. Only authorized users are allowed to login. The Transaction module is responsible for transactions such as the payments. Payments can be made through credit card and PayPal. After a successful payment, the vender is able to download the purchased documents. The third module takes care of tender offer document submission. Vendors are able to upload their offers digitally. The tenders are stored in the central database. Finally, there is the System module. The purpose of this module is to provide administrators monitoring functions. For example, they can see whether the system receives vendor queries and what offers are submitted (Heddad, 2013).

By comparing the three different architectures developed throughout the years, you will recognize that the overall application architecture is not changed a lot. Core elements such as a webserver and a database are available in all architectures. Every architecture makes use of user accounts for different functions and with different authorizations. However, there are several improvements that need to be distinguish. Where Cheng et al. (2003) have a strong focus to digitalizing the manual tender process, the PreQTender architecture from Noor & Mohemad (2008) focusses on automated decision support functions that eases tender comparison. Heddad (2013) added a function for suppliers that enables them to pay digitally for required tender documentation.

All the three architectures have a strong focus on the buyer side from a tender process. With the architectures mentioned, buyers can easily evaluate and compare digital received offers. However, responding to tenders is possibly even more time consuming than initiating a tender itself. Non of the reviewed digital tender facilities has decent bid-preparation support. The only provided facility is digital offer document submission. This research will have a strong focus in the bid-preparation process.

3.3.2 Intelligent agents in tender processes

In this paragraph we describe two different, agent oriented, automated purchase or tender solutions. Software agents are self-contained autonomous modules that perform assigned tasks by humans and are able to interact with other agents or software applications to complete a certain task (Lea, Gupta, & Yu, 2005). The first solution, by Ito & Rizal Salleh (2000), is a blackboard-based negotiation system for a collaborative supply chain system. The second solution, by Shin & Jung (2004), describes a mobile-agent-based negotiation process.

Management of a chain of logistic processes is called Supply Chain Management (SCM). SCM is an integrated network of suppliers, factories, warehouses, distribution centers and retailers. SCM aims to coordinate ordering processes between customer and supplier in a fast and flexible manner. Ito & Rizal Salleh (2000) came up with the idea for an open tender concept based on blackboard negotiation within a collaborative supply chain system (CSCS). Within a blackboard-based environment, intelligent agents use a blackboard to exchange information for collaboration. The open tender concept stimulates transparency to all suppliers, which will result in a sound competition to obtain a tender (Ito & Rizal Salleh, 2000).

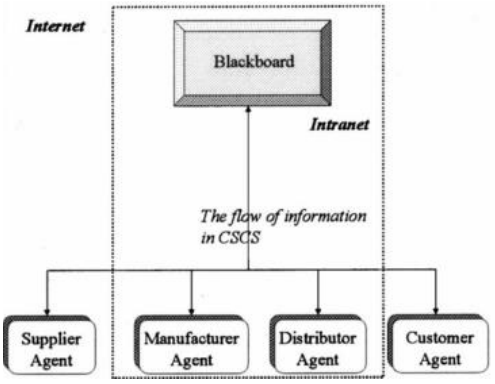

Figure 19: Agents interaction in CSCS (Ito & Rizal Salleh, 2000) *[E]*

The figure above, Figure 19, indicates the interaction of agents with one central Blackboard (BB) over the internet. BB regulates and provides the right information to the concerning agent. Take for example an inventory control application. One dedicated Inventory Control Agent (ICA) works to control the inventory levels of a certain shop and even negotiates with Supplying Agents (SA) to reorder materials if they become below a certain threshold.

Another scenario could be that a certain company is looking for specific materials for their new product line. This company could publish his specific request at BB after which it can be reviewed by hundreds of potential suppliers. This scenario is depicted in Figure 20 and it is called an open tender competition.

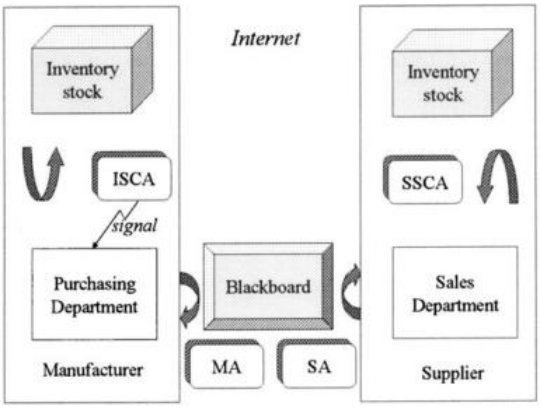

Figure 20: Interaction in open tender process (Ito & Rizal Salleh, 2000) *[E]*

SAs scour the internet to find trading opportunities, once an interesting opportunity is found the SA will urge its host company to submit a quotation. Then the BB will receive all the individual quotations from candidate

suppliers and publishes them. Quotation publication could motivate participating suppliers to sharpening their initial offer before BB will close the tender in order to select the most appropriate quotation based on selection criteria (Ito & Rizal Salleh, 2000).

Shin & Jung (2004) developed a fully automated mobile agent-based negotiation process for distributed Shop Floor Control Systems (SFCS). Their negotiation mechanism, called Mobile Agent-based Negotiation Process (MANPro), consists of a variety of individual bidding agents who autonomously swerve over the internet from their Virtual Controller to various Resource Controllers to collect possible offers and to return them home after which the offers can be evaluated, compared and finally awarded.

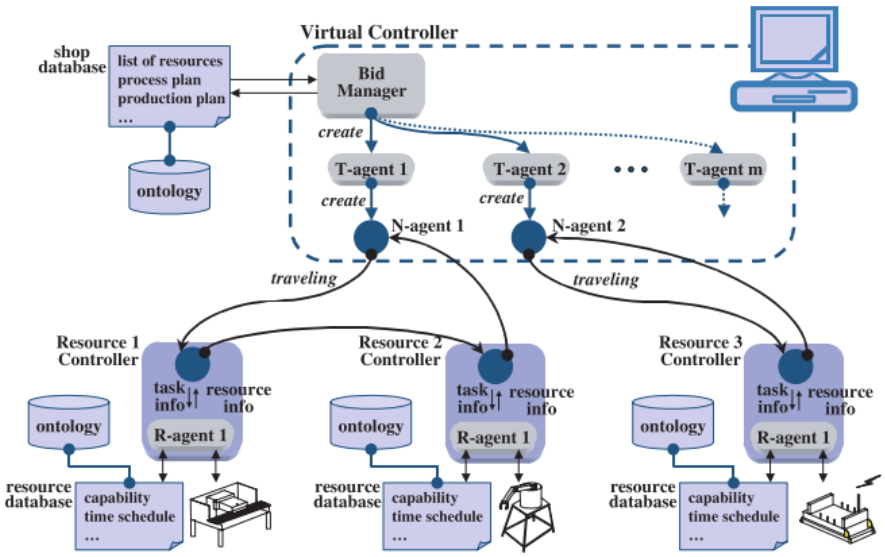

Figure 21: Framework of MANPro (Shin & Jung, 2004) *[E]*

Four functional modules can be distinguished in the MANPro communication architecture. First, there is a Bid Manager (BM), second a Task Agent (T-agent), third a Negotiation Agent (N-Agent) and finally a Resource Agent (R-agent). The BM can be seen as an overall supervisor of the negotiation process. The BM coordinates, supervises and initiates negotiations on the shop floor. T-agents are bound to just one task and they manage therefor only one negotiation process. Both, the BM and several T-agents are located in the so-called Virtual Controller. T-agents generate N-agents who actually execute the negotiation process by traveling from Resource Controller one to two in order to collect information and generate bids. Each Resource Controller has its own R-agents. R-agents fulfill the task to give N-agents the interface with the resource database (Shin & Jung, 2004).

T-agents manage negotiation processes from the viewpoint of a single part. R-agents call for bids as so called latent contractors. In fact, T-agents are able to negotiate with several R-agents to find the best possible solution (Shin & Jung, 2004).

Fundamental difference between blackboard-based negotiation (Ito & Rizal Salleh, 2000) and the MANPro (Shin & Jung, 2004) solution lies in the fact that for the first solution IAs report to a central blackboard where all the received data is processed. Within the MANPro solution, T-agents generate N-agents who travel dynamically from supplier to supplier after which they return with the gathered data for their T-agent. Additionally, N-agents contain a database including required data which enables them to make individual bid related decisions. According to Shin & Jung (2004) MANPro has various benefits over a blackboard-based negotiation solution. Frist, they state that network load will be reduced. Second, N-agents work asynchronously and autonomously. A third motivation, the MANPro solution is robust and fault-tolerant since it does not rely on one single blackboard.

4 Bid Preparation

4.1 Bid proposal preparation and markup decisions factors

4.1.1 Micro, small and medium-sized enterprises

Small and medium-sized enterprises (SMEs) play a significant role by supplying public sector organizations. SME organizations are flexible and have a strong entrepreneurial focus (Woldesenbet, Ram, & Jones, 2011). From a SMEs point of view, governmental organizations are reliable customers. Most governmental organizations guarantee prompt payment, they enhance a SMEs reputation and often they offer long-term opportunities. These preconditions are essential for sustainable growth (Loader, 2005).

However, not every SME organization is of the same size. SME organizations can be divided into three scales. The first scale is referred to as Micro enterprises; this group has 1-9 employees. The second scale is referred to as Small enterprises; this group has 10-49 employees. Finally, the third scale is referred to as Medium enterprises and it has 50-249 employees. A recent study by Flynn, McKevitt, & Davis (2013) under 4567 respondents who are involved in public sector tendering demonstrated the impact of a company's size in public sector tendering. It turns out that firm size, measured by the number of employees, influence tender behavior and success significantly.

Arguments for this phenomenon could be that smallest SME organizations are often inexperienced and the available resources are thinly spread. Others are, within small organizations, the exploitation of ICT is often low and there are less upskilling opportunities for employees (Arbore, 2006; Karjalainen & Kemppainen, 2008).

Different SME organizations express their frustration about the enormous resource demands required for successful participation in public tenders (Purchase, Goh, & Dooley, 2009). This resource demands, such as procedural hurdles, administrative complexity and time make it extremely difficult for small SME organizations to win a tender. According to Vincze Máté (2010), just 33 percent of the public tenders published in the Official Journal of the European Union between 2006 and 2008 is awarded to a SME organization. From the SME organizations, Medium sized enterprises have the most potential to win a tender followed by small organizations. Micro enterprises have the lowest perception of success (Flynn et al., 2013).

4.1.2 Bid or no-bid reasoning factors

The decision for a company to participate in a tender or not, to submit an offer or not is known in literature as the bid or no-bid decision. The decision to bid or not to bid is not only made based on the probability of winning the tender. It is even more important for the supplier to know if they are able to finish the project according to the contract agreements. For a company's management team it is difficult to decide about the, to bid or not to bid decision in a couple of days since the decision is highly related its macro environment and to the often unclear project requirements. According to Egemen & Mohamed (2008), the bid or no-bid decision is often based upon a company's experience, intuition and guesses.

In a competitive bidding process, a contractor must make the decision to bid or not to bid. If the contractor decides to bid, he needs to submit an estimated price. After bid evaluation, the client awards the project to the preferred supplier. Shash (1993) distinguished two stages in the bidding process. First, there is the decision to bid or not to bid and then there is the markup level.

To go deeply into the heart of the bidding problem Egemen & Mohamed (2008) performed a research to uncover the main factors that characterize the two stages of bidding processes. The research is performed under 80 contracting organizations from Northern Cyprus and Turkey. They all operate in the construction market. According to the authors, the results are generalizable to other markets throughout the world.

The different contributing factors to the final bid of no-bid decisions are divided into three main categories: 'Firm-Related Factors', 'Project-Related Factors' and 'Market Conditions/Expectations and Strategic Considerations'. The most important factors regarding the bid or no-bid decision are factors (blue ovals in Figure 22) 1.1 Need for Work, 2.1 Project Conditions Contributing to Profitability, 2.2.1.4 Client & Consultant, 1.2 Strength of Firm and 2.2.1.2 Job Complexity. For the markup decision, the most important factors (green ovals in Figure 22) are 2.3 Competition considering the current project, 3.1 Competition considering the current market conditions only,

2.2.2.1 Economic Condition & Instability, 2.1 Project Conditions Contributing to Profitability and 1.1 Need for Work. For the complete list of all the factor see Egemen & Mohamed (2008). The complete bid-reasoning model (hierarchy) is depicted in Figure 22.

Two additional findings from the survey: 92,5% of the respondents has never used statistics or mathematics to support their bid or no-bid and markup decision and 97,5% of the respondents use their intuition as their primary tool in the decision making process (Egemen & Mohamed, 2008).

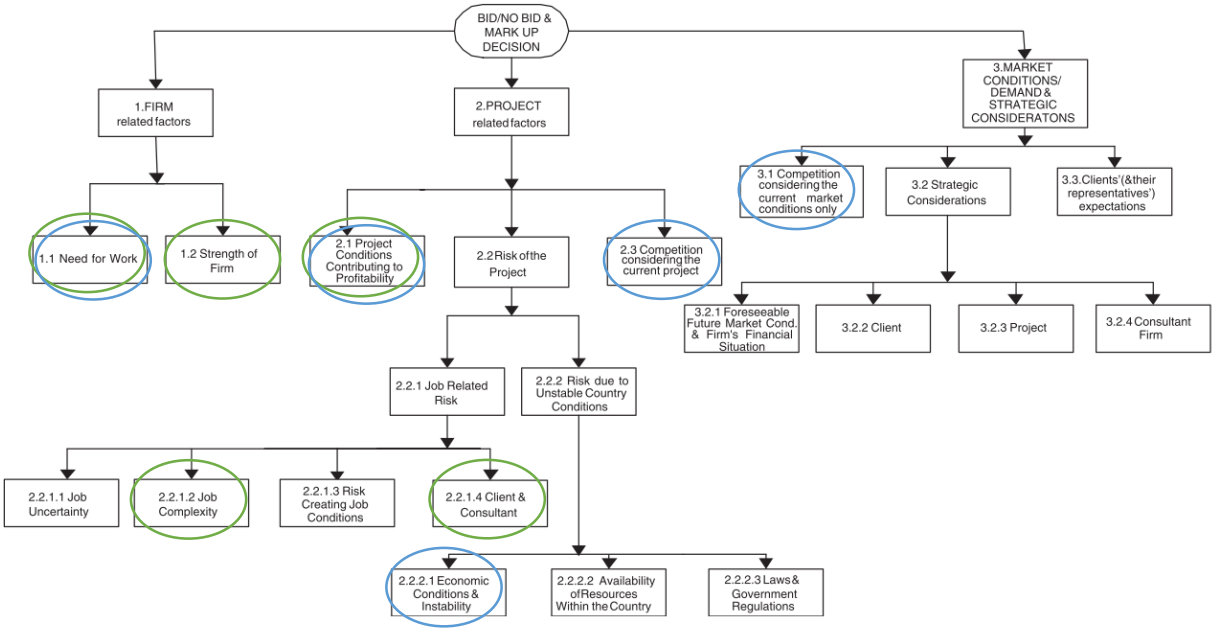

Figure 22: Bid reason model (hierarchy) by Egemen & Mohamed (2008) [E]

Another attempt towards a bid-reasoning model is made by (Chuna & Li, 2000). Chuna & Li (2000) used a wide variety literature sources to identify factors related to the bid and markup decision. Besides literature, Chuna & Li (2000) kept interviews with six experiences practitioners in competitive bidding. Differing from other studies, this study uses four sub goals: Competition, company's position in bidding, risk and need for work. To structure the factors based on relevance The Analytical Hierarchy Process (AHP) technique was applied. AHP is a framework of logic and problem resolving achieved by organizing perception, judgments, feelings and memories into a hierarchy of forces that influences decision results (Saaty, 2000).

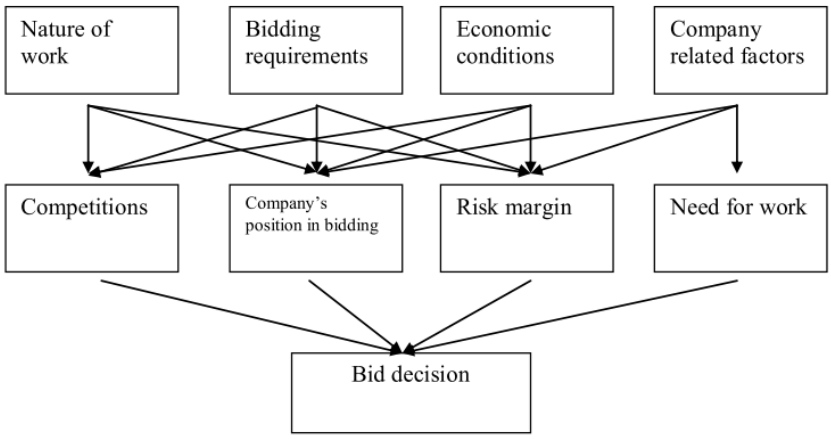

Figure 23: Bid-reasoning model by Chuna & Li (2000) [E]

Competition plays in both bid-reasoning models a central role. In the bid-reasoning hierarchy of Egemen & Mohamed (2008) it is situated in the bid-markup process. Bidding with a higher markup increases the profit if the bid can be won. However, it decreases the probability of winning the bid. The potential level of competition

is often related to the number of competitors. The number of competitors and their competitiveness has also a strong influence on the change of winning a bid. Several external factors can assess the level of competition: Nature of the project, bidding requirements and the social-economic environment (Chuna & Li, 2000).

If a company has a stronger position in competition than its competitors do have, it will be likely that this will give the company a more risk-positive attitude. A strong position in bidding can have several causes. It can depend on the situation at the time of bidding and on the type of project to bid on. A certain project can be suitable to a company because of its specialty and resources (Chuna & Li, 2000).

Besides the quality criterion, the costs criterion is a heavily weighted evaluation point for buyers. Also for suppliers is pricing extremely important, often estimated cost form the basis for the markup evaluation. If the cost estimate is inadequate, costs can overrun which will cut into the markup. In some cases, it can even result in a negative financial result at the end of the project. To overcome these scenarios, a contingency provision is usually included in costs estimations (Chuna & Li, 2000).

The latest sub goal is need for work. Based on the level of competition and on a risk assessment the expected profit for a certain project can be determined. In case of a low risk project and a high need work, contractors are generally risk positive and willing to accept less profit. If a contractor lacks enthusiasm for the job, they often consider adding a premium to their bids (Chuna & Li, 2000).

4.1.3 Learning strategy in bidding

Fu, Drew, & Lo (2003) performed a quantitative research in which they test if experienced contractors are more successful in bidding than inexperienced contractors. For their analysis, they used a sample of 266 Hong Kong public building contracts, these contracts were awarded between 1990 and 1996. After analyzing the survey results, they found evidence that experienced contractors are more competitive in competitive bidding than inexperienced contractors.

Additionally, Fu, Drew, & Lo (2003) suggested an experiential learning strategy for contractors in bidding that is depicted in Figure 24. The relevance of this learning strategy is demonstrated by the following two generalized theories that show a sharp relationship between learning and experience. First, “Learning is the product of experience and takes place through the attempt to solve problems during the activity.” Arrow (1962). Second, “The performance of the learner has steady improvement through repetition of the same task, over which the ingress of stimuli to solving problems is admitted” Arrow (1962).

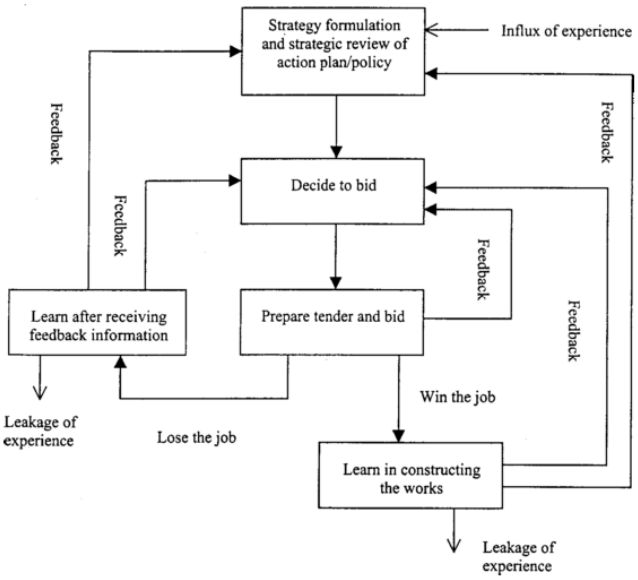

Figure 24: Experiential learning of contractors in bidding [E]

According to Love, Li, Irani, & Faniran (2000), feedback is the dynamic of experiential learning. Learning will never occur if there is no knowledge converted from feedback information. Once a company has decided to bid on a

certain project a bid needs to be prepared. During the bid preparation, difficulties can be identified. Feedback from bid preparation can be used for further decisions related to bid preparation. If the company wins the bid, it can learn from the actual construction process itself. If the company loses the bid, it needs to learn from the client's feedback. In either situations, winning or losing a bid, a company should learn to improve its strategy for upcoming projects. Relevant to mention is that the experiential learning process is not completely closed. New experiences can influx the organization and existing experiences can drain out from the organization (Fu et al., 2003).

4.2 Bid/No-bid strategy and markup decision models

In this paragraph, we elaborate on and discuss several bid/no-bid strategies. Herby we distinguish manual strategies and automated strategies. The first manual strategy to discuss is based on a case study called the Whorcop project by Cova, Salle, & Vincent (2000). The second manual strategy describes an integrated bid/no-bid decision process for construction contractors based on lessons learned (Shokri-ghasabeh & Zillante, 2010). After elaborating on two manual bid/no-bid strategies, we discuss two automated decision support techniques. The first bid/no-bid technique described by Wanous, Boussabaine, & Lewis (2000) is what they call a parametric solution. After that, we describe a bid/no-bid solution based on neural networks by Mohammed Wanous, Boussabaine, & Lewis (2003).

Cova et al., (2000) considers the screening of potential projects, or the pre-bid analysis, as a strategic procedure of paramount importance. Bidding on potential projects involves huge expenses in preparing the answers for a final offer. Losing important tenders or winning tenders without a decent markup can be damaging for a company.

A question to answer is, is your company able to fulfil an eventual project successfully? Besides the potential of your own company, it is important to identify potential competitors who could complete this project successfully as well. It is important to be realistic about the real chances of winning the tender. Do you already have a relationship with your potential client or are there at least links with them? In addition, what about your competitors relationship towards that potential client? Try to clarify your own and your competitors position towards the client (Cova et al., 2000).

Be an interlocutor for your potential client, you need to know every detail about the functional and technical requirements specification from the offer for tender document. Possible contradictions in the product specification could reveal ignorance and that should be fully utilized. Your client is possibly not a product expert, which is a chance for you to show your expertise by supporting him in setting up weighed product requirements. Try to get in touch with the people who fix the product specifications, probably you can be influential (Cova et al., 2000).

Cova et al. (2000) positioned the Pre-Bid Analysis as an intermediate stage after the anticipatory work of project marketing. Anticipatory work consists of the work to be done in order to develop a good network position.

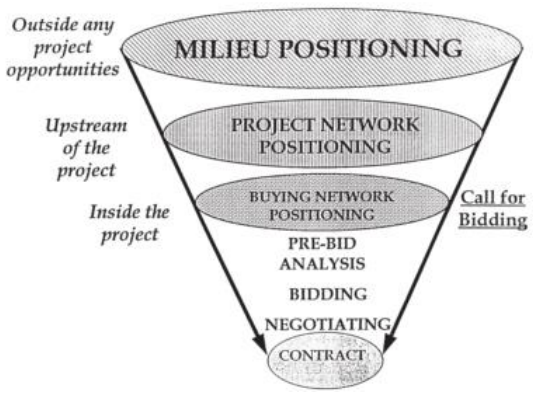

Figure 25: Pre-Bid Analysis as an intermediate stage in the project marketing process [E]

Besides the Pre-Bid Analysis, depicted in Figure 25, Cova et al. (2000) made use of the Project Buying Network diagram depicted in Figure 26. Positioning your own, or this case: "Catalu's", company against you competitors in a Buying Network diagram will provide useful insights in your position into the actual buying network from your potential client. This Network Buying diagram reveals useful insights regarding communication lines between the stakeholders. These diagrams could for example be helpful by forecasting the likeliness of winning a certain tender.

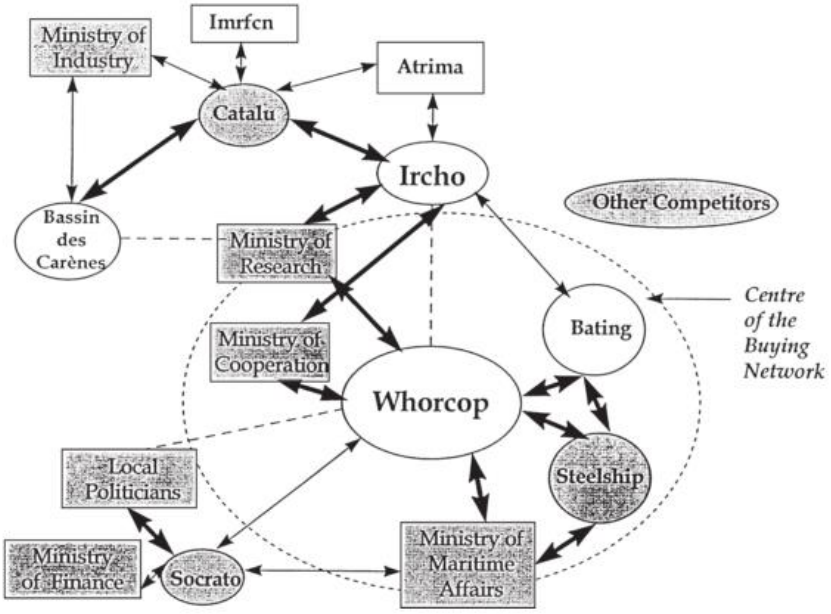

Figure 26: The Catalu Project Buying Network [E]

In the Project Buying Network diagram above, we immediately recognize the Whorcop oval, which is the project Catalu is tendering for. The dotted oval around the Whorcop oval is called the Buying Centre. The Buying Centre is based on past performance project results.

By analyzing the relational position of Catalu within its Project Buying Network we can conclude the following. First, we recognize that Catalu is not positioned within the actual buying network of the Whorcop project in contrast with some of its competitors. Second, Catalu is has no direct link with the Whorcop project that indicates that both still do not had direct contact with each other. Catalus competitor Steelship, has a direct link with the Whorcop project and is located in the actual buying network, which gives them a stronger relational position.

In this scenario Catalu has two reasonable options to increase the chance of winning the bid. First, in the pre-bid phase, Catalu can initiate a lobby in order to manipulate the people who are responsible for specifying the actual product requirements. In this way, Catalu starts creating a fruitful relationship. Second, Catalu's business partner Inrcho already has a relationship with the Whorcop project. Catalu could stimulate Ircho to join forces and to become business partner during the Whorcop tender.

Shokri-ghasabeh & Zillante (2010) consider their bid or no-bid decision model as tool that can be used for project selection purposes inspired by the fact that most, if not all, organizations try to increase their benefits and decrease their losses. By using this project selection model there is no need to choose a project among different projects. The project selection model evaluates a project for its feasibility and hence its suitability for tender (Shokri-ghasabeh & Zillante, 2010). The project selection model consists of four phases and is depicted in Figure 27.

Phases	Precedent(s)	Process	Deliverable – Description
1	---- **or** Phase 4 (if available)	Corporate brainstorming to find bid/no bid decision criteria	**List** – of bid/no bid criteria
2	---- **or** Phase 4 (if available)	Study on contractor's previous similar projects	**Feedback** - against the criteria
3	Phase 1 **and** Phase 2	Bid/no bid decision	**Decision** - to/not to choose a project to bid for
4	Phases 1 **and** Phase 2 **and** Phase 3 (if the project was undertaken)	Post-project review	**Lessons learned** – will be used for the next bid/no bid decision process as an input to phase 2

Figure 27: Integrated bid/no-bid decision model [E]

Phase 1 is about setting up the bid/no-bid criteria list. Shokri-ghasabeh & Zillante (2010) list twenty-six criteria subdivided into the following categories: Project, Market, Contractor, Client and Contract. A more comprehensive criteria list is composed by Egemen & Mohamed (2008) and Chuna & Li (2000). Depending on the type of business, bid/no-bid criteria needs to be selected. The final criteria list is deliverable of the first phase.

Phase 2 is about lessons learned from previous similar projects. In more detail, the second step in this bid/no-bid model is the actual evaluating process. Similar previous projects from a contractor are evaluated against the bid/no-bid criteria determined in the first phase. Ideally, the evaluators group exists of different members than the group who decided about the bid/no-bid criteria. Evaluation against the criteria can either be in a descriptive format, in words, or in a numerical format, in rating. The deliverable of the second phase is structured feedback from previous similar projects (Shokri-ghasabeh & Zillante, 2010).

Phase 3 is concerned with the decision to bid or not to bid. The same team as who decided about relevant bid/no-bid criteria in the first phase executes this process. The primary question that needs to be answered is whether or not it would be advantageous to bid for a particular project. In order to come to an informed decision an evaluation must be made of the prospective project against the list of bid/no-bid criteria. In addition, the lessons learned from similar previous projects needs to be considered. It is up to the decision group about how to grade the project. The result from phase 3 is having a project accepted or rejected against careful selected bid/no-bid criteria (Shokri-ghasabeh & Zillante, 2010).

Moreover, phase 4 is about future projects. The authors call this phase the most important phase from the decision model. Phase 4 is about documenting lessons learned by the contractor about the project that was tendered for and subsequently undertaken by that contractor. To document the lessons learned the author suggest assigning the same group that undertook phase 2. Documented lessons learned should be archived for future use (Shokri-ghasabeh & Zillante, 2010).

A more automated bid/no-bid model is developed by M. Wanous et al., (2000). M. Wanous et al., (2000) developed a parametric solution to support the bid/no-bid decision. The model is based on a literature study, six semi-structured interviews and a formal questionnaire through which 38 factors that affect the bid/no-bid decision were identified. Their conceptual model was optimized using data about 162 real bidding situations that result in an accuracy of 85% by simulating the actual decisions.

A subsets of the initial 38 factors were used for the final study. The factors used, denoted with an "F", are listed in Appendix A: Parameters bidding factors and parametric scale, Table 33 and Table 34. Positive bidding factors are marked with an "*i"* and negative bidding factors are marked with a *"j".* Next to the factors, the parameters "B" and "NB" are shown. The "B" parameter represents the Bidding Index and the "NB" parameters indicate the Kill Score. Gaining the Kill Score results immediately in a No Bid suggestion (Wanous et al., 2000).

The first step the authors took by developing their bid/no-bid decision model was developing a parametric scale for the positive factors (a) and for the negative factors (b). The parametric scale is shown in Appendix A: Parameters bidding factors and parametric scale, Figure 44. The "I" parameter represents the importance index, "CA" indicates the contractor's assessment score given to "F" (score between 0 and 6 points). To illustrate the impact of the parametric scale, take for example the positive bidding factor "7. Availability of materials required". This factor applies: B = 3.56 (neutral score) and NB = 2. These values indicate that this factor still has a negative effect if the contractor's assessment was CA < 3.56. It would cause a no-bid recommendation when CA < 2 (Appendix A: Parameters bidding factors and parametric scale, Figure 44) (Wanous et al., 2000).

To combine the individual assessment results used for a certain project denoted as "*k*", the follow formula is used to produce a bidding index, "BI". "*n*" are the number of factors used. "*m*" are the number of negative factors used.

$$BI_k = \sum_{i=1}^{m} Ib_i(CA_i - B_i) - \sum_{j=1}^{n} Ib_j(CA_j - B_j)$$

B*ik* = 0 when CA*i* = *Bi and* CA*j* = B*j.* B*ik* = 0 represents the mid-point case scenario. This neither result in a positive or negative bidding suggestion, the strengths of both decisions are equal. BI*k* > 0 indicates a positive effect on the bid decision were BI*k* < 0 indicates a negative effect (Wanous et al., 2000).

The systematic model who actually implements the formula is depicted in Figure 46 (Appendix B: Systematic model for bid/no-bid decision) and need to be explained as follows. First, the user need to describe the bidding situation by assigning a subjectively score between 0 and 6 were 0 indicates extremely low influence of the concerning positive or negative bidding factors and 6 indicates extremely high impact. If one or more of these factors violate its corresponding kill value, the no-bid decision will be recommended. It is up to the user to accept or reject that recommendation. When all the factors are evaluated a bidding index (BI*k*) is produced (Wanous et al., 2000).

Mohammed Wanous et al., (2003) describe a bid/no-bid model using artificial neural network (ANN) techniques. An important improvement made in this ANN model compared to their previous parametric bid/no-bid model is that the ANN model doesn't assume linear influence from the decision criteria on the final decision, which might not be the case (Wanous et al., 2003).

Several researchers claim that ANN techniques are suitable to model 'markup selection' because of the highly unstructured decision-making process. The bid/no-bid decision making processes is unstructured and therefor ANN techniques could be suitable (LI & LOVE, 2010; LI, 1996; Moselhi, Hegazy, & Fazio, 1991). ANN techniques have several advantages. The first advantage is that ANN techniques are able to learn underlying functional relationships from real life bidding situations, these relationships can easily be collected from contractors. The second advantage, according to Moshiri & Cameron (2000), ANN models are not restricted by assumptions of linearity. Finally, ANN models are able to provide meaningful data, even when the data to be processed are incomplete or include errors (Lippmann, 1987).

Before the ANN model can be developed relevant input factors need to be discovered. M. Wanous et al., (2000) identified 35 useful bidding factors through a formal questionnaire survey supported by six semi-structured interviews. Bidding factors with an Importance Index below 50% were omitted. The remaining 18 factors were used to collect data on real bidding situations via another questionnaire. The bidding factors are listed in Table 35: Selection of the most influential bidding factors, Appendix C: Selection of the most influential bidding factors.

The collected data from the second survey needed first to be pre-processed and transformed into pairs of inputs and outputs. This process involved three steps: First, errors in the data were discovered and disregarded. Then,

twenty cases from the remaining sample were randomly selected for the validation process. Finally, the data needs to be translated into a format that is suitable for the development software used: 'NeuralWorks Professional II/Plus". The data is organized as a set of pairs of inputs and outputs: 'bid' or 'no-bid' and input variables for the corresponding factors are scores between 0 and 6 were 0 means extremely low (no-bid) and 6 means extremely high (bid).

Development process ANN model

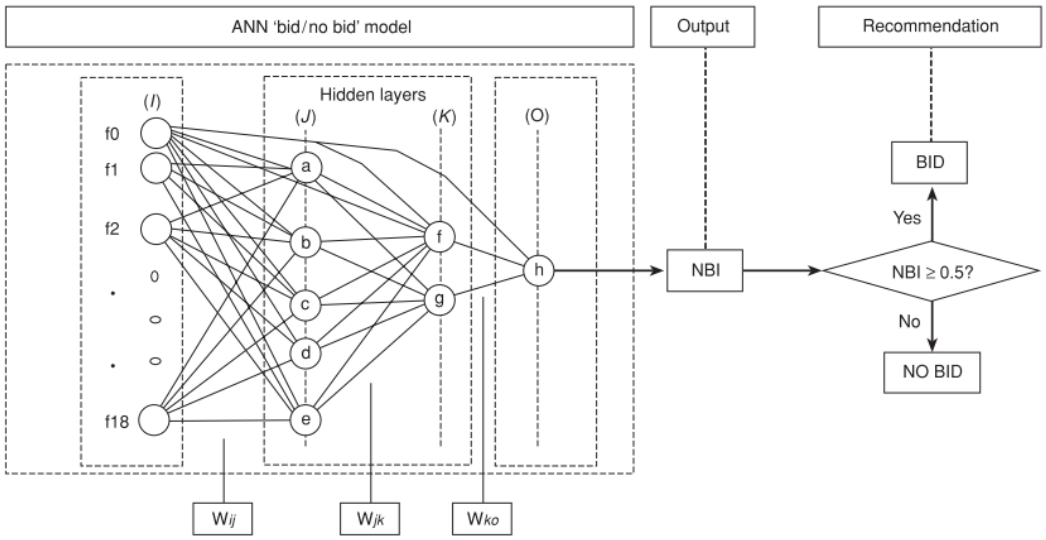

Figure 28: Final structure ANN model [E]

For the complete development process of the ANN model see the paper "A neural network bid/no bid model: the case for contractors in Syria" by Wanous et al., (2003). The structure of the final ANN model is shown in Figure 28. Model users need to submit their personal assessment of the 18 bidding variables on a scale from 0 to 6 into the ANN model. Then, the model produces a Neural Bidding Index (NBI) on a scale from 0 to 1. The closer to 0, the higher the confidence in a 'no bid' recommendation and the closer to 1, the higher the confidence in a 'bid' recommendation (Wanous et al., 2003).

5 Case Study Results

5.1 Case study A1: A1 at Ordina

The case study interview results are structured according to the interview guidelines. A complete transcription can be found in chapter 11.10.1. The original audio recordings can be acquired on request. The complete semi structured interview took 1 hour and 45 minutes.

5.1.1 Introduction interviewee and his working company

A1 participated in case study one, also known as case study A. A1 has over six years of experience in Business Consulting, especially pre-sales activities and later as New Business Developer.

A1 holds a BSc. In Computer Science and an MSc in Business Administration.

Input provided by A1 for this cases study is based on his personal experience. No confidential information from his current or former employers is shared.

5.1.2 Organizational aspects

Ordina NV is Benelux largest independent ICT service provider with around 2900 employees. Ordina is founded in 1973 and in 2014; their total turnover was 366.9 million euros. This first ten years of Ordina's history, they were a subsidiary company from Société Générale. In 1985, Ordina's activities in The Netherlands became privatized via a managementbuy-out and in 1987; Ordina became listed on the Euronext (ORDI).

Ordina designs, builds and manages ICT applications for governmental, financial, industrial and health care organizations. Ordina has wide spread expertise in translating business strategies into tailored business processes by using knowledge from her a client's organization, operating markets and local governmental legislations. The organizational structure is divided in five divisions in order to serve the clients effectively and efficiently: Technology & Competences, Business Consulting & Solutions, Managed Services, Sourcing and Belgium/Luxemburg. Every division has its own director.

From 2900 employees are around 50 employees responsible for sales. Half of them are have a dedicated focus on governmental tender projects. In general, public tender projects are essential for large ICT service providers and for ICT consultancy firms, this also applies for Ordina according to A1. On average, Ordina wins 25 percent of the tender projects in which they attend. Public tender projects are responsible for 35 until 45 percent of the total turnover.

Ordina's top 10 clients are listed below[8]:

- Europese Commissie
- ING Groep
- Ministerie van Binnelandse Zaken
- Ministerie van Economische Zaken
- Ministerie van Financiën
- Ministerie van Infrastructuur en Mileu
- Ministerie van Onderwijs, Cultuur en Wetenschap
- Ministerie van Sociale Zaken en Werkgelegenheid
- Philips
- Raboank

5.1.3 Acquisition phase

The acquisition phase is important according to A1. Within the acquisition phase, new business opportunities are identified. Ordina maintains a distinction between public and private tender projects. Account Managers are responsible for a select portion of a certain market in order to work efficient.

Private tender projects, also known as RFI's or RFP's, are mostly acquired via networking activities initiated by Sales Managers. Cold calling acquisition is a popular activity that allow Sales Managers to enter new markets. In order to intensify business at current clients, business consultants have the responsibility to collect and communicate customer's intelligence regarding for example upcoming projects. It may be clear that these activities comply with governmental legislation.

Public tender projects, often-governmental tender projects, are published online on tender portals such as TenderNed and TED. Dedicated Account Managers monitor these platforms by reading new published IT tender proposals thoroughly.

From the moment new realistic business opportunities are identified by sales representatives, Ordina's 'Deal Review Systematiek' (DRS) starts. A1 mentioned that in practice DRS starts when a customer's request reaches sales or account managers. Requests could be an RFP, RFI or a market consultation.

DRS consists of six phases, a diversity of roles and teams. DRS phases are supported by teams and teams consists of roles. Different roles can be applied to one single employee and these roles can differ per opportunity. DRS is developed in two flavors, DRS light is applicable for projects between 50.000 euro and 150.000 euro and DRS Standard is applicable for projects larger than 150.000 euro. For bots flavors applies, that Ordina is willing to close a result obligation and that, no unknown sub-contractors are involved.

To facilitate sales activities, Ordina implemented Miller Heiman sales strategies throughout its entire sales organization. Miller Heiman distinguishes six phases in its sales funnel. The different Miller Heiman phases are listed below. As soon as a lead, SSO (Single Sales Objective), is registered in the sales funnel, DRS process starts. Ordina's entire sales funnel is managed within Salesforce.com. Multiple SSO's can be linked to one single account. SalesForce.com enables Ordina to follow opportunities in a transparent manner.

It is the responsibility for every individual commercial manager to keep Salesforce.com up-to-date. So-called DOR (Delivery Opportunity Review) template files are used in order to structure lead registration in Salesforce.com. DOR templates contain at least the general characteristics from the bid, a well-written business case including a checklist that supports the bid or no-bid decision and appointments made during different progress meetings.

[8] Analistenpresentatie Ordina jaarcijfers 2014-1.pdf

Sales phases	Description
Universe	Unqualified lead, Opportunity creation, unqualified RFI
Above the funnel	RFI bid, RFI issued, RFI awarded, RFP unqualified
In the funnel	RFP bid, RFP issued
Best few	RFP longlist, RFP shortlist, RFP top shortlist
Won/Lost	RFP lost, awarded, gentleman agreement, declaration of intent, contract negotiation
Contracted	Sign contract

Table 6: Ordina's sales phases

5.1.4 Project qualification

Project qualification starts from the moment a commercial manager decides to start a DRS process. Three documents are required in order to start a DRS process; these documents provide input for DRS meeting one. The document set consists of documentation retrieved from the client; often this is information regarding the market consultation, an RFI or an RFP. Then, a completely filled out Blue Sheet is required and the earlier explained DOR form.

