An exploratory research into the application of the Value Added

The current application and possible optimisations of the Value Added in the Dutch construction industry

Marijke Stoel
Master Thesis
An exploratory research into the application of the Value Added

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Master Thesis
Preface

This thesis is the final assignment to complete the master Construction Management & Engineering at the TU Delft. With my graduation work I wanted to contribute to make the world a better place, I hope this research motivates clients and contractors to strive for what is the best for the project.

Although I found writing a thesis a rather lonely journey I did not have to do it all by myself. I want to use this opportunity to thank everybody who helped me during the process. First of all, I would like to thank all the participants of this research, who I cannot call by name because of the anonymity of the cases. With their hospitality they gave me a great insight in the industry and very valuable input for my research. I would like to thank the clients who participated in my research. They made time available and offered me the possibility to work at their offices. This helped significantly in order to get access to all the files. I would like to thank the contractors who were willing to share their tender proposals with me. This is confidential information, something that is usually not shared outside the walls of their own company. Without their trust and cooperation, I could have never realised this research. In addition to this I would like to thank the interviewees for the pleasant and inspirational conversations we had.

I would like to thank my graduation committee who provided guidance during my research process. I have never graduated before and the experience and guidance of Hans Wamelink, Louis Lousberg and Leon Hombergen made it possible that I can graduate now. Furthermore, I would like to thank Sophie Vulink, as my supervisor from Witteveen+Bos, who always made time free for a brainstorm or to read and give feedback on my work. I would like to thank Witteveen+Bos for facilitating the opportunity to conduct this research.

Special thanks goes to my graduation buddies Hanna, Marrit, Lotte and Niki. We have spent countless hours together in the library and our coffee breaks allowed me to escape from the lonely island called graduation.

Last but not least I would like to thank my parents for their support and confidence that I could make it to where I am today.

Marijke Stoel

Delft, October 2017
Executive summary

Introduction
The popularity of Best Value Procurement (BVP) has increased in the Netherlands after the successful application of BVP in the program Emergency Approach High Ways (Dutch: ‘Programma Spoedaanpak Wegen’) of Rijkswaterstaat (RWS), the Dutch national road agency. In a BVP tender the contractor has to submit three files in which he describes his approach towards the project. In one of the three files, the Value Added (Dutch: Kansendossier), the contractor can offer options that can add extra value to the project.

For an optimal implementation of BVP more insight is needed in the application of the Value Added. According to the Best Value methodology, the expert-contractor must be able to see possibilities to create extra value for the client (Kashiwagi, 2011). At this moment it is unclear if this promise is going to be fulfilled when the theory is applied in practice. The objective of this research therefore is to create insight in the current use of the Value Added and to give recommendations for an effective application of the Value Added within the Dutch construction industry. This research is guided by the following question:

Research question:
What is the reasoning behind the current application of the Value Added in Best Value Procurement tenders in the Dutch infrastructure sector and how can this application be optimised?

Research approach
This research is a case study, consisting out of four phases, see figure 1. To increase the validity of the research a triangulation of two methods is used (Baarda & Bakker, 2010) (Yin, 1994). The first part of the case study - the extensive research – consists of a document analysis. In this part fourteen cases are included to create external validity (i.e. the degree to which the findings are generalizable (Swanborn, 2010)). In the second part - the intensive research - interviews are held with actors from three of the fourteen cases to interpret the quantitative data (Yin, 2014). By this step, the internal validity (i.e. the degree to which the causal explanations can be trusted (Swanborn, 2010)) is secured.

The findings from the cases are analysed using a cross case analysis based on the work of Stake (2013). Actors from the cases of the intensive research have validated the findings from this part of the case study in a validation meeting. The findings of the case study have been used to formulate recommendations on the application of the Value Added.
Literature study

What is Best Value Procurement?

BVP is a procurement method aimed at selecting the best expert-contractor. This expert-contractor is selected on the basis of irrefutable, verifiable and accurate information, to avoid a subjective judgement. BVP is a response to the inefficient practices in the construction industry, which are induced by a price based environment (Kashiwagi, Kashiwagi, & Savicky, 2009). According to Kashiwagi, an expert-contractor should be beneficial to the client and his project in three ways. First, the expert knows the best method to reach the goal of the client. Secondly, the expert acts proactively to control the risks occurring outside of his sphere of influence. Thirdly, the expert is able to see possibilities to create extra value for the client (Kashiwagi, 2011). The last promise is supposed to be fulfilled in the Value Added.

What is the Value Added?

In the Value Added the contractor can propose options (so called opportunities) that increase the value of the project without paying for the extra costs. The offered opportunities should align with the project objectives. In the project objectives, the client indicates what he considers important in the project and the contractor can contribute to these areas in the Value Added. The opportunities should offer something extra and cannot be part of the initial scope: without the use of the Value Added the scope must be fulfilled (Rijt, Witteveen, & Santema, 2016).