The Blue Sheet is part of Miller Heiman's sales strategy. It is a one-page tactical plan and it is often used in complex sales processes. A Blue Sheet supports a sales representative in discovering the political field at a client's business side. It identifies key users from an organization in order to gain insight in their decision-making capabilities and their motivation for buying a product. A Blue Sheet allow sales representatives to judge about their competitive position, it stimulates focusing on personal and business motives from involved key users on the clients side and it helps in differentiation their organization by focusing on strong spots.[9]

The role Bid Managers is responsible for scheduling the first DRS meeting. Besides scheduling the DRS meeting, a Bid Manager also composes the bid team. Minimal the following roles are involved: Bid Manager, Commercial Manager, Contract Owner and a Business Assurance Manager. Depending on the opportunity type, additional roles can be added. The available roles and teams are listed in Table 7 and Table 8 below.

Besides collecting the required documents, the Bid Manager is responsible for the initial bid planning and the initial bid calculation. During the first DRS meeting, decisions regarding the items listed below needs to be made. The decisions made are noted in an updated version of the initial DOR document. A bid/no-bid decision is made based on the output from the first DRS meeting.

- Who will become the internal contract owner (organizational);
- Are we able and willing to invest resources and time in order to acquire the opportunity;
- What budget is available in order to fund the entire acquisition process;
- What will be the process and strategy, in general terms, in order to acquire the opportunity;
- What will be the structure of the participating teams for upcoming project phases (e.g. DRS-team, Review team, Write team, etcetera;
- What follow-up activities have DRS meeting members after this meeting;

Decisions in the selling phase are always taken by at least three roles: Contract Owner, Commercial Manager and the Business Assurance Manager. Final decisions are always made based on proposed decisions. It is the responsibility from the Bid Manager to bundle and bring in these proposed decisions. Each of the three role has the ability to stop a decision. If the decision to bid is made, the Offer Management Process starts.

[9] http://www.motion5.nl/portfolio/methodieken/miller-heiman-blue-sheet-strategic-selling.html

Role	Description
Contract Owner (CE)	The CE (Contract Eigenaar) is responsible for releasing a final bid and after awarding for delivering the product or service. BM and CM have to report to the CE.
Commercial Manager (CV)	The CV (Commercieel verantwoordelijke) is responsible for opportunity qualification and successful selling. The CV also subscribes SSO's in the Salesforce.com application.
Business Assurance Manager (BAM)	The BAM ensures that the DRS process proceeds according to agreements. The BAM also validates the quality of the documents generated in the Offer Management Process in order to make informed decisions.
Bid Manager (BM)	The BM is responsible for managing the Offer Management Process and for supervising the Bid Team. He also is chair of DRS meetings, is responsible for offer planning- and communication, takes care of the minutes and maintains to-do lists during the Opportunity Management and Bid Management phases. Finally, the BM is responsible for communication with stakeholders and for project archiving.
Contract Manager (CM)	The CM negotiates with the client; on behave of the CE, in the contract acquisition phase. After awarding, the CM is responsible for the implementation.
Resource Owner (RE)	The RE advises the CE and is responsible for delivering resources and expertise in order to create an offer or implement a solution.
Solution Manager (SM)	The SM reviews customers' requests on feasibility and practicability. He also suggests realistic solutions and assesses which expertise is required for realization. Also the SM advices the CE.
Legal affairs (JZ)	JZ is point of contact during the entire lifecycle of a contract for legal related questions. JZ also provides legal advice based on concept agreements.
Tender desk (TB)	The TB advices the CE during the first DRS phase regarding a customers' demands and contractual agreements in relation with a customers' demands. The TB also advices the CE regarding possible mitigation measures.

Table 7: Available DRS roles

Teams	Description
Bid (DRS) team	Members from the DRS. DRS team compositions differ per project, based on the expertise required. The following roles participate in every project type: Bid Manager, Commercial Manager, Contract Owner and a Business Assurance Manager were the Bid Manager is the technical chair. He is not really a DRS team member. It is up to the Bid Manager to add additional disciplines in order to write a winning offer.
Core team	The Core team is responsible for the actual bid (its contents) and it consists of the following roles: Commercial Manager, Solution Manager and the Bid Manager. The Core team reports to the DRS team.
Write team / experts	The Write team consists of experts who deliver content for the final bid, based on their expertise. Write team experts are also allowed to give unsolicited advice to the DRS team as well as the Core team.
Review team	The Review team consists of employees who review the bid substantively. In order to become a Review team member, an employee should be aware of an opportunities context, the strategy from potential competitors and of Ordina's product portfolio. Often, a deputy from the management team is member of the Review team.

Table 8: Available DRS teams

5.1.5 Prepare bid

The Bid Manager has to responsibility to steer its bid team through DRS 1. DRS 1 contains all the activities in order to make an informed bid or no-bid decision. When the decision to bid is made, a winning offer needs to be written.

Writing a winning offer is also the responsibility from the Bid Manager at Ordina according to A1. The Core Team and the Writing team are responsible for substantive aspects under the direction of the Bid Manager.

Ordina's offer realization process consists of different phases. First, there is the Delivery Opportunity Review phase. In this phase, the DOR realized in DRS 1 is analyzed and ambiguities are clarified. The second phase, Opportunity Strategy, is used to develop a strategy in order to write a winning bid. For example, potential competitors are identified and unique selling points are compared. Then, a Bulleted Version of the final bid is developed. The topics who needs to be discussed in the final offer are listed in bullet format. The bullet list is input for the Writing team, it enables them to write a coherent bid. After the Draft version, a Final Version is composed.

The offer realization phases are supported by six Work streams. Work streams are sort of building blocks who can be used by the Writing team in order to work efficient. Building blocks can be refined to each specific situation mentioned A1. Ordina distinguishes the following Work streams: Commercial, Solution, Risk assessment, Pricing, Legal and Content.

A1 mentioned that by the end of Ordina's Offer Management Process a second DRS meeting is scheduled. The Bid Manager is also the chair of the second DRS meeting. Output from the second DRS meeting is a Go or No-go decision. If the bid team decides to No-go, activities in order to finalize the bid will be discontinued. A Go decision will trigger the finalization process.

Aspects on which Ordina makes a Go or No-go decisions are listed below:

Go or No-go aspects	Description
Quotation	The overall quotation quality needs to be from a certain quality what allows the DRS team to make an informed decision.
Costs price	In this overview, the cost price calculation is worked out In such a way that values can be used in OCS (Offerte Calculatie Sheet or Quotation Calculation Sheet).
Margin (OCS & MCS)	In OCS or MCS (Mantel Calculatie Sheet or Frame Calculation Sheet) are the expected margin and the expected pre-calculation margin described. In accordance with Ordina's authorization guidelines decides the DRS team if they accept the expected pre-calculation margin.
Legal advice	Ordina's department Legal Affairs provides legal advice. Various aspects are appointed: Internal considerations, aspects who do not comply with Ordina's policies and other potential legal risks.
Risk analysis	The Contract Manager creates a risk analysis. For each potential risk, mitigations are described.
Risk profile	The Business Assurance Manager provides an overall risk assessment for the opportunity.
Teaming agreement	Signed agreement with potential sub-contractors. A teaming agreement also covers back-to-back matters.
Action items	Action items contains a list with closed and open action items from DRS1.

Table 9: Go or No-go aspects

Go or No-go decisions including motivations are documented in DOR forms by the Bid Manager. Relevant issues including pending activities, possible future activities in order to increase changes to win and activities in order to lower identified risks for future project phases.

In this process, two applications are used. Salesforce is used in order to store data streams generated during the sales process. Within Salesforce, data is structured in accordance with Miller Heiman's sales funnel. Ordina's

SMARTportal, which is in essence a Sharepoint instance, is used to store documentation regarding the bid processes itself. Bid calculation sheets and a diversity of process flows are available for bid team members.

5.1.6 Finalize offer

The last changes to the offer are made in the finalize offer phase by the Core Team in order to deliver an offer in accordance with the clients submission protocol. The Bid Manager is responsible for archiving the bid in Ordina's bid archive. The bid archive is used for analysis purposes and for future projects. Often, chapters can easily be reused which has a timesaving effect.

The Commercial Manager sends Ordina's tailor made offer on time to the prospect. He is also responsible for managing a customers responses. If the client decides to accept the offer, DRS3 the so called Contract Acquisition phase, starts. If the client decides to decline the offer, the Finishing Offer Process starts is executed. Sometimes it happens that offers are conditionally accepted. In these scenarios, the project is set back to the offer construction phase in order to make necessary modifications.

The last activity in Ordina's bid preparation process is evaluation. Internal Evaluation is required in both scenarios after the Finalize offer phase. During this evaluation, Ordina's Quotation Management Process is evaluated. The purpose of this evaluation is to identify lessons learned regarding the Quotation Management Process. Concrete improvement activities are scheduled in order to structurally improve future Quotation processes.

5.1.7 Acquire contract

Ordina's Contract Acquisition phase starts after awarding of a certain project. The presence of a contract is the foundation of service provisioning and is a prerequisite for solid financial reporting within Ordina. A1 mentioned four goals from Ordina's Contract Acquisition phase:

- Obtaining of a legal foundation for executing projects and deployment of professionals at customers and protecting Ordina's legal rights;
- Entering into contracts with manageable risks for Ordina;
- Determining and providing insights in the terms of delivery;
- Generating of relevant management information.

The Contract Manager is responsible for contract negotiation. The Bid Manager can be consulted in order to provide knowledge that he acquired during offer phase. Regular coordination takes place between the Contract Owner, Contract Manager, Business Assurance Manager and a Legal Officer in order to create a contract that suites Ordina's interests. Finally, a senior Legal Officer carries out a contract review in order to identify clauses that could form potential risks. After the client signed the contract, the Commercial Manager updates the sales funnel status and the Bid Manager archives the signed contract.

5.1.8 Deliver service

Services can be delivered as soon as contracts are signed. Service delivery is done in three phases. First, there is a so-called kick-off meeting (DRS 4). The kick-off meeting informs all the involved stakeholders about the ins-and-outs of the service that needs to be delivered.

Second, Ordina maintains an extensive monitoring mechanism (DRS 5) in order to monitor project progress on a monthly basis. Ordina's monitoring mechanism covers the following topics: Monitoring of scheduled activities, finance, risk, customer satisfaction and quality. A dedicated steering committee generates and evaluates progress reports per topic. On a monthly basis, the Contract Manager has to report to the Contract Director and the Financial Controller.

Ordina Project Assurance (OPA) is the basis for financial evaluation for ongoing projects. This highly standardized reporting mechanism provides progress information from ongoing projects including its associated risks. Traffic lights are used to show the actual status of a certain project. Arrows are used to indicate whether the status improved (arrow-up), deteriorated (arrow-down) or stays the same (horizontal-arrow) compared to previous month.

Third, a more formal activity, concerns Project Finalization (DRS 6). Discharge needs to be given to the Bid Manager.

5.2 Case study B1: B1 at ATOS

The case study interview results are structured according to the interview guidelines. A complete transcription can be found in chapter 11.10.2. The original audio recordings can be acquired on request. The complete semi structured interview took 2 hours.

5.2.1 Introduction interviewee and his working company

B1 participated in case study two, also known as case study B. B1 has over 15 years of experience as sales professional and within that period, he held various positions, all of them, except the first one within Atos. Two years as an Account Managers at Origin Nederland BV, two years in the role of Business Developer, four years as an Sales Executive, two years as Manager Solution Architects, two years as Manager from the Bid Factory and in total five years as an Bid Manager.

B1 studied Informatics at Fontys Hogescholen.

Input provided by B1 for this cases study is based on his personal experience. No confidential information from his current or former employer is shared.

5.2.2 Organizational aspects

Atos is a European leader in delivering digital services. The Atos Group serves a large global client base, they provide: Consulting and Systems Integration services, Manages Services and Business Process Outsourcing, Cloud operations, Big Data and Cyber Security solutions as well as transactional services. Atos is focused on business technology that powers progress and helps organizations to create their firm of the future. Due to its industry knowledge and deep technology expertise, the Atos Group works with clients across different business sectors: Defense, Financial Services, Health, Manufacturing, Media, Utilities, Public sector, Retail, Telecommunications and Transportation.[10]

In 2014, Atos had an annual revenue of circa 11 billion euros and they had around 93000 employees in 72 countries. From these 93000 employees, around 2 percent of them has a dedicated focus on sales. One-tenth (around 18) of the sales representatives are Bid Managers. Bid Managers can be seen as Project Managers who have to deliver a winning bid. Almost the entire workforce is indirectly involved in sales activities since a substantial part of Atos revenue stream comes from body shopping activities. Consultants are expected to identify new leads and opportunities at the organizations to which they are hired. According to Atos's annual report 2013, 27 percent of the company's revenue is coming from from the public sector[11].

Atos tender hit rate is conform market rates. B1 was not allowed elaborate on exact numbers. The hit rate from his previous department Bid Factory was around 85 percent, which was extremely high. The Bid Factory was specialized in up- and cross selling at already existing customers. Due to the existing relationship with its customers, Bid Factories hit rated were significantly higher compared to hit rates achieved via new business at unknown customers. B1 sketches the figure below to illustrate the ideal moment to sell.

[10] http://atos.net/en-us/home/we-are.html
[11] http://atos.net/en-us/home/investors/financial-information/reports.html

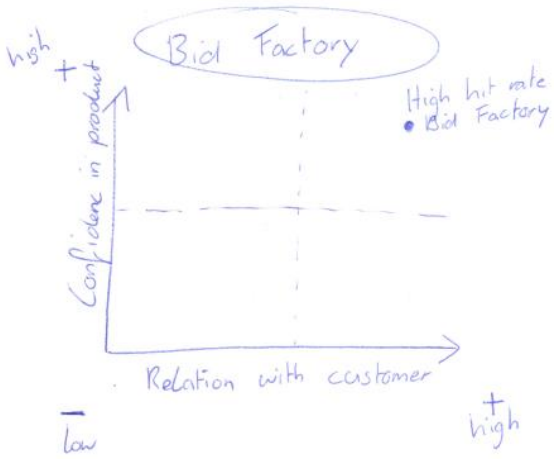

Figure 31: Confidence in product and Relationship with customer [E]

5.2.3 Acquisition phase

At Atos, they distinguish two sales perspectives. First, the private sector and second the public sector. Each sector has its own sales professionals. The private sector is specialized in commercial projects acquired through individual initiatives by Sales, Business Development, Account Management and the selling Consultants. The public sector sales professionals have a strong focus on governmental tender projects. All available public tender projects are published on TenderNed or TED. These tender publication platforms are extremely important for Atos and they monitor them 24 hours per day.

For tender platform monitoring Atos has an dedicated administrative function. This function is responsible for reading through all published tenders within relevant categories and it makes the first qualification. B1 noticed that public tenders could easily be identified were other acquisition techniques require much higher time investments, e.g. networking etcetera.

B1 argues that a good relation with your prospect or client stimulates selling. In a certain way, the way in which Ordina manages her customer relations is effective.[12] However, also relation management should also take place within organization ethical guidelines.

While setting up a new tender, specific thresholds could be introduced who in essence only allows certain organization to participate successfully in the tender. Customers could for example describe how the taillight from a police car should look like. More detailed, customers could prescribe the exact taillight dimensions.[13]

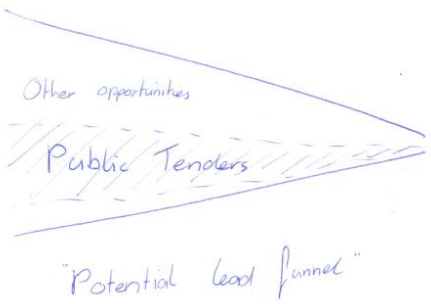

Figure 32: Public Tender stream is easy to identify [E]

A relative new phenomenon is 'demand guidance' (in Dutch 'vraagbegeleiding'). It happens that Atos receives unexpectedly RFI (Request for Information) requests. Often, these RFI requests come from consultancy firms

[12] http://zembla.vara.nl/seizoenen/2014/afleveringen/02-10-2014/ict-bedrijf-ordina-fraudeerde-met-overheidsaanbestedingen

[13] http://www.ftm.nl/exclusive/aanbestedingsaffaire-politievoertuigen-opgeschaald/

who provide demand guidance services. Consultancy firms like Accenture and Aquaterra are specialized in demand guidance services. For IT service providers like Atos it is important to recognize possible interposition of demand guidance consultancies. It could be a waste of time to respond on every RFI request coming from such organizations because it is difficult to assess whether competitive IT service providers already have a relation with such consultancies.

Often, the IT suppliers have broader knowledge and deeper understanding of IT solution compared to governmental customers. For this reason, it happens that consultancy firms support organizations or governmental departments in specifying their functional or technical requirements. This situation could encourage a conflict of interest. Being suspected from a conflict of interest is the latest thing a civil servant wants. To overcome this potential risk, VBP (Value Based Procurement) is introduced. With VBP, potential suppliers collaborate in a workgroup in order to specify requirements, potential risks plus opportunities and key performance indicators. VBP ensures accurate market knowledge provided by potential suppliers and it stimulates innovation. After setting up the requirements every supplier can submit a quotation and a motivation why he or she would be the preferred supplier. Especially by VBP tender projects are the Solution Architects who already participated in the RFI phase also involved in the actual implementation, which is not the case in regular tender projects.

The acquisition phase is supported with funnel management software. Funnel management software allows sales representatives to monitor and maintain each individual phase in their sales process.

5.2.4 Qualification phase

The decision to bid or not to bid is an important and crucial for Atos. Participating in tender projects require huge investments. As a selling company, you need to be sure that you can win the bid with your proposition. Otherwise, you should not participate at all.

Atos uses three perspective in order to assess an opportunity: Business interests, Technical feasibility and Legal. Within Atos, a wide spectrum of roles and responsibilities is available to support the final bid or no-bid decision. These different roles and responsibilities work together. It is important to know in an early stage if there is a positive business case, do the expected profits outweighs the investment. Not only the investment for contract execution but also the investment for bid preparation should be taken into account as well as the corresponding risks.

To guide the bid process, Atos introduced its own bid management process, which is called RAINBOW. RAINBOW foresees in small bid projects such as upselling opportunities and in large bid projects such as merger and acquisition processes. In order to facilitate objective bid or no bid decision making RAINBOW has several decision support functions. One of the decision support functions consists of a set of questions. Various stakeholders within Atos should provide their expertise by answering the questions in order to get an objective bid or no bid consult.

Within Atos, a dedicated steering committee decides about the actual bid or no-bid decision for projects larger than one million euro. The sales representative is authorized to decide about the qualification decisions for projects less than one million euro. Sales representatives and the bid-team provide input for the steering committees qualification decision. The questions below assist the bid team to structure the information required to make the qualification decision.

- Do we understand the prospects demand?
- Do we have a serious change to win the bid?
- Does the expect profit outweigh the investment?
- Can we and are we willing to deliver?

Often, prospects demands are formulated vague. Because of this vague formulation, it is difficult to interpret the demands in a correct manner, which in essence disrupts creation of a suitable offer. To overcome unclarities, a prospect can host one or two “Question and answer” sessions, in Dutch “Nota van inlichtingen”, in order to inform his questioning suppliers sufficiently. These sessions are assessable for all participating suppliers. Most pursuit decisions at Atos are conditionally due to uncertainties who needs to be clarified later on.

It is important to have a realistic indication about the real change to win the bid. Is there already a relation with the prospect or client? What kind of relation is it? Having a good relation with the prospect increases the chance of winning the bid significantly. Also the past performance at a certain customer has to be taken into account. For example, if you currently have a hit-rate around 10 percent at an existing customer, it is probably wise to make a no-bid decision.

B1 emphasizes the importance of the context where a decision is made. Sales representatives are eager to submit offers, even when the chances of winning a bid are relatively low. Why would they do that? Do they have no other opportunities to work on? Are we loosing faces if we not participate? After several years as a Bid Manager B1 still recognizes that people fail to assess their opportunity on factors such as Risk, Investment and Profit. B1's rule of thumb: Bid if you really have a chance to win.

Setting up a winning bid can demand huge investments. A wide variety of disciplines can be required to build a suitable and winning solution. It is important to compare the estimated initial investment in order to setup the bid with the expected profit margin. If the investment is to large compared to the expected profits and the real change of winning the bid, it could be worthwhile to decide not to bid.

The fourth question to ask is: "Are we able to deliver?". Several criteria are related to this question: Companies proposition, availability of qualified personnel and experience in the branch. Unless Atos has a wide product portfolio, however there are scenario's that this portfolio does not cover a client's demands. To overcome this scenario Atos could decide to hire qualified subcontractors or to recruit new qualified personnel for specialized work. Another option is to retrain existing personnel. The branch in which a prospect operates is important. Additional work can be gained by tapping into new branches. Every opportunity requires scenario specific considerations and each has its own specific pros and cons. The question "are we able to deliver" cannot be answered with just a "Yes" or a "No". The different perspectives should be taken into account.

Regarding the perspectives Business interests and Technical feasibility, B1 does not work with a spreadsheet containing a bid or no-bid checklist. However, due to his experience, he uses the "checklist criteria" in his mind to assess an opportunity. In respect of the Legal perspective, Atos maintains a strict traffic light decision support model. Due to its stock listing, Atos is restricted from taking large risks.

B1 was allowed to provide one example regarding the Legal perspective: Governmental departments often demand its suppliers to accept the ARBIT delivery terms and conditions. However, one of the articles within ARBIT says that the supplier needs accept unlimited liability.[14] The Legal perspective has only one major interest, it needs to assess whether there are additional risks besides the already expected ones. If there are risks identified, what are acceptable mitigation levels.

In case of a tender or RFI requests, Atos always perform a credit check. It is great that a certain customer wants to commit to Atos for the upcoming ten years, but is that organization credit worthy. In case of international RFI requests, Atos will always consult the international corruption index.

Atos maintains a strong code of ethics.[15] In their code of ethics, Atos describes explicit how it ensures a fair competition. How it deals with business integrity and how it prevents conflicts of interest. B1 experienced an ethical decision from the board of directors himself. Atos refused to participate any longer in a certain project because by doing so it would violate the organizations code of ethics.

5.2.4.1 Supportive software

To register sales opportunities and to monitor the sales pipeline Atos uses the SAP CRM (Customer Relationship Management) module. Atos distinguishes two pillars, customers and prospects or potential customers. It is up to the responsible Account Manager how and what is logged. A rule of thumb in here is 'garbage in, garbage out'. Available customer information is shared throughout the organization on different organizational levels. Every

[14] http://kvdl.nl/nieuws/arbit-rijksvoorwaarden-voor-it-overeenkomsten/
[15] http://atos.net/en-us/home/we-are/company-profile/corporate-values/code-of-ethics.html

employee is supplied with adequate customer information that helps him/her in preparation for crucial meetings.

To structure information used in steering committee sessions, Atos uses mind-mapping software.

5.2.5 Prepare bid

5.2.5.1 Bid teams

At Atos, Bid Managers are the project managers from bid teams. Bid Managers invite all the required disciplines in order to participate in the teams. Additionally, Bid Managers arrange the collaboration meetings. Important to notice, the Bid Manager is not involved in the qualification decision itself.

Often, large bid teams consists of the following roles: Bid Manager, Solution Manager, Financial Engineer, Legal Manager, HR Manager, Bid Writer and a Lead Sales. It is not necessary to have all disciplines in smaller bid teams for less complex projects. The Bid Manager is responsible for configuring well-functioning bid teams. On average, Bid Teams work on three bids simultaneously.

The business is responsible for funding the investment required to prepare the bid. At the moment, bid preparation projects are funded from common costs. Ideally, bid preparation costs are borne by the prospect or client you are working for, however a counter effect could be that no bids are done anymore since there is always a financial risk that you lose the bid.

5.2.5.2 Code of ethics

Atos code of ethics does not allow sales representatives or Business Consultants to gain competitive advantages by supporting prospects or clients with setting up their RFI or their RFP (Request for Proposal). B1 explicitly mentioned that this does not mean it never happens, referring to the Ordina casus.

In order to support prospects or clients with setting up their RFI or RFP, Atos will often suggest her prospect to initiate a VBP process. Within a VBP process, several potential suppliers are invited to collaborate in solution sessions in order to get consensus regarding a suitable solution. Herby Atos complies with its own code of ethics.

5.2.5.3 Sub-contractors

In bid preparation, subcontractors are important. For example, by delivering Managed Services Atos makes use of offshore parties. Because of participation of subcontractors in projects, back-to-back provisions in contracts need to be verified by a Legal Manager. The term ‘back-to-back’ refers to the replication of contractual terms through the entire supply chain. Subcontractors are responsible for their own contribution to the final offer.

By finding the best subcontractor for a certain job, Atos compares its subcontractors based in their past performance. Past performance lookups and price negotiation is done by Atos’s purchase department. Sales decides about the markup for the work delivered by subcontractors.

5.2.5.4 IT tool support

Feasible IT tooling is indispensable during the bid preparation process. However, bid preparation itself can be performed with standardized applications. At Atos, they propagate “het nieuwe werken”. Therefore, it is important to use applications that are accessible from remote locations.

B1 stated that it is impossible to build an offer generator as long as you are not selling pencils. To reuse commonly used offer sections, document repositories hosted on Sharepoint are frequently used. Besides repositories, office suites with extensive collaboration features, communication tools like Lync and Skype, are mobile phones also important. Especially for calculation purposes, sales representatives share their calculation sheets via Subversion (SVN). Finally, to facilitate and structure output from brainstorm sessions, mind-mapping tools are frequently used.

5.2.6 Finalize, evaluate and archive bid and service

Evaluation takes place in two separate activities. Bids are evaluated after awarding, delivered services are evaluated after delivery. B1 stated that it is important to have these evaluation activities separated since an

awarded contract can expire for example after six years. You do not want to wait with the bid evaluation after a contract's expiration date.

Evaluation takes place via the Plan, Do, Check, Act principle. Subject matter experts store knowledge derived from evaluation sessions in knowledge base repositories. Lessons learned are then available for the entire organization. Besides the subject matter experts, for example a Solution Architect, Atos has dedicated personnel who are responsible for bid/loss reviews. Bid/loss reviews are also stored in the centralized knowledge base.

5.3 Case study C1: C1 at Axians

The case study interview results are structured according to the interview guidelines. A complete transcription can be found in chapter 11.10.3. The original audio recordings can be acquired on request. The complete semi structured interview took 2 hours.

5.3.1 Introduction interviewee and his working company

C1 participated in case study three, also known as case study C. C1 has over 15 years of experience as Bid Manager at various organizations. C1 started his Bid Manager career at Getronics, after four year he switched to Tele2 Zakelijk to become a Senior Bid Manager for another six years. C1's career continued at Start People as a Senior Bid Manager and today C1 is working for Axians, previously known as Imtech ICT, as a Bid Manager.

C1 holds a Bachelor in Industrial Engineering from Hogeschool van Amsterdam.

Input provided by C1 for this cases study is based on his personal experience. No confidential information from his current or former employers is shared.

5.3.2 Organizational aspects

Axians, owned by VINCI group, is a full service IT service provider, it aims to deliver innovative and forward thinking solutions that solve issues and demonstrate added value. Axians delivers, secure and end-to-end, edge and virtual solutions to deploy reliable, integrated, cost-effective and secure networks. These are the main ingredients to deliver the end-user a true mobility experience, regardless of where, when or how they access the network.

Axians service portfolio stretches the following disciplines: Cloud Services, Business Applications, Business Analytics, Converged Infrastructure, Data Centers, Security, Collaborative Solutions, Enterprise Network, Mobility Solutions, Broadband Networks and Core Networks.

Axians has a strong international focus; they employ 7000 employees over 150 specialized business units in 15 different countries. This model stimulates people and business units to combine their strengths and talents to provide tailored and valuable solutions to customers, at the local level around the globe. [16]

Axians Nederland employs 500 employees; C1's business unit Communication Solutions has 350 employees. One-fourth of Axian's (NL) workforce consists of sales representatives, half of them, around 40 employees, are Bid Managers.

According to C1, tender projects are essential for the IT service market and therefor also for Axians. On average, 60 percent of Axians total turnover is gained via tender or RFP projects. Around 50 percent of the total turnover is gained via governmental and semi-governmental tender projects. An important reason for Axians to participate in tender projects is to acquire framework agreements. Framework agreements give organization the exclusive right to supply specified services within a certain period.

[16] http://www.axians.co.uk/en/about-us/axians-vinci-energies-brand-dedicated-ict/

C1 noticed that Axians has different business units to serve the large Enterprises market and SMEs (Small and Medium Enterprises). The business unit with an Enterprise focus executes most of the tender and RFP projects. The SME business unit sells its products and services via cold acquisition and its relational network.

Last year, Axians participated in around 100 tender projects. This figure includes RFP's, RFI's and market consultations. Especially market consultations are important for future business. At Axians, Bid Managers can work on three to four normal sized tenders simultaneously. The organizations goals is to win more than 50 percent of the participated bids. This is also C1's personal target. Last year, Axians hit-rate was excellent with 60 percent!

5.3.3 Acquisition phase

Seeking new business opportunities is within Axians a responsibility from Account Management. In case of new tender opportunities, Account Managers monitor tender publication platforms such as TenderNed and Aanbestedingskalender frequently. C1 explained that this situation is not ideally due to long lead times. Often, when an Account Manager identifies an opportunity he takes one week to decide whether to bid where after he informs Bid Management. In some scenarios, this unused week is essential to prepare an initial set of questions for the prospect. At C1's former employer Tele2, the Bid Managers themselves explore publication platforms in order to make a first selection. Then, it is up to Account Management to decide whether to bid, according to C1, the Tele2 scenario was more efficient.

At Axians they do not maintain minimum turnover as a criteria for tender participation. Governmental legislation prescribes threshold values were after (semi-)governmental projects need to be tendered. Projects that exceeds these threshold values are by default relevant for Axians. Due to the small profit margins at C1's previous employer Tele2, they maintained strict minimum turnover values in order keep the cost of sale positive.

C1 mentioned that Account Management has roughly two periods during the acquisition phase in order to influence the prospect. First, the market consultation sessions. Market consultation sessions are hosted by prospects in order to validate the applicability of the solution they created. Account Management needs to inform the prospect about his product or service possibilities before the actual consultation. An Account Manager should influence his prospect in such a way that it will only pose questions who can be answered positively by his company. Second, there is the competitive dialogue. In these sessions, suppliers are invited to elaborate on how they can contribute to a conceptual RFP. Frequently it is possible to know which competitors participate in the competitive dialogue sessions. You also know the strengths and weaknesses from the products and services delivered by the competitors. During these sessions, the Account Manager needs to promote his product or service in such a way that it appears to be the most suitable solution compared to the solution from its competitor.

A relative new phenomenon is Value Based Procurement (VBP). With VBP, prospects formulate functional questions for a set of possible suppliers. Then, it is up to every individual supplier to propose a suitable solution within budget. Besides the proposed solution is the organizations track record of importance. As a supplier you really have to convince your prospect that you are able to deliver the proposed solution within budget and time.

C1 noticed that sales methods like Solution Selling and Miller Heiman are frequently used by organization working in ICT branches. These sales methods are all based on influencing your prospect. For ICT service providers it is essential to have an instant sales focus since the European Union decided that governmental contracts have an expiration date. This means that organizations needs to acquire new contracts, in a highly competitive market, before their contracts expire. According to C1, civil servants know that commercial parties have certain interests, it is up to them maintain their own integrity.

Within Axians, the entire bid preparation process is well described. However, there is room for adjustments while using the process. Opportunity qualification on the other hand is in essence a strict procedure and there is room for improvement, according to C1. There are scenarios were objections to not participate in a bid are ignored which results in a bid decision instead of a no-bid decision. In sales departments there is often an opportunistic mood, all tenders can be won in theory and therefor you should participate. Currently, at Axians, sales representatives with the biggest mouth are right.

The acquisition phase is supported by IT tooling. First, there are tender publication platforms such as TenderNed and Aanbestedingskalender to explore published tenders. Also the TenderNed mailing list is important. Second, Axians uses a CRM application called CRM. Funnel management takes place in this CRM application. Every Account Manager needs to maintain the probability percentage from his or her opportunities based on guidelines from Miller Heiman's qualification process.

C1 noticed that Bid Managers are often not involved in the sales phase, so they do not work that much with CRM and they do not have to estimate success rates.

5.3.4 Project qualification

According to C1, bid qualification is the most important activity within the bid preparation process. Thoroughly bid qualification leads to an excellent foundation for a final bid strategy. If Account Managers are not capable to develop a winning bid strategy, Bid Managers need to support them. Providing assistance takes place via strategic peer sessions between the Account Manager and the Bid Manager, together they sharpen the proposition.

5.3.4.1 Qualification criteria

Axians does not facilitate its sales department with decision support tools regarding the bid or no-bid decision. C1 however developed a decision support application himself. C1 argued that such an objective decision support application substantiates his presentiment significantly.

C1's qualification model consists of two primarily questions:

- Can we deliver?
- Can we win?

Both questions need to be answered positively. The first questions is relatively easy to answer, if the prospects needs matches one or more products in your service catalogue, there will be no problem. However, if your reputation at a certain prospect is bad, than you will be able to deliver the product but it will be impossible to win the tender. On the other hand, if you are able to write a winning offer and during the operation appears that you are unable to deliver the promised solution you will experience contractual issues.

Besides the two primarily questions C1 elaborated on several secondary factors who are of importance in bid qualification. Each of these secondary qualification factors are used in his personally developed qualification application. Every factor has its own weight, which implicates its relative importance compared to the other factors. The qualification factors can differ per branches.

- Do we already know the prospect?
- Does the prospects knows our company?
- Do we already have a relation with the prospect?
- What do we know about our companies reputation at that prospect?
- How went the communication with the prospect so far?
- Do we have USPs (Unique Selling Points) at this project?
- What is the prospects opinion about these USPs?
- Do we need subcontractors?
    - What percentage of the profit belongs to subcontractors?
- Are there reasonable terms and conditions?

Two qualification criteria are about expiring contracts and about terms and conditions. A few months before contract expiration customers often initiate tender projects to enter into a new contract. In these scenario's Axians always participates in the tender in order to prevent losing the client. Important for Axians are the applicable terms and conditions. Often, governmental organization demand their potential supplier to accept default ARBIT terms and conditions. However, these terms and conditions are too unilaterally and therefor unacceptable without modifications. If the prospect is not willing to implement necessary modifications, participation is excluded.

Essential for thorough qualification is knowing the competition. Preferably, having in depth knowledge regarding the competitions USPs. One has to know what his own USPs are, compared to the USPs from the competition and the other way around. Based on the results from the USP analysis a potential strategy can be formulated in order to defeat the competition or in order to decide to no bid. A well motivated no bid decision can safe a company huge bid investments and allows the company to focus on other, more viable projects.

C1 explained that bid qualification did not took place at his former employer Getronics. Getronics participated in as much as possible tender projects because they were under assumption that all public tenders would be transparent and that every participant has equal changes to win. This misconception resulted in a 10 percent hit rate.

Another case, were bid qualification was properly done, took place at his former employer Tele2 Zakelijk. The Tele2 Zakelijk sales department did not experiences any competition anymore from its most important competitor KPN Zakelijk at specific product lines. It appears that KPN Zakelijk decided to not participate (no bid decision) in tender projects related to specific product lines if it would be likely that Tele2 Zakelijk was part of the competition.

Total cost of sale is another qualification criterion. Unless this criterion is not relevant for Axians, public tender opportunities in IT services are profitable by default, it could be a valuable criterion for other branches. For example the telecommunication branches.

The final qualification criteria mentioned by C1 was related to the availability of personnel or capacity to execute the opportunity. If there is insufficiently capacity it could be an option to hire contractors. In such scenario's you become the main contractor who delegates specialized work. Strict agreements regarding financial and legal aspects, including back-to-backs, are of importance.

5.3.4.2 Roles

Several roles are involved in the bid or no-bid decision process: Bid Manager, Account Manager, Sales Manager and always one deputy from the Management Team. An ideal situation would be the introduction from a so-called bid board, C1 commented. Every Account Manager has to presents his or her opportunity in around five minutes to the bid board committee. Questions that need to answered are:

- What is our prospects demand?
- What would our proposed solution be?
- Why do we have a realistic chance to win the bid?

Despite C1's active lobby for the introduction of a bid board, there is no one introduced yet. C1 argued that there is no priority for such a radical process improvement at the moment. Account Managers and Sales Managers have their personal monthly targets. If selling went smooth and targets are achieved, people are susceptible for improvement. However, when it is hard to achieve targets and the work pressure increases, people stop thinking. In these scenarios, sales representatives easily decide to bid anyway. Even if there is just only a small chance to win and Bid Managers advise them to no-bid.

The bid board committee should consists of an odd set of people with contrary interests and each should have an equal weighted right to vote. C1 argued that this composition is necessary for objective bid or no-bid decision making. Qualification decisions should be based on facts and not on today's thinking. At least the following disciplines should be involved in the committee according to C1: Sales Manager, Project Manager, and Service Delivery Manager. In case of structural disagreements or indecision, there should always be the possibility to escalate to the Management Team who should make the final decision. If an Account Manager is not able to sell his opportunity and solution to the bid board committee, why would he be able to sell his solution to a customer, argued C1.

5.3.4.3 Past performance

Intelligence regarding the market and expected competition is relevant input for writing a winning bid. Other valuable knowledge can be derived from lost-order review sessions. Lost-order session are hosted for tender participants who lost the order. During these sessions, the client explained why and on what criteria the winning

competitor presented a more suitable offer for his case. Output from these sessions is extremely valuable and can be used for future projects.

After each bid, evaluation takes places. Input for these bid evaluation sessions is derived from lost-order reviews. At Axians, there are no concrete Knowledge Management initiatives. C1 argued that context is extremely important for interpreting lost-order review results. Context can easily been lost if such knowledge is stored in a generalized fashion for knowledge management purposes. For example, a project planning is not in accordance with a clients expectations. Exactly the same project planning could be a winning one in other tender projects. Assessing a project planning is highly subjective. For future projects, it could make sense to know who will assess the project planning at a certain client. This allows you to deliver a tailor made planning according to the preferences from that specific assessor.

5.3.4.4 Tooling

Axians' CRM application is the most important application regarding their bid qualification process. Communication between employees and departments is all stored in a global CRM application. Axians' CRM includes also a central document repository were tender related communication documents can be stored under assigned projects.

Especially for his personal bid or no-bid reasoning, C1 uses his own decision support application. Important to state, C1's decision support application is only used by himself. However, he would highly recommend his bid department to adopt such a supportive application to objectify and thereby professionalize the decision making process.

If C1's suggestion to introduce a bid board, in which Account Manager has to present their opportunities to the bid board committee, would be adopted by the organization, presentation software such as Microsoft Powerpoint would also be essential.

5.3.5 Prepare bid

If the sales department decides to bid, a bid team is formed. At Axians, a bid team consists of the following roles: Account Manager, Project Manager, Service Manager, Solution Consultant and Legal Experts. Legal Experts can also be consulted in the acquisition phase. However, most Bid Managers has enough experience to assess smaller legal issues themselves. An example could be whether to accept default ARBIT terms and conditions.

Direct involvement from the Management Team is crucial in complex tender projects. There are scenarios in which you have to answer questions with "yes, we do support" instead of "no, but" in order to win the tender. However, a Consultant, Solution Architect or Bid Manager should not decide to bluff for himself. There are scenarios in which a bluff will affect the profitability of a project. Therefore, the Management Team needs to back the decision.

Axians does not always have the possibility to deliver every service or product themselves. In those situations, contractors have an important role. Contractors are invited in an early stage and are selected by the Bid Manager. Contractors always have the ability to participate in the bid preparation process, they ultimately know how to sell their own service or product. Contractor selection is not a task for the purchase department. Legal Experts cover back-to-back aspects.

No Bid Writers are involved in Axians' bid preparation process. The task of writing a consistent bid is assigned to the responsible Account Manager and to the corresponding Bid Manager. Relatively standard software is used for in the bid preparation process. Before a new bid can be written, a SharePoint repository is created. All the bid related documents are stored in a repository and are then accessible for every project member. Features such as document versioning and collaboration functions are covered in SharePoint. The actual bid document is written in Microsoft Word.

However, some prospects demand its potential suppliers to submit their offer in digital portals such as TenderNed, CTM and Negometrix according to C1. C1 argued that such digital tender portals do not facilitate an optimal bid preparation workflow from a supplier perspective. Ideally, C1 submits his offer in a PDF file. This allows him to steer his prospect through his offer, from A to Z. C1 experiences lack of control by answering

predefined, strict formatted questions in a digital tender portal. C1 recognizes the benefits from digital tender portals for buyers.

At Axians, pricing or the markup decision is the last step in bid preparation process. It is not possible to bring this step forward in the bid preparation process because of all the different uncertainties. Every single project detail needs to be identified before the markup can be determined. The responsible Account Manager together with the Management Team decide about the final markup.

5.3.6 Finalize offer

Due to a lack of time it was not possible to talk in depth about the finalize offer phase. However, C1 argued that this is not an issue since the acquisition, qualification and preparation phases are the most important phases.

5.4 Case Study D1: D1 at C.S.C. Ceelen Sport Construction BV

The case study interview results are structured according to the interview guidelines. A complete transcription can be found in chapter 11.10.4. The original audio recordings can be acquired on request. The complete semi structured interview took 1 hour and 55 minutes.

5.4.1 Introduction interviewee and his working company

D1 participated in case study four, also known as case study D. D1 has over 30 years of experience as a Sales Representative. Within this period, D1 worked 11 years as a Sales Representative and Office Manager at Michelin Nederland N.V. After this period, he moved to Hallmark to work as a Field Sales Manager for another 13 years. After his career at Hallmar, D1 switched to logistics, he became a Sales Manager at TNT NetwerkVSP for 4 year. At the moment, D1 is working for C.S.C. Ceelen Sport Construction BV were he holds a dual job: Buyer in combination with Bid Manager.

Input provided by D1 for this cases study is based on his personal experience. No confidential information from his current or former employers is shared.

5.4.2 Organizational aspects

C.S.C. Ceelen Sport Construction BV (CSC) is a construction company that is fully focused on construction of sports facilities. Especially sports facilities that make use of artificial turf. CSC does not make use of standardized propositions. Every new sports facility is completely tailor made and complies with the highest quality standards available in the market. To keep ahead from its competitors, it is essential for CSC to innovate. Product innovation, but also innovation regarding their project management. Sports facilities constructed by CSC represent quality, durability and performance.