But what is value?

Value is a subjective term and depends on the perception of the actors (Koops, Coman, Bosch-Rekveldt, Hertogh, & Bakker, 2015) (Heirs & Pehrson, 1982). The level of achieving the project objectives determines how successful a project is. Since the Value Added is supposed to enrich the project objectives, this research uses success criteria to operationalize value. The success criteria as summarised by Koops et al. will be used to categorise the project objectives and opportunities (2015). These criteria are grouped using the Square Route of Atkinson (1999).

Findings
Extensive research

The extensive research’ most relevant findings concern the type of opportunities that were offered/bought and the price of the Value Added in relation to the price ceiling.

Type of offered and bought opportunities

Most of the opportunities offered extra value for the environmental and social context of the project. On average, the clients bought 63% of the offered opportunities in the winning bid. Most of the bought opportunities were aligned to project objectives that aim to satisfy the needs of stakeholders and users. When looking at the percentage of bought opportunities from the total offered opportunities, the categories ‘delivered on time’, ‘efficient use of resources’ and ‘project specific political or social factors’ were popular as well. Even though the theory prescribes that opportunities should be aligned to the project objectives, this did not always happen in practice. Next to opportunities aligned with the project objectives, the clients also bought unaligned opportunities.

Price of the Value Added

Three important observations are made regarding the price. First, the price of the individual opportunities and of the total Value Added is marginal relative to the price ceiling. The different ways of applying the price ceiling seems to have an influence, although not a significant one. The price is slightly lower when the price ceiling is the limit for the basic scope plus the Value Added. Second, almost all the offered opportunities ask an initial investment from the client. Cost saving opportunities were a rarity. (Note that this research did not take into account the costs that can be saved during the life span of a project after the initial investment of the opportunity, because this data was not available.) Third, the contractors often did not use the available budget space for the Value Added. In most of the cases, budget space is determined by the price ceiling and the price of the basic offer.

<table>
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<th>1 - price limit for scope + VA</th>
<th>2 – price limit for scope + individual opportunities</th>
<th>3 – price limit for scope</th>
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<tr>
<td>Number of submissions</td>
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<td>10</td>
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<tr>
<td>Average price individual opportunity</td>
<td>1.17%</td>
<td>1.97%</td>
<td>1.87%</td>
</tr>
<tr>
<td>Average price Value Added</td>
<td>4.77%</td>
<td>6.31%</td>
<td>8.53%</td>
</tr>
<tr>
<td>Average not used budget space</td>
<td>9.27%</td>
<td>4.48%</td>
<td>N/A</td>
</tr>
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</table>

Table 1 - Overview of the price of the Value Added.

Intensive research

Interviews were held with the client, winning contractor and another contractor of three cases to be able to investigate consider the Value Added from different viewpoints.

There is friction between the two goals of the Value Added, as seen from the perspective from the contractor. Contractors often said the goal of Value Added is value creation. However, during the process of making the Value Added most contractors were focussed on winning the tender. This resulted in contractors preferring opportunities with a potential good score over opportunities which were potentially the best for the project, the client and/or contractor. Contractors were inclined to offer the opportunities which they expected to be appreciated by the client. Most of the offered opportunities were related to the context and environment of the project, while these were sometimes not the opportunities that the client was waiting for.
Savings are barely offered in the Value Added and the intensive research provides the following explanations for this. The contractor has a focus on extra value and is less concerned with how he can decrease the costs. When he cuts project costs, he will include this in his basic offer to gain a competitive advantage. Lastly, when it is not allowed to deviate from the demands, it is often not possible to offer cost saving opportunities, because these will not meet the demands.

**Conclusion**

The main research question of this thesis is formulated as follows: “What is the reasoning behind the current application of the Value Added in Best Value Procurement tenders in the Dutch infrastructure sector and how can this application be optimised?” Following from the findings of the intensive research two perspectives can be distinguished, based on the contractor’s and client’s main goal of the Value Added. These perspectives provide two viewpoints on aspects surrounding the Value Added and create insight in the reasoning behind the current application by client and contractor.

![Figure 2 – Two perspectives on the goal of the Value Added.](image)

**Perspective 1: selection**

In the first perspective, the goal of the Value Added is the selection of the best contractor for the project. In this perspective, the price of the Value Added is not most relevant, since implementation of the Value Added is not the goal. The contractor aims for a realistic price, which shows his expertise. It does not matter whether or not the client has budget available for the opportunities. The goal is achieved when the best contractor is found; implementation of the opportunities is considered a bonus. This can be illustrated with the following quote: “That (not buying opportunities) does not really matter to me, it has already fulfilled its role during the tender.” (Interview 9ii).

**Perspective 2: value creation**

In the second perspective the goal of the Value Added is to add extra value to the project. The price of the Value Added is preferably high, indicating that the contractor could add significant extras to the project. The purchase of opportunities is crucial in this perspective, because without a purchase the created value remains fictional. A deviation from the demands is preferred in perspective 2, because it would create more possibilities to add value to the project.

**Recommendations**

The client should be aware of what he wants to achieve with the Value Added and let this determine how he designs his tender procedure. When his primary goal of the Value Added is adding extra value to the project, it is not recommended to use the Value Added as a selection criteria. The motivation for the contractor to submit a Value Added will no longer be to gain a high score. His motivation goes back to the core of the Value Added: to add value to the project objectives and to enlarge the scope of his assignment. According to article 2.163 of the Dutch new procurement law (Dutch: Aanbestedingsreglement Werken 2016, ARW 2016), the maximum amount of scope changes of 10% do not include the options offered in the Value
Added. Therefore, the contractor has more options to enlarge the scope of the project when using the Value Added.

This recommendation should be combined with the following recommendation: the client must be allowed to buy opportunities from all submitted dossiers. This way, good opportunities are not lost and the contractor who did not win the tender can be rewarded for his ideas. It is important that the purchase of opportunities is done in consultation with the winning contractor and with the contractor who proposed the opportunity.

Lastly, it is recommended to allow contractors to deviate from the technical demands in the Value Added. This way the solution space of the Value Added increases, giving the contractor the possibility to show his expertise and to contribute valuable options to the project.
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<th>Definition</th>
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<tr>
<td>ARW</td>
<td>Aanbestedingsregelement Werken</td>
</tr>
<tr>
<td>BVP</td>
<td>Best Value Procurement</td>
</tr>
<tr>
<td>EMVI</td>
<td>Economisch Meest Voordelige Inschrijving</td>
</tr>
<tr>
<td>M</td>
<td>Million</td>
</tr>
<tr>
<td>PI</td>
<td>Performance Information</td>
</tr>
<tr>
<td>RA</td>
<td>Risk Assessment</td>
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PART 1

diagnosis

1. Research design
2. Literature study
1. Research Design

Introduction
In the first chapter of this thesis the research design is described. The chapter starts with a description of the context in which the subject of the research is situated. Next the problem which was the motivation for the research is described. Furthermore the research objective and research question are formulated. The scope of the research is defined, describing which facets are part of the research and which are not. The last and most important part of this research is the research approach, a methodologic description of the way the research will be conducted.
1.1. Context: The obligation to tender
Governmental bodies are the largest provider of work in the infrastructure sector. To fairly distribute this large amount of work over the market the Procurement Law is in force. This law implies that governmental bodies are not free to enter into a contract with whoever they wish. The Procurement Law is based on the following principles: equal treatment, non-discrimination, proportionality and transparency. In Procurement Law governmental bodies are called *contracting authorities*. The State, provincial authority, municipal authority, a water board, a body governed by public law or an association of these government bodies and bodies governed by public law are considered contracting authorities under the Procurement Law. Private entities may use a tender as well to select their partners, but they are not obligated to do so.

Governmental bodies are not obligated to use a European tender procedure for everything they procure. The threshold is based on the estimated value of the contract. Below the threshold the contract can be put out to tender in the domestic market. Above the upper threshold (European limits) the contract must be out to a European tender. See table 2 for the European thresholds.

<table>
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<th></th>
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<th>Concessions</th>
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<tr>
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Table 2 - Overview European thresholds 2016-2017 (Pianoo)

1.2. Context: Inducement for the growth of BVP in the Dutch construction industry
Traditional procurement methods - wherein the contractor is selected on the basis of the lowest price - paved the way for abuse in the construction sector (Duren & Dorée, 2008). A competitive relationship emerged between the client and the contractor, instead of a cooperative relationship. The focus the client placed on the lowest price forced the contractor to submit an unrealistic low offer. To be able to survive in this environment the contractor had to search for possibilities to earn extra money, in order to cover the low price (Duren & Dorée, 2008) (Nap, 2015).

This unhealthy situation escalated in 2002, when a large scale fraud in the Dutch construction industry was revealed. In what was called the ‘Construction Fraud’ (Dutch: Bouwfraude), large contractors in the Netherlands made price agreements to keep the prices of projects artificially high. This fraud case showed the necessity for a new procurement method. Clients and contractors desired a procurement method that would take quality into account, next to the price. This should stimulate the fairness and transparency in the sector.

In response to this situation, two procurement methods quickly gained popularity: Economically Most Advantageous Tender (EMAT) (Dutch: EMVI) and Best Value Procurement (BVP). These methods allowed a selection on the basis of other criteria next to the price. EMVI is a method in which criteria are determined on which the contractor is going to be selected. These criteria include quality or process aspects of the project. The criteria are translated into a fictive discount which, together with the bid, results in the fictive bid. The contractor with the lowest fictive bid wins the tender. The client can decide the ratio between the price and the other criteria, depending on what he wants to achieve in the project (Pianoo, 2017). BVP can be seen as a way of applying EMVI. The different files in a BVP tender are the criteria on which the fictive discount can be scored.