In 2014 CSC constructed 50 soccer fields, 23 hockey fields, 10 korfball fields and 4 athletics fields. CSC operates as a main contractor and delivers the actual sports field. Everything else, such as buildings, lightning, paving etcetera is subcontracted. Herby CSC always collaborates with local subcontractors; this is highly appreciated by governmental clients. CSC sports fields are listed on sports flooring lists from FIFA and NOCSNF and are NOCNSF and FIFA 1 and 2 start certified. Besides the governmental projects

5.4.3 Acquisition phase

The construction marketing of sports facilities is highly competitive and pricing is a key criterion for customers. Because of this saturated market, CSC has to apply on every public tender regarding the construction of sports facilities. Public tenders are identified on publication platforms such as TenderNed and Aanbestedingskalender.

Besides public tender projects, CSC also participates in RFI's and RFP's, so called private tenders. D1 noticed that organizations have to be invited before they can participate in private tender projects. A good business network, knowing the right people and excellent past performance is extremely important to become invited. Since CSC's strategy stipulates collaboration with local subcontractors, CSC gains in depth knowledge from local markets where these subcontractors operate. Knowledge gained via subcontractors often contains information about upcoming constructions projects. Account Managers use this knowledge to seek new opportunities.

A third and relatively new possibility to identify business opportunities and to stay ahead from the competition is to make use of software that automatically searches into multiannual budgets from governmental organizations and sports associations. Information gathered, via specified search strings, informs Sales and

Account Management in an early stage about upcoming projects. With this knowledge Sales is able to setup highly targeted sales initiatives in an early stage in the sales process.

In the sports facility construction branch make well-maintained relationships the difference. Both directors from CSC have more than 15 years working experience and know almost all decision makers within governmental organizations personally according to D1. These relationships allows them to lobby effective for upcoming construction projects. However, well-planned influencing and manipulation strategies, like the Ordina case, are not applied in this branches mentioned D1.

5.4.4 Project qualification

CSC does not maintain an extensive list with project qualification criteria. Bid or no-bid decisions are primarily based on two factors. First, it is crucial to identify whether the construction project contains artificial turf. If artificial turf is demanded, there should be ample room in the project planning for new construction projects. Especially in the construction industry are good project references of importance for acquiring new projects. Therefore, quality before quantity is CSC's slogan.

CSC does not maintain minimum revenue criteria for participation. However, smaller projects are entirely outsourced. Also no strict revenue or size criteria here.

Past performance is in construction branches a heavily weighted criterion to motivate a bid or no-bid decision. At CSC, they had a client who refuses to pay the final payment of 50.000 euro for due a minor construction issue with a total value from around 400 euro! Future opportunities from clients with such behavior will always result in a no-bid decision.

Bid managers make the actual bid or no-bid decision for regular sized projects themselves. For exceptional large projects, one of the company's directors is involved. In such situations, it is important to take contextual factors such as available capacity, past performance and expected chances to win the bid, into account. One until three persons are involved at the bid or no-bid decision-making process, it depends on the expected project complexity.

To facilitate the bid or no-bid decision-making process no real scientific tools are used. However, at CSC they record past-performances in a central project database. This database is primarily used to facilitate Account Management and Sales Management.

5.4.4.1 Project database: For sales and qualification

To facilitate Account Management, Sales Management but also Bid Management, an extensive project database is maintained. The project database provides input regarding trends per geographic region. It indicates for example the possibility whether an expected competitor could decide to compete solely on price or not. This information can be derived since every winning party is registered. When a certain party has not won any tender project last months, it is likely that its eagerness to win upcoming projects increases. Especially since most of the projects are awarded based on pricing. Also the value of a project, in financial terms, has great predictive value regarding possible subscribers.

The CSC project database registers data regarding all published sports facility construction tenders. In which tender projects CSC has participated and in which not. Which other competitors (from whom known) also participated in these tender projects. The project database contains an extensive tender won and lost register. It can answer questions like; Are there new entrants to the market? Also what proposition a certain competitor has and what his unique selling points are.

For future acquisition purposes, one has to know when and what types of sports fields are constructed at clients. Sports fields have a certain lifespan and occasionally fields need to be serviced thoroughly or need to be replaced. Such knowledge enables Account Management and Sales to schedule highly targeted contact opportunities in advance.

At the moment, CSC is trying to find a method that enables them to analyze EMVI (In Dutch: Economisch Meest Voordelige Inschrijving) awarding decisions. EMVI tenders are awarded based quality and price. Bad quality can

be compensated with low pricing and vice versa. However, it is from a supplier perspective incredible subjective how a prospect would judge quality. It happened that an amateur soccer club invited football players to judge the quality from artificial turf soccer fields. The soccer players were just playing around, it has nothing to do with judging the actual technical quality aspects of the field. The assessment went extremely subjective and it resulted in a casino according to D1.

5.4.5 Prepare bid

5.4.5.1 Bid preparation and calculation

Bid preparation in the construction industry consist largely of bid calculation. Before calculation starts, it is required to read project specifications carefully. At CSC, multiple bid managers including one director read the same project specification to ensure no details area overlooked. After the initial project specification reading a first meeting is hosted. In this meeting, all project specification are thoroughly discussed, the initial strategy is defined and the expected project workload is divided. In general, two or three employees, of which one director, are involved in the bid preparation and calculation process.

The outcome of the bid calculation process decides whether a bid can be won or may be lost. It is up to the project calculator to find clever means in order to save money. D1 provided a striking example: In large soccer field projects suppliers often has the responsibility to dispose huge amounts of soil and disposing soil is expensive. However, sometimes there are building companies nearby who need soil at that moment. Finding clever opportunities allow calculators to turn costly activities into profitable business. At the moment, the competition in the sports facility construction branches is competitive. Without finding clever opportunities to save, or sometimes earn extra revenue, it will be impossible to win a bid, according to D1.

Due to a highly uncertain calculation process with many potential unforeseen circumstances, there is no fixed markup per activity. The markup is determined throughout the entire calculation cycle and is set when the calculation is finished.

The largest part in the bid preparation process is the calculation part. Therefor only small parts of earlier created offers can be reused. Reused parts consists mostly of company and product information.

5.4.5.2 Working with contractors

Contractors are not directly involved in the bid preparation process. Contractors do not provide support while writing an offer. For highly specialized work, they are able to submit a pricing sheet that will be used as input for a final offer.

Besides the project database, CSC also maintains an extensive contractor performance database. Since CSC outsources large portions from construction projects, it is important for them to have an accurate overview of a contractor's performance while looking for contractors for new construction opportunities. Especially a contractor's ability to adapt to new situations is a sense making criterion. But also the ability to deliver in time, after-sale performance and delivered quality. CSC prefers to work with long term framework agreements with specialized contractors since this stabilizes delivered quality.

Negotiation with potential subcontractors takes place in two iterations. The first negotiation session takes place before project awarding, actually in the offer phase from a certain opportunity. D1 defines these negotiation sessions as explorative. Prices offered by potential subcontractors are not that sharp. After project awarding, the moment when the job opportunity transformed into a real job, a second negotiation round is initiated. Initially invited subcontractors are approached again and are requested to come up with sharper prices if they would like to become a contractor.

Often there are two types of tender projects. First, there is the most common "Construct" calculation and second there is a less common "Design and Construct" calculation. The difference between both can already be recognized in the name, the first and most common project type, Construct calculation, entails only the calculation from a prescribed sports facility. The second, less common, option is more complex. In here, the potential suppliers also have to hire a sports facility architect who is able to design a complete sports facility. Besides the architectural design, also the regular calculation needs to be delivered. Design and Construct projects have a significant higher risk profile because of the subjective decision making regarding the Design part of the

project. Therefore, Design and Construct projects are less interesting to participate. CSC only participates in Design and Construct projects if their project pipeline is almost empty or if they can share the architectural design investment with competitors or when there is funding for the architectural design by the client.

5.4.5.3 Compose offer

Almost the entire bid preparation and calculation process takes place offline at CSC. From the moment of acquiring a new opportunity, the bid manager prints all the relevant bid documents. While calculating the project, notes are written down on the hardcopy documents. After the first review iteration a second and eventual third iteration are performed. When all project risks and corresponding mitigations are identified, results are processed digitally.

CSC uses several tools to process bids digitally. Bakker & Spees (B&S) is the most frequently used application. B&S is primarily used in the construction industry for calculation purposes. Suppliers have to submit their prices in a strict formatted B&S template. Templates are developed by the client and can be processed automatically. In case of a Design and Construct project, suppliers have to format their own B&S templates.

Besides B&S, CSC uses the Microsoft Office Suite for word and additional calculation processing. Especially the track change feature in Microsoft Word is crucial for collaboration purposes with colleagues mentioned D1.

The last step in the bid preparation process is to make one coherent story from all the individual parts. This task is performed by the bid manager.

5.4.6 Finalize offer and evaluation

Project evaluation sessions are important for CSC according to D1. However, specific knowledge gained from evaluation sessions is not stored in a structural manner. Procedural bid preparation or calculation knowledge gained via evaluation sessions is only available for those who participated in the evaluation session itself. Quantitative knowledge is stored in the firm's central database to monitor the competition.

Extensive bid preparation process evaluation sessions are less useful compared to the past performance database that collects hard figures such as prices offered in a winning bids and the number of wins or losses for a certain party. It happened that a 700.000 euro bid was lost due to a pricing difference from only 100 euro and a 1.200.000 euro bid was won due to a pricing difference form only 400 euro!

5.5 Case study E1: E1 at Telindus

The case study interview results are structured according to the interview guidelines. A complete transcription can be found in chapter 11.10.5. The original audio recordings can be acquired on request. The complete semi structured interview took 1 hour and 15 minutes.

5.5.1 Introduction interviewee and his working company

E1 participated in case study five, also known as case study E. E1 has over 17 years of experience as a Bid Manager. Within that period E1 worked at two ICT service providers, both specialized in ICT infrastructure products and services.

E1 studied at Leiden University from 1972 until 1980.

Input provided by E1 for this cases study is based on his personal experience. No confidential information from his current or former employers is shared.

5.5.2 Organizational aspects

Telindus, a Proximus Company, is an independent supplier in the field of access, connectivity and data center solutions in combination with multi-vendor support and managed services. Telindus integrates individual components from the complete ICT chain like the datacenter, connectivity and access layers in order to facilitate the increasing IT demands. Telindus' has in depth knowledge and expertise in the field of end-to-end infrastructure solutions.[17]

Telindus has strategic partnerships with major virtualization, networking, storage, backup, telecommunications and security vendors such as Ciena, Cisco, Juniper, EMC, NetApp, VMware, CommVault, Quantum, Nutanix, Transmode, Vasco Data Security, RedSocks, VCE and Riverbed.[18]

Telindus Nederland BV has around 190 employees. Twenty-eight employees are responsible for Sales, Pre-Sales and Account Management. Two of them are dedicated Bid Managers. Bid Managers are responsible for European and primarily national tenders, RFI and RFP projects. Tender projects are extremely essential for the ICT services branches according to E1.

5.5.3 Acquisition phase

For Telindus, tender projects compared to RFI's and RFP's are of equal importance. However, more than 50 percent of the profit is gained via tender project because of its greater volume. Tender project frequently contain framework contracts. Framework contracts are often about millions of euros. Telindus has a tender/RFI/RFP hit-rate from 20 until 30 percent. E1 argued that he would be satisfied with a hit-rate from around 20 percent.

Within Telindus, Bid Management has the responsibility to seek out new tender projects. Publication platforms such as TenderNed, but also Aanbestedingskalender and TED are been explored. Most of the exploration is performed manually. E1 argued that it would be a waste of money to have subscriptions for services that features automated search. Instead of using automated search functions, based on CPV codes, E1 reads every publication himself. An additional advantage of manual search is that he sometimes identifies lots (parts from tenders) that

[17] http://www.telindus.nl/oplossingen-en-diensten/

[18] https://www.yahoo.com/tech/s/zenoss-gives-telindus-competitive-edge-150000694.html?nf=1

could not have been identified via automated search, he said. Every day E1 spends 30 until 60 minutes reading the platforms.

Account Management has the responsibility to seek for non-public RFI and RFP projects. They also seek for tender projects who are not published yet. E1 added that it is forbidden by law to communicate with your prospect, about a potential tender, from the moment you know that they are planning to publish a tender in the near future. E1 also said that a good Account Manager knows where upcoming tenders are about and when they are going to be published. Balancing between both contradictions can be difficult for an Account Manager

Setting up a thought out tender including well formulated requirements is a tough task for subject matter experts. Let alone for a regular purchase department. Nowadays it becomes more popular to ask the market for sharing their product and service knowledge as well as their expertise in setting up RFPs. If only one party is asked to support a client in setting up a bid, he is not allowed to participate as a seller in that bid anymore because of unfair competition. To prevent unfair competition and to engage potential suppliers in an early stage, new phenomena such as “Market Consultation” and “Best Value Procurement” are initiated. Both initiatives guarantee a level playing field.

Telindus is only asked for his knowledge by existing customers. Account Managers do not undertake unlawful initiatives to get involved in the definition phase of new tenders, such as its competitors sometimes do. Because of this inequality, it could be more difficult to steer a prospects subjective decision-making process. However, it is true that relationships sell, mentioned E1.

5.5.4 Project qualification

Within Telindus there are strict bid qualification criteria according to E1. However, these qualification criteria are not always maintained as it should be by every department. For example, eager and often young, Account Managers prefer to shoot on every opportunity that passed by. This behavior is often supported by their Sales Managers. Even if Bid Management highly recommend to make a no-bid decision.

By reading every published tender, Bid Management often finds interesting lots for participation. These smaller projects (less than 200.000 euro) are handed over to Account Management. Account Management has the responsibility to handle these smaller projects themselves. No bid team is formulated for these smaller projects because of its cost of sale. Often, standardized propositions and offers can be used for these projects.

For medium sized projects (between 200.000 and 650.000 euro), Telindus has a bid decision committee, initiated by Bid Management. The committee consists of a Management Team deputy, the Account Manager who is presenting his opportunity, a Solution Architect and the Legal Officer. Legal advises regarding term and agreements, often Arbit conditions. In addition, legal provides input by means of a profit and loss calculation. After positive qualification, a bid team is formulated.

The Management Team of Telindus qualifies tender projects larger than 650.000 euro itself in a qualification meeting because of the financial investments required for writing large bids. The expected cost of sale in comparison with the chances of being awarded needs to be taken into account carefully. Also in these qualification meetings, the Account Manager has to present his opportunity and he needs to argue why it would be worthy to invest.

In case of a lost opportunity, it is good to know why they did not win. Telindus distinguishes two rejection forms. First, there is the rejection based on pricing. Second, there is the rejection based on quality. Rejections based on pricing are not evaluated at all. E1 mentioned that pricing is a frequently heard argument. It is known that some competitors offer services such as desktop management below cost price. These competitors speculate on upcoming lower prices or profitable future projects. Offering below cost price is not the strategy the Management Team of Telindus wants to follow.

Rejections based on insufficient quality could contain valuable information for future tender projects. Therefore, these rejections are evaluated extensively. At Telindus, there is no formal strategy to store knowledge gained via evaluation sessions, no knowledge bases are used for example. Knowledge gained via evaluation sessions is only

stored in the minds from the evaluators itself. In addition, the original tender repositories are stored within Sharepoint. These repositories are accessible for future tender projects. Proper parts can be reused for example.

Before the bid decision committee decides whether to bid, E1 often already has an idea which way it will go based on his experience. E1 mentioned that is not that relevant to validate whether you are able to deliver the demanded products or services. More important is it to validate whether you can comply with knockout criteria.

At the moment it becomes essential to be certified for ISO9000 (Quality Management), ISO27000 (Information Security Management) and for example ISO14000 (Environmental Management). These criteria can differ per year. If it appears that you do not comply with certain knockout criteria, there is one option to ask questions. Questions could be about the necessity for certain criteria to have a knockout weight. In Dutch, the first opportunity to asked questions is called “Nota van inlichtingen”.

Another qualification criterion is the availability of qualified personnel to fulfill the job. At Telindus they prefer to not work with contractors. There is one exception; Telindus only hires contractors for services for which they have no personnel themselves.

Ideally, the bid or no-bid decision is made within the first five business days. After the bid or no-bid decision there are only five weeks left for writing a bid.

An important criterion that can contribute to an estimation of the chances to win a bid is one that elaborates on the existence of a relationship with the prospect or customer. It should contain sub criteria such as the nature and duration of the relationship. Having a relationship with the client enables the supplying party to gain intelligence about the preferred solution from a client’s perspective and therefor it enables the suppling party to write precisely in the direction of that preferred solution.

The last criterion mentioned by E1 is the likeliness to know which competitors also plan to participate in the tender. E1 considers this criterion as important because he knows the product portfolios from his competitors well. For example, if a prospect asks to deliver network components such as routers and switches and this prospect has a strong focus on low pricing and considers quality as less important, than it is relevant to know which suppliers probably will participate. Suppliers who offer brands such as Huawei and HP have a much greater chance to win compared to suppliers that offer Cisco. Based on the preferred price/quality ratio in comparison with eventual brand preferences, E1 is able to estimate his chances to win the tender.

It happened that Telindus decided to not participate in a certain tender because they were quite sure which suppliers also would participate and what their proposition would be. The probability of winning the tender would be too small compared to the investment required for writing a bid.

Telindus does not make use of specific tooling for tender qualification purposes except the standard Microsoft Office Suite. Especially PowerPoint is of importance for the Account Manager who has to present his opportunity in the bid committee and Excel for calculation purposes.

Telindus uses the following qualification criteria:

- Is there already a relation with the prospect;
    - What kind of relation is there with the prospect;
- What about the relation between product pricing compared to product quality;
- With which suppliers are we in competition and how are their propositions;
- Are the terms and conditions not to unilateral;
- What about the expected cost of sale for this project;
- Are there knock out criteria that result in a knock out;

5.5.5 Prepare bid

At Telindus, Bid Managers are the Project Leaders from tender projects. Bid Managers have the responsibility for delivering a good-looking winning bid. Account Management, the opportunity owner has always the final responsibility together with one or more management deputies. E1 noticed that the job title Bid Manager was

introduced around 30 year ago. Before that period, a Bid Manager was titled Tender Coordinator. The earliest job title has better coverage according to E1.

Once the bid committee decided to bid, the Bid Manager puts a bid team together. A bid team consists of the following roles: Bid Manager, Account Manager, Pre-Sales Manager, Project Manager, Technical Engineer for maintenance planning, Legal Officer and the Pricing department. Often a bid team consists of eight till ten people. On average, ten bid projects can be handled simultaneously.

Sometimes it occurs that Telindus can fulfil around 80 percent of a tender project. For the last 20 percent, often-specialized work, they need to hire a contractor. In this scenario, the contracting party is also involved in the bid preparation process. However, Telindus remains the main contractor.

In case of contracting, Telindus makes use of regular subcontractors since there is not enough time for extensive negotiation regarding pricing and legal aspects. At this point in writing the bid there are only three till four weeks left! Once a year, Telinus evaluates her subcontractors extensively. Also pricing plans are set for the upcoming year.

The latest step in the bid preparation phase is determining the markup. Account Management together with the department Pricing decide about the selling price. In here, the department Pricing is responsible for pricing the working hours were Account Management has the responsibility to decide about the margin. Account Management needs to comply with certain thresholds imposed by the owners of Telindus, Proximus Company. Besides, Account Management needs to negotiate with hardware suppliers for competitive pricing.

All the tender project related documents are stored on a fileserver in a central folder called Library. From this folder the Bid Managers retrieves all the information he needs for writing a consistent offer. Telindus does not make use of Bid Writers. Bid Writing is a responsibility from the Bid Management. E1 noticed that his primarily frustration are last minute modifications in his final offer version. Besides the standard Microsoft Office Suite there is no necessity for additional supportive software in the preparation phase.

It would be great if tender platforms could facilitate historical awarding information from publishing organizations as long as it remains within legal directives.

5.5.6 Finalize offer

E1 mentioned that he often knows before submitting his final bid if evaluation will be required or not. In this case, evaluation will be about the bid preparation phase. Not about the actual product of services.

5.6 Case study F1: F1 at ManpowerGroup

The case study interview results are structured according to the interview guidelines. A complete transcription can be found in chapter 11.10.6. The original audio recordings can be acquired on request. The complete semi structured interview took 1 hour and 55 minutes.

5.6.1 Introduction interviewee and his working company

F1 participated in case study six, also known as case study F. F1 has over 10 years of experience as a senior management consultant and within that period, he was involved in large projects, especially in the financial and telecommunication sector. The last seven years Victor worked as a Bid Manager. Now Victor is working as a Senior Bid Manager at ManpowerGroup Nederland.

Before Victor was asked by ManpowerGroup Nederland to boost the internal bid management department to a higher level, he gained experience as Bid Manager at CGI, before known as Logica and LogicaCMG.

F1 studied Business Informatics from 1988 until 1994 at the Universiteit van Amsterdam.

Input provided by F1 for this cases study is based on his personal experience. No confidential information from his current or former employers is shared.

5.6.2 Organizational aspects

ManpowerGroup is the world leader in workforce solutions. ManpowerGroup serves both, large and small organizations across all industry sectors through four main brands: ManpowerGroup Solutions, Experis, Manpower and Right Management. ManpowerGroup operates a worldwide network of offices in more than 80 countries. With local expertise and global insight, ManpowerGroup accelerates clients businesses by providing people and services that raise the quality, productivity and efficiency. ManpowerGroup also facilitates recruitment, assessment, training and development, workforce consulting, outsourcing and career management.[19]

ManpowerGroup has around 20.000 employees worldwide, within The Netherlands they has around 1.000 employees. One-fifth of the Dutch employees are sales representatives and all of them are in one way or another involved in (governmental) tender projects. A distinction is made between governmental tender projects and RFP/RFI project coming from commercial parties because of the different ways in project handling. Within ManpowerGroup they separate the marked into branches, the governmental branch has its own director and several dedicated account managers. The public market is extremely important for the staffing branch and therefor also for ManpowerGroup itself. Around 50 percent of the total revenue is gained via public tender projects. Last year, ManpowerGroup has a hit rate from over 60 percent, which is extremely high compared to its competitors.

5.6.3 Acquisition phase

At ManpowerGroup, Bid Management includes Account Management and Tender Management. Account Management has the responsibility to acquire new leads. Tender Management has the responsibility to qualify

[19] http://www.manpowergroup.com/wps/wcm/connect/manpowergroup-en/home/about/

promising leads and to decide whether to bid or not to bid. It is impossible to consider these disciplines as separate entities since both entities contributes to the project outcome.

Account Management invests a relatively large portion of the total time required to acquire new business and that makes it an import link in the complete chain. While talking about increasing the scoring percentages (hit rate) a variety of initiatives are taken in the entire Bid Management chain. Initiatives to increase the hit rate are executed far before an actual tender is published. In essence, it is about influencing the prospect as early as possible. Bid evaluation in public governmental tender projects is a strict process and the evaluation criteria are available upfront. However, evaluators are human beings and they still can be influenced.

In case of governmental tender projects, it is relatively easy to schedule strategic meetings upfront, since contract expiration dates are publicly available. In strategic meetings, influencing strategies are set. At ManpowerGroup they schedule the first strategic meeting one year before they expect the official tender publication for a certain project at TenderNed or TED. Even when ManpowerGroup is already doing business with a client they schedule these strategic meetings one year before contract expiration. Within this last contractual year, they do whatever is required in order to satisfy and thereby retain the client.

5.6.3.1 Sales strategy

One year before a governmental or public prospect publishes a new tender project ManpowerGroup starts analyzing a prospect or client and its specific demands. While analyzing, ManpowerGroup answers the questions listed below where after they plot their service portfolio on the answers found.

- What do we know about the client;
- What do we know about its branch;
- What do we know about its demands;
- What are actual trends in its company;
- What are actual trends in its branch;
- What is currently going on in the company on a strategic level;
- What internal and external influential factors are there;
- On which levels within that organization do we already have contacts;

The next step is to propagate specific messages in order to exert influence. These messages are, for example, about a certain proposition that ManpowerGroup is planning to sell. By dropping specific messages on different organizational levels, ManpowerGroup tries to influence relevant stakeholders. Influencing relevant stakeholders, most of the time decision makers, is important in an early stage. The ultimate objective is to let the stakeholder adopt your proposition as their own idea before they start writing a new tender. In some scenarios, the prospect allows you to support him in writing the new tender specifications. This gives the selling company the opportunity to include product or service specificities only his company can deliver which will result in competitive advantage. By investing heavily in Account Management or Pre-sales activities, the Tender Management process is just a walking park.

Another advantage of influencing a prospect in an early stage is that it allows the selling company to start the total cost of ownership discussion that is necessary if you do not want solely want to compete on price.

The strategic influencing processes are even more relevant for commercial client instead of public clients because it allows you to prevent them from publishing their purchasing projects. Public organizations do not have that choice; they have to follow governmental legislation.

5.6.3.2 Strategic clients and Solution Selling

Another strategy to increase the hit rate on the long run is to identify an organization's top 50 strategic clients. Besides current clients is it also possible to list strategic prospects. Every listed company has its own key Account Manager including a C-level deputy from the board. A board member is added to speed up decision-making processes. Additionally, there are dedicated bid and sales managers involved. The teams with at least four disciplines have a shared responsibility regarding the sales strategy for that specific client. Questions like: "How can we service this customer in an optimal way?" and, in case of a prospect: "How are we going to win this prospect for the company?" are essential to answer.

Sometimes it happens that the selected proposition seems not to be the winning one, despite the fact the concerning customer is selected as one of the top 50 strategic clients. In this case, it is beneficial to use 'loss interviews' as an extra moment of interaction with the customer. Most of the time, after awarding, communication restrictions are elapsed which allows your prospect to speak without restrictions. For an Account Manager, this is the moment to gather as much as possible information about his prospect regarding his business and his demands and to start building a future relationship.

Besides ManpowerGroups strategic client philosophy, they make use of best practices from the Solution Selling sales method. A few years ago, ManpowerGroup decided to embrace Solution Selling since the tender projects became more complex. In the past, it was possible to suffice by delivering three employees for a certain period. Nowadays customers' requests are much more complex. Customers ask ManpowerGroup to come up with a solution that facilitates on-demand up and down scaling from their flex personnel without losing quality.

5.6.3.3 Software to facilitate sales activities

To facilitate the sales operation, supportive sales software is indispensable. Every individual contact moment with prospects but also with customers are kept in Sales Force. Registration examples are: Results of meetings, telephone conversations and updates regarding influence strategies. Other information stored in Sales Force contains information about a client's organization, it could contain an organogram but it can also elaborate on different functions and roles. Whom are import decision makers? Furthermore, who is responsible for evaluating offers received? This up to date information allows sales teams to plan, execute and monitor their influential strategy precise.

Besides Sales Force, Manpower Group uses mind mapping software to structure output from brainstorming sessions for the purpose of sales strategy planning. Questions listed below need to be answered:

- What is the client's vision;
- What is the world of experience from the client;
- What are the strategies;
- What do we already know about the client's business;
- Do we already have useful contact who could support us in getting this client;

These questions contribute to the final question: "If this seems to be the roadmap our client probably will follow, how can we add value."

5.6.4 Project qualification

The first two qualification criteria maintained by ManpowerGroup are 'order value' and 'complexity'. The outcome of this qualification results is the decision which department becomes responsible for creating the offer and writing the bid. In general, Account Managers themselves will take care of smaller projects since these propositions are often standardized. Larger and more complex projects are handled by subject-matter-experts.

Ideally, ManpowerGroup knows upfront, due to its Account Management activities, exactly what new tender project it can expect within a certain period. Lead qualification is for every selling companies important. Writing a winning offer can be quite a challenge and is often expensive. A positive business case is required before an offer can be written. In some scenario's the investments required to write a winning offer outweigh potential profits. Victor emphasizes that the complexity of offer phases are highly branch dependent. At his former employer Logica, offer phases were even more complex than offer phases at ManpowerGroup. Proper lead qualification becomes of more importance if the investment required for writing a winning bid increases.

Not that long ago, sales representatives answered every possible (tender) project that appeared on their radar within the context of 'to never have shot is always a miss'. For the entire sales organization, it was quite a learning curve to be convinced about the relevance of opportunity qualification. Hit rates increased dramatically but the organization is still learning.

Now and then, ManpowerGroup receives requests to participate in a tender project without having any kind of relationship with the requestor. Most of the time this is due to their international notoriety, it is quite a large

company with a good reputation. However, blindly participating in such a tender is not a good practice because you do not know anything about the prospect.

ManpowerGroup uses a checklist with qualification criteria, however this list is not exhaustive, fine-tuning is a continuous process. Qualification criteria can differ per business unit. The qualification checklist consists of approximately 10 items and it allows the opportunity owner to qualify a new opportunity at a glance. The output from the qualification checklist is a grade between 0 and 10. A side note to mention, output from the qualification checklist is a directive. There are other factors that affect the bid or no-bid decision. At ManpowerGroup, the board always have to validate the qualification checklist.

Important qualification criteria are: “Do we already have a relationship with this client? And, what kind of relationship is it?”, “Why does the client want us to participate in his tender?”, “What is our current presence or footprint in a certain market?”. Other qualification criteria are: “Do we have available capacity?”, “What would be the prioritization of this new project compared to current running projects?”. The credibility of your offer increases by demonstrating that you know your prospects organization well and that you have a deep understanding of his issues. Having a good relation with your prospect is a necessity. Another heavily weighted criterion is your current presence in your prospects market. If it seems to be difficult to answer these questions or if the answers are not convincing enough, it is possibly wise to disqualify the opportunity and to refuse participation. It is likely that this prospect is looking for prices without obligation.

A practical example: It happened that we as ManpowerGroup refused to participate in a tender project, we disqualified the tender project, were after the prospect reacted confused: ‘Why would we not participate in his project? We would have a serious chance to win’. In this scenario, we convinced the prospect that it was impossible to write a winning offer without knowing the finesse of his organization and his demands. Our reasoning made sense to the prospect and an information meeting was scheduled. In the end, the contract was awarded to ManpowerGroup.

A motivation to disqualify an opportunity could be the presence of an intermediary. Clients consult intermediaries in order to decrease pricing. ManpowerGroup guarantees quality, we have to charge a certain price and we are not a discounter.

The markup decision is made in the qualification phase. ManpowerGroup experienced that for their customers pricing is one of the key factors that supports the buy or no-buy decision. As a selling company you have to make an estimate about the expected winning price. Only when you can provide your services for less or at least equal to the estimated winning price it is worth to participate in the tender. For some tender projects the EMVI (Economisch Meest Voordelige Inschrijving) evaluation method is used. EMVI allows suppliers to have a higher or lower offer price compared to their competitors if they deliver better or inferior quality.

It is of importance to estimate the real chance your organization will have to win the tender. If there are any doubts, try to neutralize them or disqualify the lead and invest your scarce time in tender projects whereby there is a reasonable chance to win.

To put everything in perspective, at CGI we finalized a radical Bid Management improvement program covering the complete sales organization. Sales representatives were highly motivated and hit rates increased significantly. At a certain moment, the organization was hit by the destructive impact of the financial crisis. Fewer opportunities arose and the pipeline became emptier. Due to these circumstances, sales representatives fell back in old behaviors. As a Bid Manager you do not have an argument why you should disqualify a certain opportunity since there are not that many other opportunities to work on. According to the statistics, you always have around 20 percent chance of winning a bid when five competitors participate. As a sales organization, you are doing well by increasing a 20 percent hit rate to 30 percent hit rate.

5.6.4.1 Past performance

Knowledge retrieved from past performance projects is helpful while fine-tuning propositions and the sales strategies. This makes tender evaluation and essential part of Bid Management. Each sales project, won or lost, small or large, needs to be evaluated. All project evaluations are stored within a Sharepoint archive.

5.6.5 Prepare bid

ManpowerGroup distinguishes Bid Support personnel and Bid Managers. An important responsibility for the department Bid Support is monitoring tender publication platforms such as Aanbestedingskalender, TenderNed and TED. However, Bid Managers are deemed to know large tender projects upfront since these are already scheduled one year in advance. Ideally, ManpowerGroup already has a relationship with the client since they already started influencing decision makers.

Before winning bids can be written project teams need to be formed. Every opportunity has an Opportunity Owner. The Opportunity Owner is often the prospect owner or the client owner. This person feels most responsible for winning the bid, he initially also executed the influencing strategy. The Opportunity Owner works closely with a Bid Manager. Based on the specific project demands a dedicated bid team is formed by the Bid Manager. Roles as: Staffing Expert, Sourcing Expert, Branch Expert and Solution Architect are added to the bid team.

The Bid Manager also orchestrates strategic solution sessions in order to define the preferred bid strategy. In strategic solution sessions, the outline of how an offer might be formulated is proposed. First, we need to know and understand our prospects demand. Hereby it is good to first focus on your main story where after you can answer relevant sub-questions. To deepen a prospects demand we often keep brown paper sessions and make use of mind maps. Brown paper sessions provides you a bulleted list with key items relevant for your final offer. Commercial Copy Writers use the bulleted list with key items to write the final offer.

5.6.5.1 Subcontractors

ManpowerGroup offers some propositions they not deliver themselves. For these propositions, they hire highly specialized subcontractors. In some situations, the subcontractor literally helps writing the proposal, however it should always smells like Manpower. A more common scenario is that ManpowerGroup has pre-defined agreements for specific propositions with carefully screened subcontractors. For ManpowerGroup it is essential to have a good relationship with these subcontractors because it is practically impossible to contract unknown subcontractor's ad-hock per individual project.

After each project, a subcontractor's performance is evaluated extensively. This information is stored in a subcontractor management system, which eases subcontractor management and subcontractor screening for future projects.

5.6.6 Finalize offer

Preferably, evaluation takes place before a certain project is awarded. Evaluations before awarding are often less biased compared to evaluations that take place after awarding. Operational difficulties or team frustrations experienced while working on a bid can easily be neutralized if appears that a project has been won.

Besides the internal team evaluation, wherein we consider if the delivered offer could not be better, there are often external evaluation opportunities. The client hosts 'loss interview' sessions. They elaborate on how they interpreted your offer and try to explain why you were not their preferred choice. Besides the useful feedback on your proposition, this meeting is an opportunity to start building a new relationship for upcoming tender projects.

5.7 Case study comparison table

A case study comparison table is depicted below. This table summarizes the topics covered in the executed case studies. Due to the semi-structured nature of the case studies performed, it can occur that not all topics are discussed equal. Topics that are not covered during the interview sessions are marked with a "-" symbol.

		Case companies					
		A1	***B1***	***C1***	***D1***	***E1***	***F1***
Account management	***Markets***	Public, private	Public, private	Public, private	Public, private	Public, private	Public, private
	Acquisition methods	Publication platforms, business networks, Cold calling, Selling consultants	Publication platforms, business networks, Selling consultants	Publication platforms, Cold acquisition, Relational network	Publication platforms, Relational network, Tekst mining	Publication platforms, Accountmanagement	Publication platforms, Accountmanagement
	Sales strategy	Miller Heiman	-	Solution Selling and Miller Heiman best practices	-	-	Solution Selling
	Publication platforms	TenderNed, TED	TenderNed, TED	TenderNed, Aanbestedingskalender	TenderNed	TenderNed, TED, Aanbestedingskalender	TenderNed, TED
	Opportunity qualification	Ordina's Deal Review System (DRS)	Atos' RAINBOW Review System	Personal qualification sheet	None	Qualification critera however, not used adequately	Strategic client philosophy
	Specific IT tool support	SalesForce, CPV mailing	Funnel management software, SAP CRM, Mind Mapping, CPV mailing	CRM tooling called CRM, CPV mailing	Tekst Mining	None	SalesForce, Mind Mapping software
Tender Management	***Qualification perspectives***	Profitaility, Legal, Risk	Business interests, Technical feasibility, Legal.	Can we win and can we deliver	Artificial turf required and availability of personel and contractors	Potential knock-out criteria, can we deliver, availability of a relationship, expected competition	Order value, Complexity
	Bid/No-bid decision making	Initial decision In DRS meeting, final decision before submitting	Sales representative < 1 million euro, Dedicated steering committee > 1 million euro	Bid Manager preliminary decision, Accountmanager and Sales manager final decision (bid committee)	Accountmanager, sales manager and director	Accountmanager < 200.000 euro, Decision committee >< 650.000 euro, Management team > 650.000 euro	Decision committee based on strict qualification checklist
	Bid writing	Workstreams (templates), Bulleted version, bid writers	Input from previous bids, bid writers	Bid Manager and Solution Manager	Accountmanager	Bid Manager and accountmanager	Bid Manager, Bid Writers
	Bid calculation	Sales manager via Calculation sheets	Sales manager via Calculation sheets	Sales- and Accountmanager via Calculation sheets	Sales manager and director	Pricing department	
	Markup decision	Decision Commercial Manager	Sales representative	Sales representative	Sales manager and director	Accountmanager and Pricing department	Already made in the qualification phase
	Bid Preparation roles	CE, CV, BAM, CM, RE, SM, JZ, TB	Bid Manager, Solution Manager, Financial Engineer, Legal Manager, HR Manager, Bid Writer and a Lead Sales	Account Manager, Project Manager, Service Manager, Solution Consultant and Legal Experts.	Accountmanager, sales manager and director	Bid Manager, Account Manager, Pre-Sales Manager, Project Manager, Technical Engineer for maintenance planning, Legal Officer and the Pricing department.	Bid Manager, Staffing Expert, Sourcing Expert, Branch Expert and Solution Architec
	Subcontractors	Via additional Teaming agreement	Offshore parties, back-to-back verified by legal.	Can be evolved. Subcontractors support in writing the final offer.	Always evolved however, not in the bid preparation process.	Partnerships with subcontractors	Seldom, highly specialized work
	Bid Preparation evaluation	Evaluation of Ordina's Quotation Management Process	Bid preparation evaluation after awarding, Bid/Loss review, Plan-Do-Check-Act principle, Knowledge creation	-	-	Lost on pricing is not evaluated, lost in quality is evaluated extensively.	Bid preparation evaluation before awarding, Bid/Loss review sessions
	(IT) tool support	Ordina's SMARTportal	Document repositories in Sharepoint, Communication tools such as Lync and Skype, Subversion (document merging)	CRM software, Decision support checklists, Presentation software, Repository in document management	Extensive project awarding database for acquisition purposes, Office tooling	Repository on fileserver	Brown paper sessions, Sharepoint repositories
Project Management	***Contract acquisition***	Legal foundation for executing projects, Manageble risks, Terms of delivery, Management Information	-	-	Accountmanager and director	-	-
	Service delivery	Kick-off, Monitoring mechanism, Discharge statement	-	-	Accountmanager	-	-
	Delivery evaluation	Delivery evaluation via Ordina's Project Assurance (OPA)	Delivery evaluation after delivery, Plan-Do-Check-Act principle, Knowledge creation	-	Subcontractor evaluation	-	-

Table 10: Case study comparison table

6 Result Analysis

This chapter (Paragraph **Error! Reference source not found.**) foresees in a comparative result analysis from all ndividual case studies. The main goal of the comparative result analysis is to find similarities and differences among the different case studies in order to provide input for development of the PDD presented in chapter 6.2. The comparative result analysis is structured in accordance with interview guidelines (chapter 11.5) and the individual descriptions of the case studies (chapter 5).

Findings from the comparative result analysis has been used as input for the final Bid Preparation Reference Method, which is depicted in a PDD. Therefor we sometimes refer to so called Activities, Sub-activities or CONCEPTS used in that PDD, paragraph 6.2. The final Bid Preparation Reference Method is evaluated with another six individual case studies and these outcomes are documented in chapter 7.

In the comparative result analysis, we do not refer to case companies directly. Therefor we introduced synonyms.

6.1 Comparative result analysis

"Effective Bid Management is a means to successfully and systematically coordinate tender submission."[20]

All interviewees confirm the correctness of the citation above. Interviewee F1 highlighted the distinction between Account Management and Tender Management. Account Management has the responsibility to acquire new leads. Tender Management has the responsibility to qualify promising leads and to decide whether to bid or not to bid. It is impossible to consider these disciplines as separate entities since both entities contributes to the project outcome. Interviewee A1 highlighted the relevance of Project Management in order to close a project profitable. Therefore, our proposed Bid Preparation Reference Method, depicted in Figure 38, considers Bid Management as a conjunction of Account Management, Tender Management and Project Management. These collaborating disciplines are illustrated as vertical lines in the reference method and covers each various activities.

6.1.1 Account Management

In order to decide whether to bid, new business opportunities needs to be acquired. Regarding the opportunity acquisition strategy, all interviewees made a distinction between private and public sectors. Public sector prospects or clients are obliged by law to buy above certain thresholds via tender procedures.

"A request for tenders (RFT) is a formal, structured invitation to suppliers, to bid, to supply products or services."[21]

All public requests for tender are published on so called publication platforms. In the reference method, we refer to publication platforms as PUBLICATION SOURCES. The two most used publication platforms are TenderNed and TED. TenderNed needs to be used for national tender projects where publication on TED (Tenders Electronic Daily) is required for international tender projects. Requirements regarding tender publication are described in "Aanbestedingswet 2012".

Opportunity acquisition via publication platforms results in a fair playing field for all suppliers. Suppliers can browse through the publication manually or they can register themselves on a mailing based on CPV-codes (Commom Procurement Vocabulary). Buying organizations have to link their tender project to CPV-codes what eases searches. Interviewee C1 mentioned that searching based on CPV-codes saves him time where interviewee D1 argued that there is realistic change of missing interesting lots by solely searching on CPV-codes. He argued that is wisely to read every published tender, including its lots, individually.

To decrease lead times, the Bid Manager himself can best be responsible for opportunity acquisition via PUBLIC SOURCES argued interviewee C1 as well as interviewee E1. Bid Managers are involved in the entire bid

[20] http://knowhownonprofit.org/funding/service/commercial-masterclasses/bid_management
[21] https://en.wikipedia.org/wiki/Request_for_tender

preparation process and therefore have sufficient capacity to judge whether an opportunity could be fulfilled or not.