By focussing on the expert-contractor, BVP goes a step further than EMAT. Not only the best value for money is procured, but also the expert who is aware of the risks and opportunities for
the client an able to mitigate/ enhance these (Rijkswaterstaat, 2013). This should reduce the insecurities in the final price for the client (Hulzen, 2011).

The kick-start of BVP was the program Emergency Approach High Ways (Dutch: ‘Programma Spoedaanpak Wegen’) of Rijkswaterstaat (RWS), the Dutch national road agency. In 2009 Rijkswaterstaat had to complete 16 high way projects in an unusual fast planning. To reduce time during the tender procedure, they implemented BVP. The average tender process was reduced from 14 months to 4 – 6 months (Witteveen & Dorée, 2011). BVP had been applied in the Netherlands before, but never on this scale. It resulted in an enormous impulse for the use of BVP (van de Rijt & Santema, 2012).

1.3. Problem definition and knowledge gap
Existing research about Best Value Procurement focusses on the implementation of the method in the different phases, on the implications of the method on the risk management of the project and on the collection of dominant information by the contractors.

Little is known about the third dossier, the Value Added (Dutch: Kansendossier). This is remarkable, since the ability of the expert to foresee extra value in the project is one of the promises of Kashiwagi (2011). Rijkswaterstaat conducted a brief analysis focussed on of the statistics of the application of Value Added in the BVP projects of Rijkswaterstaat (Bosma, 2017). This research provided an indication of how the Value Added is applied in projects of Rijkswaterstaat. It did not give insight in the reasoning behind the numbers. Indeed, it provoked extra questions about the choices the client (in this case Rijkswaterstaat) and the contractors made in the Value Added.

For an optimal implementation of Best Value Procurement more insight is needed in the reasoning behind the Value Added. At this moment it is unclear if the promise Kashiwagi made - the expert is able to see possibilities to create extra value for the client (Kashiwagi, 2011) - is going to be fulfilled when the theory is applied in practice.

1.4. Research objective
The objective of this research is to give insight in the current use of the Value Added and to give valuable recommendations for an optimal application of the Value Added within the Dutch construction industry.
1.5. Main research question and sub-questions
The following question stands central in this research and will help to reach the research objective.

Research question:
What is the reasoning behind the current application of the Value Added in Best Value Procurement tenders in the Dutch infrastructure sector and how can this application be optimised?

Sub-questions will help to build up to an inclusive answer to the research question. The following questions will guide the research to the final results:

Sub-questions:
1. What is Best Value Procurement?
2. How is the Value Added embedded in the Best Value Procurement methodology?
3. How is BVP placed in the Dutch procurement context?
4. What is the value of infrastructure and how this perceived by the public client and by the contractor in the Dutch infrastructure sector?
5. What is the current use of the Value Added in the Dutch infrastructure sector?
6. Which factors influence the use of the Value Added by clients and by contractors?
7. Which recommendations can be given to optimise the application of the Value Added in the Dutch infrastructure sector?

1.6. Scope of research
This research is focussed on the application of the Value Added (part of BVP) in the Dutch infrastructure sector.

- The focus is on BVP because it is a promising procurement method which is gaining popularity in the Netherlands. The practical implications of applying the method in the Dutch context is not fully crystallised yet, resulting in a request from Witteveen+Bos to research this topic.
- The focus is on Value Added because although it is one of the core promises of the BVP methodology little is known about its applicability in practice.
- The focus is on the Netherlands because it is the most popular country in which BVP is applied outside its home country America (van de Rijt & Santema, 2013) (Kashiwagi, 2015).
- The focus is on the infrastructure sector because of the alignment with the master track CME and because sufficient projects in this sector are procured with BVP.
- This research is limited to the public clients (excluding private clients) because for public clients it is mandatory in most of the case to use the Procurement Law (Chao-Duivis et al., 2013).
- The focus is on the procurement of works (excluding services). The character of opportunities in a contract for works is different than in a contract for services. A comparison of both is outside the scope of this research.
- The categorisation of public clients by Koops et al. (2016) will be used in this research. This division is based on the perspective of the public clients towards the success of a project. This perspective determines the clients attitude towards the governance of a project since the way success is perceived is strongly linked with the (non)use of opportunities adding in a project (Boyd & Chinyio, 2006) (Koops et al., 2016). The categorisation by Koops et al. follows roughly the differentiation in public clients that can be made on the basis of which level they are governing (e.g. national, regional or municipal). Therefore this research does not limit itself to either the national, regional or the municipal clients. BVP is applied on all these levels and a comparison in the use of the Value Added will enrich the results.
The value the Value Added delivers to the project is outside the scope of this research. The objective is not to compare BVP with other tender procedures on how much value is achieved in the project.

1.7. Research approach and strategy
In figure 1 a summary of the research approach is given. Which sub-question (SQ) stands central in which phase of the research is visible in this scheme. The research exist out of four phases (diagnosis, analysis, synthesis and results) which will be described below. The core of the research strategy is a multiple case study. A case study enables the possibility the research a phenomenon in its context, providing a richer result than for example a self-contained interview (Yin, 2014).

![Figure 3 - Research Approach (own illustration)](image)

1.7.1. Diagnosis
In the first phase of the research a diagnosis of the current situation is made to discover where this research can contribute to best. This is done by a literature reviews and exploratory interviews held with professionals and experts on Best Value Procurement within and outside Witteveen+Bos. An understanding of the theoretic aspects surrounding the subject is necessary (Verschuren & Doorewaard, 2007). This will be achieved by conducting a literature study. Sub-questions 1, 2, 3 and 4 will stand central in the literature study.

1.7.2. Analysis
1.7.2.1. Multiple Case Study
According to Yin, a case study is valuable when the subject of the research is out of the control of the researcher (1994). This is the case in this research: the way the client and the contractor act cannot be controlled by the researcher. Therefore an experiment cannot be conducted, but the situation must be observed in its natural habitat. A case study is an ideal method to do so according to Baarda & Bakker, and will therefore by applied in this study (2010). It is crucial for an effective case study design to incorporate ‘the theory’ on the subject (Yin, 1994).

Yin describes two versions of a case study: the single and multiple case study (1994). A single case study is used when the case that is being reviewed is so rare and unique that it cannot be
repeated or that it is not ethically justified to repeat the situation (e.g. an accident). Another reason to choose the single case study is when the case represents a critical test to the existing theory. A multiple case study is used when a replication logic is expected. This can reveal support for the findings: when finding similar results in multiple cases they are believed to be more trustworthy (Yin, 1994). However, there is some discussion about the generalisation of the results of a relative small sample of cases. Swanborn says that the question remains if a set of cases can say something about non-investigated cases (2008). Flyvbjerg emphasized the importance and reliability of a ‘strong example’ should not be forgotten. Generalization is not the only tool the researcher possesses, and findings in one case may, because of the falsification method, have an impact on all the other cases (Flyvbjerg, 2006). The subject of this research, the application of the Value Added in a tender procedure is not unique. A replication logic can be expected and therefore the multiple case study is appropriate for this research.

1.7.2.2. Triangulation approach
Within the case study various methods of data gathering will be used: the so called triangulation approach (Baarda & Bakker, 2010) (Yin, 1994). The triangulation approach will make the findings of the study more reliable. It is made possible to verify the findings against each other. The data following out of the different methods will not be used to simply gather more data (supplementary) but to affirm the rest of the research (Yin, 1994). A method triangulation will be used to construct validity by combining extensive and intensive research in the analysis phase (Yin, 2014) (Swanborn, 2010).

1.7.2.3. Extensive research
The extensive research is to create external validity, i.e. the degree of generalisability of the results (Swanborn, 2010). The extensive research will use a document review of 14 tenders. Documents included in this research are: ‘Nota van Inlichtingen’, ‘tenderleidraad’ and the submitted Value Added. Goal of this part of the research is in twofold and will answer sub-question 5:

- to create a general image of the current use of the Value Added by collecting statistics,
- to give input for the interviews.

The advantage of document review is that it gives an unbiased impression of the case at the time it was put to tender, since the tender documents were used at the moment of tendering. Furthermore the researcher is able to get familiar with the cases without getting influenced and influencing the perspectives of the client or contractor (Yin, 2014). A pitfall of document review can be that documents are missing, leading to an incomplete impression. Generally speaking this should not be a problem, since the tender procedure is well documented due to legal requirements. However, access to all the bids (winning and losing) might be sensitive. To gain this access it is recommended to approach the case at the client side, since he is the only party who has access to all the bid documents. Assessing these documents must be done in consultation with the contractor in question.

The document review will results in a lot of data about the Value Added. This data is gathered in an excel format. The researcher is the only one with access to this format, because of the confidential nature of the data. To avoid that mistakes in the format cause a biased outcome control cells will be included.

1.7.2.4. Intensive research
The intensive research is to create internal validity, i.e. the degree to which the causal explanations can be trusted (Swanborn, 2010). In this part insight will be gained to interpreted the data from the extensive analysis, which will answer sub-question 6. On the basis of the results of the extensive research three cases will be selected for the intensive research. By selecting three cases it will be possible to dive deep into the context and analyse it thoroughly. At the same time validation options are provided by the other two cases. Interviews are the main
part of the intensive research. Conducting interviews enables the researcher to research the qualitative elements (in this case the reasoning behind the (non)use of the Value Added) (Yin, 2014). Interviews will be held with the key persons of the chosen tender projects. The client, the winning contractor and another competing contractor will be interviewed. By interviewing these parties a complete image of the situation can be drawn. Semi-structured interviews will be held, which makes it possible to reproduce the interview but also to deviate from the prepared script when the interviewee brings up an interesting topic.