"A Bid Manager is an executive sales role within an organization, responsible for managing bids in response to Request for Proposals (RFPs) from customers.
Bid Managers orchestrate the creation of the solution and proposal"[22]

Opportunity acquisition for private projects requires much more creativity and therefore an effective branch specific sales methodology (SALES STRATEGY) should be developed and executed. Among the interviewees, two already existing and quite popular sales methodologies are adopted. Interviewees A1 and C1 implemented Miller Heiman and interviewee F1 implemented Solution Selling. Both sales methodologies provide great guidance for closing complex deals. Within this last contractual year, case company F1 does whatever is required in order get or to retain the client. Selling consultants are responsible for gathering prospect and customer intelligence at interviewee A1.

Interviewees B1, C1 and F1 mentioned that it is crucial for every sales strategy to schedule potential relevant tenders a few month upfront in order to anticipate adequate on it. At interviewee F1, they schedule the first strategic meeting with a prospect or client one year before they expect an official tender publication for a certain project on TenderNed or TED. During this year, they start analyzing the client and its specific demands. After the initial analysis, they start plotting their service portfolio on the client's demands. Questions used by interviewee F1 in order to analyze a client are listed in

[22] https://en.wikipedia.org/wiki/Bid_manager

The next step, according to interviewee F1, is to propagate specific messages in order to exert influence. These messages are, for example, about a certain proposition that the sales representative is planning to sell. By dropping specific messages on different organizational levels, you try to influence relevant stakeholders. Influencing relevant stakeholders, most of the time decision makers, in an early stage is of importance. The ultimate objective is to let the stakeholder adopt your proposition as their own idea before they start writing a new tender. In some scenarios, the prospect allows you to support him in writing the new tender specifications. This gives the selling company the opportunity to include product or service specificities only his company can deliver which will result in competitive advantage. By investing heavily in Account Management or Pre-sales activities, the Tender Management process is just a walking park according to interviewee F1.

Interviewee C1 uses the mechanisms Market Consultation and Competitive Dialogue as an opportunity to influence prospects. Market consultation sessions are hosted by prospects in order to validate the applicability from the solution they created. The Account Manager needs to inform his prospect about the products or services he is planning to deliver before the actual consultation takes place. An Account Manager should influence his prospect in such a way that it will only pose questions who can be answered positively by his company. During competitive dialogue sessions, suppliers are invited to elaborate on how they can contribute to a conceptual RFP. Frequently it is possible to know which competitors participate in competitive dialogue sessions. You also know the strengths and weaknesses from the products and services delivered by the competitors. During these sessions, the Account Manager needs to promote his solutions in such a way that his solutions appears to be the most suitable solution to fulfill the prospects needs.

A relative new phenomenon is Best Value Procurement (BVP) according to interviewee B1. With BVP, prospects formulate functional questions for a set of possible suppliers. Then, it is up to every individual supplier to propose a suitable solution within budget. Besides the actual proposed solution is an organizations record of accomplishment of importance. As a supplier you really have to convince your prospect that you are able to deliver the proposed solution within budget and time. VBP can be positioned next to the mechanisms Market Consultation and the Competitive Dialogue.

6.1.2 Tender Management

Three activities are covered by the Tender Management phase. These activities are Qualification, Prepare bid and Evaluate and archive bid. Account Management initiates the Tender Management phase after an initial qualification decision. Then, a more extensive bid qualification procedure starts wherein a variety of roles are involved. The decision ‘to bid’ initiates the Prepare Bid activity where after the bid development process is evaluated and archived.

6.1.2.1 Qualification

The decision to bid or not to bid is of importance due to the investments for writing a winning offer according to interviewee B1. As a selling company, you need to be sure that you have a realistic chance of winning the bid with your proposition. Otherwise, you should not participate at all. Besides predicting the chances of winning the bid, it is important to know in an early stage if there is a positive business case, do the expected profits outweighs the investment. Not only the investment for contract execution but also the investment for bid preparation should be taken into account as well as the corresponding risks. Every interviewee has its own methods and techniques that supports them in making a final bid or no-bid decision.

Despite the importance of qualification is recognized by all interviewees and their organizations, the strictness of the implementation from qualification rules (criteria) differ per organization. Within the organization of interviewee E1 there are strict bid qualification criteria however, these qualification criteria are not always maintained as they are intended for. Eager Account Managers prefer to shoot on every opportunity that passed by. This behavior is often supported by their Sales Managers. Even if Bid Management highly recommend to make a no-bid decision.

Interviewee F1 emphasized the importance and the power of tactical disqualification from certain opportunities. Often, organizations reputation increase during the years, which could result in scenarios, were the sales

organization becomes invited to participate in tender projects instead of seeking for it. Delivered products or solutions are top of the bill and the branches recognize this. In such scenarios, it is often the case that the sales employees do not have a strong relationship with every potential prospect. Disqualification of such a relatively unknown, but interesting, opportunity could trigger possibilities that allows the selling organization to present his solution more in depth, which is essence an additional contact moment to strengthen the relationship.

Besides using disqualification as a tactical mechanism, lead disqualification could also be used as a strategic mechanism. Interviewees C1 and E1 gave example of scenarios in which their organization decided to no-bid because they knew pretty sure which competitors would participate in the tender. The conclusion of an analysis of similar previous projects results in a no-bid decision. The chance of having a competitive proposition would be relatively low while the cost of sales were significant.

Interviewee C1 stated that it is essential for thorough qualification to know the competition. Preferably, having in depth knowledge regarding a competitors USP's. It is important to know what your own USP's are, compared to the USP's from the competition and the other way around. Based on the results from the USP analysis a potential strategy can be formulated in order to defeat the competition or in order to decide to no bid. A well motivated no bid decision can safe a company huge bid investments and allows the company to focus on other, more viable projects.

QUESTION ID	CRITERIA CATEGORY	QUALIFICATION CONSIDERATIONS
1	Motivation	Why does the client want us to participate in his tender?
2	Demand	Do we understand the prospects demand?
3	Capacity	Do we have available resources in order to fulfill the job?
4	Subcontractors	Do we need subcontractors in order to fulfill the job?
5	Subcontractors	What percentage of the profit belongs to subcontractors?
6	Financial	Rate the order value of this opportunity, in financial terms, compared to previous projects
7	Past performance	Rate the complexity of this opportunity compared to previous jobs
8	Financial	Rate the expected cost of sale ratio
9	Financial	Is the prospect or client creditworthy?
10	Terms and conditions	Are there reasonable terms and conditions?
11	Branches	What is our current presence or footprint in a certain market?
12	Competition	With which suppliers are we in competition and what are our chances to win compared to theirs
13	USP	Do we have USPs (Unique Selling Points) at this project?
14	USP	What is the prospects opinion about these USPs?
15	Past performance	How did we performed in similar projects?
16	Chances	Do we have a serious change to win the bid?
17	Knock-out criteria	Are there knock out criteria that result in a knock out?
18	Relationship	Do we and what kind of relationship do we have with this client?
19	Relationship	How well do we know this client?
20	Branches	How well do we know his branch?
21	Relationship	Do we already have reasonable contacts within the client's organization?
22	Relationship	How went the communication with the prospect so far?
23	Reputation	What do we know about our company's reputation at that prospect?
24	Environmental	Does the request fit in the actual trends going on in the client's organization?
25	Environmental	Does the request match with actual trends going on in the clients branches?

Table 11: Qualification criteria derived from case studies

A generic categorized list with bid/no-bid criteria is deducted from the interview results and is summarized in the Table 11.

The markup decision is made in the qualification phase according to interviewee F1. Interviewee F1 experienced that for their customers, pricing is one of the key factors in the supplier selection decision. As a selling company, you should estimate the expected winning price. Only when you can offer your services for less or at least equal to the estimated winning price it would be worth to participate in the tender. It is good to notice that pricing is not in every tender and not in every branches determinant. Therefore, criteria weight differs per organization.

A decision to bid or not to bid has enormous consequences for an organization. Therefore, the bid or no-bid decision is not made by a single employee according to the interviewees. Organizations maintain administrative processes and procedures who clearly describe which roles are involved in the bid or no-bid decision. Interviewee C1 mentioned the following roles who are involved in the bid or no-bid decision: Bid Manager, Account Manager, Sales Manager, Service Delivery Manager and always one deputy from the Management Team. In the organizations from interviewees, B1 and C1 collaborate these roles in so-called Bid Committees or Bid Boards. Ideally, Account Management has to present their opportunities in Bid Board sessions. Information regarding a prospects demands, a proposed solution and an estimate regarding the winning chances should be presented to and discussed by the Bid Board members followed by a voting session.

Interviewee C1 added that a Bid Board (or Bid Committee) should consists of an odd set of people with contrary interests and each should have an equal weighted right to vote. *This* composition is necessary for objective bid or no-bid decision making. *The q*ualification decisions should be based on facts and not on today's thinking. In case of structural disagreements or indecision, there should always be the possibility to escalate to the

Management Team who should make the final decision. If *the* Account Manager is not able to sell his opportunity and solution to the bid board committee, why would he be able to sell his solution to a customer, argued interviewee E1.

6.1.2.2 Prepare bid

After a positive bid decision, a project team needs to be composed in order to prepare and write a decent looking winning bid. Interviewees A1, B1 C1 and E1 argued that writing a winning bid is the responsibility from the Bid Manager and therefore this role is leading in composing the bid team. Interviewee E1 added that a Bid Manager is in essence the Project Leader from the bid preparation project. The role name Bid Manager was introduced only 30 years ago according to interviewee E1. Before that period, a Bid Manager was titled a Tender Coordinator.

Larger bid teams consists of at least the following roles: Bid Manager, Solution Manager, Financial Engineer, Legal Manager, HR Manager, Bid Writer and a Lead Sales. The exact bid team composition differs per project, it is not necessary to have each role available in smaller projects. At interviewee F1, the Bid Manager also leads the strategic solution sessions in order to define the preferred bid strategy. In strategic solution sessions, the outline of how an offer must be formulated is proposed. First, it is necessary understand a prospects demands. Hereby it is important to focus on the global picture where after relevant sub-questions have to be answered. To deepen prospects demands brown paper sessions are hosted and mind maps are used. Output from brown paper sessions are bulleted lists with key items relevant for the final offer. Commercial Writers use these bulleted lists with key items to write the final offer.

It could occur that an organization is not able to deliver all demanded services themselves. In these scenario's specific parts of the project can be outsourced. Outsourcing can occur in various flavors, interviewee B1 for example cooperates with offshore parties to deliver their Managed ICT Services because of financial benefits. Because of participation of subcontractors in projects, back-to-back provisions in contracts needs to be verified by Legal Managers.

Selecting the most suitable subcontractor is a though job. Often, various past performance experiences with subcontractors are required in order to judge objectively about a contractors pros and cons. Interviewee D1's organization maintains an extensive contractor performance database. Since they outsource large portions of construction projects, it is crucial to have an accurate overview of a contractor's performance. Past-performance information from subcontractors is stored in a Subcontractor Management System at interviewee F1's organization.

At the interviewees D1, E1 and F1, contractors have the ability to support in writing the final bid. In most scenario's subcontractors provide highly specialized documentation about the products or services they deliver. The final bid has to appeal like a coherent story from the main contractor according to interviewee F1.

Providing a prospect pricing information is besides product and/or service information an essential element from a bid. The complexity of calculating a price differs per product. Interviewees C1 and E1 sell datacenter hardware including maintenance on an hourly basis. In these scenarios only a markup has to be determined. For most of the products and services, are markup percentages fixed and determined at the organization's headquarters according to interviewee E1. Interviewee A1 makes use of partly predefined bid calculation sheets where interviewee D1 makes use of tailor made software, Bakker & Spees (B&S), which facilitates construction calculation.

Writing an offer or a bid can be performed in different ways. In smaller organization, writing a final bid is often a shared task with one final responsibility, often the Bid Manager. Larger organizations often use commercial Bid Writers. Bid Writers have enough domain and product knowledge in order to write a professional story. Input for their story, often bulleted lists who describe a certain strategy, is derived during strategic sessions. Besides the input derived from strategic sessions have Bid Writers at interviewee A1's organization the ability to use so called Work streams. Work streams are sort of building blocks who can be used by the Writing team in order to work efficient. Building blocks can be refined to each specific situation according to the interviewee. The following Work streams are distinguished: Commercial, Solution, Risk assessment, Pricing, Legal and Content.

Reuse from previous written chapters is possible when the same products or services are offered repeatedly. However, reuse is not possible at every organization. Interviewee D1 is working for a construction company were bid calculations are the most elementary part of a bid. Calculation sheets are always unique since no sports facility is equal according to interviewee D1.

When the final offer document is written, the project calculations are made and the team determined about the final markup, several final checks needs to be executed before the bid can be presented to the prospect according to interviewee A1. These last checks are carried out in a so called go or no-go meeting. Chair for this meeting is also the Bid Manager. The following topics affect the go or no-go decision at interviewee A1's organization: Quotation, Costs price, Margin, Legal advice, Risk analysis, Risk profile, Teaming agreement and Action items. A comprehensive explanation of these topics is provided in Table 9.

6.1.2.3 Evaluate and archive bid

Bid process evaluation is not equally relevant to all interviewees. Interviewee E1 explained that bids who are solely lost on pricing are not evaluated at all. Rejections based on insufficient quality could contain valuable information for future tender projects. Therefore, these rejections are evaluated extensively.

Interviewee F1 mentioned that the process towards a bid must be evaluated before awarding or rejections in order to keep the evaluation sessions objective and unbiased. Operational difficulties or team frustrations experienced while working on a bid can easily be neutralized if appears that a project has been won.

Besides internal team evaluation, mentioned by interviewee F1, there are often external evaluation opportunities. The client is obliged to hosts 'loss interview' sessions. During these sessions, the client elaborates on how the bid is interpreted and he explained why your organization was not the preferred choice. Besides useful feedback on the presented solution, this meeting is an opportunity to start building a new relationship for upcoming tender projects commented interviewees B1 and F1.

Results from evaluation sessions are transformed into generic lessons learned and are stored in a central knowledge base at interviewee B1's organization. Interviewee C1 prefers to store the entire evaluation sessions in order to prevent loosing essential contextual information. Interviewees E1 and D1 does not store evaluation results at all. Evaluation results are only available for those who participated in the evaluation session. However, at interviewee D1's organization, quantitative knowledge is stored in the firm's central database in order to monitor winnings and losses of competitors. At the organization of interviewee A1, they develop an improvement strategy in order to structurally improve future quotation processes.

6.1.3 Project Management

Three activities are covered by the Project Management phase. These activities are Acquiring contract, Deliver service and Evaluate and archive delivered service. After awarding of a certain project, a contract needs to be acquired before any product or service can be delivered. In order to finish a project it needs to be evaluated.

6.1.3.1 Acquiring contract

The Tender Management phase ends after awarding and evaluation of a certain project according to interviewee F1. Before the actual product or service can be delivered, a contract is required. The presence of a contract is the foundation of service provisioning and is a prerequisite for solid financial reporting. Interviewee A1 mentioned four arguments for having a contract:

- Obtaining of a legal foundation for executing projects and protecting an organizations legal rights;
- Entering into contracts with manageable risks;
- Determining and providing insights in the terms of delivery;
- Generating of relevant management information.

The Contract Manager is responsible for contract negotiation. A Legal Officer carries out a contract review in order to identify clauses that could form potential risks. After the client signed the contract, the product or service can be delivered.

6.1.3.2 Deliver service

Product or service delivery can start after the contracts are signed. The first step towards delivery contains the project kick-off meeting. The project kick-off meeting is the first meeting with the project team and the client of the project. Members of the project team and the client are introduced and roles and team memberships are discussed. Besides definition of roles and recognition of responsibilities is reaching agreement regarding the project planning essential. Besides its administrative functions is the kick-off meeting an enthusiasm-generator for the customer and displays a full summary of the project so far.

In order to monitor the project progress, a monitoring mechanism is essential according to interviewee A1. The monitoring mechanism at his current organization monitors finance, risk, customer satisfaction and quality on a monthly basis. A dedicated steering committee generates and evaluates progress reports per topic.

6.1.3.3 Evaluate and archive delivered service

Evaluation takes place in two separate activities at interviewee B1's organization. Bids are evaluated after awarding and delivered services are evaluated after delivery. Interviewee B1 stated that it is crucial to have these evaluation activities separated since an awarded contract can expire for example after six years. It is impossible to wait with the bid evaluation after a contract's expiration date. Evaluation from delivered products or services takes place via the plan, do, check, act principle. Subject matter experts store knowledge derived from evaluation sessions in knowledge base repositories. Lessons learned are then available for the entire organization. Besides the subject matter experts, for example a Solution Architect, dedicated personnel responsible for bid/loss reviews are required added interviewee B1. Bid/loss reviews are also stored in the centralized knowledge base.

6.1.4 Software usage in bid preparation

Software that supports opportunity acquisition is used by every case organization. However, not every case organization uses their software the same way. There is a distinction between mature and less mature selling organizations based on their application usage. From less to more mature selling organizations, we recognize sort of the same applications however; the way they are implemented differs. Good to recognize is that the maturity of application usage does not predict anything regarding expected hit-rates on tender projects. Various applications were identified during the six case study interviews. These applications are aggregated into application type categories. Table 12 indicates which application types are used per case organization.

Applications such as Publication platforms, Communication software, Office Suites and CRM are used throughout the entire bid preparation process. Especially in the Acquisition phase are applications such as Publication platforms, Text mining functions and CRM used intensively. The Qualification phase is primarily supported by CRM software and Bid/No-bid decision support software were the Prepare bid phase is supported by Communication software, CRM software, Mind mapping applications as well as Collaboration software. Project Archiving is facilitated by Bid archiving software.

		Case organization					
		A1	B1	C1	D1	E1	F1
Application type	Publication platforms	x	x	x	x	x	x
	Communication software	x	x	x	x	x	x
	Office Suite	x	x	x	x	x	x
	Collaboration software	x	x	x			x
	CRM	x	x	x		x	x
	Bid/No-bid decision support			x			x
	Mind mapping	x	x				x
	Bid archiving (store)					x	
	Bid archiving (derive knowledge)	x	x	x	x		x
	Text mining				x		

Table 12: Application usage among interviewees

All participated interviewees indicate that they frequently use publication platforms in order to search for new business. TenderNed is used by every participant, TED by the ones who search for international business opportunities and Aanbestedingskalender by the ones who prefer automated features such as advanced searching on CPV codes and mailing lists. Interviewee E1 noticed that these automated features require

investments (monthly subscriptions) who are not strictly necessary. Judging about the benefits from these automated features is definitely a matter of taste according to interviewees B1, C1, and F1.

Communication software as well as an Office Suite are also used by every organization although organization D1 still prints every bid in order to facilitate collaboration among colleagues. D1 argued that there is no collaboration software available that suites collaboration in complex calculation sheets as old fashion pen and paper does. For organizations A1 and B1 is communication software essential in order to facilitate working from remote location at any moment of the day. Intranet portals such as Sharepoint are used to embed the organizations bid preparation and bid management procedures in the organization. Furthermore, various kinds of direct-communication applications are used in order to facilitate direct messaging and conference calling. Examples from such applications are Microsoft Lync and Google Hangout.

Organizations A1 and F1 rely heavily on SalesForce's CRM solution in order to manage the contact moments with their prospects or clients. Besides logging communication activities, CRM software is also used to plan and schedule strategic activities regarding the sales strategy in order to gain customer intelligence. Interviewee A1 mentioned that CRM application SalesForce has various extensions that could benefit to an organizations sales strategy. Among others an extension that integrates the Miller Heiman sales strategy seamlessly with SalesForce CRM. The following Miller Heiman facets are integrated: Strategic Selling, Blue Sheets, Conceptual Selling, Green Sheets and Large Account Management ProcessSM Gold Sheets.[23] Mind mapping is another software feature that is often used in sales meetings and sales processes to structure meeting outcomes and gathered customer intelligence.

Interviewee D1 experiments with an application that identifies future business opportunities via text-mining software by automatically searching into multiannual budgets from governmental organizations and sports associations. Knowledge derived from the text-mining algorithm allows the sales department to setup highly targeted sales initiatives in an early stage from the sales process.

Two interviewees, C1 and E1, use bid or no-bid decision support applications. Necessary to mention is that both interviewees developed these applications themselves, as private projects. The decision support artifacts are not implemented in the sales organization for qualification support. However, both interviewees argued that their bid or no-bid decision support artifacts were usually right! It happened only once that the application from interviewee C1 suggested not to bid where after the organization got the project awarded. Interviewee C1 added that refinement of these decision support application is extremely important. He also argued that such an objective decision support application substantiates presentiment significantly however, a human being should justify the final bid decision.

For the actual offer writing part, several applications and collaboration mechanisms are frequently used among the interviewees. Interesting to recognize is that none of the interviewees uses real-time collaborative editing (RTCE) software. Instead of RTCE, non-real-time collaborative editing is used among the interviewees. Interviewees A1, C1, and F1 make use of Microsoft Sharepoint services in order to share documents with colleagues where interviewee E1 uses shared network storage. Interviewee B1 implemented SVN (Subversion) in order to facilitate collaboration by merging documents semi-automatically. As already mentioned, interviewee D1 does not collaborate in a digital fashion at all. Printing documents and re-entering them into a preferred digital format is their primarily approach.

All interviewees except E1 do maintaining a bid archive in order to store derived knowledge that could contribute to future tender projects. Interviewee E1 only stores all relevant generated bid documents on a shared network drive were other interviewees host evaluation sessions after completion of a certain bid and store lessons learned in a knowledge base.

[23] https://appexchange.salesforce.com/listingDetail?listingId=a0N300000016Zt4EAE

6.2 Bid Preparation Process - Reference Method

The overall Bid Preparation process can be divided into different phases and activities. Process Deliverable Diagrams illustrate phase structures and how the activities and sub-activities interact with each other.

Chapter 6.2.1 depicts the actual Bid Preparation Reference Method PDD. Within the PDD, two sides can be distinguished. The left-hand side, which is based on a UML activity diagram, depicts the meta-processes including its activities. The right-hand side, which is based on a UML class diagram, depicts the different deliverables and are called concepts. The connection between activities and concepts are specified by dotted arrows (van de Weerd & Brinkkemper, 2008).

Chapter 6.2.2 provides a highly structured overview from the activities and sub-activities used at the left-hand side (Activity table) from the PDD. Chapter 0 elaborates on the concepts used at the right-hand side (Concept table) from the PDD.

6.2.1 Bid Preparation Reference Method

In the following, the major phases including its activities illustrated in Figure 38 are described in more detail.

Figure 37 depicts the initial version of our bid preparation reference method. Primary input for this version is our extensive literature review and our preliminary research. During our case study research the initial version of our bid preparation reference method evolved. The method evolution is extensively described in chapter 6.2.5. The different colors used refer to specific contribution from interviewees. Pink refers to Manpower Group, Blue refers to ATOS and orange refers to Ordina.

Acquisition phase: The first phase in our Bid Preparation Reference Method is called the Acquisition phase. New business opportunities are identified and sales strategies are determined. Publication platforms are vital sources for identifying public tender projects. Part of the Acquisition phase is the Initial tender qualification. This task is often performed by the Bid Manager himself or by the Tender desk staff.

Qualification phase: Opportunities that are that are labeled as “promising” have to be qualified in depth. Opportunity qualification is performed in the Qualification phase. Roles that are responsible for bid qualification are the Bid Manager, Solution Manager and the Commercial Manager. Often these roles participate in teams such as Bid- and Core teams. In order to qualify opportunities, a tender document assessment should be performed first. These documents are retrieved from publication platforms or from the prospect itself. Input for the bid or no-bid decisions is generated by valuating an opportunity against relevant qualification criterion. The qualification criterions have a certain weight that is based on its relevance within a certain context. Qualification criterions are derived from a central tender qualification base. This qualification base stores best practices and experiences regarding previous qualification decisions in order to work efficiently. Part of the opportunity qualification is determining the expected winning price. If an organization is not able to quote in line with the determined expected winning price, it is probably worthwhile to make a no-bid decision.

Prepare bid: If the bid decision is made, an offer needs to be created. The Bid Manager is the project leader from the bid preparation process. The Bid Manager has the end responsibility in order to deliver a winning bid. In his journey towards a winning bid, the Bid Manager collaborates with his Bid Team. Different roles and responsibilities within the Bid Team are discussed in chapter 6.2.4. Depending on the branches, more or less sub-contractors are involved in the bid preparation process. After inquiring potential sub-contractors, offers are compared and the preferred sub-contractor is selected. A sub-contractors past performance can be taken into account by selecting the best sub-contractor. The next step consists of the pricing part followed by the actual bid writing part. When the bid is written, it is the responsibility of the Commercial manager to determine the actual markup. Logically, the markup is related to the expected winning price that is determined in the Qualification phase.

Evaluate and archive bid: After the bid is shared with the prospect, evaluation takes place. It is crucial to evaluate the bid preparation process before the prospect made his awarding decision in order to keep the evaluation objective and unbiased. Too much positive, in case of winning a tender, or negative, in case of losing a tender,

does not contribute to a constructive evaluation session. In order to feed the knowledge base, bid archiving is important. Generated knowledge is now available for future bids.

Acquiring contract: Contracts are the foundation of works. Before projects can be executed a decent contract needs to be acquired. After bid awarding, negotiating about contract agreements starts. The product of several negotiation sessions are one or more contracts signed by the buyer as well as by the supplier. A signed contract belongs to the final bid.

Deliver service: The actual service delivery part is not necessarily part of 'bid preparation'. However, it is an meaningful element for two reasons. First, lessons learned from the delivery phase can be used in future bid preparation projects. Second, projects need to be profitable, if actual delivery costs exceed the forecasted delivery costs, calculation sheets need to be update.

Evaluate and archive delivered service: Evaluation of the delivered services is the latest activity before the discharge statement can be given. Experiences derived from the delivered service evaluation sessions are transformed into explicit knowledge and stored in the bid database.

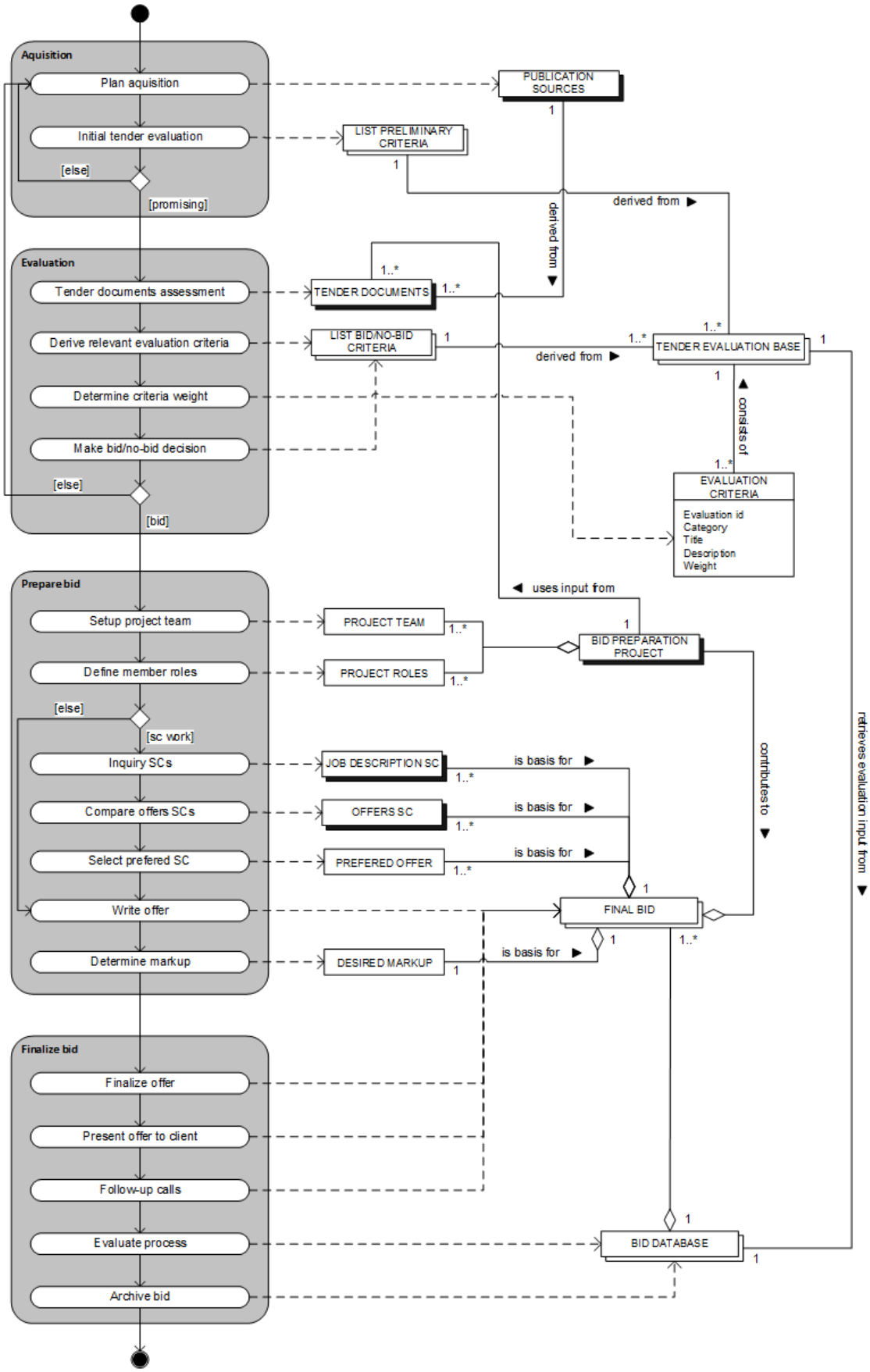

Figure 37: Initial Bid Preparation Process Reference Method PDD (Version 0.1) [BP]

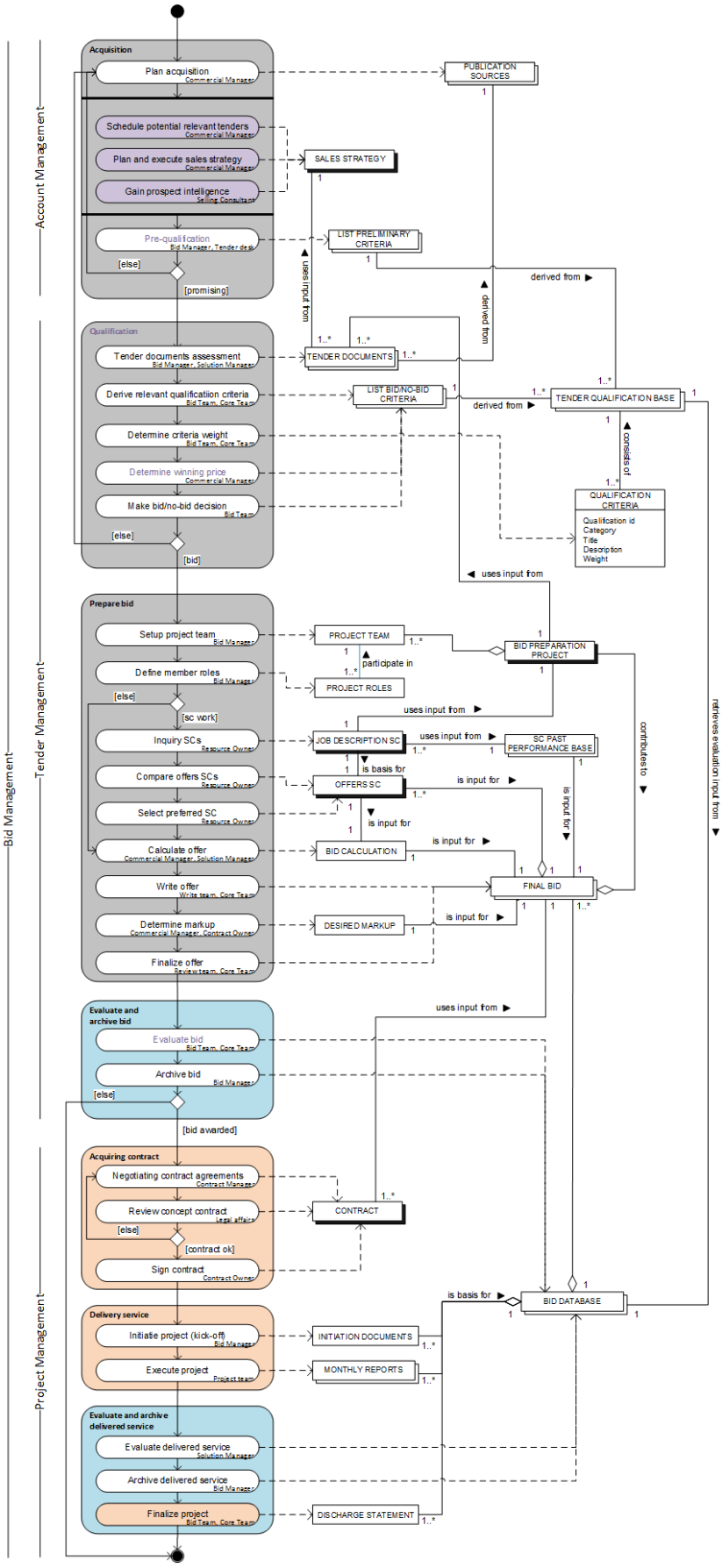

Figure 38: Final Bid Preparation Process Reference Method PDD (Version 0.3.2) [BP]

6.2.2 PDD: Activity table

Activity	Sub-activity	Description
Acquisition	Plan acquisition	PUBLICATION SOURCES such as TenderNed and TED are the primary sources for *Commercial Managers* to identify new public, governmental or semi-governmental, business opportunities.
	Schedule potential relevant tenders	In order to execute a SALES STRATEGY efficiently, which often contributes to its effectiveness, a sales pipeline needs to be maintained by scheduling future potential tenders. In addition, contract renewals should be scheduled; this enables sales to act appropriately.
	Plan and execute sales strategy	Besides setting up a sales pipeline, a strategy for approaching sales opportunities should also be developed. Input from proofed sales methodologies such as Miller Heiman and Solution Selling could be used or could be implemented completely.
	Gain prospect intelligence	In case of contract renewals, intelligence from consultants who already work on projects can be used in order to gain a knowledge advantage. Consultants, who already work within the targeted organization, should be instructed to pry potential useful information from decision makers, within law borders, that could beneficial to the acquisition phase.
	Pre-qualification	Input for the initial tender qualification decision is derived from TENDER DOCUMENTS who are publicly available via PUBLICATION SOURCES or via a careful planned and executed sales strategy. The Bid Manager in collaboration with an organizations Tender Desk make the initial tender qualification decision by making use of objective, carful selected, PRELIMINARY CRITIRIA who are derived from a central TENDER QUALIFICATION BASE.
Qualification	Tender documents assessment	An in depth assessment on the available TENDER DOCUMENTS is an important element of project qualification. 'Tender document assessment' assesses the documents already retrieved via 'Initial tender qualification' more thoroughly. Project specific assessment criteria can be derived from the SALES STRATEGY.
	Derive relevant qualification criteria	Input gathered during a tender document assessment is required in order to make a solid bid or no-bid decision. A bid or no-bid decision is made by assessing various bid or no-bid criteria (LIST BID/NO-BID CRITERIA) which is done by the *Bid Team* and by the *Core Team*. These criteria differ per project and are also compiled by the *Bid Team* and by the *Core Team.* The criterions (QUALIFICATION CRITERIA) are derived from and are a subset from an organizations TENDER QUALIFICATION BASE.
	Determine criteria weight	Not every QUALIFICATION CRITERIA has equal weights. Weights implicate a criterions relative importance compared to the other criteria. Criterions weights can differ per project and are set by the *Bid Team* and by the *Core Team.*
	Determine winning price	Besides a compiled list with project-related bid/no-bid criteria, is the 'expected winning price' an obligated criteria. Its weight however can differ per project and is determined by the *Commercial Manager.*
	Make bid/no-bid decision	The *Bid Team* makes a final bid or no-bid decision.

Prepare bid	Setup project team	Every unique bid has its own bid team, or PROJECT TEAM, in order to write a potential winning bid. Each PROJECT TEAM has chair, or project leader, which is always the Bid Manager.
	Define member roles	The Bid Manager decides about which additional roles (PROJECT ROLES) are required in order to compose solid bid.
	Inquiry SCs	In order to inquiry subcontractors, a job description needs to be written by the *Resource Owner*. Input the JOB DESCRIPTION SC is derived from the BID PREPARATION PROJECT itself and from documented experiences with earlier contracted subcontractors. Experiences with subcontractors are documented in a SC PAST PERFORMANCE BASE.
	Compare offers SCs	Offers received (OFFERS SC) from subcontractors needs to be compared in order to select the best one.
	Select preferred SC	One or more subcontractors can be selected in order to fulfill the job. It is up to the *Resource Owner* to decide whether to use multiple subcontractors.
	Calculate offer	In case of no works that has to be subcontracted, the Calculate offer activity is triggered after Defining the member roles. In case of subcontracting works, offers from subcontractors (OFFERS SC) are important while calculating the offer (BID CALCULATION).
	Write offer	In larger sales organizations, dedicated bid writers write offers. Subcontractors can be requested to support in writing their part of the final offer since they often deliver highly specialized services. The *Write team* has the main responsibility of writing the bid.
	Determine markup	Before finalizing the offer, the markup has to be determined. Both, the *Commercial Manager* and the *Contract Owner* are responsible for determining a desired markup (DESIRED MARKUP). *Contract Managers* have to report to the board of directors.
	Finalize offer	The last changes to the offer are made in the finalize offer phase by the *Core Team* in order to deliver an offer in accordance with the clients submission protocol.
Evaluate and archive bid	Evaluate bid	The bid process needs to be evaluated (internal) in order to improve future bid preparation processes. The process must be evaluated before awarding or rejections in order to keep the evaluation sessions objective and unbiased. It depends per project whether external evaluation is beneficial. Both, the *Bid Team* and the *Core Team* have to evaluate their own performance.
	Archive bid	The *Bid Manager* is responsible for archiving the bid in a bid archive or the BID DATABASE. Bid archives are used for analysis purposes in order to be beneficial for future projects.
Acquiring contract	Negotiating contract agreements	Contract Acquisition phase starts after awarding of a certain project. The presence of a CONTRACT is the foundation of service provisioning and is a prerequisite for solid financial reporting. The *Contract Manager* is responsible for contract negotiation. The *Bid Manager* can be consulted in order to provide knowledge that he acquired during offer phase. Regular coordination takes place between *Legal Officer* the *Contract Owner*, the

		Contract Manager and the *Business Assurance Manager* in order to create a CONTRACT that suites the organizations interests.
	Review contract	A senior Legal Officer carries out a CONTRACT review in order to identify clauses that could form potential risks.
	Sign contract	Contracts are signed after the contract review.
Deliver service	Initiate project (kick-off)	The first step towards delivery contains the project kick-off meeting. The project kick-off meeting is the first meeting with the *Project team* and the client of the project. Members of the *Project team* and the client are introduced and roles and team memberships are discussed. Besides definition of roles and recognition of responsibilities, is reaching agreement regarding the project planning important. Agreements are documented in INITIATION DOCUMENTS.
	Execute project	After allocating roles and recognizing responsibilities, the project can be started. Project progress needs to be monitored on specific themes: Finance, Risk, Customer Satisfaction and Quality. MONTHLY REPORTS are composed in order to keep track of every project.
Evaluate and archive delivered service	Evaluate delivered service	Knowledge retrieved from past performance projects is extremely important by fine-tuning propositions and the sales strategies. This makes tender evaluation and essential part of Bid Management. Each project needs to be evaluated internally and externally.
	Archive delivered service	Evaluation from delivered products or services takes place via the plan, do, check, act principle. Subject matter experts store knowledge derived from evaluation sessions in knowledge base repositories. Lessons learned are then available for the entire organization.
	Finalize project	After project finalization, discharge is given to the *Bid Team* and to the *Core Team.*

Table 13: Activity table Bid Preparation PDD

6.2.3 PDD: Concept table

Concept	Description
PUBLICATION SOURCES	Large public (governmental) procurement projects must be published in order to make them accessible for potential suppliers. Suppliers can search for tender projects in two portals. First, there is TenderNed[24]. TenderNed is used to search for national tender projects. Second, there is TED[25]. TED is the online version of the 'Supplement to the Official Journal' of the EU, dedicated to European public procurement.
SALES STRATEGY	A sales strategy consists of a plan that positions a company's brand or product to gain a competitive advantage. Successful strategies help the sales force focus on target market customers and communicate with them in relevant, meaningful ways. Sales representatives need to know how their products or services can solve customer problems. A successful sales strategy conveys this so that the sales force spends time targeting the correct customers at the right time.[26]
LIST PRELIMINARY CRITERIA	Preliminary qualification criteria help you to predict your chances of winning through to the tender stage of a project. Preliminary qualification criteria are determined by the Commercial Director and his management in order to provide handles for Bid Managers while scanning PUBLICATION SOURCES for new business opportunities. LIST PRELIMINARY CRITERIA are derived from the TENDER QUALIFICATION BASE.
TENDER DOCUMENTS	TENDER DOCUMENTS contain documents that provide information about the project. Buyers add TENDER DOCUMENTS to their bid in order to inform potential suppliers about requirements and preferences. Suppliers use TENDER DOCUMENTS as a guide; offers provided by suppliers are based on these guidelines. TENDER DOCUMENTS are accessible for suppliers via PUBLICATION SOURCES.
LIST BID/NO-BID CRITERIA	LIST BID/NO-BID CRITERIA are as LIST PRELIMINARY CRITERIA also derived from the TENDER QUALIFICATION BASE. LIST BID/NO-BID CRITERIA are more profound compared to preliminary criteria list and are used as an extensive review mechanism in order to decide whether to bid.
TENDER QUALIFICATION BASE	The TENDER QUALIFICATION BASE is a dedicated library that contains the available bid qualification criteria for a certain organization. Qualification criteria refinement takes place after sub-activity "Evaluate bid". TENDER QUALIFICATION BASE receives updated qualification criteria from the central BID DATABASE. LIST PRELIMINARY CRITERIA as well as LIST BID/NO-BID CRITERIA derive their qualification criteria including the preferred criteria weight from TENDER QUALIFICATION BASE.
QUALIFICATION CRITERIA	QUALIFICATION CRITERIA are the individual items that are used in order to predict the likeliness of winning a certain bid. QUALIFICATION CRITERIA have a unique id, belong to a Category and have a Title and a Description. Its Weight indicates its relative importance. QUALIFICATION CRITERIA weight can differ per project.
PROJECT TEAM	A PROJECT TEAM is responsible for one or more bid preparation projects. A PROJECT TEAM is a combination of various PROJECT ROLES. PROJECT ROLES are assigned to employees. An employee can have operate in different roles within one team.
PROJECT ROLES	Different PROJECT ROLES are identified in order to ensure separation between different project tasks. However, employees are allowed to participate in different roles at once. The Bid Manager has the responsibility to prevent conflicts of interests.