1.7.2.5. Cross case analysis
A cross case analysis will be conducted to be able to generalize the findings from the single cases. The approach of Stake will be used to be able to find differences and commonalities in the cases (2013). Central in this approach stands the quintain: a central theme which is derived from the research question and will help answering the research question. Before performing the analysis the researcher is already familiar with the contents of the cases because she conducted and transcribed the interviews. Therefore she will have ideas about what might be of importance. The analysis is used to check these assumptions and provide a valid substantiation for them. The assumptions are formulated as ‘themes’. The transcript of each interview will be checked for statements that are related to the theme and whether or not the statements confirm the theme. A summary of the theme per interview will be written down as a background for the analysis. The interviews will be compared per theme, using the different characteristics of the interviewees as basis for the comparison. For example, the viewpoint of the client will be compared with the contractor and differentiation will be made between clients who have work experience at a contractor’s organisation and who have not. See the complete comparison in table 3.

<table>
<thead>
<tr>
<th>Comparison:</th>
<th>Client</th>
<th>Winning contractor</th>
<th>Other contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison:</td>
<td>National client</td>
<td>Provincial client</td>
<td>Municipal client</td>
</tr>
<tr>
<td>Comparison:</td>
<td>Client with experience at contractors side</td>
<td>Client with only client experience</td>
<td>Contractor with experience at clients side</td>
</tr>
<tr>
<td>Comparison</td>
<td>Experienced with BVP</td>
<td>Inexperienced with BVP</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 - Comparison of the interviews based on the characteristics of the interviewees.

To focus the research a selection of the most important themes will be made. The themes which occur most often in the interviews are regarded most relevant and will be validated in the validation meeting. To be sure no important information is missed by not selecting all the themes, the themes with a low utility (which appear in less than half of the interviews) will be tested. It is checked whether or not they contradict with the selected themes. After the validation meeting a similar check is done to see whether the validation meeting produced extra input for the low utility themes.

1.7.3. Synthesis
After the analysis phase the synthesis phase starts. In this phase recommendations will be given about the application of the Value Added, which will be the answer to sub-question 7. The recommendations are based on the findings of the case study. The recommendations will be discussed with Santema, van de Rijt and Witteveen - who are the official representatives of BVP in the Netherlands. Their reaction will be included in this thesis.

1.7.4. Results
A discussion will be written on the validity of the research, critically assessing the used method and findings. Finally a conclusion will be drawn and an answer will be given to the research question. The research might provoke new questions or might leave questions partly unanswered. This research has a limited time scope, interesting topics that arise during the
research period but do not fit within the scope will be addresses in the recommendations for further research.

1.8. Research relevance

1.8.1. Social relevance

Best Value Procurement is gaining popularity in the Netherlands and since the first application in 2009 more and more tenders are put to the market following the BVP methodology. When including the tenders that borrow elements from BVP – so the say hybrid BVP – the number of tenders is even higher. The popularity of BVP in the public domain has an impact beyond the project that is put to tender. Projects with large budgets and a significant impact to their context are tendered with BVP – meaning BVP has an influence on the users and other stakeholders of the project and on the Dutch taxpayers. Insight in how the method is applied and whether or not this can be optimised is therefore relevant for all these parties.

1.8.2. Scientific relevance

Research is performed into various elements of BVP but the Value Added – being one of the three main dossiers never has been thoroughly analysed. This research aims at providing a scientific basis for the application of the Value Added in practice.

Furthermore, this research contributes to existing research by applying and testing their findings in this specific context. The research into the impact of different perception on the collaboration between client and contractor in the construction industry (Boyd & Chinyio, 2008) and the role of the organisational culture (van Marrewijk et al., 2008; 2014) are examples of existing research that is used and applied in this thesis.
2. Literature study

Introduction
To be able to answer the research question the existing literature will be assessed. Sub-question 1, 2, 3 and 4 will be answered by conducting a literature study. The answers of these questions will focus on what the Best Value methodology is. This will focus on what the ‘founding father’ Kashiwagi envisioned with this method and how this is applied in the Dutch context by van de Rijt, Witteveen and Santema. In the light of the main research question, a critical assessment of the application of the method in the Dutch infrastructure sector is interesting. To be able to assess the method in a nuanced way, first the method should be explained - without any variants, criticisms or doubts of non-believers. How the method, and specifically the use of the Value Added, is translated into practice will be addressed in the answers of the other sub-questions, see figure 1.

The following sections answer sub-questions 1, 2, 3 and 4. This chapter ends with a provisional conclusion on the basis of the literature review.
2.1. SQ1: What is Best Value Procurement?

In this section a description will be given of Best Value Procurement since this method is at the core of this thesis. First a description of the American founder Kashiwagi will be given. Second, the method as it is applied in the Netherlands will be described.

2.1.1. The foundation of Best Value Procurement

Best Value Procurement (BVP) is developed by prof. Dean Kashiwagi from the Performance Based Studies Research Group of the Arizona State University. BVP is a procurement method aimed at selecting the best expert-vendor. This expert-vendor is selected on the basis of dominant information in order to avoid a subjective judgement. Dominant information is irrefutable, verifiable and accurate. The use of dominant information is rooted in the Information Measurement Theory (IMT) (Kashiwagi, 2002). This allows the client to select a vendor on a broader basis than the lowest price. BVP has been applied in various sectors: in the construction, engineering, medical and IT sector (PBSRG, 2016). BVP is a reaction on the inefficient practices in the construction industry which are induced by the price based environment (Kashiwagi et al., 2009).

According to Kashiwagi, an expert-contractor should be beneficial to the client and his project in three ways. First, an expert knows the best method to reach the goal of the client. Second, the expert does not have any risk inside his own sphere of influence and he acts proactive to control the risks occurring outside of his sphere of influence. Third, the expert is able to see possibilities to create extra value for the client (Kashiwagi, 2011).

The three characteristics of an expert-vendor are the basis for the three files the vendor has to submit with his bid, each with a maximum of two A4 papers. The first file is the Past Performance, which describes his relevant performances to prove that he is qualified. The second file is the Risk Assessment: to describe the risks of the project that are outside his sphere of influence and how he will control them. And thirdly the Value Added: wherein he proposes extra chances to enhance the project objectives besides the asked scope, to create extra value for the client. All the statements in the three files should be underpinned with dominant information. This is information that is irrefutable, verifiable and accurate. This makes it possible to objectively assess the different submissions. The judgement is based on the alignment of the statements with the project objectives (Kashiwagi et al., 2009).

Because BVP is focussed on the procurement of the ‘expert’, a change in the in the traditional attitude of the client and the vendor is required. The client should give space to the vendor to act as the expert. This implies a move away from the traditional Manage, Direct and Control attitude towards “quality control” conducted by the expert-vendor (Kashiwagi, Kashiwagi, Kashiwagi, & Sullivan, 2012). What this change implies is summarised in table 4.
This has implications for how the project should be put to tender: from a predefined and strictly outlined project towards the expression of the end goal (Kashiwagi, Parmar, & Savicky, 2004). When the client is putting a less predefined tender to the market the contractor has more possibilities to come up with a solution. Figure 4 shows how the solution space decreases when the number of demands (specifications of a project) increases.

**2.1.2. BVP adjusted to the Dutch context**

The American procedure as defined by Kashiwagi needs some adjustments to comply to the European and Dutch legislation (Leeuwen, 2011). When applying the Value Added in the context of the European Procurement Law the fundamental principles of the European treaty must be taken into account. These principles are: equal treatment, non-discrimination, proportionality and transparency (Chao-Duivis, Koning, & Ubink, 2013). Van de Rijt and Santema are the official representatives of the BVP methodology (Kashiwagi in (Rijt, 2013 #2)). Therefore, their description of the procedure of Best Value Procurement adjusted to the Dutch context, based on the work of Kashiwagi, is taken as guidance in this thesis.
BVP consists out of 4 phases, as can be seen in Figure 5. In the first phase ('preparation phase') the client defines his need and translates this into objectives. His objectives, the criteria on which the tender will be assessed and other details about the procedure will be published in the ‘leidraad’, a guiding and public document that accompanies the tender. In phase 2 the contractor writes a project proposal based on the available tender documents, submitting the Past Performance, the Risk Assessment and the Value Added. An interview is held with the key actors of the contractor to examine their level of expertise. The client chooses a contractor on the combination of the scores on the three files, the interview and the price. The files and the price are assessed separately. The client determines the weight of the price, the files and the interview in the selection. The interview and the Performance Information are often the largest selection criteria.

The contractor with the highest score will go to phase 3 ('pre-award phase'). This is the moment when the contractor should be in the lead and will explain in further detail how he has planned to realise the project. If the developed plans of the contractor are in line with the expectations of the client, the contract will be rewarded and phase 4 ('execution phase') can start. Although the P in BVP stands for Procurement, the change in attitude of the client and the contractor, as described in Table 4, does not stop after the procurement is finalised. It is also required in the execution phase (Rijt & Santema, 2013).

Van de Rijt & Santema argue that BVP is not a rigid method, but a tool to preserve and use the principles (no control, win-win, transparency) behind BVP. Therefore BVP is continually in a learning process, allowing for adjustments when confronted with new insights (Rijt et al., 2016). This learning process leads to the use hybrid variants besides ‘pure’ BVP tenders. These variants combine aspects of the BVP method, as described above, with other procurement methods.