[24] http://www.tenderned.nl/over-tenderned-0/waarom-tenderned
[25] http://ted.europa.eu/TED/main/HomePage.do
[26] http://smallbusiness.chron.com/sales-strategy-629.html

BID PREPARATION PROJECT	Concept BID PREPARATION PROJECT represents the bid preparation project as a hole. Different PROJECT ROLES participate in a PROJECT TEAM and a PROJECT TEAM is responsible for one or more bid preparation projects.
JOB DESCRIPTION SC	It can happens that works are subcontracted. In these scenarios subcontractors (SC) needs to be inquired. In order to inquiry a SC, highly detailed job descriptions are required. Job descriptions inform the SC about specific project requirements and are used by the SC in order to create an offer. Input for JOB DESCRIPTION SC is derived from BID PREPARATION PROJECT.
OFFERS SC	OFFERS SC represent the offers received by the bid team from different potential SC's. It happens that specific product or service information, provided by SC's, is used in a final bid, FINAL BID.
SC PAST PERFORMANCE BASE	The SC PAST PERFORMANCE BASE stores all information regarding a sub contractors past performance. Especially JOB DESCRIONs are relevant for future projects. Which sub contractor is specialized in what kind of projects. Often, input for bids will be derived from the SC PAST PERFORMANCE BASE in order to prevent reinventing the wheel again.
BID CALCULATION	OFFER SC is input for the BID CALCULATION. The BID CALCULATION is added to the FINAL BID.
FINAL BID	A FINAL BID bundles all information generated in earlier activities and sub-activities. Finals bids are archived in one central BID DATABASE. Lessons can be learned from archived bids throughout the years.
DESIRED MARKUP	Penultimate, a DESIRED MARKUP is added to the FINAL BID. Markups can differ per project and therefore there is not linkage between the BID CALCULATION and the DESIRED MARKUP.
CONTRACT	After awarding, a contract needs to be signed in order deliver a product or service. Input for a CONTRACT is derived from the delivered FINAL BID.
BID DATABASE	The BID DATABASE is the central store in this bid preparation reference method. Every released bid is archived in the FINAL BID database and can therefore be reused in future bids. TENDER QUALIFICATION BASE receives its refinements from the BID DATABASE. Every delivered service is evaluated extensively. Documents generated during these evaluation sessions, INITIATION DOCUMENTS, MONTHLY REPORTS or DISCHARGE STATEMENTS, are stored in the central BID DATABASE.
INITIATION DOCUMENTS	Documents required in order to facilitate sub-activity "Initiate project (kick-off)".
MONTLY REPORTS	MONTHLY REPORTS generated during intermediate evaluations in sub-activity "Execute project".
DISCHARGE STATEMENT	DISCHARGE STATEMENT generated while finalizing a project.

Table 14: Concept table Bid Preparation PDD

6.2.4 Teams, roles and responsibilities

In this chapter, we elaborate on the available teams and roles and its corresponding responsibilities. The teams and roles are assigned to the various sub-activities from the PDD depicted in Figure 38.

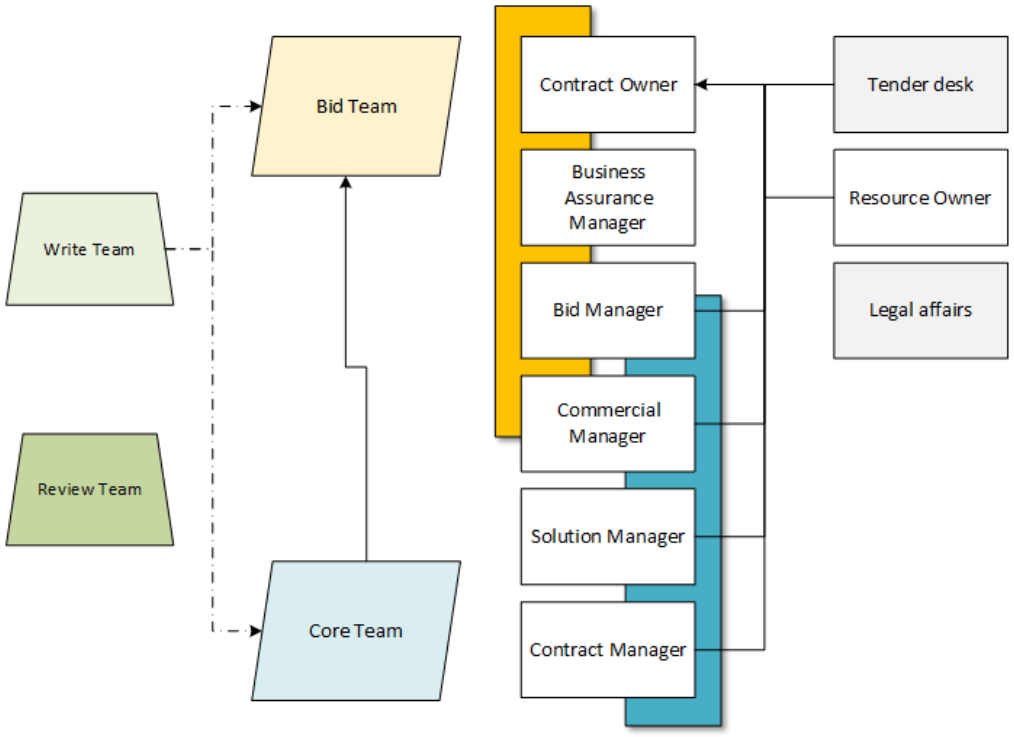

Figure 39: Representation available team, roles and hierarchies [BP]

Role	Responsibilities
Contract Owner	The Contract Owner is responsible for releasing a final bid and after awarding for delivering the product or service. The Bid Manager and Commercial Manager have to report to the Contract Owner.
Commercial Manager	The Commercial Manager is responsible for opportunity qualification and selling from products and services. The Commercial Manager has also the responsibility to keep the CRM and Funnel Management Systems up to date.
Business Assurance Manager	The Business Assurance Manager ensures that the bid process proceeds according to agreements. The Business Assurance Manager also validates the quality of the documents generated in the bid preparation phase in order to make informed decisions.
Bid Manager	The Bid Manager is responsible for managing the Tender Management phase and for supervising the Bid Teams. He also is chair of various meetings required for the bid preparation activity and is responsible for offer planning- and communication. Additionally the Bid Manager takes care of the minutes and maintains to-do lists from meetings during the Account Management and Tender Management phases. Finally, the Bid Manager is responsible for communication with stakeholders and for project archiving. The Bid Manager does not provide contextual input to projects. The Bid Manager role can best be compared with a project leader function.
Contract Manager	The Contract Manager negotiates with the client; on behave of the Contract Owner, in the contract acquisition phase. After awarding, the Contract Manager is responsible for fulfillment of the contract.
Resource Owner	The Resource Owner advises the Contract Owner and is responsible for delivering resources and expertise in order to write offers and implement offered solutions.
Solution Manager	The Solution Manager reviews customers' requests on feasibility and practicability. He also suggests innovative and realistic solutions and assesses which expertise is required for realization. Additionally, the Solution Manager provides advice to the Contract Owner.
Legal affairs	Legal affairs are point of contact during the entire lifecycle of a contract for legal related questions. Legal affairs also provide legal advice for concept agreements during contract negotiations.
Tender desk	The Tender desk advices the Contract Owner and Bid Manager during the initial tender qualification phase regarding a customers' demands and contractual agreements in relation with a customers' demands. The Tender desk also advices the Contract Owner regarding possible mitigation measures.

Table 15: Available roles Bid Preparation reference method

Teams	Description
Bid Team	The Bid Team has the final responsibility for bid projects and is therefore empowered to make decisions, for example the bid or no-bid decision. The Bid Team composition differs per project, based on the expertise required. The following roles participate in every project type: Bid Manager, Commercial Manager, Contract Owner and a Business Assurance Manager were the Bid Manager represents the role as chairperson. It is up to the Bid Manager to add additional disciplines to the team in order to have the right knowledge available for writing a potential winning offer. Only the three static Bid Team members have a right to vote. Optional team members and the Bid Manager do not have a right to vote.
Core Team	The Core team is responsible for the contextual part (what exactly will be offered) of a bid and consists of the following roles: Contract Manager, Commercial Manager, Solution Manager and the Bid Manager. The Core team reports to the Bid Team.
Write Team	The Write Team consists of experts (Senior Consultants) who deliver content for the final bid, based on their expertise. Write team members are allowed to give unsolicited advice to the Bid- and Core Team.
Review Team	The Review Team consists of experts from disciplines required and review bids substantively. Besides the subject matter experts, a deputy from the Management Team is a member of the Review team.

Table 16: Available teams Bid Preparation reference method

6.2.5 Method evolution during interviews

Figure 38 depicts final Bid Preparation Reference Method Process Deliverable Diagram (version 0.3.2). The development of his Bid Preparation Reference Method was an iterative process. As described in the research framework, depicted in Figure 3: PDD Research Framework" and especially in Figure 2: Research framework," the Bid Preparation Reference Method answers SQ3 where SQ1 and SQ2 were the information sources.

During this research, six in depth semi-structured interviews have been carried out. The results from the first interview session have been used for the second interview session etcetera. This has resulted in several revision of the initial Bid Preparation Reference Method. The Bid Preparation Reference Method change log is depicted in the table below. As can be recognized from the table, there was no need for adjustment after the fourth and fifth interviews.

Version numbering clarification: 0.1 is the initial (first iteration) Bid Preparation PDD version. 0.1.*x*.1 is the first revision of the first Bid Preparation Reference Method PDD version based on input gathered up to interview *x*. Every individual modified method fragment is listed in the appendixes, chapter 0.

Case	Version	Date	Adjustments
-	0.1	4-5-2015	Initial Bid Preparation PDD based on information derived from SQ1
A1	0.1.1.1	25-5-2015	Activity "Deliver service" is added
B1	0.1.2.1	3-6-2015	Activity "Archive bid" is split into activity "Evaluate and archive bid" and "Evaluate and archive delivered service"
C1	0.1.3.1	17-6-2015	Renaming activity "Evaluation" to "Qualification"
D1	-	-	-
E1	-	-	-
F1	0.1.6.1	13-7-2015	Expanded activity "Acquisition" with three sub-activities "Schedule potential relevant tenders", "Plan and execute sales strategy" and "Gain prospect intelligence". Added sub-activity "Determine winning price". Added activities to overarching phases (Y-axis).
F1	0.1.6.2	5-10-2015	Alignment of various concept labels

Table 17: Evaluation Bid Preparation Reference Method (first iteration during interview sessions)

Version	Date	Adjustments
0.2.1	19-10-2015	Reanalyzing case study (documents) results A1: Added "Acquiring contract" activity and merges "Finalize bid" activity with "Prepare bid" activity.
0.2.2	29-10-2015	Reanalyzing case study (documents) results A1: Added sub-activity "Review contract"
0.2.4	30-10-2015	Reanalyzing case study (documents) results D1: Added sub-activity "Calculate offer"
0.2.5	30-10-2015	Update concept relations for activity Prepare bid.
0.2.6	10-11-2015	Changed order "Acquire contract" and "Evaluate and archive bid".
0.2.7	24-11-2015	Moved sub-activity "Finalize bid" from "Deliver service" to "Evaluate and archive delivered service".
0.3.0	25-11-2015	Roles added to sub-activities.
0.3.1	30-11-2015	Update roles.
0.3.2	2-12-2015	Added concept SC PAST PERFORMANCE DB

Table 18: Evaluation Bid Preparation Reference Method (second iteration while analyzing interview results)

Figure 37 illustrates the initial version from the Bid Preparation PDD. Input received from the case studies performed is not necessarily processed in sequential order. It happened that input from case study A1 made actual sense after completion of interview C1, etcetera.

The first set of modifications after case A1 are depicted in Figure 47. The activity Deliver service is added to the original PDD including three additional concepts: INITIATION DOCUMENTS, MONTHLY REPORTS and DISCHARGE STATEMENT. These particles clarify the activities that should be performed while executing the

project. Input from case study B1 is processed in the method fragment that is depicted in Figure 41. Evaluation results of both, the Bid Preparation activity and the Delivery service activity contribute central BID DATABASE. Generated knowledge can be stored and refined in, and eventually reused by accessing it from, the central BID DATABASE. Input from case study F1 is processed in Figure 49, the Account Management phase. Three critical activities towards a SALES STRATEGY have to be executed in order to identify new opportunities in an efficient way. Figure 43 depicts the implementation of the activity Acquiring contract, were the first improvements on this activity are depicted in Figure 44. Finally, in Figure 52 and Figure 46, some displacements were made in order to create the right chronological order.

6.3 IT tool support set

Chapter 6.3 elaborates on how to support the developed Bid Preparation Reference Method, depicted in chapter 6.2, with IT tooling or IT tool support. In order to provide an overview of what parts from the Reference Method can be supported by IT tooling, the Application Overlay Diagram from the Enterprise Architecture Modelling Method by Koning, Bos, & Brinkkemper (2008) is adopted after some small modifications. In the following sections, the Enterprise Architecture Modelling method is explained where after the Application Overlay Diagram for the Bid Preparation Reference Method is presented.

6.3.1 Enterprise Architecture Modelling method (EAM)

The Enterprise Architecture Modelling method (EAM) is developed by Koning, Bos, & Brinkkemper (2008). The development of EAM is driven by experienced teaching requirements and by previous ERP modelling experiences from both authors. EAM consists of five diagram who are strongly interrelated. EAM seeks to answer the following questions: What are the main functions the enterprise performs? What are the relations of these functions to each other and to the outside world? What are the information systems that support the enterprise functions? What infrastructure, in terms of computers and network capabilities is necessary or will be necessary in the near future (Koning et al., 2008)?

A complete EAM consist of the following five diagrams. First, a Supply Chain Diagram (SCD) is drawn and it shows how the enterprise works together with business partners in order to produce services for its customers. Thereafter, an Enterprise Function Diagram (EFD) is drawn which provides a top-level breakdown of the main functions of an enterprise or organization. The first overall diagram is called a Scenario Overlay (SO). An SO depicts the interoperability of an enterprise functions in a particular situation. An Application Overlay (AO) shows how software applications give support to which enterprise functions. The last diagram is the so called System Infrastructure Diagram (SID). It shows an organizations network topology, the most critical servers that operate in the network and the main information systems that support the depicted enterprise functions (Koning et al., 2008). Figure 40 shows how the different EAM models interact with each other. For example, in order to create an AO or SO, an EFD needs to be developed.

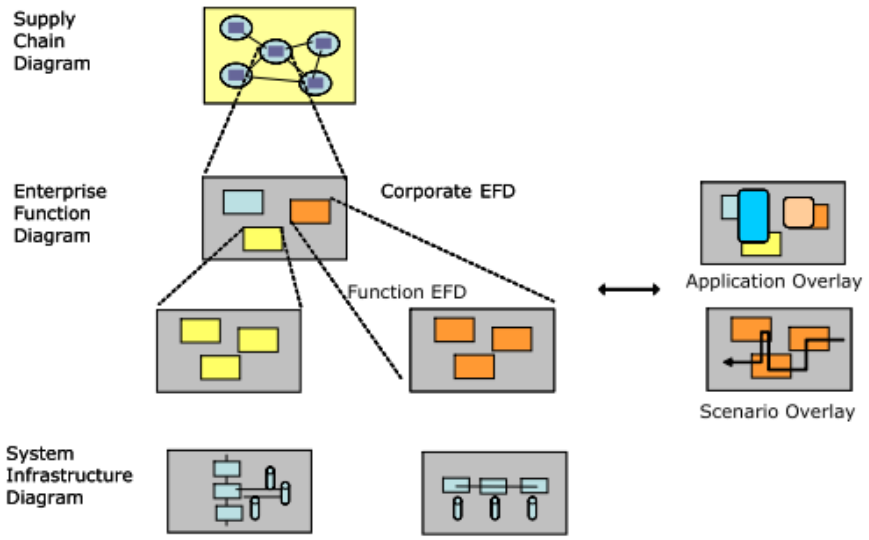

Figure 40: Interaction EAM models by (Koning et al., 2008) *[E]*

A strong quality of EAM that that relations between information systems (applications) and infrastructure (network and computers) are described only in general, therefor the authors refer to the word 'lightweight' in their paper in which EAM was introduced. EAM is limited to a top down analysis in order to create an overview for providing insights. The authors explicitly stated that the word 'lightweight' should not be confused with 'easy' or 'not to be taken serious'. It is extremely complex to enter an unknown organization to derive a central, balanced model of its enterprise functions out of all available information sources (Koning et al., 2008).

A questionnaire among 23 students shows that a large majority confirms that the readability of the SCD, EFD, SO and SID diagrams is good. They also confirmed that the diagrams have the right level of abstraction. The diagrams only present relevant information, no information is lacking and there is almost no redundancy. Finally, the diagrams are relatively easy to produce after some teaching classes and no training was needed in order to read the diagrams (Koning et al., 2008).

6.3.2 Application Overlay Diagram (AO)

An AO depicts applications used in business processes. Only software applications that play a significant role in these business processes are depicted. For instance, system software like operating systems or office suites are usually not taken into account since these applications are used in all business processes. However, specifically developed spreadsheets executed by a program who is part of an office suite can play a significant role in a business process. In this scenario, the specific spreadsheet is considered as an application that supports a specific business process and is therefore mentioned in the AO (Koning et al., 2008).

The AO presented in Figure 41 is drawn on top of a PDD were the EAM modelling method prescribes that AO's should be drawn on top of EFD's. Combining the PDD modeling method and the AO derived from the EAM modelling method enables the researcher to present the possibilities for IT support in the Bid Preparation process at a glance. In chapter 6.3.3 we elaborate on how suggested IT tooling could support the activities mentioned in the Bid Preparation PDD.

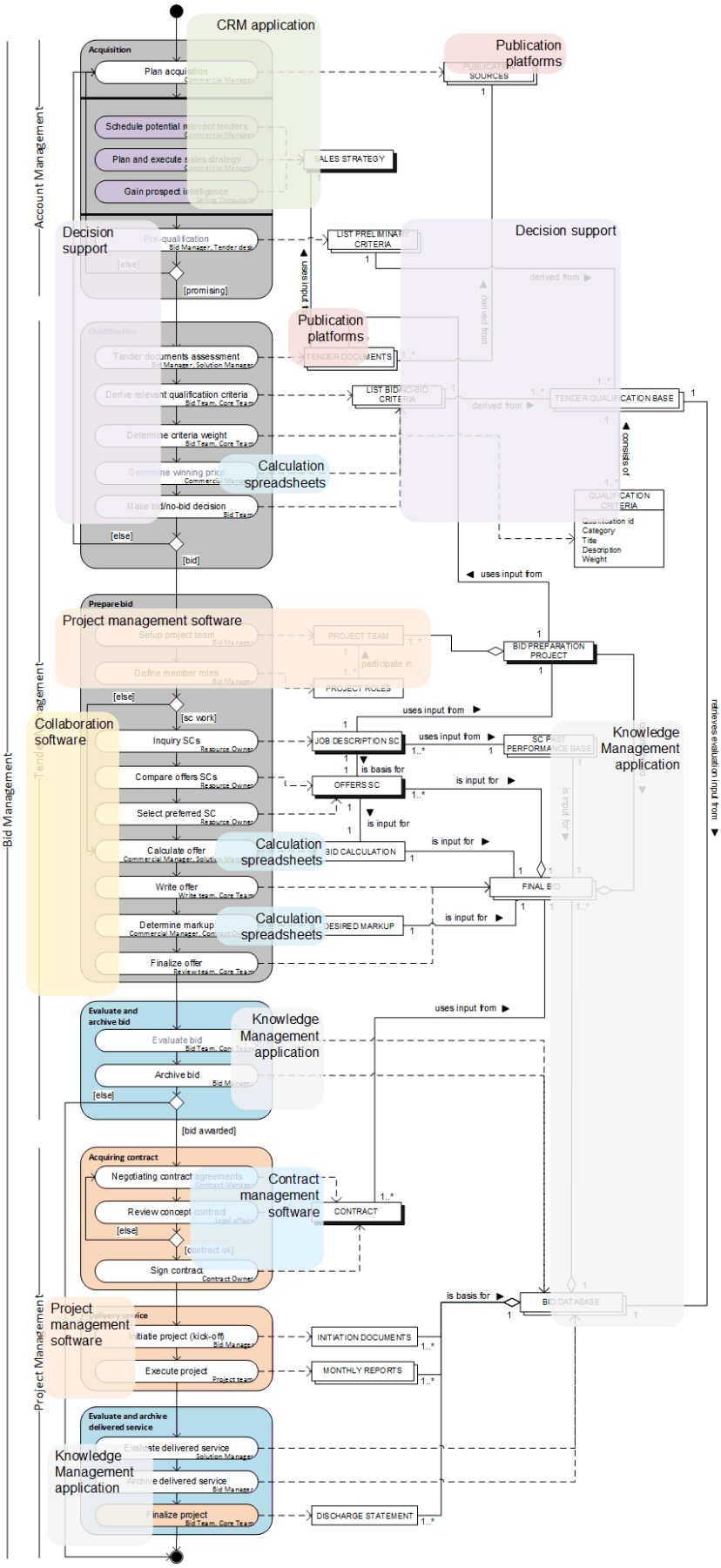

Figure 41: Application Overlay Bid Preparation Process [BP]

6.3.3 IT tool support explained

As can be concluded from the Bid Preparation Process Application Overlay, depicted in Figure 41, a wide variety of applications contributes to the Bid Management process according to the six interviewees. None of the organizations who participated mentioned that they use an application that suites a complete Bid Management process such as ERP software does for complex business processes. Essential to mention is that not every participating organization uses the same type of applications in order to support their business processes. For example, some organizations heavily invest in evaluation processes and others do not. For those organizations who prefer to not evaluate archived bids or executed projects intensively, Knowledge Management application could be less valuable. For those organizations, who do solely participate in private tender project, subscriptions to Public Publication Platforms could be less valuable. Since we developed a broadly applicable Bid Preparation Reference Method, every possible support application is taken into account.

In the remainder of this chapter, applications suggested for the different activities listed in the Bid Preparation Reference Method are deepened down to a functional level. For example, what functions or features from CRM applications are applicable in order to suite the Acquisition phase. Moreover, what characteristics should Decision support software have in order to support the Qualification phase? In chronological order, the following applications types are discussed: Publication platforms, CRM application, Decision support, Project Management, Collaboration software, Calculation spreadsheets, Knowledge Management application and finally Contract Management software.

6.3.3.1 Publication platforms

Publication platforms provide access to business opportunities so businesses can access all available public publications from a single webpage. European authorities are obliged to publish their tenders larger than a certain threshold on announcement platforms such as TenderNed (Dutch announcement platform) or TED (Tenders Electronic Daily), the online version of the 'Supplement to the Official Journal'. Publication platforms themselves offer basic functionalities in order to explore their databases. Commercial competitors maintain copies from databases of announcement platforms such as TenderNed and TED in order to deliver additional functionalities. Often, commercial platforms charge the end-user a certain fee for these services where official platforms are free to use.

The main features for tender announcement platforms are listed below[27]:

- Database browse function allows suppliers to find notices by topic. Various browse functionalities should be available:
    - By business opportunity;
    - By Common Procurement Vocabulary (CPV)[28] code to allows browsing by business sector;
    - By expected place of delivering by using the Nomenclature Des Unités Territoriales Atatistiques (NUTS)[29];
    - By heading to allow browsing by tender procedure;
- Various database search functions that allow suppliers to set different search criteria in order to search efficient;
    - Save and modify earlier defined search profiles to work efficient;
- Bookmark feature (Clipping list) that eases later consultation;
    - Specify a reminder date for clipping list documents and get reminders via e-mail on specified dates;
- Rich Site Summary (RSS) feeds sends automatic updates on the latest announcements published;
    - Suppliers can specify personal search profiles to set as RSS feeds;
- News alerts by e-mail;
    - An e-mail will be sent as soon as search profiles marches new published announcements or documents;

[27] http://ted.europa.eu/TED/static/help/en.pdf
[28] http://simap.europa.eu/codes-and-nomenclatures/codes-cpv/codes-cpv_en.htm
[29] http://simap.europa.eu/codes-and-nomenclatures/codes-nuts/codes-nuts-table_en.htm

- Release calendar provides an overview for publication dates for the current year.

Additional features, often available via commercial parties, are listed below:

- Profiling of tender opportunities in order to increase match result quality (instead of solely CPV tagging);
- Manual tender classification service: Commercial tender publication platforms offer manual tender classification services since text mining algorithms are still not as strong as required since they lack contextual awareness.[30]
- Contract Awards: Providing details of tenders that have been awarded. Who won the contract and how much the contract was worth;
- Contract expiration dates: Upcoming contract expiration dates are crucial information for planning future sales activities;
- Competitor Analysis: Which competitors will probably also participate in the tender;
- Subcontracting Opportunities: Identification of opportunities were your organization could participate as a subcontractor instead of being the main contractor;
- Future tenders: Municipal councils have to publish their decisions made for the upcoming years. These publications provide insight in expected future tender projects. This information is crucial for planning future sales activities.

Interesting to notice, features provided by public tender announcement platforms, maintained by governments, facilitate primarily tender publication services. Were commercial parties try to add value by providing more advanced search engines by making use of company profiling strategies and by delivering information that is valuable from a sales perspective. It needs to be said that also the information used by commercial parties is publically available and is free of charge. Commercial parties add value by executing innovative data mining algorithms in order to deliver useful knowledge. In addition, commercial parties often provide premium support and consultancy for those organizations who prefers additional services instead of solely the announcement platforms.

6.3.3.2 CRM applications

Mack, Mayo, & Khare (2005) developed a strategic approach for successful CRM. The approach consists of three implementation stages including the activities required for successful implementation of CRM initiatives. The different stages are summarized in a so called CRM-Diamond depicted in the figure below. For this research, we only use the four CRM-Activities in the center of the model in order to describe the conditions for CRM in Bid Preparation.

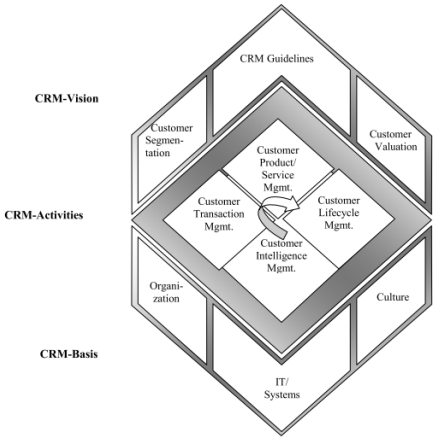

Figure 42: CRM-Diamond [E]

Strategic CRM should cover the operational part of Shareholder Value Management, especially in the field of marketing, sales and service. In order to create an integrated approach that rests on an existing customer oriented strategy, strategy processes and employees have to be linked. Therefore, good CRM focuses on three

[30] http://abkpremium.nl/EntInf.aspx?subject=ServicesForCompanies&PageId=50003

main effects: Higher customer loyalty, more targeted customer control and better customer information (Mack et al., 2005; Xu & Walton, 2005)(Mack et al., 2005).

The CRM-Diamond presented presents four activities in its CRM-Activity cycle, all of them are of equal importance. However, for this research, we have special attention for Customer Intelligence Management as the interviewees A1, B2, C1 and F1 frequently referred to this topic. The bulleted list below describes the four activities from the CRM-Activity cycle.

- Customer Intelligence Management;
    - Mack et al., (2005) describe this module as a management module for that contains all customer information. It should be the basis for customer management in general. This means that it should distribute customer data throughout and it should provide customer data analysis functionalities. Data Warehousing and Data Mining could be of importance in order to deliver Customer Intelligence Management. Highly related to Customer Intelligence Management is Customer Insight Management. Customer Insight Management aims to understand customers' behavior and exploits this knowledge to the company's benefit in future activities. Customer Intelligence Management as well as Customer Insight Management are primarily used in the Acquisition phase from our proposed Bid Preparation Reference Method;
- Customer Transaction Management;
    - Customer Transaction Management focuses on interaction with the customer during a sales transaction. According to Mack et al., (2005), Customer Transaction Management consists of two activities: Integrated Customer Touch Point Management (ICTPM) and Complaint Management (CM). In ICTPM, the company should identify all relevant contact point between the company itself and its (potential) customer. Based on the organizations sales strategy, customer contact moments before, during and after the actual transaction should be orchestrated carefully. CM is essential in Customer Interaction Management since service or product failures can jeopardize a customer's retention. While ICTPM focuses on the smooth customer contact in standard situation, CM deals with communication in failing situations. ICTPM is of importance in the Acquisition phase from our proposed method were CM is of most importance in the Delivery Service phase;
- Customer Product/Service Management;
    - The third activity in the model of Mack et al., (2005) deals with Customer Product/Service Management. In or to stay ahead from the competition, continuous product and service development is important. CRM should facilitate Customer Product/Service Management by means of scheduling, logging and evaluating recurring product or service evaluation sessions with key accounts. These functionalities will be used primarily in the Evaluate and archive delivered service activity from our proposed method and shall contribute to lessons learned who will be adopted in future acquisition projects.
- Customer Lifecycle Management;
    - Customer Lifecycle Management (CLM) overlaps the previous three activities in a certain way since the overall scope of CLM encompasses all domains or departments of an organization. Therefore, CLM accommodates room for regular Account Management activities. As interviewee C1 noticed, most governmental contracts expire every four years, which means that new tender projects are initiated frequently. CLM contributes to the Acquisition phase by gathering useful customer intelligence for expected tender projects from existing customers.

6.3.3.3 Decision support

Governmental organizations and large private sector clients adopt competitive bidding to determine contract awards. In competitive bidding, two critical decision have to be made by bidders. The first decision is about whether or not to submit a bid, second (if the first answer is 'yes') what markup value should be used on the submitted bid. Bidding decisions are often complex because of the many variables that affect the actual bid and markup-scale decision (M.-Y. Cheng, Hsiang, Tsai, & Do, 2011).

Often, complex decision processes are practiced without adequate information (Dalal, Jindal, & Nirwal, 2013). The limitations of human's subjective cognition and circumstance's complexity are described by H. A. Simon's theory of bounded rationality (Holsapple, C. W., & Whinston, 2001). H. A. Simon's theory states that it is difficult for decision makers to obtain rounded information at the beginning. Previously acquired expertise is taken as a guide and imperfection of information is gradually cleaned up. More information, based on experience, is continuously fed into the decision making process which increases the chances of getting satisfactory outcomes. Khosrowshahi (1998) stated that management decision making is an art because it is dependent on the experience, intuition and creativity of the decision-maker. Due to the complex nature of today's managerial decisions, high quality information is essential. Besides, decision-making tools can be beneficial in some situations.

There are several published models that support the selection process such as Analytical Hierarchy Process (AHP), Artificial Neural Networks (ANN), Fuzzy Set Prequalification and Knowledge Based System (KBS) (Noor & Mohemad, 2008).

Practical Bid or No-bid Decision Support via Multi-Criteria Decision Analysis (MCDA)

Opportunity Acquisition and Qualification are important activities in our proposed Bid Preparation Reference Method. Both activities provide important information for the actual Bid or No-bid decision. As we learned from literature, decision support applications such as described above and in chapter 4.2 (Bid/No-bid strategy and markup decision models) are not often utilized in practice due to their complexity. Often, decision makers use their gut feeling and experiences in order to decide whether to bid.

Single persons do not make bid or no-bid decisions. From our qualitative interviews, we saw that multidisciplinary teams have the responsibility to make the bid or no-bid decision. This can be done by reaching consensus or via voting sessions were the majority makes the final decision. Our practical Bid or No-bid decision support tool provides insight in viewpoints from the participating team members via a multi criteria analysis. The information provided can be used to feed bid or no-bid sessions by pinpointing potential difficulties.

"Multi-Criteria Decision Analysis, or MCDA, is a valuable tool that we can apply to many complex decisions. It is most applicable to solving problems that are characterized as a choice among alternatives. It has all the characteristics of a useful decision support tool: It helps us focus on what is important, is logical and consistent, and is easy to use. At its core MCDA is useful for: Dividing the decision into smaller, more understandable parts. Analyzing each part and integrating the parts to produce a meaningful solution"[31]

MCDA's are a good approach to motivate a bid or no-bid decision. Besides, output generated by MCDA's are useful input to feed the bid or no-bid discussion among the members participating in bid teams responsible for the actual bid or no-bid decision. The MCDA developed for this research is easily applicable for almost every kind of selling organization that wants to have deeper insight in the foundation of its bid or no-bid decision-making processes.

Individual evaluators feed our practical Bid or No-bid MCDA approach by evaluating several categorized factors. As we learned from our case study research and from literature, the actual factors or questions to be answered can differ per branch and can even differ per project. Therefore, it is necessary to have an accurate list of factors that needs to be evaluated.

As described, factors are arranged in so called categories. Using categories makes our MCDA flexible and suitable for a variety of situations because categories can be deactivated easily. Besides deactivating of certain categories, categories can also be weighted. The option to choose for weighted categories can make the outcome from the MCDA more accurate since not every question or bundling of questions has to be even relevant for a certain decision. Additionally to weighted categories, individual contributions from evaluators can also be weighted. This functionality enables Bid Managers to discern experienced evaluators from less experienced evaluators that also contributes to the accurateness of the proposed MCDA.

[31] https://www.ncsu.edu/nrli/decision-making/MCDA.php

For the sake of rapid the prototyping process, we used Microsoft Excel 2013 to develop our bid or no-bid MCDA. The figures below depict the relevant screens of our MCDA.

Figure 55: Category weighting configuration screen depicts the configuration tab that allows Bid Managers to configure the weighting from the evaluators. Figure 55 depicts the configuration tab that allow Bid Managers to configure the weighting from relevant categories. By configuring 0% weighting, an evaluator or category will be omitted from the evaluation.

Figure 56 depicts the selected evaluation factors and provides submission forms for evaluators. Evaluators have to submit a score (Likert scale from 0 to 10) where after the MCDA can use their input for further calculations in order to give concrete bid or no-bid advice (Figure 57) supported by an extensive analysis. The analysis graphs are depicted in the figures Figure 58, Figure 59, Figure 60, Figure 61, Figure 62, Figure 63, Figure 64, Figure 65 and Figure 66 and are explained below. Additionally, the formation from the formulas used is explained.

- Evaluator Weighting;
    - Every individual evaluator has its own weighting. Weighting allows to decide an evaluators relative importance compared to the other evaluators. Total weighting must be equal to 100 percent;
- Category Weighting;
    - Questions that need to be answered by evaluators, so called factors, belong to a category. Categories can be weighted the same as for evaluators (relative weighting). Factors within a certain category are always equally weighted. Factors can be weighted individually by assigning them to dedicated categories;
- Average Category Score;
    - The Average Category Score depicts the average grades given by evaluators for the factors in a certain category. Evaluators weighting is taken into account;
- Relative Category Score;
    - The Relative Category Score depicts a categories relative score. Evaluators weighting including category weighting are both taken into account.
- Total Points per Question;
    - Total Points per Questions depicts the total given points by all evaluators for all questions that belong to a certain category. Evaluators or category weighting is not taken into account;
- Average Score versus Weighted Average Score;
    - Chart Average Score versus Weighted Average Score compares the unweighted average category score with the weighted average category score. Evaluators weighting is taken into account and category weighting is not taken into account;
- Evaluators Average Grade versus Average Grade;
    - Evaluators Average Grade versus Average Grade depicts the average grades given by individual evaluators. The average grades depicted are not weighted. The gray horizontal line represents the average grade from all evaluators;
- Bid or No-bid per Category (Weighted);
    - Radar chart Bid or No-bid per Category depicts the weighted category scores including the configured Bid Threshold Score. This chart provides the Bid Manager an overview from the categories that score below the bid threshold and from the categories that score above the bid threshold. Bad-scoring categories can be compensated by well-scoring categories. This mechanism allows certain categories to score below the configured bid threshold score if other categories score above the bid threshold. In score compensation, the category weighting must be taken into account.
- Category Average per Evaluator;
    - In order to compare category scorings per evaluator, the radar chart Category Average per Evaluator must be consulted. Evaluator as well as category weighting is not taken into account.

6.3.3.4 Project management software

In this chapter, we elaborate on what PMIS (Project Management Information Systems) features are beneficial for bid preparation projects. To manage bid preparation projects efficiently, usage of PMIS will streamline the management of parallel projects and enhance communication during these projects by allowing project managers to easily tracks tasks, allocate resources, manage suppliers and share information with stakeholders. All of which will be beneficial to the on-time completion and to the success of projects. Nowadays there are several PMIS-suites available on the market and based on the requirements and on premise or cloud solution could be implemented (Zhang, Ying; Bishop, 2014).

Raymond & Bergeron (2008) empirically assessed the quality of the PMIS presently used in organizations by examining the impact on project managers and their project performances. They observed improvements in timelier decision-making and in effectiveness and efficiency in managerial tasks in terms of planning, scheduling, monitoring and control. PMIS have directly impacts project success. Therefor, Raymond & Bergeron (2008) concluded that PMIS make a signification contribution to project success.

Braglia & Frosolini (2014) argue that the improved information flows between project managers and team members significantly helps to keep people and task up-to-date. The field of PMIS is shifting from single-project management systems to distributed, cooperative multi-project planning applications. The potential gain in efficiency can lead to cost savings. All projects include several basic elements; these elements become key requisites of any PMIS application. PMI (2008) lists the following elements: Scope, Resource allocation, Time, Deliverables, Assignments, Risk management, Monitoring and Quality Control. These elements can also been found in our proposed Bid Preparation Reference Method.

Modern PMIS applications allow Project Managers to constantly track project life cycles in order to complete projects successfully and on time. Concrete benefits from the adoption and correct use op PMIS derived from Braglia & Frosolini and are listed below:

- Projects can be managed from within integrated and coherent applications;
- Tasks and assignments can be created, updated and tracked in real-time;
- Involved actors have direct and real-time access to all documents regarding the project;
- Documents are updated and only last approved releases are made available to them;
- Teams and individuals have access to the full list of tasks they have been assigned to;
- Tasks are timely updated when modifications to the current scheduling is needed and all actors are immediately informed when this occurs;
- Workers can report their progress in a common environment allowing other team members easily understand where the project stands in comparison to the project baseline;
- Real time completion control gives a justification for the eventual re-scheduling of the project itself;
- Individuals are allowed to communicate with one another in real-time. All communications can be logged and tracked from within the software (Braglia & Frosolini, 2014).

Braglia & Frosolini (2014) added that nowadays both small and large firms adopt project management applications in order to increase efficiency, production and transparancy. PMIS become essential when different projects run on the same time and when teams are made up of people who are dispersed across multiple locations. PMIS applications provide team members access to centralized information that reflects real-time updates. According to Braglia & Frosolini, PMIS can be effective for an organization if the statements listed below apply:

- Employees frequently work on multiple project simultaneously;
- Re-scheduling and adjustments are frequent die to poor planning or budgetary constraints;
- Team members find it difficult to track their assigned tasks and deadlines;
- Resources are often overbooked, leading to delays or budget extensions;
- Project managers cannot take advantage of centralized database containing the essential documents (Braglia & Frosolini, 2014).

6.3.3.5 Knowledge Management software

Bid preparation projects are considered as complex, a variety of disciplines with each their particular area of expertise collaborate in bid preparation projects. The available roles and responsibilities for our proposed bid preparation reference method are described in chapter 6.2.4. Especially in service-oriented organizations is knowledge regarded as a valuable commodity that is embedded in tacit knowledge of highly mobile employees. Davenport & Prusak (1998) state that the only sustainable advance a firm has comes from its collective knowledge. Modern knowledge driven organizations are the ones that learn, remember and act based on the best available information, knowledge and know-how. These developments created a strong need for a systematic approach to cultivate and share a company's knowledge, companies need to learn from past errors and do have to reinvent the wheel again.

Initially, the discipline knowledge management was defined as a process of capturing, structuring, managing and sharing throughout the organization in order to work faster, reuse best practices and reduce rework from project to project (Pfeiffer & Sutton, 1999). Early knowledge management systems were primarily used to warehouse as much as possible documents. Large databases combined with sophisticated search engines were then used to retrieve the content. Such knowledge management systems were often large-scale and costly (Dalkir, 2005). According to Dalkir (2005) a good definition for knowledge management incorporates capturing, storing of the knowledge perspective, including the valuing of intellectual assets:

> *"Knowledge management is the deliberate and systematic coordination of an organization's people, technology, processes, and organizational structure in order to add value through reuse and innovation. This coordination is achieved through creating, sharing, and applying knowledge as well as through feeding the valuable lessons learned and best practices into corporate memory in order to foster continued organizational learning."* (Dalkir, 2005)

Most knowledge management efforts have largely concerned with capturing, codifying and sharing knowledge held by people in organizations. Motives for management's to embrace knowledge management are plenty. Important motives are listed below. These motives can also be used in arguing why knowledge management is a beneficial asset for bid preparation processes:

- Facilitate a smooth transition from those retiring to their successors who are recruited to fill their position;
- Minimize loss of corporate memory due to attrition and retirement;
- Identify critical resources and critical areas of knowledge so that the corporation "knows what it knows and does it well-and why";
- KM initiatives can avoid reinventing the wheel;
- KM initiatives, especially past experiences, contribute to risk management processes (Nickols, 2000).

Knowledge creation and knowledge transformation are the two elementary knowledge tasks. Knowledge creation encompasses knowledge storage since storage and retrieval imply context and interpretation. Knowledge transformation encompasses knowledge transfer. Elementary knowledge applications are depicted in Figure 43 (Baskerville & Dulipovici, 2006).

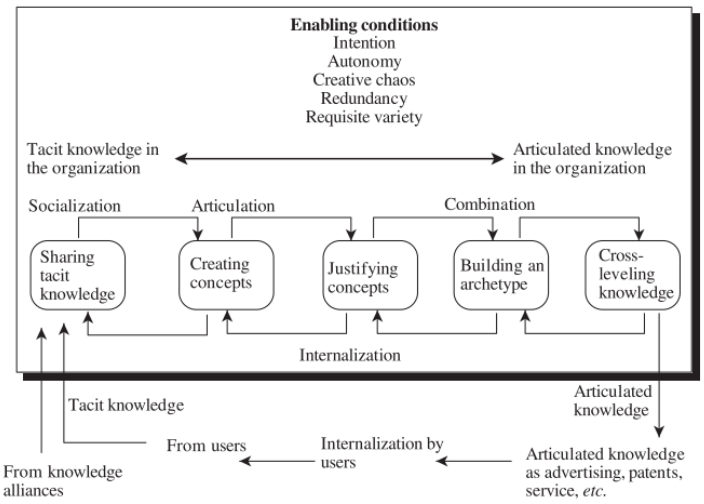

Figure 43: Knowledge creation process by Nonaka & Takeuchi (1995) *[E]*

In order to reap the rewards of knowledge management within organizations, a knowledge-support-infrastructure and designs for knowledge-support architecture are required. Previous research indicates that the overlap with current information systems is large since most of the components extend the human ability to store and access information. Davenport & Prusak (1998) state that IT support in knowledge management is essential for successful knowledge management. For example, intranets enable organizational access to, often dispersed, explicit knowledge were group support systems provide features like workflow programming and variable structured database storage. Table 19 depicts examples of possible technical components from a knowledge management infrastructure.

Knowledge task	Knowledge application	Tool example
Knowledge creation	Socialization, sharing tacit knowledge	Video conferencing, groupware
	Externalization, creating concepts	KBS, CAD, workflow, authoring tools
	Combination, building archetypes, or cross-leveling	Case-based reasoning, simulation tools, decision support tools, object modeling
	Internalization	Data mining, query tools, CBT
Knowledge transformation	Extension	KBS, electronic publishing
	Appropriation	Data mining, query tools, CBT
	Assimilation	Intelligent agents, executive IS, search engines
	Dissemination	Electronic publishing

Table 19: Examples of knowledge-support infrastructure components (Baskerville & Dulipovici, 2006)

6.3.3.6 Collaboration software

In bid preparation, the actual bid-writing task is performed in the Prepare bid activity. Sub-activities from Inquiry SC until Finalize offer have to be completed in order to deliver a winning bid for a potential client. As we state in chapter 6.2.4, a variety of roles collaborate, individual or in (virtual-) teams, in bid preparation processes. With the development of new technologies such as e-Collaboration and Groupware, (virtual-) teams have evolved to encompass new forms of interaction and collaboration.

Lipnack & Stamps (1997 mentioned that virtual teams are like every other real-life team. Virtual teams are a group of people who interact through interdependent tasks guided by a common purpose. Main difference lies in the physical distance between group-members. Virtual teams can work across space, time and organizational boundaries, often by making use of communication technologies via internet.

Bouras, Giannaka, & Tsiatsos (2009) categorize e-Collaboration systems according to a time and location matrix using distinction between synchronous (same time) and asynchronous (different time), and between face-to-face (same place) and distributed (different place). Poltrock & Works (2002) introduces another frequently used categorization of collaboration software. Poltrock & Works (2002) divides groupware into three categories

depending on level of collaboration: Communication tools, Collaboration or Conferencing tools and Collaborative management or Coordination. Per category, a distinction is made between synchronous and asynchronous.

	Synchronous (Real-time)	Asynchronous
Communication tools	• AV conferencing • Telephone • Chat, messaging • Broadcast video	• E-mail • Voice mail • FAX
Collaboration (Conferencing) tools	• Whiteboards • Application sharing • Meeting facilitation • MUDs and CVEs	• Document management • Threaded discussions • Hypertext • Team workspaces
Collaborative management (Coordination)	• Floor control • Session management	• Workflow management • Case tools • Project management • Calendar & scheduling

Table 20: Collaboration Technology, Features and Categories Poltrock & Works (2002)

Web 2.0-based e-collaboration technologies have emerged that are able to integrade many supporting tools within the Web 2.0 domain. Web 2.0 refers to web applications that are more interactive than traditional applications. E-collaboration is therefore key components of Web 2.0. Two popular examples of these modern e-collaboration applications are IBM Quickr and Microsoft Sharepoint. The table below provides an overview of these two platforms including its functionalities (Bidgoli, 2012).

Product name	Features
Quickr (IBM Lotus)	*"This is a collaboration software that can help team members access and interact with the people, information, and project materials that they need to get a project done. It offers features such as content libraries to share information, team discussion forums to encourage communication, wikis that let team members create and edit content together, and connectors that help make sharing easier and which connect team collaboration with other software such as Lotus Notes, Lotus Connections, Lotus Sametime, Lotus Symphony, Microsoft Office and Microsoft Outlook"*[32]
SharePoint Server (Microsoft/Office)	*"This is a part of the Microsoft Office 2010 suite and used to improve collaboration, provide content management features, carry out business processes, and provide access to information that is essential to organizational goals. You can create SharePoint sites that support content publishing, content management, records management, and business intelligence needs. You can also conduct searches for people, documents, and data as well as access and analyze large amounts of business data. SharePoint Server 2010 provides a single, integrated location where employees can collaborate with team members, find organizational resources, search for experts and information, manage content and workflow, and use the information they have found to make better decisions"*[33]

Table 21: Popular collaboration products

6.3.3.7 Contract management software

The ultimate product from the bid preparation process is a signed contract. In our proposed bid preparation reference method, the activity Acquiring contract is the first activity in the Project Management phase. A signed contract serves as the foundation for the delivery of products or services in the Delivery service activity. Contract management software can facilitate the negotiation activity (Negotiating contract agreements) and the review activity (Review concept contract).

According to Wikipedia, Contract lifecycle management (CLM) is the proactive methodical management from contracts. It contains initiation and awarding, but also compliance and renewal. Implementing CLM can result in significant performance improvements, efficiency benefits and costs savings.[34]

CLM can be interpreted from two perspectives, from a client side and from a supplier side. Both parties can use CLM software however; functionality wise there are major differences. Were CLM tools for "clients" primarily focus on keeping track on expiration dates, tools from for "suppliers" focus more measurements that are much more complex, for examples, see the bulleted list below.

[32] www.01.ibm.com/software/lotus/products/quickr/
[33] http://sharepoint.microsoft.com/en-us/Pages/default.aspx
[34] https://en.wikipedia.org/wiki/Contract_lifecycle_management

- Structuring more profitable deals;
- Recognizing revenue more quickly;
- Assessing the total value of multi-contract relationships;
- Taking advantage of renegotiation windows to improve terms;
- Avoiding penalties and sanctions by ensuring operational and regulatory compliance.[35]

There is still no universal accepted model for contract lifecycle. It is up to commercial vendors from CLM software provide a comprehensive software suite that suites the business needs. The table below compares contract lifecycle interpretations from two large CLM software vendors; it contributes to the understanding of how the Acquiring contract activity from our bid preparation reference method could be supported by IT.

Exari[36]	Determine[37]
1. Capture	**1. Contract request**
2. Track	**2. Contract authoring**
3. Author	**3. Contract negotiation**
4. Create	**4. Contract approval**
5. Approve	**5. Contract execution**
6. Negotiate	**6. Contract obligations management**
7. Sign	**7. Contract amendment**
8. Analyze	**8. Contract audit and reporting**
	9. Contract renewal

Table 22: Contract lifecycle comparison from two commercial software vendors

High quality contracts are essential for thorough CLM. Therefore, CLM processes start with document assembly. Making use of approved templates can ease contract creation significantly and ensures quality and consistency and improves compliance. Contract authoring can be difficult due to the legal language that is been used. Both reviewed applications provide a user-friendly clause and term libraries and provide usage guidelines that help contract authors choose the most appropriate language from among several options.

Contract approval workflows are extremely beneficial when contracts are complex and often highly negotiated. Sophisticated CLM software allows dynamic approval workflows based on multiple criteria. Support for mobile devices in approval workflows is important, it allows managers to approve or disapprove anywhere and anytime, this can shorten the duration time significantly.

Contract obligations management is a critical function in CLM software suites, it prevents arise of a 'file and forget' mentality. It often happens that well negotiated benefits are completely undone. Contract obligations management provides visibility and control. Features such as fulfillment tracking, automated alerts linked to expirations, key events, renewals, post-execution workflows and analytics and reporting help administrators maximize contract value.

[35] http://www.determine.com/resources/guide/contract-management-guide
[36] http://info.exari.com/introduction-to-document-assembly-contract-management
[37] http://www.determine.com/resources/guide/contract-management-guide#.Vp8pgirhCHt

7 Evaluation 'Bid Preparation Reference Method'

In order to validate our initial research results three additional validation interviews are performed at three new organizations. Before the actual interviews took place, the participating interviewees prepared themselves by reading the interview guidelines. The interview guidelines for the validation interviews are added to Appendix F: Interview guidelines (validation interviews).

Validation of the products generated during this research took place in four parts. The first part of the interview afforded the interviewee a short summary of this research. The purpose of this research including the research question and its sub questions were explained. Our proposed Bid Preparation Reference Method (PDD) is discussed in the second part from the validation interviews. The outline of the proposed IT Support functions in bid preparation is presented in the third part of the interview. Finally, the last part of the interviews is used to validate our proposed Bid/No-bid decision support via MCDA.

7.1 Participants validation interviews

In this chapter, the participants from the validation interviews are introduced.

7.1.1 Validation interview A2: A2 at CGI

A2 participated in validation interview number one. A2 has over 15 years of experience as a Project Manager and three years as a Team Manager. A2 has several specializations: Project Management, IT Security and Risk Management, Team Building and Team Management. The last five years, A2 worked as a Bid Manager at his current employer CGI. From 1982 until 1986, A2 studied "Automatisering en Mechanisering van de Bestuurlijke Informatievoorziening". Input provided by A2 for this validation interview is based on his personal experience. No confidential information from his current or former employers is shared.

7.1.2 Validation interview B2.1: E1hold Konijn at Verdonck Klooster en Associates

E1hold Konijn participated together with B2.2 Schaap in validation interview number two. E1hold started as a Consultant for over nine years. After his career as a Consultant, E1hold continued in the Sales field. First as a Sales Executive and after three years as a Sales Manager. Nowadays, E1hold is a Partner and is specialized in European Tender projects. From 1986 until 1992, E1hold studied Computer Science at University of Twente. Input provided by E1hold for this validation interview is based on his personal experience. No confidential information from his current or former employers is shared.

7.1.3 Validation interview B2.2: B2.2 Schaap at Verdonck Klooster en Associates

B2.2 Schaap participated together with E1hold Konijn in validation interview number two. Erwin started as a Recruiter at Switch Financial Recruitment and works nowadays for as Bid Manager for already eight years. From 2001 until 2005, B2.2 studied "Personeel & Arbeid" at Haagse Hogeschool Den Haag. Input provided by B2.2 for this validation interview is based on his personal experience. No confidential information from his current or former employers is shared.

7.1.4 Validation interview C1: C2 at TELE2 Wholesale

C2 participated in validation interview number three. C2 started his career in the telecom industry in 2006 as a Sales Support Executive. After two years, he switched to Tele2 to start working as Bid Manager Wholesale. Today, C2 already works for ten years at Tele2 Netherlands. C2 studied Economics at Hogeschool van Amsterdam. Input provided by B2.2 for this validation interview is based on his personal experience. No confidential information from his current or former employers is shared.

7.2 Qualification schema validation interview results

Due to the purpose of validation, interview results are not presented in plain text. The different statements made by the interviewees are listed in tables and are qualified by the researcher. Each validated artifact has its own qualification schema. The qualification schemas used are presented in Table 23: Qualification validation statements. Positive or negative abnormalities are discussed in more detail followed by an overall conclusion.

Bid Prep. Ref. Method	IT support	Bid/No-bid MCDA
Consistent	No usage	Useful
Partly consistent	Minimal usage	Useful, however
Not consistent	Regular usage	Less useful
Known knowledge	Highly effective	Useless
Partly new knowledge		
New knowledge		
Refinement		

Table 23: Qualification validation statements

7.2.1 Bid Prep. Ref. Method

Consistent: Information gathered in literature study and information retrieved via case studies in order to develop the Bid Preparation reference method, the application overlay and the MCDA is equal to the validation results.
Partly consistent: Minor derogations have been identified while validating the artifacts.
Not consistent: Major derogations have been identified while validating the artifacts.
Known knowledge: Knowledge regarding this topic is known.
Partly new knowledge: New insights regarding an already known topic have been found.
New knowledge: Topic is not identified in literature study or in earlier case study sessions.
Refinement: A suggestion for improvement, refinement from the reference method could be worthwhile.

7.2.2 IT support

No usage: Suggested IT tooling is not used in this case organization.
Minimal usage: Suggest IT tooling is used, however, application usage is minimal. This means that most application features are not used at all.
Regular usage: Application usage is normal.
Highly effective: Applications that and are tailor made for one specific (sub-) process. Often these applications are branches specific.

7.2.3 Bid/No-bid MCDA

Useful: MCDA supports in making or underpinning a bid or no-bid decision.
Useful, however: MCDA can support in making or underpinning a bid or no-bid decision, however due to various reasons less applicable in practice.
Less useful: Specific elements of the MCDA does not contribute to the bid or no-bid decision process.
Useless: MCDA does not contribute to the bid or no-bid decision process.

7.3 Evaluation: Bid Preparation Reference Method

Our proposed Bid Preparation Reference Method consists of seven activities. Feedback received during the validation interviews is collected in various tables and is ordered in accordance with the different activities from the Bid Preparation Reference Method.

7.3.1 Activity: Acquisition

All interviewees that participated in the validation interviews recognize themselves in the modulated Acquisition activity including its sub activities. At each organization a distinction is made between acquisition activities via tender publication platforms, often executed by Bid Managers or by an organizations Tender desk and via other sales channels, for example via Account management or selling consultants. Most popular publication platforms are TenderNed and TED. Interviewee A2 noticed that they use an application called VPPipline in order to keep

track on contract expiration dates. Such information is extremely valuable for Account managers; it enables them to act proactively towards prospects who are facing ending contracts.

Interviewee C2 acknowledges that customer and competitor intelligence such as win and loss information could be beneficial in bid preparation and especially in making a bid or no-bid decision. However, no initiatives emerge in order to start registering such information in databases; unless the fact that win and loss information is publically available. Win and loss information is stored in the heads of bid managers; therefore, it cannot be classified as corporate knowledge. When experienced bid managers leave the organization, the knowledge and experience they have will be lost.

Each interviewee confirmed that the Initial tender qualification is part of the Acquisition activity. Often, Initial tender qualification is done by the Bid Manager himself or by its Tender desk. Often, Initial tender qualification is done by scanning publication platforms and introduction texts. Publication platform scanning can be performed manually auto automatically. Publication platforms and third party services provide various opportunities that automate the search process. However, interviewee B2 mentioned these algorithms are not accurate enough. It happens that opportunities are missed which is unacceptable in his opinion. Therefore, Publication platform searching occurs fully manually.

Interviewee	**Explanation**	**Qualification**
A2	Governmental projects are identified via publication platforms and commercial project are acquired via business networks and via word to mouth publicity.	Consistent
A2	On a daily basis we read the TenderNed database in order to identify opportunities.	Consistent
A2	Besides the TenderNed CPV mailing we maintain an Aanbestedingskalender.nl subscription in order to identify opportunities that are initially listed under the wrong CPV tags. Aanbestedingskalender.nl provides a team that reads manually new published tenders, potential relevanted projects are then tagged manually.	Consistent
A2	Aanbestedingskalender.nl also provides sales intelligence based on analyzing multiannual budgets from municipalities.	Consistent
A2	Besides TenderNed and Aanbestedingskalender.nl we maintain a VPPipeline subscription. This service provides a contract register with accurate contract expiration dates. This register allows sales employees to act proactivily towards prospects who are facing ending contracts.	Partly new knowledge
A2	Accountmanagers and Sales Managers maintain client relations and are responsible for upselling activities. These roles identify opportunities at their clients and try to fulfill these positions with CGI colleagues.	Consistent
A2	Selling Consultants communicate opportunities to their Accountmanagers. This enables the Accountmanagers to fulfill the opportunity.	Consistent
A2	Participating in framework agreements is important in our business. Smaller governmental projects are often directly awarded to suppliers participating in framework agreements instead of public tender procedures.	Consistent
A2	As CGI, we prefer to participate in market consultation projects in order to share our knowledge with a potential future client. For CGI, market consultation projects are meant to become familiar with the client and his project and to build or maintain a fruitful relationship.	Consistent
A2	Two persons supervise market consultation projects at new clients. The first is a Sales Manager who is responsible for relationship management and the second is a Solution Architect who is responsible for proposing the best possible solution. A Bid Manager is not evolved in market consultation projects.	Consistent

A2	At CGI we do not maintain criteria regarding minimum or maximum project values. Projects who are published on TenderNed are by default from a certain proportion that makes them interesting by default.	Consistent
A2	The bid team is responsible for qualifying opportunities. Sales Managers participate in bid teams.	Consistent
B2	VKA works mainly for (Dutch) governments, therefor TenderNed is their primarily source of opportunities (framework agreements, mini-competitions). VKA provides IT Advisory services (60%) and IT staffing services (40%).	Consistent
B2	VKA does not use parallel publication platforms such as Aanbestedingskalender.nl anymore. In the past they used the project identification algorithm due to the unreliability of the original CPV coding system, often CPV codes are forgotten, however these algorithms also lack performance, not all relevant projects are identified.	Consistent
B2	Now, VKA screens all potential relevant tenders manually.	Consistent
B2	Pre-qualification is done on the following criteria: Are we willing to participate, can we fulfill the job and are we able to win the tender.	Consistent
B2	The Sales Manager does pre-qualification. The Sales Managers decides whether to organize an official bid or no-bid meeting.	Consistent
C2	Having customer intelligence is extremely useful while preparing a bid. However, there are no initiatives to gather such information actively.	Partly consistent
C2	Win/loss information is not actively logged in databases. Win/loss information is solely stored in minds of employees. If employees leave the organization, knowledge leaks.	Partly consistent
C2	At Tele2 Wholesale they make use of Aanbestedingskalender and TenderNed for seeking new tender opportunities.	Consistent
C2	Account management acquires most opportunities via sales initiatives.	Consistent
C2	Most important pre-qualification criteria: Are we able to deliver?	Known knowledge
C2	The Sales Manager including his Bid Manager does pre-qualification.	Known knowledge
C2	There are no initiatives in order to support at bid writing processes at buying organizations.	Known knowledge

Table 24: Validation Bid Preparation Reference Method (Acquisition)

7.3.2 Activity: Qualification

The activities listed in the Qualification activity are largely in accordance with bid preparation processes by the case companies that participated in the evaluation interview sessions. Since we developed a generic reference method for various branches, it is not possible to match organizations demands for 100 percent. However, each organization should be able to implement the method in such a manner that it fits their specific demands.

Interviewees A2 and C2 both qualify opportunities based on a, for them, standardized approach. The difference between both is that A2 uses a formalized set of PowerPoint slides with specifically selected qualification criteria per project. C2 uses roughly the same qualification criteria for each individual project, but they do not use formalized PowerPoint slides. You could state that both maintain a LIST BID/NO-BID CRITERIA. However, their approaches differ in creating a unique set of qualification criteria per project.

According to interviewee B2, consortia (partnerships) are already formed in the Qualification phase instead of in the Prepare bid phase because it is often impossible to bid as a single organization. Interviewee B2 also mentioned that the bid or no-bid meetings are somewhat overrated. He said that the actual bid or no-bid decision is often an informal decision based on gut feeling from subject matter experts. Due to the informality, no-bid decisions are hard to underpin which makes communication with the Management team a tough challenge.

Interviewee C2 also recognizes the difficulty of justifying no-bid decisions. He also acknowledges the added value of our MCDA, based on the objective measurements and comparisons a reliable analysis can be provided.

Additionally, since there is still no standardized format to structure bid/no-bid sessions at C2's organization, such criteria analysis could stimulate professionalization in this process.

Interviewee	**Explanation**	**Qualification**
A2	In order to motivate a bid or no-bid decision, a "fixed" set (template) of PowerPoint slides is used. Some adjustments are made for specific customers.	Consistent
A2	Bid or no-bid criteria are: Competition, status relation customer, chances to win, able to deliver, willing to deliver, legal aspects	Known knowledge
A2	The Bid Manager is not the chair from the bid or no-bid meeting. This role is fulfilled by the OPL (Opportunity Pursuit Lead, Sales representative)	Partly consistent
A2	Winning price is roughly determined during the bid or no-bid meeting.	Consistent
A2	Past performance indicators from comparable projects are taken into account by forecasting the chances of winning the bid.	Consistent
A2	90% of the decisions made in the bid or no-bid meeting result in a bid decision. Most no-bid decisions are already made in the pre-qualification phase. Therefore, the bid or no-bid meeting sometimes seems like a formality.	Partly consistent
A2	Important roles in bid or no-bid meeting: Legal, Financial and the Business Approver. The Business Approver makes the final decision.	Known knowledge
B2	Bid or no-bid meetings are the formal completion of the Qualification activity. Informal bid or no-bid decisions are already made before the actual bid or no-bid meeting in for example informal watercooler meetings.	Consistent
B2	It happens that VKA operates in partnerships in order to win certain tender projects (framework agreements). These partnerships (consortia) are often realized in the Qualification activity if it is not possible to participate on a solo basis.	Partly new knowledge
C2	Opportunity qualification takes one week. Several employees are involved in qualification processes.	Known knowledge
C2	Justifying no-bid decisions is difficult. This MCDA provides clear insights in the thoughts of each evaluator.	Consistent
C2	Your MCDA can be used as a guideline for bid/no-bid meetings. Now, we do not have a standardized agenda for these meetings.	Consistent
C2	Applying your MCDA in a good way requires professionalization of certain business processes in our organization. Right now, these bid/no-bid meetings are informal; sometimes decisions are already made before the meeting.	Consistent
C2	The Bid Manager performs tender document assessment.	Known knowledge
C2	Technical Solution Engineers, Sales Managers, Legal and the Bid Manager (project leader) are involved in the qualification decision (bid/no-bid meeting). Every member provides feedback based on his experience.	Consistent
C2	Tele2 does not maintain standardized templates to structure bid/no-bid sessions.	Partly consistent
C2	Second qualification criteria: Do we want to deliver. This criterion serves strategic interests.	Known knowledge
C2	Past performance is an important criterion for the bid/no-bid decision (input for the meeting). Tele2's past performance as well as its competitors past performance, to the extent that this can be estimated. Tele2 does not maintain a database in order to log past performance explicitly.	Partly consistent
C2	Individual qualification criteria do not have their own weight.	Not consistent
C2	Tele2 does not maintain a standardized list with bid/no-bid criteria. C2 acknowledges that this could be beneficial in order to professionalize the bid/no-bid decision and meeting.	Not consistent

Table 25: Validation Bid Preparation Reference Method (Qualification)

7.3.3 Activity: Prepare Bid

The bid preparation activity is treated as a small project with a start and an end according to each validation interview participant. Bid preparation teams are formed and roles are defined.

Adeviation is related to sub-contractors. The interviewees mentioned that sub-contractors are not inquired in the prepare bid activity. Supplying organization already have a sub-contractor database in which they can select the preferred partner. Inquiring several sub-contractors in the prepare bid activity is too time consuming, often there are on average only three weeks available in order to prepare a complete bid. Interviewee C2 added that comparing offers from partner does apply and is a crucial part of the process.

Interviewee A2 and B2 both mentioned that a sub-activity called “Solution shaping” should be added prior to sub-activity “Write offer”. An ingredient for writing a winning offer is having a winning strategy. According to interviewee B2, a winning strategy is shaped by answering questions like: “How are the offers evaluated”, “With which question can we earn points” and “Who will evaluate the offers”. In essence, offers need to be tailored towards the reviewer.

Special attentions is required at sub-activity “Finalize offer” according to interviewee B2. It still occurs that parties are excluded because of missing pieces or by attaching incorrect statements to their offer. In order to prevent these administrative failures, two final quality checks are introduced: a substantively and a procedural check. Both checks are performed by different employees in order to prevent blinders.

Interviewee	**Explanation**	**Qualification**
A2	Inquiring, Comparing and Selecting subcontractors is not part of the Prepare bid activity at CGI. CGI has framework agreements with a pool of subcontractors. Therefore, comparing and selecting of subcontractors is a parallel process.	Partly new knowledge
A2	A sub-activity called "Solution shaping" should be added before the sub-activity Write offer.	Partly new knowledge
A2	Part of the Finalize offer sub activity is a technical review process. This process is performed by bid writers or, at complex solutions, by IT architects.	Known knowledge
B2	"Solution shaping" is extremely important in the Bid Preparation activity.	Partly new knowledge
B2	In addition, a "Winning strategy" needs to be defined. Which ingredients are required to write a winning offer for this specific project. In order to formulate a winning strategy, information that answers the following questions is required according to Konijn: "how are the offers evaluated", "were can we earn point" and "who will evaluate the offers".	Partly new knowledge
B2	VKA does not Inquiry new SC's in the Bid Preparation phase. VKA has a fixed list of SC's who can be involved in the last minute.	Refinement
B2	The Finalize offer activity is important. It still occurs that parties are excluded because of missing pieces in their offer.	Consistent
B2	VKA maintains two final quality checks: substantively and procedural. Both checks are performed by different people, it requires an completely different mindset. It often happens that parties are closed because they sent an incorrect statement.	Consistent
C2	Commercial Manager and CFO decide about the markup. 0% markup is a no-go, buying bids is not allowed. This strategy is frequently executed by KPN. In essence, KPN buys market share.	Known knowledge
C2	Project teams often consists of four roles: Bid Manager, Sales Manager, Technical Solution Engineer, Consultant, Legal	Known knowledge
C2	Inquiry SC is not applicable for the Telco market. Partnerships already exists in the Bid Preparation phase. It takes to much time to ask for and compare different quotes. There are only (+/-) three weeks to deliver a bid.	Refinement
C2	Compare offers SC is applicable. Often there are various possibilities to reach a goal, pricing is important while comparing.	Known knowledge

C2	Markups are fixed. Approval from the Sales Manager is required when derogating from this standard.	Consistent
C2	Each project team member is responsible for his/her part of the bid. The Bid Manager is responsible for monitoring deadlines and is responsible for the end review of the bid.	Consistent

Table 26: Validation Bid Preparation Reference Method (Prepare Bid)

7.3.4 Activity: Evaluate and archive bid

Evaluation is meaningful for each interviewee. However, evaluation mechanisms are implemented differently. Each interviewee evaluated the bid preparation process before awarding in order to keep the evaluation unbiased. Interviewee

A2 only evaluates before awarding if the bid preparation process did not go smoothly. After receiving the customers feedback, B2 hosts another evaluation session in order to derive best practices. Evaluation sessions are structured in accordance with a default evaluation checklist at organization B2. Organization C2 generates evaluation reports however, these reports are solely stored for administrative purposes, not for organizational learning. C2 admitted that knowledge management initiatives regarding these evaluation sessions could be beneficial for future improvement of bid preparation processes.

Interviewee	**Explanation**	**Qualification**
A2	Bid preparation process evaluations, before awarding, only take place if the preparation process did not go smoothly. Otherwise, bids are evaluated after awarding.	Known knowledge
B2	Process evaluation happens before awarding.	Consistent
B2	An addition evaluation session is hosted after receiving the customers feedback.	Consistent
B2	Evaluation sessions are structured in accordance with a default evaluation checklist	Consistent
C2	At Tele2, they evaluate projects that did not go well. Evaluation takes place before awarding in order to keep the evaluation objectively. For example, last-minute contributions to offers from consultants are a no-go. Such behavior puts too much pressure on the organization.	Partly consistent
C2	An evaluation report is written after each evaluation session. These reports are not shared throughout the organization. C2 admitted that knowledge management initiatives regarding these evaluation sessions could be beneficial for future bid preparation processes.	Not consistent

Table 27: Validation Bid Preparation Reference Method (Evaluate and archive bid)

7.3.5 Activity: Acquiring contract

The first activity outside the scope of Tender Management is Acquiring contract. Activities outside the Tender Management scope are more branches dependent than activities within this scope. This explains the diversity of the feedback received in the validation interviews.

Interviewee A2 acknowledged that topics such as Service Level Agreements are negotiated in the Acquiring contract phase. Contract negotiation is not applicable for interviewee B2. Contractual agreements are already specified and clarified in the Offer phase. C2 mentioned that especially contract verification is relevant in this activity.

Interviewee	**Explanation**	**Qualification**
A2	SLA agreements are negotiated in this phase.	Consistent
B2	"Negotiating contract agreements" is not relevant for VKA. Contract agreements are already clear in the offer phase.	Not consistent
C2	Negotiation occurs more or less in the Offer phase. Contract verification by the Legal department is what occurs in this activity.	Consistent

Table 28: Validation Bid Preparation Reference Method (Acquiring contract)

7.3.6 Activity: Deliver service

At interviewee A2, service delivery is definitely part of the entire bid management cycle. Ultimately, projects can be labeled as profitable or unprofitable after the actual delivery. Additionally, lessons learned from the delivery process can be used for future bid management activities. In order to keep track on the delivery process, various status reports are generated and risk management takes place on a daily basis.

At staffing company B2, service delivery is only to a certain extent the responsibility of the bid team. The bid team is responsible for implementing the acquired framework agreements within the organization. After the implementation, the bid team is available as a source of information regarding determined KPI information etcetera.

Interviewee	**Explanation**	**Qualification**
A2	Various monthly reports in order to monitor the project status	Consistent
A2	Various monthly project evaluations during project execution phase (health check)	Consistent
A2	Risk management on a daily basis	Consistent
B2	Awarded framework agreements needs to be implemented in the organization. After the implementation within the organization, it is up to the Account managers to generate revenue out of it.	Partly consistent
C2	Project management is out of scope for the Bid Manager. The Project Manager is in charge in for the service delivery. Often the Bid Manager is involved because he has in depth knowledge from the project details.	Consistent

Table 29: Validation Bid Preparation Reference Method (Deliver service)

7.3.7 Activity Evaluate and archive delivered service

Evaluation of executed projects is the final activity from product or service delivery at the organization of interviewee A2. Evaluation is a means to improve future organization performances. However, important information for adjusting the project directions on the fly are derived from monthly project evaluation reports and from our daily risk management mechanisms. Interviewee A2 mentioned that evaluation reports are stored on file servers however, this documentation is not available for the entire organization, and active knowledge management is not applied.

Interviewee B2 said that product or service delivery evaluation is not applicable to them because acquiring framework agreements does not guarantee any revenue streams.

Interviewee	**Explanation**	**Qualification**
A2	Evaluation of executed projects takes place. Evaluation is important to improve future organization performances. However, important information for adjusting the project directions on the fly are derived from monthly project evaluation reports and from our daily risk management mechanisms.	Consistent
A2	Project evaluation reports are stored on a central server. However, not in a knowledge management system.	Consistent
B2	Not applicable. The fact that you win certain framework agreements does guarantee any revenue streams. The framework agreements itself are not subject of evaluation.	Partly consistent

Table 30: Validation Bid Preparation Reference Method (Evaluate and archive delivered service)

7.4 Evaluation: Bid Preparation Reference Method IT Tool Support overlay

In this chapter we discuss the application overlay for our Bid Preparation Reference Method. Each application (overlay) category is discussed with our interviewees. Two questions needed to be answered per application category: “Do you use such an application in your daily routine, if yes: how?” and “Do you have suggestions to improve application usage in this specific category?”.

Each interviewee uses the same publication platforms. Publication platforms used are the governmental funded platforms: TenderNed for national tender opportunities and TED for international tender opportunities.

Interviewees A2 and C2 also use Aanbestedingskalender.nl due to the additional services this platform provides. An interesting application regarding the Acquisition activity is mentioned by interviewee A2, the application is called VPPipeline. Vppipeline provides information regarding expiration dates of large IT contracts. This information is extremely useful for the sales department. An explanation of the publication platform services is provided in chapter 6.3.3.1 Publication platforms.

CRM application are used by all interviewees to log acquisition activities. One of them, interviewee A2, uses the CRM application in a highly efficient manner. Within A2 organization, they apply Miller Heiman's sales strategy. Salesforce facilitates this sales strategy with specific modules. For example, Miller Heiman's blue and green sheet can be filled in an efficient manner and are automatically distributed to the right people with an organization. According to the interviewees, current CRM application does not lack useful functionality. Therefore, there is no desire for tooling that is more efficient or integrated in order to facilitate relationship management.

None of the interviewees actively use real decision support applications. Interviewee B2 uses a standardized set of checklists in order to structure the bid or no-bid meeting. However, this such checklists cannot be considered as a decision support application. It is a means of structuring meetings. Unless none of the interviewees actively use decision support applications, possible advantages thereof are recognized. For example, no-bid decision can be underpinned in a professional manner. The evaluation of our developed MCDA can be found in chapter 7.5 Evaluation: Bid or No-bid Decision Support via MCDA.

Unless Bid Preparation must be considered as a real project, project management software is not necessarily required according to the interviewees that participated in our validation study. Bid Preparation project are relatively small and therefore clear. Carefully designed Excel sheets often do keeping track on ongoing Bid Preparation projects. Such planning sheets often contain a Gantt chart including deadlines and responsibilities. Specific project management software is used in the Service Delivery activity. However, it still depends per branches and per project. Most popular project management application among our interviewees is Microsoft Project.

In Bid Preparation, collaboration software can be extremely beneficial. As we saw in our research, disciplines from the entire enterprise are involved in the bid preparation process: From board members, to sales managers, to tender desk staff, to domain experts, to lawyers, to sub-contractors etcetera. Each of these roles has to provide input regarding his or her specific expertise's were the Bid Manager is there to coordinate the various contributions. Interviewee C2 does not use collaboration software at all. C2 uses conventional Word processing features such as the 'review' functionalities. Interviewee A2 uses file-sharing solutions for internal purposes and Microsoft Sharepoint for collaboration with external partners. Interviewee B2 makes use of Box, which is a modern cloud based collaboration platform. Interviewees A2 and C2 mentioned that they do not think that additional collaboration features make their work more efficient. Modern collaboration tooling is explained in chapter 6.3.3.6. Collaboration software.

For pricing purposes, interviewees A2 and C2 indeed use tailor made calculation spreadsheets. These calculation spreadsheets are also used for markup determination purposes. Often, these spreadsheets are used throughout the entire organization and are centrally maintained. Complexity from the calculation spreadsheets depends on an organizations scale.

Knowledge Management software is not used extensively among the interviewees. No concrete Knowledge Management projects are running at their organizations and no dedicated Knowledge Management software is used. Interviewee C2 pretends to do Knowledge Management in a lightweight fashion by storing evaluation minutes on a fileserver however, this knowledge is not transformed into explicit knowledge and is not available for the entire organization. Interviewee B2 implemented a lightweight Knowledge Management initiative by storing evaluation minutes and by refining actual work instructions.

It was difficult for our interviewees to explain whether and how Contract Management software is used in their organization since Contract Management is not part of their responsibility. The Legal department manages contracts at interviewee C2. Contract Management software is specifically used to keep track on configured KPI's. At interviewee A2, the Contract Owner is responsible for Contract Management. Interviewee A2 mentioned that

they developed Contract Management tooling in house. Account Management is responsible for Contract Management at interviewee B2. They use the Contract Management module from SalesForce to keep track in determined KPI's [38].

Interviewee	*Application overlay*	**Explanation**	**Qualification**
A2	Publication platforms	TenderNed, Aanbestedingskalender.nl	Regular usage
A2	Publication platforms	VPPipeline: identify contract expiration dates	Highly effective
B2	Publication platforms	TenderNed	Regular usage
C2	Publication platforms	Aanbestedingskalender.nl and TenderNed	Regular usage
A2	CRM applications	Logging entire sales process: Visits etc. However, solely used by sales representatives	Regular usage
A2	CRM applications	Sales method used: Miller Heiman. CRM application is configured in order to facilitate this sales method.	Highly effective
B2	CRM applications	CRM (Sales Force) in order to register opportunities. VKA does not log their entire sales strategy in CRM.	Minimal usage
C2	CRM applications	Sales Force is used in order log Acquisition planning	Regular usage
A2	Decision support	No decision support at all.	No usage
B2	Decision support	Default agenda and a fixed set of checklists in order to guide the bid or no-bid meeting.	Minimal usage
C2	Decision support	No decision support at all.	No usage
A2	Project management software	MS project used in the past. Nowadays, planning in Excel.	Regular usage
A2	Project management software	MS project for product and service delivery projects	Regular usage
B2	Project management software	No specific project management software, Excel suits all the needs.	Minimal usage
C2	Project management software	Excel is used to keep track on projects. Gantt charts are created by manually. Extensive Project Management software is not required according to C2.	Regular usage
C2	Project management software	Project management software (MS project) is used in the product delivery phase.	Regular usage
A2	Collaboration software	Workspace in Sharepoint if collaboration with external parties is required.	Regular usage
A2	Collaboration software	Local file server with regular Word, Excel and PowerPoint files for internal usage.	Regular usage
B2	Collaboration software	We use document management software in order to collaborate (Box).	Regular usage
B2	Collaboration software	VKA also maintains extensive repositories in order to store and reuse standardized bid chapters. For example: References, Company information etc.	Regular usage
C2	Collaboration software	No specific collaboration software is used. Everyone uses Microsoft Word and revisions are managed via track changes. Documents are share via a fileserver.	Minimal usage
A2	Calculation spreadsheet	Extremely sophisticated calculation spreadsheet. Maintained by CGI Canada. Literally all possible costs and revenues can be noted.	Regular usage

[38] http://www.salesforce.com/assets/pdf/misc/Contract_Management_Best_Practices.pdf

C2	Calculation spreadsheet	Extensive calculation spreadsheets are used.	Regular usage
A2	Knowledge Management	All bids are evaluated, however, not knowledge management in order to store best practices	No usage
B2	Knowledge Management	No dedicated KM applications. However, the collection of evaluations are stored are stored on a filesystem and knowledge derived from evaluation sessions is directly embedded into various templates used.	Minimal usage
C2	Knowledge Management	Tele2 maintains a repository in order to store evaluation reports. However, this knowledge is not transformed specifically into tacit knowledge that is accessible for the entire organization.	Minimal usage
A2	Contract management software	In house developed tooling	Regular usage
B2	Contract management software	SalesForce is used for contract management purposes.	Regular usage
B2	Contract management software	Framework agreement specifications are listed in SalesForce. Reports on KPI's can me generated.	Regular usage
C2	Contract management software	The Legal department uses contract management software in order to keep track on KPI's.	Regular usage

Table 31: IT Tool support overlay evaluation

7.5 Evaluation: Bid or No-bid Decision Support via MCDA

The primary function of our MCDA (Multi Criteria Decision Analysis) is to compare individual project qualifications from various evaluators. Participating evaluators have to qualify a variety of questions that are bundled in categories. Appropriate weightings for categories as well as for evaluators are established before evaluation takes place. Our MCDA provides concrete bid or no-bid advice including underpinning.

Each interviewee interpreted our MCDA as one artifact that generates one advice, the bid or no-bid advice. Therefore, the textual underpinnings from our interviewees are strongly focused on the bid or no-bid advice instead of on the various charts.

Interviewee A2 qualified our MCDA as useful. However, he added a remark. At interviewee A2, the bid or no-bid decision is not made at the actual bid or no-bid meeting. The actual decision is already made leading up to the bid or no-bid meeting. Therefore, he expected that the contribution of our MCDA could be drowned out.

Interviewee B2 noticed that decision support for the bid or no-bid decision can be extremely useful to motivate no-bid decisions. It is often difficult to motivate a no-bid decision in front of the Management Team. MCDA presented provides insights which criteria are uncertain and need attention in a meeting.

Interviewee C2 was enthusiastic while analyzing our MCDA. He mentioned that our model would be applicable immediately and that it could professionalize the current bid or no-bid process at his organization right from the beginning. Interviewee C2 mentioned the current decision making process used is primarily focusing on the gut feeling of various experts. Currently it is difficult to compare people's point of views in order to structure the discussion and to exchange ideas. The current method of qualifying opportunities lacks the availability of crystalized qualification criteria.

The overall opinion regarding the chosen graphs was positive. In addition, the distinction in the charts between average scores and relative scores was positive. Chart "Bid or No-bid per Category (Weighted)" received most positive feedback because of its clearness. The red circle represents the configured bid or no-bid threshold where the blue spider overlay highlights the positively and negatively qualified categories. The graph "Evaluators Average Grade vs. Average Grade" clearly depicts an evaluators average grade in comparison with other

evaluators average grades and the overall average grade. Evaluators with large deviating scores are able to underpin their overall opinion. The contribution from chart "Average Score vs. Weighted Average Score" would be less useful according to the interviewees; the deviation in the average and weighted bars is too small and therefore meaningless.

Interviewee	Chart	Qualification
A2	Bid or No-bid advice	Useful, however
B2	Bid or No-bid advice	Useful, however
C2	Bid or No-bid advice	Useful
A2	Evaluator Weighting	Useful
B2	Evaluator Weighting	Useful
C2	Evaluator Weighting	Useful
A2	Category Weighting	Useful
B2	Category Weighting	Useful
C2	Category Weighting	Useful
A2	Average Category Score	Useful
B2	Average Category Score	Useful
C2	Average Category Score	Useful
A2	Relative Category Score	Useful
B2	Relative Category Score	Useful
C2	Relative Category Score	Useful
A2	Total points per Question	Less useful
B2	Total points per Question	Less useful
C2	Total points per Question	Less useful
A2	Average Score vs. Weighted Score	Less useful
B2	Average Score vs. Weighted Score	Less useful
C2	Average Score vs. Weighted Score	Less useful
A2	Evaluators Average Grade vs. Average Grade	Useful
B2	Evaluators Average Grade vs. Average Grade	Useful
C2	Evaluators Average Grade vs. Average Grade	Useful
A2	Bid or No-bid Category (Weighted)	Useful
B2	Bid or No-bid Category (Weighted)	Useful
C2	Bid or No-bid Category (Weighted)	Useful
A2	Category Average Per Evaluator	Useful
B2	Category Average Per Evaluator	Useful
C2	Category Average Per Evaluator	Useful

Table 32: Decision Support via MCDA evaluation

8 Discussion

The goal of this research was to develop a generic bid preparation reference method whereby IT support facilities are identified per activity. Our generic reference method can be used by organizations in various branches who are evolved in tender projects. Newcomers in the world of, often governmental, tendering can use our method as a guideline for setting up their tender department efficiently and more experienced organizations can use our method in order to optimize their current tender department.

In this chapter, limitations of the research are being discussed. Hereby we will elaborate on the strengths and weaknesses of the research. Furthermore, future research possibilities are provided.

8.1 Limitations of research

Every research project has its limitations. Therefore, we have to evaluate the identified limitations and weaknesses carefully. Having knowledge from the limitations is essential for interpreting research findings. Most of the identified limitations can be traced back to time and resources constraints.

The first limitation of this research is concerned with the selection of the case companies. It was tough to motivate Bid Managers and Sales Managers to participate in the case study series since they had to share some potential commercial confidential information in order to have an open and transparent interview. Unless many organizations were not willing to participate, we tried to come up with a mixed list of organizations. Finally, the list contains large and medium sized enterprises, stock listed or privately held, from various branches. We have to admit that most of them are tech related and that all organizations are headquartered in The Netherlands. If there was more time or there were more resources available, more organizations could be interviewed causing results that are more reliable.

Another identified limitation is related to the data collection process of this research. In order to increase the validity of this research, multiple source of evidence were used. However, in most cases the participating organizations were not allowed to share documentation regarding their internal bid preparation processes. Case company A1 provided their internal bid preparation documentation. Other companies were allowed to discuss their internal processes extensively however, sharing hard copy documentation was not allowed.

Closely related to the second limitation, multiple sources of evidence, is this third identified limitation. Unless that most interviewees consulted internal documentation during the interview sessions, some of them answered from their readily available knowledge. In theory, this can be seen as sort of bias as some of the interviewees could have forgotten crucial information during the interview.

A fourth limitation is caused by the fact that only one researcher is actively involved in the research. One researcher conducts activities such as the data collection, performing the literature study and keeping all the interviews, and the data analysis process. Having a second researcher during the interviews would increase the validity of the research as well as the reliability of the results. For example, the second researcher could have asked questions forgotten by the first researcher. Having one researcher involves the possible risk of personal bias by the researcher.

Finally, the last identify limitation is related to our proposed MCDA. Validation of our MCDA has been done in the second interview series by evaluating the individual MCDA components as well as the MCDA as a hole by posing oral questions to the three interviewees. In fact, we verified the perceived added value from our MCDA. Better would be a dedicated multi-case study tailored to this specific artifact. As already mentioned, that was not an option due to the lack of time.

8.2 Future research

This research has presented a theoretical framework for the disciplines e-procurement, e-tendering and especially for bid preparation. Besides this theoretical examination, empirical findings about currently implemented bid preparation processes have been generated. Our theoretical framework as well as the generated empirical findings served as input for answering the initially posited research questions. The answers from our research questions created room for new future research objectives.

A first research opportunity is shaped by the presentation of our generic bid preparation reference method. Various individual case studies can be performed in order to investigate specific activities from our reference method in more depth. Activities that are considered as crucial are the bid or no-bid decision, markup determination, tender acquisition and the actual bid writing activity. The mentioned activities should be investigated in more depth at various running bid preparation projects. By means of these in depth case studies, specific activities and sub activities from our generic bid preparation method can be enriched.

In addition to the first mentioned future research opportunity comes this second opportunity. The goal of our proposed reference method was that it should be a generic, widely applicable and branch independent. Therefore, we tried to come up with a well mixed pool of case study organizations. However, it seems logical that bid preparation processes slightly differ per branches. Therefore, the opportunity to research specific activities in depth can also be branches specific. By doing so, various branches specific method fragments can be developed and stored in a method base in order to use them interchangeable.

After this research we could state that the bid or no-bid decision is the most important decision that needs to be made in a bid preparation process. Therefore, we developed an MCDA, our MCDA provides an weighted underpinned bid or no-bid advice. Due to the lack of time, we were not able to validate the applicability of our MCDA in practice. This could be an interesting starting point for future research towards decision support in bid preparation. In literature, some papers can be found about the applicability of neural networks in bid or no-bid decision support. However, how feasible are such initiatives in practice?

If an MCDA seems to be a feasible decision support facility, which questions or criteria needs to be evaluated by the evaluators? The qualification criteria used for our proposed MCDA are derived from our literature study and from the empirical findings derived from the performed case studies. However, each branches has its specific characteristics and therefore it seems to be likely that tailor made qualification criterion can increase the reliability of the provided advice.

Our study presents an application overlay with essential applications for the different bid preparation activities. However, our application overlay does not provide concrete information about how these applications can be used in practice. You could state that it lacks a concrete bid preparation application toolkit including process implementation guidelines. While validating our application overlay we experienced traditional implementations of widely used office applications that together support the bid preparation process, often in an inefficient manner. None of the interviewees uses one application that serves all the bid preparation phases. An interesting research opportunity could be the creation of an ideal bid preparation application toolkit, whether or not delivered as a one stop shop SaaS solution.

Finally, there is the option to execute our study internationally in order to compare practices in different countries.

9 Conclusion

The goal of this research was to develop a generic bid preparation reference method whereby IT support facilities are identified per activity. To reach this goal, a multiple case study was conducted to answer the main research question. The main research statement was stated as follows:

RQ: "*How to facilitate suppliers in bid preparation processes by making use of IT?*"

In order to solve this main research question, four sub questions were considered. Each of the four sub questions are answered in the remainder of this chapter.

SQ1: "*What can we learn from academic research with regard to bid preparation in (e-)tender processes?*"

Sub question 1 is answered by means of an extensive literature review. A lot is written about tender processes from a buyer perspective, less is written about our topic of interest, tender processes from a supplier perspective.

To render large procurement projects efficient, transparent, non-discriminating and accountable, (e-) tender procedures are often required (Liao et al., 2002). The tendering phase is responsible for shaping contractual and legislative agreements between different project stakeholders (Vee & Skitmore, 2003). A traditional tender phase is extremely information intensive and much paperwork is involved. Once the tender documentation is ready, it can be distributed to the different bidders. Often, human errors occur during the distribution process of tender documents. Errors such as insufficient copies, mix up of documents, incomplete information and even leakage of restricted information were not rare (R. Du, Foo, & Boyd, 2006).

Tender processes can be seen from two perspectives. In order to understand the supplier's perspective, which was the primary topic of our study, you have to understand the buyer's perspective. PIANOO, an Dutch expertise center in tender procedures distinguishes three phases, each of them is described in chapter 4.1.2.

Several e-tender procurement systems are described in literature. In chapter 3.3, we elaborate on the architecture of e-tender procurement systems. Cheng, Liao, & Chen (2003) (Figure 15) developed an e-tender application for military purposes. Noor & Mohemad (2008) (Figure 17) developed a prequalification e-tender application. And a modern e-tender architecture came from Heddad (2013) (Figure 18). By comparing the three different architectures developed throughout the years, you will recognize that the overall application architecture is not changed a lot. Core elements such as a webserver and a database are available in all architectures. Every architecture makes use of user accounts for different functions and with different authorizations. However, there are several improvements that need to be distinguish. Where Cheng et al. (2003) have a strong focus to digitalizing the manual tender process, the PreQTender architecture from Noor & Mohemad (2008) focusses on automated decision support functions that eases tender comparison. Heddad (2013) added a function for suppliers that enables them to pay digitally for required tender documentation.

The decision for a company to participate in a tender or not, to submit an offer or not is known in literature as the bid or no-bid decision. For a company's management team it is difficult to decide about the, to bid or not to bid decision in a couple of days since the decision is highly related its macro environment and to the often unclear project requirements. According to Egemen & Mohamed (2008), the bid or no-bid decision is often based upon a company's experience, intuition and guesses. Shash (1993) distinguished two stages in the bidding process. First, there is the decision to bid or not to bid and then there is the markup level.

To go deeply into the heart of the bidding problem Egemen & Mohamed (2008) performed a research to uncover the main factors that characterize the two stages of bidding processes. The different contributing factors to the final bid of no-bid decisions are divided into three main categories: 'Firm-Related Factors', 'Project-Related Factors' and 'Market Conditions/Expectations and Strategic Considerations'. The most important factors regarding the bid or no-bid decision are factors (blue ovals in Figure 22) 1.1 Need for Work, 2.1 Project Conditions Contributing to Profitability, 2.2.1.4 Client & Consultant, 1.2 Strength of Firm and 2.2.1.2 Job Complexity. For the markup decision, the most important factors (green ovals in Figure 22) are 2.3 Competition considering the current project, 3.1 Competition considering the current market conditions only, 2.2.2.1 Economic Condition & Instability, 2.1 Project Conditions Contributing to Profitability and 1.1 Need for Work. For the complete list of all

the factor see Egemen & Mohamed (2008). The complete bid-reasoning model (hierarchy) is depicted in Figure 22.

Another attempt towards a bid-reasoning model is made by (Chuna & Li, 2000). Chuna & Li (2000) used a wide variety literature sources to identify factors related to the bid and markup decision. Besides literature, Chuna & Li (2000) kept interviews with six experiences practitioners in competitive bidding. Differing from other studies, this study uses four sub goals: Competition, company's position in bidding, risk and need for work.

Several bid/no-bid strategies are being discussed in chapter 4.2. Herby we distinguish manual strategies and automated strategies. The first manual strategy to discuss is based on a case study called the Whorcop project by Cova, Salle, & Vincent (2000). The second manual strategy describes an integrated bid/no-bid decision process for construction contractors based on lessons learned (Shokri-ghasabeh & Zillante, 2010). A more automated bid/no-bid model is developed by M. Wanous et al., (2000). M. Wanous et al., (2000) developed a parametric solution to support the bid/no-bid decision. Mohammed Wanous et al., (2003) describe a bid/no-bid model using artificial neural network (ANN) techniques. The most vital improvement made in this ANN model compared to their previous parametric bid/no-bid model is that the ANN model doesn't assume linear influence from the decision criteria on the final decision, which might not be the case (Wanous et al., 2003).

By answering SQ1 we provided an overview of the scientific literature available related to the topic: (e-)procurement, (e-)tendering, bid or no-bid decision making and mark-up determination. These research streams are highly related to our topic of interest: the bid preparation process.

SQ2: "How are bid preparation processes implemented in practice?

In order to answer sub question 2, six semi-structured interviews have been held. Every individual interview took around 120 minutes, interviews are recorded and are transcribed for further analysis. In order to validate the interview results, three additional interviews have been held.

Each of the interviewees recognizes the role Bid Manager and distinguishes the public and private sector. Seeking for new tender opportunities is a responsibility for Bid Management or Account Management. New tender opportunities are identified via tender publication platforms such as TenderNed or TED. Some of the interviewees implemented specific sales strategies such as Muller Heiman or Solution Selling however, these sales strategies do not relate to tender projects. Sales strategies are used in regular acquisition. Only two interviewees use tailor made opportunity qualification methods.

The Sales Manager, Account Manager or Bid Manager often does pre-qualification of new opportunities. Commonly used qualification perspectives are Profitability, Legal, Risk and Feasibility. The Bid or No-bid meeting is important however, the actual Bid or No-bid decision is not necessarily made in this meeting. It happens that the Bid or No-bid meeting is solely a bureaucratic requirement. However, this differs per organization.

Specific roles are assigned for Bid Writing and Bid Calculation tasks. Bid Writing role is responsible for delivering a textual coherent bid. The Sales Manager often makes calculations and the Board of Directors often makes the Mark-up decision. Each interviewee implemented various roles. In our research we proposed a fixed set of roles and responsibilities and we assigned them to specific activities in our Bid Preparation Reference method.

Subcontractors are frequently used among our interviewees. However, selecting the right subcontractor is not necessarily part of Bid Preparation. Often there are verified lists with already contracted subcontractors that can be used. During tender projects, there is not enough time for extensive subcontractor inquiring and comparisons.

IT tools that are frequently used by our interviewees are: Publication platforms, Communication software, Office Suites, Collaboration software, CRM applications, Bid/No-bid decision support, Mind mapping and File repositories.

In order to answer SQ2 we held six semi-structured interviews. The interview sessions have been organized in accordance with Yin's case study replication approach. Each case study provides insights in the bid preparation processes at the various reputable companies in their branches.

SQ3: "*What similarities can be discerned in different bid preparation processes and what does a reference method look like?*"

Outcomes from SQ1, our literature review, and outcomes from SQ2, our extensive case study, contribute to SQ3. By answering SQ3, we come up with a Bid Preparation Reference Method.

Chapter 6.2.1 describes the actual Bid Preparation Reference Method PDD. Within the PDD, two sides can be distinguished. The left-hand side, which is based on a UML activity diagram, depicts the meta-processes including its activities. The right-hand side, which is based on a UML class diagram, depicts the different deliverables and are called concepts.

The development of his Bid Preparation Reference Method was an iterative process. The results from the first interview session have been used for the second interview session etcetera. This has resulted in several revision of the initial Bid Preparation Reference Method. The Bid Preparation Reference Method change log is depicted in the Table 17 and Table 18. Figure 37 depicts the initial version of our bid preparation reference method and Figure 38 depicts the final version of our bid preparation method.

Our Bid Preparation Reference Method consists of seven activities: Acquisition, Qualification, Prepare bid, Evaluate and archive bid, Acquiring contract, Deliver service and Evaluate and archive delivered service. Chapter 6.2.2. provides an extensive elaboration of the different activities, sub-activities and the relation between them by means of an Activity table. Corresponding concepts are extensively discussed in chapter 6.2.3 by means of a Concept table.

Various teams, roles and responsibilities are identified and are assigned to activities and sub-activities. Four teams (Core Team, Bid Team, Write Team, Review Team) and nine roles (Contract Owner, Business Assurance Manager, Bid Manager, Commercial Manager, Solution Manager, Contract Manager, Tender desk, Resource Owner, Legal affairs) can be distinguished. An extensive description of the available teams, roles and responsibilities and how they relate to each other is described in chapter 6.2.4.

Input from SQ2 is used in order to answer SQ3. In SQ3 we developed our final Bid Preparation reference method by making use of the Method Engineering approach developed by Brinkkemper (1996).

SQ4: "*How to facilitate bid preparation with IT?*"

The outcomes of sub question four provides insights regarding IT support in bid preparation processes. We developed an Application Overlay that clarifies what tool support is recommended during certain activities. In addition, we come up with a Multi Criteria Decision Analysis artifact that provide bid teams guidance during their bid or no-bid meetings.

An AO depicts applications used in business processes. Only software applications that play a significant role in these business processes are depicted. The AO presented in Figure 41 is drawn on top of a PDD were the EAM modelling method prescribes that AO's should be drawn on top of EFD's. Combining the PDD modeling method and the AO derived from the EAM modelling method enables the researcher to present the possibilities for IT support in the Bid Preparation process at a glance.

Identified application categories for the AO are the Publication platforms, CRM applications, Decision support tooling, Project Management software, Collaboration software and tailor made Calculation spreadsheets. In chapter 6.3.3 we elaborate on the practical applicability of the suggested IT tooling mentioned in the AO.

As we frequently mention, the bid or no-bid decision is crucial in bid preparation. Therefore, we developed a MCDA. The primary function of our MCDA is to compare individual project qualifications from various evaluators. Besides concrete bid or no-bid advice, our MCDA provides the following charts in order to underpin its advice: Evaluator Weighting, Category Weighting, Average and Relative Category Score, Total points per Question, Average Score vs. Weighted Score, Evaluators Average Grade vs. Average Grade, Bid or No-bid Category (Weighted) and Category Average Per Evaluator.

The bid or no-bid advice provided by our bid or no-bid MCDA including the majority of the charts is considered as Useful by the interviewees that participated in the validation interviews. Charts: Total point per Question and Average Score vs. Weighted Score were considered as less useful.

As mentioned in the future research chapter, future research about the actual implementation of bid preparation tooling would be extremely beneficial for practitioners. At the moment, the bid managers application toolkit is splintered. Alignment by means of an all-in-one SaaS solution could be a great business opportunity. In order to develop such a toolkit it is smart to study what and how application features interact with each other.

RQ: "*How to facilitate suppliers in bid preparation processes by making use of IT?*"

In order to answer the main research question, four sub research questions were considered. Conclusions from each of these individual sub research questions contribute to the main research question.

The problem statement at the root of this research states that bid preparation processes are complex, extremely time consuming and therefore expensive for organizations. This statement is confirmed by the outcomes of our literature study.

In order to provide guidance in bid preparation processes we developed a Bid Preparation Reference Method. Organizations that participate or are planning to participate in tender projects can use our Bid Preparation Reference Method in order to optimize their current bid preparation process or can use our reference method by means of a guideline in order to develop a new branches tailored bid preparation method.

Various applications can be used in the bid preparation cycle in order to optimize the process as much as possible. In addition to our proposed reference method, we developed an Application Overlay. Our Application Overlay provides insights in how IT is able to facilitate the preparation process. The Application Overlay can also be beneficial for the suggested future research opportunities. It could fulfil the task of being a foundation for an explorative study in order to identify relevant IT features for bid preparation.

In addition to our Application Overlay, we developed a conceptual Bid or No-bid MCDA. Our proposed MCDA provides guidance in bid or no-bid sessions. Opportunity qualification results from individual evaluators are clearly compared via the various available charts. The provided insights provide room for discussion what stimulates deliberate decision making.

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11 Appendixes

11.1 Appendix A: Parameters bidding factors and parametric scale

i	Positive bidding factors	B_i	NB_i
1.	Fulfilling the to-tender conditions imposed by the client	5.84	5
2.	Financial capability of the client	3.48	2
3.	Relations with and reputation of the client	3.84	2
4.	Availability of time for tendering	2.54	0
5.	Availability of capital required	3.41	2
6.	Site clearance of obstructions	3.64	0
7.	Availability of materials required	3.56	2
8.	Experience in similar projects	3.61	2
9.	Availability of equipment required	3.40	0
10.	Method of construction (manually, mechanically)	3.05	0
11.	Availability of skilled labour	3.25	0
12.	Original project duration	3.02	0
13.	Site accessibility	3.00	0

Table 33: Parameters of the positive bidding factors [E]

j	Negative bidding factors	B_j	NB_j
1.	Project size	3.69	5
2.	Public objection	2.15	4
3.	Current work load	2.90	6
4.	Risks expected	3.12	6
5.	Rigidity of specifications	3.66	6

Table 34: Parameters of the positive bidding factors [E]

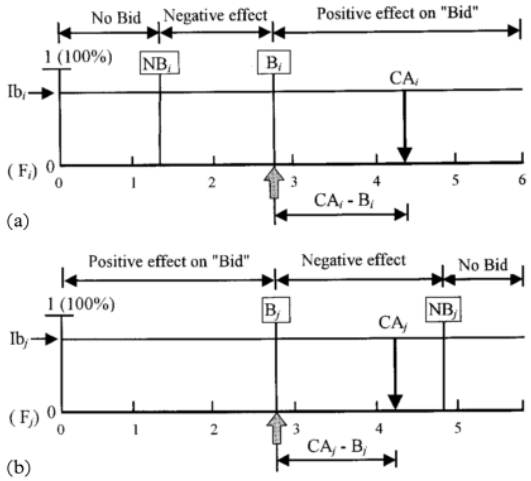


Figure 44: Parametric scale for bid/no-bid decision support [E]

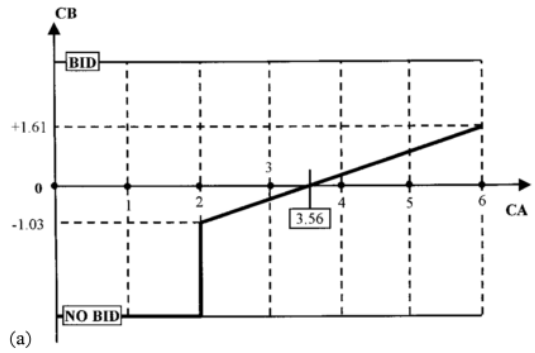


Figure 45: Contribution of '7. Availability of materials required' factor [E]

11.2 Appendix B: Systematic model for bid/no-bid decision

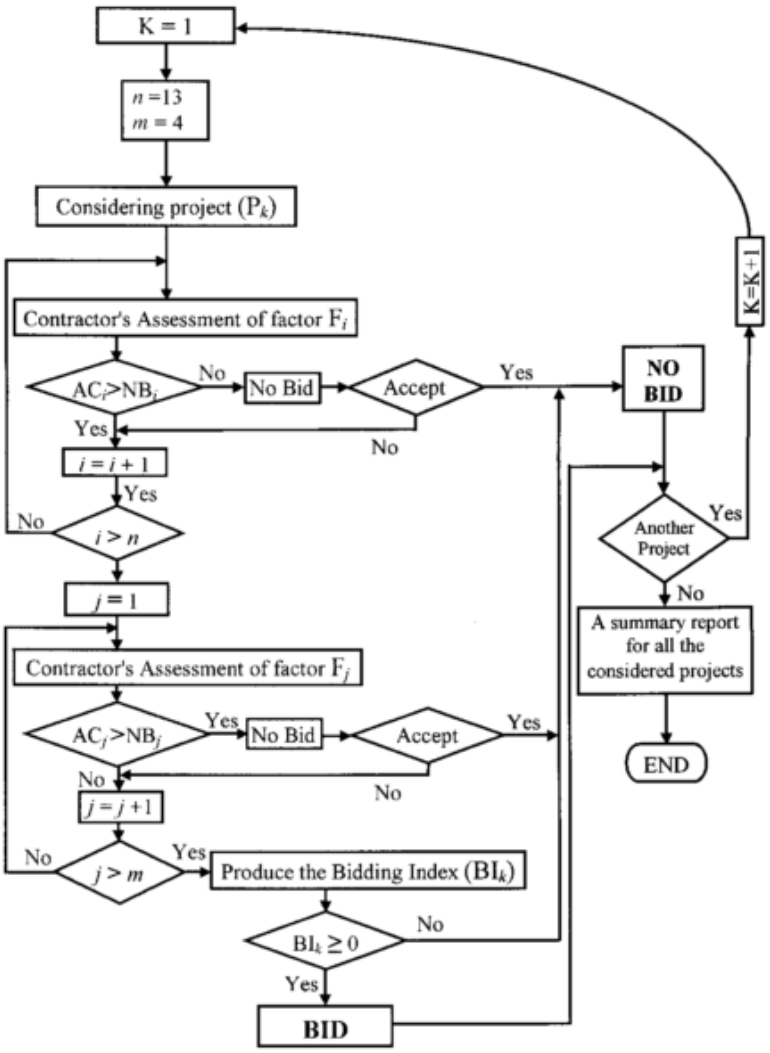


Figure 46: Systematic model for bid/no-bid decision [E]

11.3 Appendix C: Selection of the most influential bidding factors

Factor	Importance index	Considered factors
1. Fulfilling the to-tender conditions imposed by the client	89.88%	*
2. Financial capability of the client	77.67%	*
3. Relations with and reputation of the client	76.83%	*
4. Project size	73.17%	*
5. Availability of time for tendering	70.83%	*
6. Availability of capital required	68.33%	*
7. Site clearance of obstructions	68.00%	*
8. Public objection	67.83%	*
9. Availability of materials required	66.33%	*
10. Current work load	65.83%	*
11. Experience in similar projects	64.00%	*
12. Availability of equipment required	64.00%	*
13. Proportions that can be constructed mechanically	64.00%	*
14. Availability of skilled labour	58.00%	*
15. Original project duration	55.50%	*
16. Site accessibility	53.83%	*
17. Risks expected	52.17%	*
18. Rigidity of specifications	50.00%	*
19. Expected project cash flow	47.00%	
20. Degree of buildability	47.00%	
21. Availability of other projects	46.17%	
22. Confidence in the cost estimate	45.33%	
23. Project location	31.67%	
24. Original price estimated by the client	28.50%	
25. Past profit in similar projects	26.50%	
26. Expected date of commencing	24.67%	
27. Availability of equipment owned by the contractor	22.17%	
28. Expected number of competitors (degree of competition)	17.83%	
29. Local climate	17.50%	
30. Specific features that provide competitive advantage	16.33%	
31. Fluctuation in labour/materials price	15.00%	
32. Competence of the expected competitors	12.50%	
33. Relations with other contractors and suppliers	10.33%	
34. Proportions to be subcontracted	05.50%	
35. Local customs	04.17%	

Table 35: Selection of the most influential bidding factors [E]

11.4 Appendix D: Case Study Protocol

<table>
<tr><td>Preamble</td><td>Title of research: FlexTender: "Applying Method Engineering with the Aim of Creating a Flexible Bid Preparation Process"
Researcher: Ivo Kox (Master of Business Informatics, Department of Information and Computing Science)
First supervisor: Dr. Slinger Jansen
Second supervisor: Prof. Sjaak Brinkkemper

Purpose of a Case study Protocol
A Case Study Protocol (CSP) describe a set of guidelines, defined by the researcher, which can be used during the research project. The defined guidelines provide structure and govern the case research project, it elaborates on the aim of the research and on the methodological approach. This CSP structure is derived from Pervan & Maimbo (2005). A well-documented CSP establishes the quality of the research significantly; it contributes to the construct validity by strengthening the chain of evidence.

Non-disclosure agreement
• All data is handled confidentially and is primarily used by Utrecht University
• Do you have any problems with mentioning your company in this thesis (internal publication only)?</td></tr>
<tr><td>Short introduction</td><td>Objective and background
More firms want to expand their business volume by participating in, mostly governmental, tender processes (Flynn et al., 2013). Tender processes are generally perceived as complex and time consuming. Original tender processes are surrounded by much paperwork and in the case of a governmental tenders, legislation is also involved (McKevitt & Davis, 2013). From a buyer perspective, there are already several tools available that are supported by IT. These tools are supporting tender processes from the preparation phase until the awarding phase and sometimes also include contract management functionalities.

Participation in tenders is time-consuming and scoring percentages of actual awarded tenders will be never hundred percent. In order to optimize the bid preparation process from a supplier perspective, this research project is initiated. The aim of this project is to come up with (1) a generic, but highly flexible, bid preparation reference method. In addition to this theoretical method we will come up with (2) practical opportunities to support the bid preparation process by making use of IT.

Research question
This leads to a research question (RQ) and four sub-questions (SQn):

RQ: “How to facilitate suppliers optimally in complex e-tender processes?”

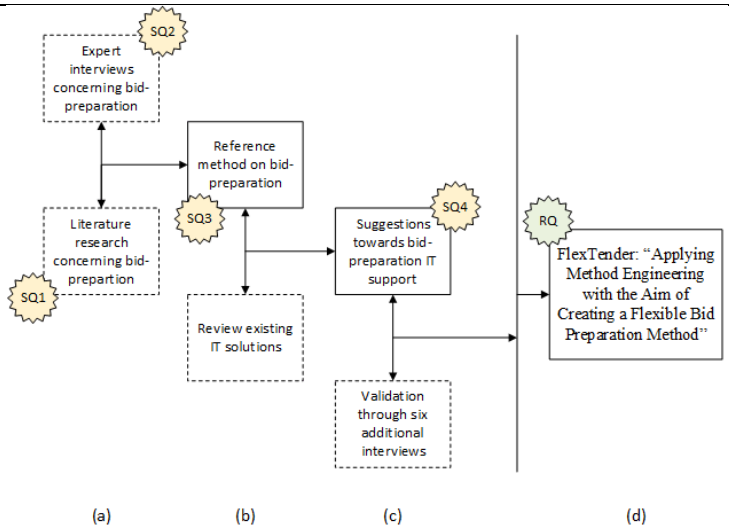
SQ1: “What can we learn from academic research with regard to bid preparation in tender processes?”
SQ2: “How do bid preparation processes look like in practice?”
SQ3: “What similarities can be discerned in different bid preparation processes and what does a reference method look like?”
SQ4: “How to facilitate bid preparation with IT?”

Approach
This research project is divided into four phases, called a, b, c and d, with a sequential order. Several expert interviews with bid managers need to be kept and the obtained results need to be processed. Together with the literature results, an initial version of the Bid Preparation Reference Method is constructed.

The initial version of the Bid Preparation Reference Method together with an in depth review of already existing IT tool support will result in an overview that provide guidance of how to facilitate the bid preparation process in an optimal way with IT tooling. The product from the confrontation in phase b results will the answer for research sub question four.

Penultimate, another six semi-structured interviews will be kept in order to validate the research results.

Finally, the products, or artifacts, from the phases a, b and c result in an approach towards flexible supplier support in e-tender processes, which answers the primarily research question.</td></tr>
</table>



Procedures

For the first case study series six medium to large sized companies, with offices in The Netherlands, have been selected in accordance with the requirements listed below. LinkedIn is used to reach experienced Bid Managers in order to schedule the interviews.

- Participating companies should be medium to large sized;
- Participating companies have a professional sales organization with a dedicated bid-manager;
- Participating companies should gain a significant portion of their turnover via tender projects;
- Participating companies should have dedicated sales representatives operating in The Netherlands;

In-depth, semi-structured interviews are time consuming. Contact with the interviewee needs to be scheduled and usually the researcher has to travel to the meeting (Lethbridge et al., 2005). Interviews will take 1.5 up to 2 hours. Each interview will be fully transcribed and a case study report will be written from each individual semi-structured interview.

Research Instruments (Data collection)

Multiple sources of evidence will be used in order to gather qualitative data. Expert interviews are the primary source for acquiring knowledge. In preparation for the actual interview, a document study is performed. Gathered information is stored in a structured case study database and the chain of evidence links all the information sources used.

Expert interviews

For this research, six face-to-face interviews need to be conducted where the researcher will interview one respondent at a time. The semi-structured interviews serve as primary data collection method in this research. During the interviews, the researcher will use a list with carefully worded questions who forms the basis of the interview (Lethbridge et al., 2005; Yin, 2009). In order to increase the validity of this research, the research supervisor assessed the case study protocol.

An advantage of semi-structured interviews compared to structured interviews is that there is enough room for discussion in between listed questions. Besides, semi-structured interviews allow interviewees to share unexpected types of information and the researcher has full control over the data collection process as he participated actively in it (Lethbridge et al., 2005; Yin, 2009).

Document study

In preparation on each individual interview, the researcher reads various document sources in order to gather knowledge regarding the participating company. The document study mainly focuses on sources such as a company's website, available brochures and available annual accounts. Besides interview preparation purposes, available documentation is also used to verify and complement information that was not discussed in during the interviews.

Case study database

In order to store the gathered data during this research and in order to make the gathered data accessible for other researchers a case study database will be maintained during this research. The case study database will contain the original audio recordings from every interview as well as transcriptions from every interview. In addition, documentation for the document study such as annual accounts and information gathers via the websites from participating companies.

The case study database consists of two storages. Each case company has a dedicated folder containing the before mentioned documents. Besides a local folder, each company has virtual folder in the application called NVivo. NVivo is used in order to analyze the interview transcriptions.

The distinction between a separate case study database and a case study report has not become an institutionalized practice in the majority of the performed case studies according to Yin (2009). Too often, the critical reader has no recourse if he or she wants to inspect the raw data that led to the case study's conclusions. Without a case study database, the raw data may not be available for independent inspection.

Chain of evidence

<table>
<tr><td></td><td>The last data collection principle is the chain of evidence. The principle behind the chain of evidence is relatively simple but highly recommended to strengthen construct validity. A chain of evidence allows the reader to follow the rationale between various evidence sources, from the initial research questions to conclusions drawn. The different research stages are traceable in both directions, from conclusion back to initial research question and from questions to the conclusions (Yin, 2009).</td></tr>
<tr><td>Data analysis guidelines</td><td>Our data analysis approach founds its origin in two data analysis methods. To a large extent, our approach is based on the grounded theory interpretation by Adolph, Hall, & Kruchten (2011) and the constant comparative method (CMM) by Boeije (2002). The approach from Adolph, Hall, & Kruchten (2011) is a derivative from Glaser, B.G., & Strauss (1967) and describes their experiences using grounded theory in software engineering research.

Interviews are the primarily source for retrieving data. To analyze interview data in a systematic way, interviews need to be transcribed. For analyzing the text that resulted from transcription, we applied a lean version grounded theory.

While analyzing the text, relevant lines or paragraphs needed to be tagged with codes, this phenomena is called open coding. Open coding results in a list of provisional codes which is actually the beginning of the process of conceptualization. Codes are also used for clustering into concepts and categories. In fact, open coding generates building blocks for the theory.</td></tr>
<tr><td>Validity</td><td>Four tests are generally used to establish the quality of empirical research methods. Case studies are one form of empirical research, so these four tests are relevant to case studies (Yin, 2009).

<table>
<tr><th>Design Tests</th><th>Case Study Tactics</th><th>Research phase in which a tactic occurs</th></tr>
<tr><td>Construct validity</td><td>• Use multiple sources of evidence
• Establish chain of evidence</td><td>Data collection
Data collection</td></tr>
<tr><td>Internal validity</td><td>• Do pattern matching due to coding approach</td><td>Data analysis</td></tr>
<tr><td>External validity</td><td>• Do cross-case analysis
• Use replication logic in multiple-case studies</td><td>Data analysis
Research design</td></tr>
<tr><td>Reliability</td><td>• Use case study protocol
• Develop and maintain case study database</td><td>Data collection
Data collection</td></tr>
</table></td></tr>
<tr><td>References</td><td>

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Appendixes	**Invitation letter to case companies** Onderwerp: Onderzoek naar 'bid-preparation' vanuit de Universiteit Utrecht. Geachte heer/mevrouw, Voor de afronding van mijn master studie Business Informatics doe ik onderzoek naar het proces 'bid-preparation'. In meer detail: Ik onderzoek het proces tot en met de uiteindelijke indiening van de offerte bij aanbestedingstrajecten. Het doel van het onderzoek is eerstens het definiëren van een efficiënte en generiek toepasbare 'bid-preparation' workflow. Een dergelijke workflow kan ervaren organisaties helpen bestaande workflows te optimaliseren en biedt best-practices voor minder ervaren organisaties. Vervolgens wordt er gekeken hoe de toepassing van IT bij kan dragen aan verdere procesoptimalisatie. Ten slotte wordt er een praktisch model opgeleverd dat ondersteuning aan de uiteindelijke bid/no-bid beslissing moet geven. Via Linkedin zag ik dat u op dit moment werkzaam bent in de functie Bid Manager. Met uw ervaring als Bid Manager kunt u mij erg goed helpen bij mijn onderzoek. Graag zou ik met u een semi-gestructureerd interview van ongeveer 90 minuten plannen om onderstaande punten te bespreken (Uiteraard bezoek ik u op uw kantoor zodat uw tijdsinvestering tot het minimum beperkt blijft): • Hoe is het 'bid-preparation' proces op dit moment binnen uw organisatie vorm gegeven; • Welke IT applicaties ondersteunen het 'bid-preparation' proces en waar kan optimalisatie plaatsvinden; • Ten slotte ga ik graag met u in gesprek om te inventariseren op basis van welke factoren u aanbestedingen beoordeeld. Ik zou het fantastisch vinden als u bereid bent deel te nemen aan mijn onderzoek. Uiteraard bezoek ik u op uw kantoor zodat uw tijdsinvestering tot het minimum beperkt blijft. Graag kom ik met u in contact, per e-mail ben ik bereikbaar op mail@ivokox.nl en telefonisch op 06 34 604 292. Uiteraard kunt u ook reageren op deze Linkedin Inmail. Alvast bedankt en ik kijk vol belangstelling uit naar uw bericht. Met vriendelijke groet, Ivo Kox

11.5 Appendix E: Interview guidelines (Version 4)

Research information	**Title of research:** FlexTender: *"Applying Method Engineering with the Aim of Creating a Flexible Bid Preparation Process"* **Researcher:** Ivo Kox (Master of Business Informatics, Department of Information and Computing Science) **First supervisor:** Dr. Slinger Jansen **Second supervisor:** Prof. Sjaak Brinkkemper **Introduction** • Voor opdrachtnemers in velerlei sectoren zijn aanbestedingen een zeer belangrijke bron om potentiele handel te vergaren. Aanbestedingstrajecten worden over het algemeen als complexe procedures ervaren. • Doel afstudeeronderzoek: Ontwikkelen van een generieke bid-preparation referentie methode. De referentie methode kan door de meer ervaren organisaties gebruikt worden om de huidige bid-preparation procesflow te toetsen en voor nieuwe organisaties in de wereld van het aanbesteden kan deze dienen als leidraad. • Daarnaast zal deze bid-preparation referentie methode gebruikt bij het onderzoek naar de vraag hoe IT optimaal ingezet kan worden in het bid-preparation proces. • Velerlei factoren hebben invloed op de bid/no-bid beslissing die veelal genomen wordt door het sales management. De meest relevante factoren zijn gedestilleerd uit de literatuur (Appendix B), deze lijst is niet uitputtend. Door de relevantie te duiden met een cijfer (0 t/m 10) hoopt de onderzoeker een universele lijst met relevante bid-preparation factoren op te kunnen leveren die uiteindelijk als input dient voor een artifact die adviseert omtrent de bid/no-bid beslissing. **Non-disclosure agreement** • All data is handled confidentially and is primarily used by Utrecht University • Do you have any problems with mentioning your company in this thesis (internal publication only)?
Company information	Company name: Sector: Number of employees: Annual turnover:
Participant information	Participant name: Experience/Background: Position:

Section 1: Interview questions	Onderstaande vragen dienen het doel het conceptuele bid-preparation model (PDD, gedistilleerd uit literatuur, te valideren. Zie **Error! Reference source not found.**.
	
	Achtergrond geïnterviewde
	• Wat is uw achtergrond (opleiding etc.)?
	• Hoeveel jaar bent u reeds werkzaam in de functie van Bid Manager?
	• Hoeveel jaar werkt u voor uw huidige werkgever?
	• Hoeveel werkgevers heeft u reeds gehad waarbij u de functie van Bid Manager vervulde?
	
	Organisatorische aspecten
	• In welke bedrijfstak is deze organisatie werkzaam?
	• Hoeveel medewerkers werken er voor deze organisatie?
	• Hoeveel medewerkers zijn er verantwoordelijk voor sales?
	• Hoeveel medewerkers houden zich bezig met aanbestedingen/tenders?
	• Hoe relevant zijn aanbestedingstrajecten voor deze bedrijfstak?
	• Hoe relevant zijn aanbestedingstrajecten voor deze organisatie?
	  ○ Hoeveel procent van de omzet wordt gegenereerd door het succesvol afronden van aanbestedingstrajecten?
	  ○ Hoeveel procent van de aanbestedingen waaraan deelgenomen word, wordt daadwerkelijk gewonnen?
	  ▪ Welke initiatieven ontpoppen er zich binnen deze organisatie om het scoringspercentage te verhogen?
	
	Proces deelname aanbesteding (volgens PDD)
	Acquisitie
	• Hoe bereiken nieuwe aanbestedingstrajecten uw organisatie?
	  ○ Is hierbij een duidelijk onderscheid te maken tussen private en publieke aanbestedingen?
	• Het uitschrijven van een aanbesteding is een complex proces waarbij gedegen productkennis noodzakelijk is. Komt het voor dat uw productexpertise geraadpleegd wordt door de aanbestedende dienst?
	  ○ Bij hoeveel procent van de aanbestedingen komt dit voor?
	  ○ Ondernemen uw sales mensen actief actie om ervoor te zorgen dat aanbestedingen correct en volledig gepubliceerd worden?

	▪ Hoe zien dergelijke initiatieven eruit? • Wordt er software ondersteunend aan het acquisitie traject ingezet (in de breedste zin van het woord)? o Van welke software wordt er op dit moment gebruik gemaakt? o Hoe wordt deze software op dit moment ingezet? o Waar zou de ondersteuning van software verbeterd kunnen worden? ***Evaluatie*** Volgens mijn concept "bid preparation workflow", die tot stand gekomen is n.a.v. literatuurstudie (zie PDD), vindt na de acquisitie de evaluatie fase plaats. Hierin wordt een mogelijk interessante aanbesteding uitvoeriger beoordeeld om vast te stellen of inschrijving relevant is. • Wat zijn specifieke kenmerken waaraan een aanbesteding moet voldoen alvorens u gaat inschrijven? o Zijn er bijvoorbeeld minimale omzet criteria? o Houdt u rekening met uw huidige personele bezetting? Het product moet ten slotte geleverd worden als de aanbesteding u gegund wordt. o Wordt er door uw organisatie een lijst met zogenaamde bid/no-bid criteria onderhouden die helpen de uiteindelijke beslissing te faciliteren? ▪ Indien er een dergelijke lijst onderhouden wordt. Hebben de diverse criteria verschillende gewichten? En hoe worden deze gewichten onderhouden? • *Hier komen we later in de survey in meer detail op terug.* o Welke personen (rollen) zijn binnen deze organisatie betrokken bij het nemen van een bid/no-bid beslissing? ▪ Hoeveel personen zijn er gemiddeld betrokken bij een dergelijke beslissing? ▪ Worden er vergaderingen belegd voor standpunten omtrent de bid/no-bid beslissing uit wisselen? • Misschien gestemd? o Hebben de verschillende stemgerechtigden een even zwaar wegend stemrecht? ▪ Wie heeft (welke rol) uiteindelijk het eindoordeel? o Worden er (al dan niet wetenschappelijk getoetste) modellen of algoritmen gebruikt bij de afweging bid/no-bid? • Is het voor u zinvol te weten welke concurrenten meedingen naar eenzelfde aanbesteding? • Wordt er voor (of tijdens) een inschrijving een uitgebreide concurrentieanalyse gemaakt die als input dient voor de bid/no-bid decision? o Kijkt u hierbij ook naar de past-performance van de concurrerende organisatie? • Hebt u wel eens bewust niet ingeschreven op een aanbesteding terwijl deze in principe wel aan de gestelde criteria voldeed? o Waarom hebt u ervoor gekozen verstek te laten gaan? • In hoeverre wordt er bij het al dan niet inschrijven op een bepaalde aanbesteding rekening gehouden met in het verleden behaalde resultaten? o Wordt er bijvoorbeeld een database met evaluaties onderhouden? Zie PDD: TENDER EVALUATION BASE. • Wordt er software ondersteunend aan het evaluatie traject ingezet (in de breedste zin van het woord)? o Van welke software wordt er op dit moment gebruik gemaakt? o Hoe wordt deze software op dit moment ingezet? o Waar zou de ondersteuning van software verbeterd kunnen worden? Zijn er andere aspecten die in praktijk meegenomen worden bij het evalueren van een mogelijk interessante aanbesteding maar die niet aangestipt zijn binnen deze vragenlijst 'Evaluatie'? Welke zijn dat? Hoe ziet dit er procesmatig uit. Ligt a.u.b. zoveel mogelijk details toe. ***Prepare bid*** Nadat er consensus bereikt is omtrent het meedingen naar een aanbesteding (bid), wordt er begonnen met het voorbereiden van de uiteindelijke aanbieding. • Hoe bereikt de nieuwe lead de interne organisatie? In mijn PDD stel ik dat er een projectteam gevormd wordt waarna er rollen verdeelt worden. Klopt dat en hoeveel deelnemers zitten er in zo'n team? • Welke disciplines komen er minimaal tezamen in een projectteam? • Aan hoeveel projecten werken projectteams gemiddeld tegelijkertijd? o Is er een vaste procesmatige structuur bij het doorlopen van projecten? ▪ Hoe ziet deze eruit? ▪ Verschilt die per project? • In hoeverre worden er onderaannemers betrokken bij aanbestedingen? o Participeren de onderaannemers in de projectteams? o Schrijven onderaannemers mee aan de uiteindelijke aanbieding?

	• Indien er gekozen wordt een onderaannemers in te schakelen, worden er dan nog diverse offertes opgevraagd?
	  ○ Hoe worden offertes van onderaannemers beoordeeld?
	  ▪ Hoe wordt de prijs/kwaliteit verdelen vastgesteld bij de offerte beoordeling?
	  ○ Wordt er ook een database bijgehouden waarin het presteren van onderaannemers vastgelegd wordt?
	  ▪ Hoe ziet een dergelijke beoordeling eruit? Welke criteria zijn hier belangrijk en worden gebruikt?
	• In hoeverre wordt er input gebruikt van eerder uitgebrachte offertes?
	  ○ Of template offertes?
	• Zodra alle benodigde input voor de aanbieding "verzameld" is, hoe komt het uiteindelijke offerte-document tot stand? Is er een iemand die er een coherent geheel van maakt? Ligt dit proces toe a.u.b.
	• Hoe wordt de marge over de opgestelde offerte bepaald?
	  ○ Zijn dit vaste percentages?
	  ○ Worden er risico opcenten of eventuele andere factoren berekend?
	• Wordt er software ondersteunend aan het bid preparation traject ingezet (in de breedste zin van het woord)? Denk aan: collaboration software tussen projectdeelnemers.
	  ○ Van welke software wordt er op dit moment gebruik gemaakt?
	  ○ Hoe wordt deze software op dit moment ingezet?
	  ○ Waar zou de ondersteuning van software verbeterd kunnen worden?
	
	Finalize bid
	Nadat de offerte gegenereerd is wordt deze ingediend.
	
	• Zijn er procedures omtrent het presenteren van een offerte aan de klant?
	• Zijn er procedures omtrent het uitvoeren van follow-up calls?
	• Hoe vindt de uiteindelijke evaluatie plaats?
	  ○ Verschilt het evaluatieproces op het moment dat offertes al dan niet geaccepteerd worden?
	• Na het afsluiten van een project (al dan niet gewonnen), vindt er ongetwijfeld een evaluatie plaats waarna de aanbesteding gearchiveerd wordt voor later gebruik.
	  ○ Hoe worden actief best-practices gedestilleerd uit afgeronde aanbestedingen om de lering later toe te passen?
	• Wordt er software ondersteunend aan de finalize bid fase ingezet (in de breedste zin van het woord)?
	  ○ Van welke software wordt er op dit moment gebruik gemaakt?
	  ○ Hoe wordt deze software op dit moment ingezet?
	  ○ Waar zou de ondersteuning van software verbeterd kunnen worden?

Remarks	Dit was het einde van het interview, heeft u suggesties tie mij helpen dit interview of dit onderzoek te verbeteren?

11.6 Appendix F: Interview guidelines (validation interviews)

Research information	**Title of research:** FlexTender: *"Applying Method Engineering with the Aim of Creating a Flexible Bid Preparation Process"* **Researcher:** Ivo Kox (Master of Business Informatics, Department of Information and Computing Science) **First supervisor:** Dr. Slinger Jansen **Second supervisor:** Prof. Sjaak Brinkkemper **Introduction and research objectives** • Voor opdrachtnemers in velerlei sectoren zijn aanbestedingen een zeer belangrijke bron om potentiele handel te vergaren. Aanbestedingstrajecten worden over het algemeen als complexe procedures ervaren. • Doel afstudeeronderzoek: Ontwikkelen van een generieke bid-preparation referentie methode. De referentie methode kan door de meer ervaren organisaties gebruikt worden om de huidige bid-preparation procesflow te toetsen en voor nieuwe organisaties in de wereld van het aanbesteden kan deze dienen als leidraad. • Daarnaast zal deze bid-preparation referentie methode gebruikt bij het onderzoek naar de vraag hoe IT optimaal ingezet kan worden in het bid-preparation proces. • Velerlei factoren hebben invloed op de bid/no-bid beslissing die veelal genomen wordt door een bid comité bestaande uit diverse professionals. Hoe kan er een wel overwogen bid/no-bid beslissing gemaakt worden waarbij alle aanwezige expertise benut wordt en rekening gehouden wordt met hiërarchieën onder de comité leden. **Research questions** This leads to a research question (RQ) and four sub-questions (SQ): RQ: "*How to facilitate suppliers optimally in complex e-tender processes?*" SQ1: "*What can we learn from academic research with regard to bid preparation in tender processes?*" SQ2: "*How do bid preparation processes look like in practice?*" SQ3: "*What similarities can be discerned in different bid preparation processes and what does a reference method look like?*" SQ4: "*How to facilitate bid preparation with IT?*" **Research approach** This research project is divided into four phases, called a, b, c and d, with a sequential order. Several expert interviews with bid managers need to be kept and the obtained results need to be processed. Together with the literature results, an initial version of the Bid Preparation Reference Method is constructed. The initial version of the Bid Preparation Reference Method together with an in depth review of already existing IT tool support will result in an overview that provide guidance of how to facilitate the bid preparation process in an optimal way with IT tooling. The product from the confrontation in phase b results will the answer for research sub question four. *Penultimate, another three structured interviews will be kept in order to validate the research results.* **Research results: To be validated** • Bid Preparation Reference Method (PDD); • Outline IT Support in bid preparation; • Bid/No-bid decision support via MCDA. **Non-disclosure agreement** • All data is handled confidentially and is primarily used by Utrecht University • Do you have any problems with mentioning your company in this thesis (internal publication only)?
Company information	Company name: Sector: Number of employees: Annual turnover: Tenders per year: Average hit rate:
Participant information	Participant name: Experience/Background: Position: Experience as bid manager:
Section 1: Validation Bid Preparation Reference Method	Onderstaande vragen dienen het doel de ontwikkelde Bid Preparation Reference Method te valideren. Gedurende het interview wordt het model gespiegeld aan de praktijksituatie van de geïnterviewde. Daar het PDD een referentiemethode betreft hoeft e.e.a. niet letterlijk geïmplementeerd te zijn. Significante afwijkingen van de reëel werkelijkheid t.o.v. de gestelde theoretische werkelijkheid dienen nader

	geanalyseerd te worden. Hierbij is het vooral van belang dat de geïnterviewde motiveert waarom er voor een bepaalde werkwijze gekozen is. Alvorens over te gaan tot het bespreken van onderstaande vragen dient de Bid Preparation Reference Method van A tot Z doorgenomen te worden. Tevens wordt de modelleringsmethode Process Deliverable Diagram toegelicht. **Activities** • Acquisition o Kerntaken binnen de Acquisition activiteit zijn het identificeren van nieuwe opportunities via zowel public tender platforms alsmede via sales activiteiten. o Geidentificeerde opportunities worden direct ge-pre-kwalificeert. • Qualification o De bid or no-bid beslissing wordt genomen aan het einde van de Qualification activity. o Om tot een weloverwogen beslissing te komen vindt er een Tender document assessment plaats, worden relevante qualificatie criteria geselecteerd inclusief bijbehorende weging en wordt de winnende prijs vastgesteld. Het bid committee buigt zich over een finaal oordeel. • Prepare bid o Als er gekozen is om een aanbieding uit te brengen wordt een projectteam geformeerd dat verantwoordelijk is voor de realisatie van de aanbieding. o Indien noodzakelijk worden contractors ingeschakeld, worden er offertes vergeleken en wordt de meest geschikte contractor gecontracteerd. o Uiteindelijk wordt de offerte geformaliseerd en uitgeschreven. o De markup wordt vastgesteld en de uiteindelijke aanbieding wordt opgeleverd. • Evaluate and archive bid o Het proces om tot een aanbieding te komen wordt direct na oplevering geevalueerd. Het is belangrijk om dit direct te doen omdat je projectleden dan nog niet bevooroordeeld zijn door de gunningsbeslissing. • Acquiring contract o Na gunning en voorafgaand aan de levering dienen er contracten overeen gekomen te worden. Contracten bepalen of een opdracht winstgevend uitgevoerd en afgerond kan worden of dat er geld bij moet. Contract Management software stelt organisaties in staat contractuele afspraken strikt te monitoren. • Delivery service o Contracten zijn getekend en de service kan geleverd worden. o Maandelijks dienen voortangsrapportages opgeleverd te worden om te projectvoortgang te monitoren en indien nodig bij te sturen. Dergelijke rapportages belanden uiteindelijk in de BID DATABASE om daarmee ten gunste te komen voor toekomstige projecten • Evaluate and archive delivered service o Na levering wordt de projectuitvoer geavaleerd en vindt decharge plaats. o Ook de leveringsevaluatie wordt vastgelegd in de BID DATABASE om daarmee bij te dragen al de collectieve kennisbank.
Section 2: Validation IT Support features	Onderstaande vragen dienen het doel de ontwikkelde Bid Preparation Reference Method Application Overlay te valideren. De Application Overlay duidt welk type IT tooling waar in het Bid Preparation proces toegevoegde waarde kan bieden. Gedurende het interview wordt per activity besproken welke IT tooling en meer specifiek, welke IT features van toegevoegde waarde zijn om proces ondersteuning zo efficiënt mogelijk te laten verlopen. Alvorens over te gaan tot het bespreken van onderstaande vragen dient de Bid Preparation Application Overlay van A tot Z doorgenomen te worden. **Publication platforms** Publication platforms maken onderdeel uit van de Acquisition activity. • Van welke publication platforms maakt uw organisatie gebruik? • Waarom maakt u al dan niet gebruik van een betaalde subscribtie? • Welke functionaliteiten gebruikt u intensief bij het raadplegen van publication platforms? • Hoe zouden publication platforms meer van toegevoegde waarde kunnen zijn? **CRM application** Een CRM application kan uiteraard op ieder gewenst moment geraadpleegd worden. Echter, binnen het Bid Preparation proces worden CRM applicaties hoofdzakelijk gebruikt t.b.v. de Acquisition activity • Van welke CRM applicaties maakt uw organisatie gebruik? • Met welke doelen wordt de CRM applicatie hoofdzakelijk ingezet binnen het Bid Preparation proces?

	• Welke functionaliteiten binnen de CRM applicatie worden het meest gebruikt? • Op welke manier zou de CRM applicatie meer van toegevoegde waarde kunnen zijn? **Decision support** In de literatuur wordt de potentiele toegevoegde waarde van Decision support applications in Bid Preparation processes uitvoerig beschreven. Echter, er wordt ook notie gemaakt van het feit dat Decision support application in praktijk niet tot nauwelijks gebruikt worden bij het maken of onderbouwen van de Bid/No-bid decision doordat deze als te complex ervaren worden. • Wordt er binnen uw organisatie gebruik gemaakt van Decision support applications? o Waarom wordt er wel of geen gebruik gemaakt van Decision support? • In welk proces (in welke activiteit) bieden Decision support applications naar uw idee de meeste toegevoegde waarde? **Project management** Het daadwerkelijk uitbrengen van een bid is een tijdsintensieve inspanning waarbij, afhankelijk van het type project, input van veel verschillende disciplines noodzakelijk is. Project management software biedt praktische handvatten om planningen te beheren en om resources efficiënt in te zetten. • Wordt er Project management software gebruikt om het project “Bid Preparation” te ondersteunen? o Waarom wordt er wel of geen gebruik gemaakt van Project management software? • Welke functionaliteiten binnen de Project management software worden het meest gebruikt? • Op welke manier zou Project management software van meer toegevoegde waarde kunnen zijn? **Collaboration software** Het daadwerkelijk uitbrengen van een bid is een tijdsintensieve inspanning waarbij, afhankelijk van het type project, input van veel verschillende disciplines noodzakelijk is. Collaboration software stelt medewerkers in staat samen te werken aan documenten. Samenwerken kan plaats vinden binnen afdelingen, organisaties of tussen organisaties. Voorbeelden van Collaboration software zijn Microsoft Sharepoint en IBM Lotus Notes. • Wordt er Collaboration software gebruikt om efficiënt samen te werken? o Waarom wordt er wel of geen gebruik gemaakt van Collaboration software? • Welke functionaliteiten binnen de Collaboration software worden het meest gebruikt? • Op welke manier zou Collaboration software van meer toegevoegde waarde kunnen zijn? **Knowledge Management** Velerlei disciplines werken samen bij het voorbereiding van een passende aanbieding omdat gronding kennis van diverse expertisegebieden essentieel is. Om zoveel mogelijk kennis, opgeslagen in individuen, toegankelijk te maken voor de gehele organisatie worden zogenaamde Knowledge Management initiatieven ontplooid. Dergelijke initiatieven stimuleren tacit knowledge expliciet te maken door bijvoorbeeld opgedane ervaringen te veralgemeniseren en deze vervolgens te archiveren in een Knowledge Base. De Knowledge Base kan gezien worden als het Corporate Memory. • Welke initiatieven vinden er binnen uw organisatie plaats die schaard kunnen worden onder Knowledge Management? • Hoe wordt Knowledge Management ondersteund door IT? Welke functionaliteiten van een eventuele oplossing worden intensief gebruikt? • Hoe zou IT, Knowledge Management beter kunnen ondersteunen? **Contract Management** Contracten liggen ten grondslag aan iedere product of service levering. Contracten scheppen verplichtingen, verplichtingen die positief, maar ook negatief kunnen uitwerken voor een organisatie. Het is belangrijk helder voor ogen te hebben welke verplichtingen je als organisatie aangegaan bent. Hoe kunnen contractuele afspraken efficiënt ten uitvoer gebracht worden? Maar ook, voor welke contracten moet inspanning geleverd worden om deze voort te zetten en welke contracten kunnen beter opgeschort worden? • Hoe ziet het proces Contract Management eruit binnen uw organisatie? • Hoe worden contracten beheer (en geëvalueerd)? • Hoe wordt Contract Management ondersteund door IT? • Hoe zou IT, Contract Management beter kunnen ondersteunen?
Section 3: Validation Bid/No-bid MCDA	Onderstaande vragen dienen het doel de ontwikkelde Bid/No-bid MCDA te valideren.

	Velerlei factoren hebben invloed op de bid/no-bid beslissing die veelal genomen wordt door een bid comité bestaande uit diverse professionals. Hoe kan er een wel overwogen bid/no-bid beslissing gemaakt worden waarbij alle aanwezige expertise benut wordt en rekening gehouden wordt met hiërarchieën onder de comité leden. Input voor de MCDA zijn diverse vragen die beantwoord worden door evaluatoren. Vragen worden gebundeld in een categorie. Antwoorden van evaluatoren kunnen op basis van hun expertise/autoriteit zwaarder of minder zwaar meegewogen worden. Hetzelfde geldt voor vraagcategorieën. Onze Bid or No-bid Decision Support tool via een Multi-Criteria Decision Analysis is hoofdzakelijk bedoeld om de bid or no-bid discussie binnen een bid-committee te ondersteunen d.m.v. een objectieve evaluatie van feiten op basis van vooraf gedefinieerde wegingen. *Demonstreer de werking van de MCDA alvorens over te gaan tot onderstaande vragen.* • Hoe komt een bid or no-bid beslissing tot stand? Hebben diverse "evaluatoren" meer of minder invloed dan anderen? • Hoeveel, en welke, vragen liggen er ten grondslag aan de beslissing? Zijn bepaalde vraagcategorieën belangrijker dan anderen? • Bij het evalueren van de diverse beoordelingscriteria die ten grondslag liggen aan de beslissing bid or no-bid: Zouden de weergaves "Average Category Score", "Relative Category Score", "Total Points per Question", "Average Score vs. Weighted Average Score" and "Bid or "No-bid per Category" kunnen dienen als sturingsmechanisme voor een dergelijke discussie? • Hoe leidend zou een concreet Bid or No-bid "advies" voor u kunnen zijn als er voorafgaand aan de evaluatie van een opportunity grondig nagedacht is over relevantie beoordelingscriteria?
Remarks	Dit was het einde van het interview, heeft u suggesties tie mij helpen dit interview of dit onderzoek te verbeteren?

Appendixes interview guidelines (not included in this appendix in order to prevent duplicate content)

- Bid Preparation Reference Method;
- Activity table
- Concept table
- Bid Preparation Reference Method – Roles and responsibilities
- Bid Preparation Reference Method – Application Overlay
- Practical Bid or No-bid Decision Support via Multi-Criteria Decision Analysis (MCDA)

11.7 Appendix G: Bid Preparation Reference Method improvements during case studies

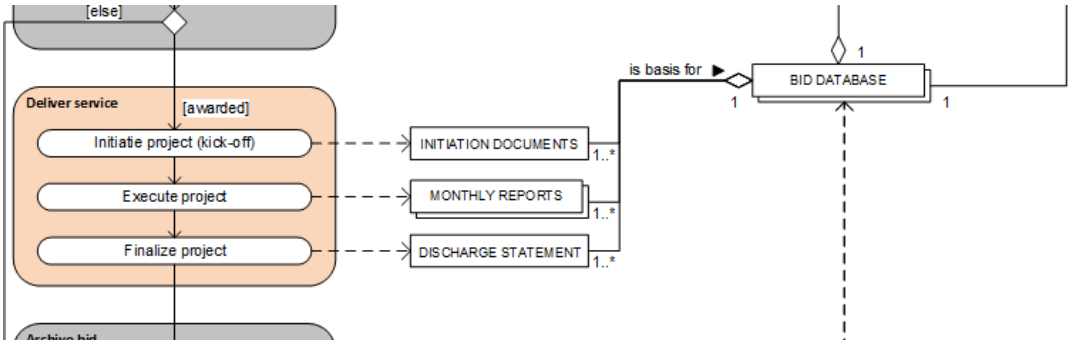

Figure 47: Improvement after case A1 (Version: 0.1.1.1) [BP]

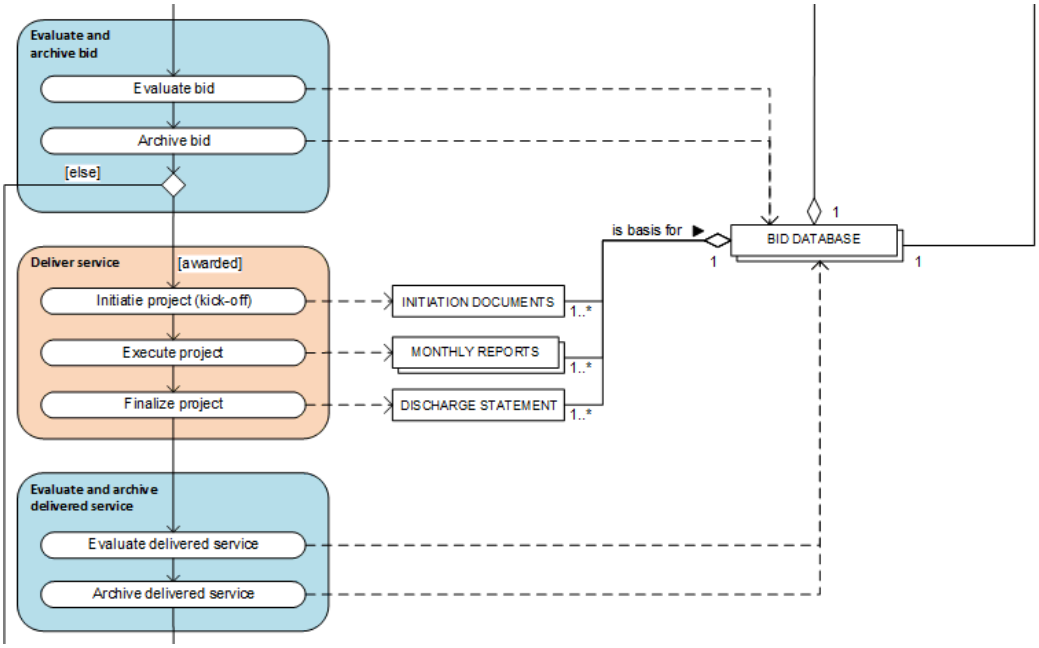

Figure 48: Improvement after case B1 (Version: 0.1.2.1) [BP]

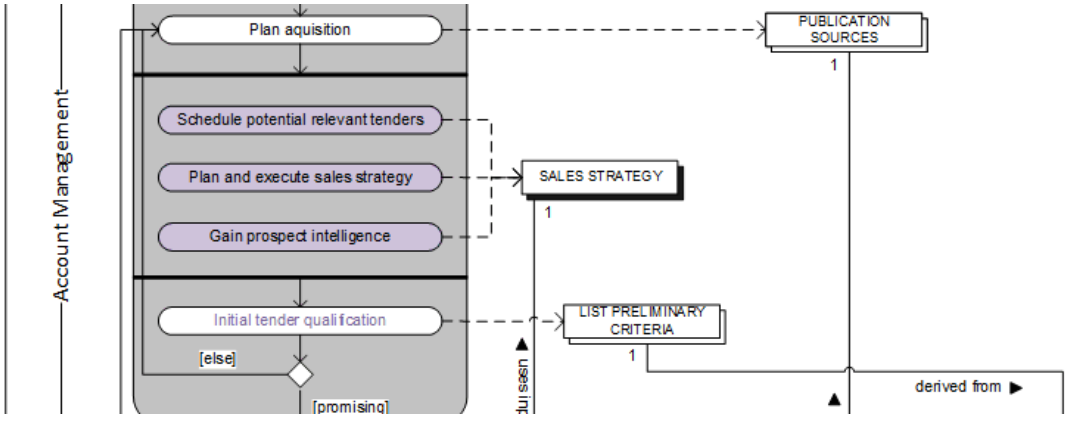

Figure 49: Improvement after case F1 (Version: 0.1.6.1) [BP]

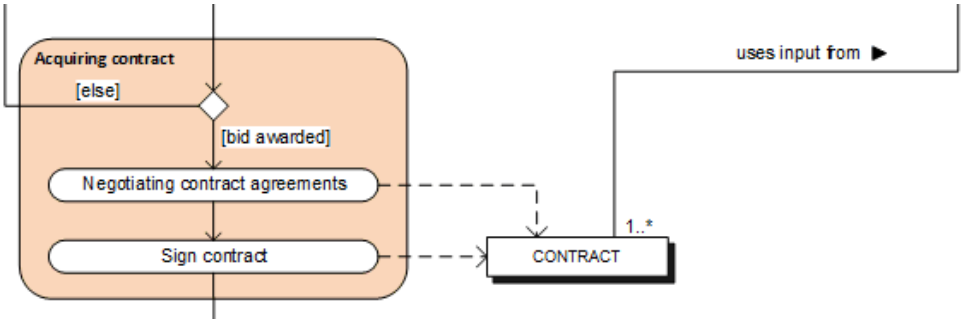

Figure 50: Improvement second iteration (Version: 0.2.1) [BP]

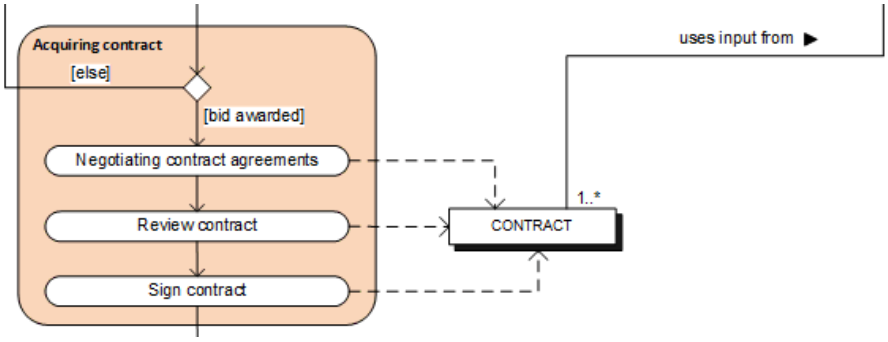

Figure 51: Improvement second iteration (Version: 0.2.2) [BP]

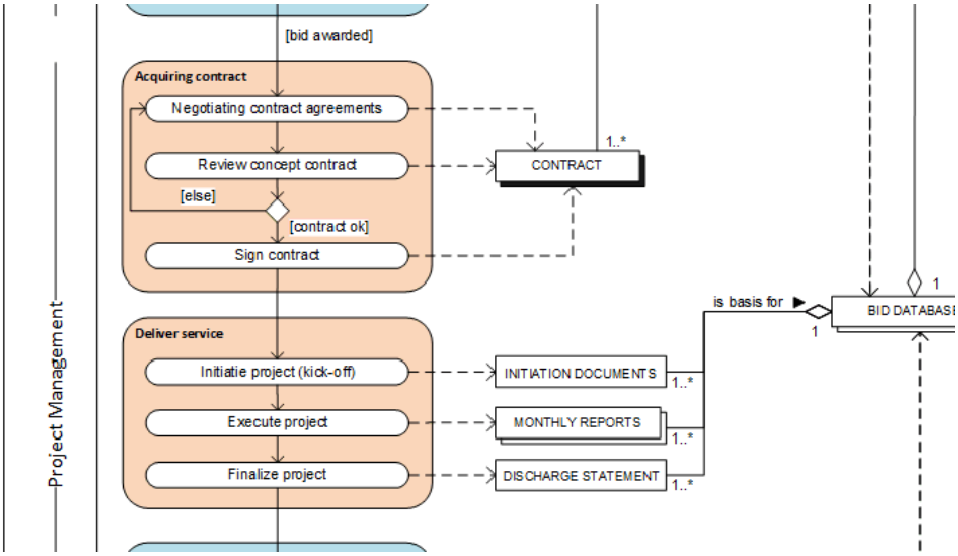

Figure 52: Improvement second iteration (Version: 0.2.6) [BP]

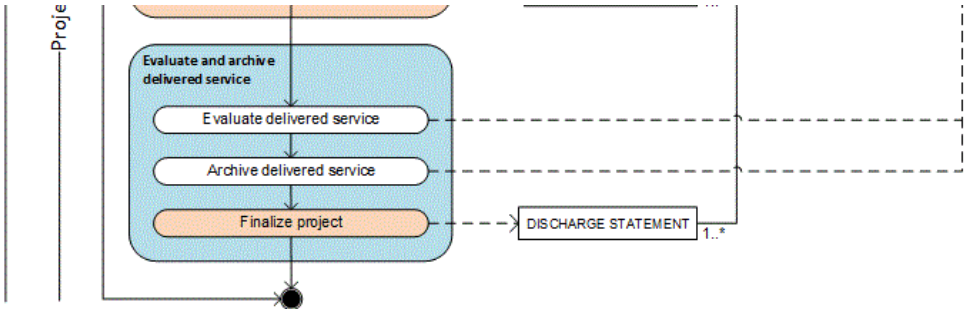

Figure 53: Improvement second iteration (Version: 0.2.7) [BP]

11.9 Appendix H: Bid or No-bid MCDA

Evaluators	Weighting
A	60%
B	10%
C	0%
D	20%
E	10%
Must be 100%	100%

Figure 54: Evaluator weighting configuration screen [BP]

Category	Weighting
Knock-out criteria	10,0%
Terms and conditions	5,0%
Demand	4,0%
Motivation	7,0%
Relationship	9,0%
Reputation	9,0%
Branches	7,0%
Environmental	8,0%
USP	4,0%
Competition	8,0%
Past performance	5,0%
Subcontractors	7,0%
Capacity	1,0%
Financial	7,0%
Chances	9,0%
Must be 100%	100%

Figure 55: Category weighting configuration screen [BP]

Question ID	Category	Factor	Evaluators: *Rate on a scale 0 out of 10*				
			A	B	C	D	E
1	Knock-out criteria	Are there knock out criteria that result in a knock out?	4	6	7	5	6
2	Terms and conditions	Are there reasonable terms and conditions?	5	5	4	5	6
3	Demand	Why does the client want us to participate in his tender?	6	5	8	8	6
4	Motivation	Do we understand the prospects demand?	4	7	9	5	6
5	Relationship	Do we and what kind of relationship do we have with this client?	6	8	8	7	6
6	Relationship	How well do we know this client?	7	9	6	7	6
7	Relationship	Do we already have reasonable contacts within the client's organization?	6	4	10	8	6
8	Relationship	How went the communication with the prospect so far?	5	8	4	9	6
9	Reputation	What do we know about our company's reputation at that prospect?	2	5	8	7	6
10	Branches	How well do we know his branch?	3	4	9	3	6
11	Branches	What is our current presence or footprint in a certain market?	6	5	6	10	4
12	Environmental	Does the request fit in the actual trends going on in the client's organization?	7	10	3	5	7
13	Environmental	Does the request match with actual trends going on in the clients branches?	8	4	3	2	7
14	USP	Do we have USPs (Unique Selling Points) at this project?	8	8	3	4	7
15	USP	What is the prospects opinion about these USPs?	6	9	4	4	5
16	Competition	With which suppliers are we in competition and what are our chances to win compared to theirs	5	4	8	8	4
17	Past performance	How did we performed in similar projects?	10	5	9	9	8
18	Past performance	Rate the complexity of this opportunity compared to previous jobs	6	5	4	4	9
19	Subcontractors	Do we need subcontractors in order to fulfill the job?	7	5	10	2	4
20	Subcontractors	What percentage of the profit belongs to subcontractors?	8	2	3	4	8
21	Capacity	Do we have available resources in order to fulfill the job?	8	3	2	2	3
22	Financial	Rate the order value of this opportunity, in financial terms, compared to previous projects	9	10	4	2	10
23	Financial	Rate the expected cost of sale ratio	4	1	4	2	1
24	Financial	Is the prospect or client creditworthy?	4	2	3	2	2
25	Chances	Do we have a serious change to win the bid?	3	4	3	2	4
		Average per evaluator	5,88	5,52	5,68	5,04	5,72

Bid or No-bid factors | Evaluation results (EVALUATORS) | Evaluation results (CATEGORIES) | Bid or No-bid analysis

Figure 56: Factor evaluations per evaluator [BP]

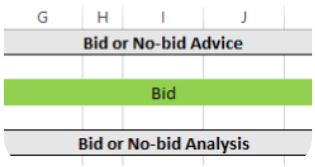

Figure 57: Bid or no-bid MCDA advice [BP]

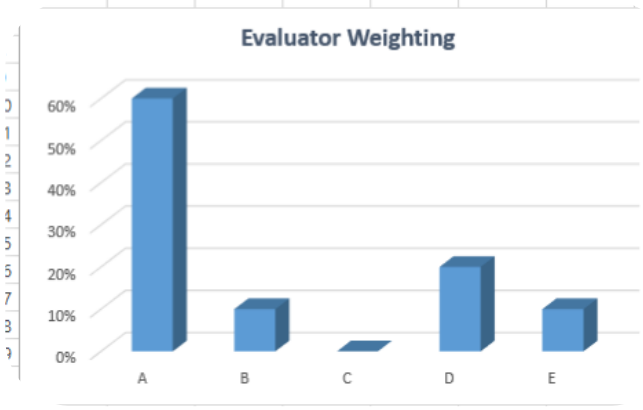

Figure 58: Evaluator Weighting [BP]

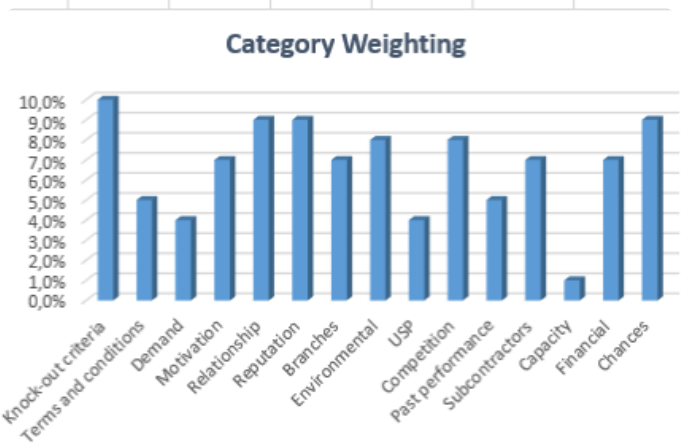

Figure 59: Category Weighting [BP]

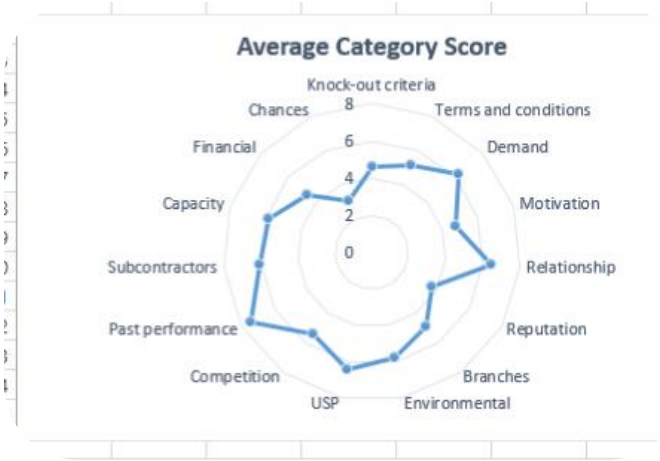

Figure 60: Average Category Score [BP]

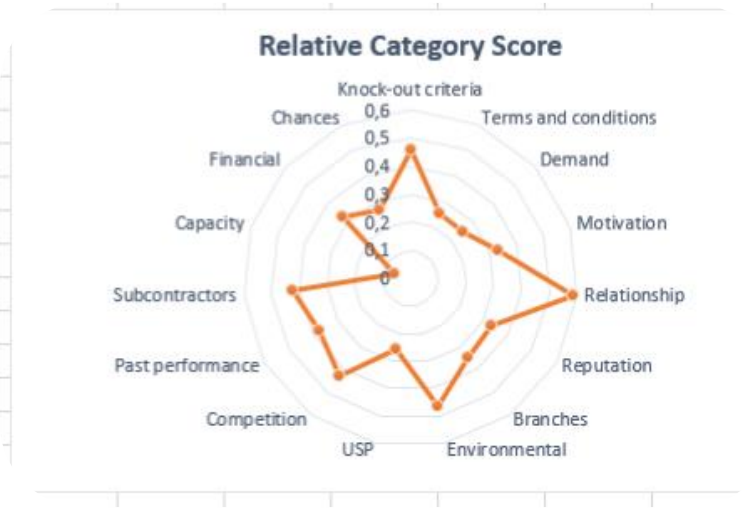

Figure 61: Relative Category Score [BP]

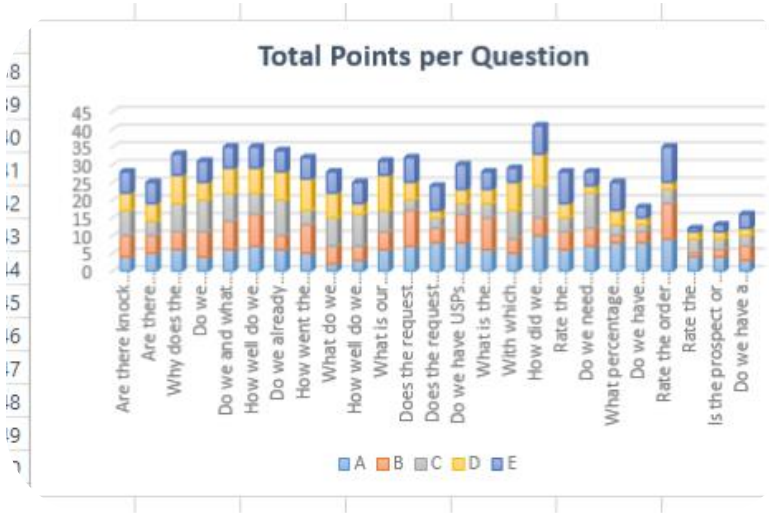

Figure 62: Total Points per Question [BP]

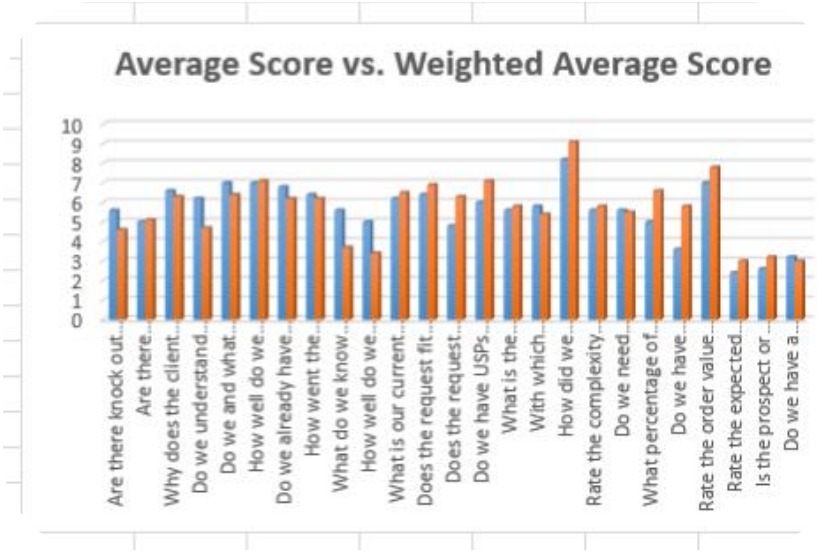

Figure 63: Average Score vs. Weighted Average Score [BP]

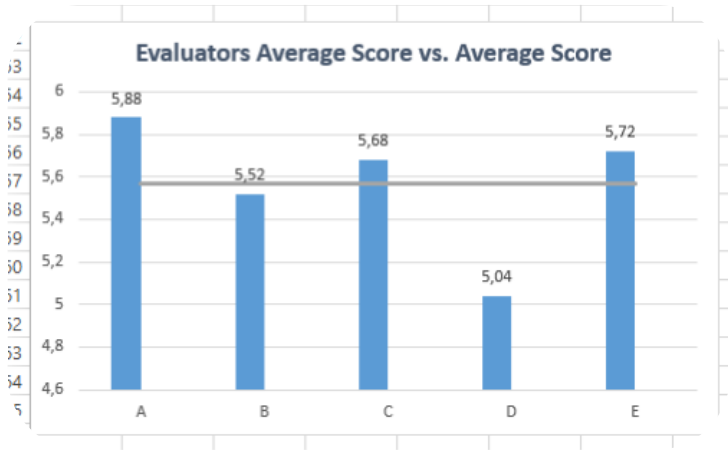

Figure 64: Evaluators Average Score vs. Average Score [BP]

Figure 65: Bid or No-bid Category (Weighted) [BP]

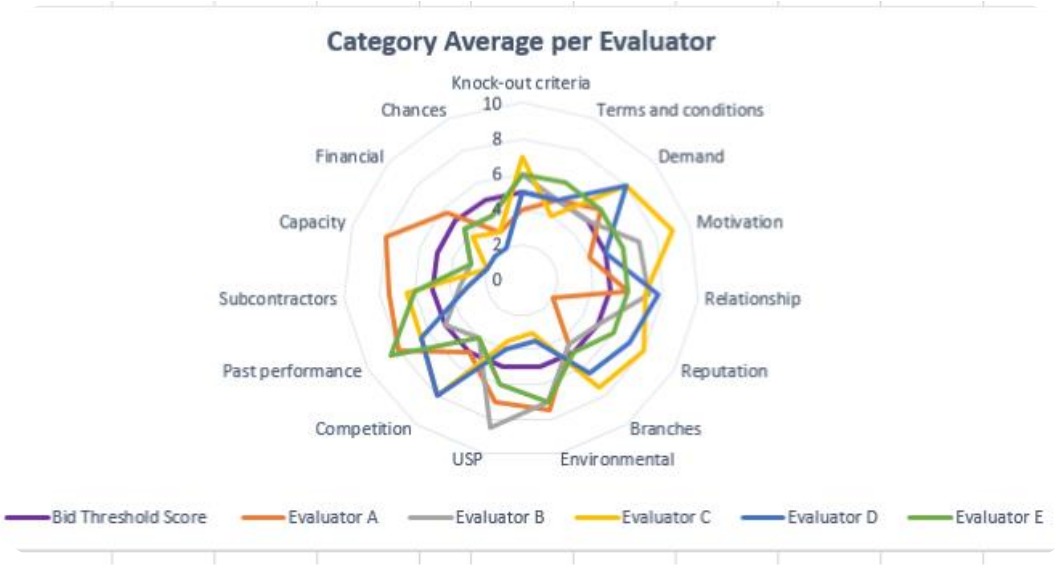

Figure 66: Category Average per Evaluator [BP]

11.10 Appendix I: Interview transcriptions

11.10.1 Interview transcriptions case study A1

See digital appendix.

11.10.2 Interview transcriptions case study B1

See digital appendix.

11.10.3 Interview transcriptions case study C1

See digital appendix.

11.10.4 Interview transcriptions case study D1

See digital appendix.

11.10.5 Interview transcriptions case study E1

See digital appendix.

11.10.6 Interview transcriptions case study F1

See digital appendix.

11.10.7 Interview transcriptions case study A2

See digital appendix.

11.10.8 Interview transcriptions case study B2

See digital appendix.

11.10.9 Interview transcriptions case study C2

See digital appendix.