2.1.2.1. Price ceiling
Quality is an important aspect in the selection process, but the price still plays a role. The client determines the price/quality ratio, which is often set at 25%/75%. BVP is often applied in combination with a price ceiling to create clarity about the price for the market parties. A price ceiling is the maximum price the client is willing to pay to get the project realised. Bids that exceed the price ceiling will be disqualified (VerniewingBouw, 2010). When a price ceiling is used it must be stated in the tender documents so it is known by all potential bidders (Leeuwen, 2011). An advantage of using a price ceiling is that only realistic bids will be placed. 
important when opportunities are offered in the Value Added, if the contractor has an indication of the available budget he will not offer opportunities that the client cannot buy (De Wilde & Witteveen, 2015).

The price ceiling is set by the client based on an estimation of the project costs. It can be hard to estimate the budget on beforehand. A price ceiling that is set too high or too low will have a negative impact on the project (Wang, 2002). A price ceiling that is set too high might cause the client to pay more than necessary because the contractor will have budget space available to claim an excessive profit (De Koning, 2014). A price ceiling that is set too low might lead to an abortive tender when the contractors are not able to offer a bid that is below the price ceiling.

Another risk is that the contractors will offer an unrealistic low bid which will force the winning contractor to cut on the quality during the execution (Wang, 2002). Clients might be resistant towards publishing their price ceiling, out of fear that the contractors will not be stimulated to offer a lower price (Rijt & Santema, 2013). According to de Wilde & Witteveen, this fear is not justified. They analysed 30 projects that were procured using BVP with a price ceiling. In 70% of the projects the winning contractor was the contractor with the lowest bid (De Wilde & Witteveen, 2015).
2.2. SQ 2: How is the Value Added embedded in the Best Value Procurement methodology?

In this section the purpose of the Value Added, its place in the whole BVP methodology and its practical applicability will be described.

2.2.1. The Value Added
Kashiwagi describes the purpose of the Added Value as follows: “To allow vendors to improve the value of the delivered project service without being penalized for additional cost.” (Kashiwagi, 2015) section 10-7) in (Rijt et al., 2016)

Crucial in the Value Added is the connection with the project goals (Kashiwagi et al., 2004) (Rijt et al., 2016). This means that the Value Added is not a random gift box but must add extra value to project goals as defined in the tender documents. An opportunity is not part of the scope of the project, without the use of the Value Added it should be possible to reach the project goals (Rijt et al., 2016). The substantiating of the Value Added is important. The extra value that is generated must be measurable and must be presented with dominant information. This means that the arguments must be irrefutable, verifiable and accurate. Using dominant information will make the proposal reliable for the client and provides the contractor with the opportunity to distinct himself, by getting a high score on the file, from the other competitors (Kashiwagi et al., 2009).

How does the change in paradigm as promoted by Kashiwagi (Kashiwagi et al., 2009) relates to the Value Added? The paradigm change demands a pro-active attitude of the expert-vendor and an awareness of his knowledge and expertise. This implies that the vendor should actively consolidate the opportunities of the project, he should think about what is ‘Best for Project’ instead of what is ‘best for me’. The client should give space to the vendor to use his expertise. He is not the one who is demanding what is going to happen. He should formulate clear and unambiguous objectives and at the same time create space for the expertise of the expert-vendor (Kashiwagi et al., 2009; Rijt et al., 2016).

The Value Added forces the contractor to consolidate the possibilities for extra value before the start of the project. As a rule, it can be set that the later that changes appear in a project, the costlier they are. See figure 6. This is caused by the interdependencies between the different elements of a project. Change in one element often implies change in the other as well. By consolidating the whole project at the start possibilities that otherwise might be accidentally found, can be involved in the process at an early start. This way expensive changes can be prevented.

![Figure 6 - Economic justification for change (van Leijten, 2016).](image-url)
2.2.2. An example: cup of coffee in the morning

To illustrate the Value Added an example of an opportunity will be given. Imagine client X whose wish is to have a nice cup of coffee every morning to start his day at his office. Client X asks three baristas in the neighbourhood if they can make a proposal to make him a cup of coffee every morning. The scope of his demand is a cup of coffee on every working day. The objective he wants to achieve with this question is a fresh start of his working day without any hassle. All the three baristas can make him a cup of coffee for a certain price. However, the barista’s have far more knowledge about the coffee than that client X does. They can come up with extra opportunities to deliver the coffee in such a way that his objectives are better fulfilled than what he thought of at the start.

Barista A proposes to make the coffee with an exclusive kind of coffee beans, which have a unique fresh taste. Barista B proposes to deliver the cup of coffee at the office of X, so he will save 10 minutes because he does not have to go to the kiosk. Barista C proposes to variate in making a cup of coffee with making a cup of tea a few times in the week.

Barista A does connect his proposal to the projects objectives, although it is up for discussion if a ‘fresh’ coffee taste is what the client aimed for when asking for a ‘fresh’ start of his day. For client X it was important to have be able to start his day without any hassle. The proposal of barista B enhances this objective: the coffee can be delivered to his office, saving client X time every morning. Barista C implies with his proposal that he is not always going to deliver the scope of the client: he is changing the coffee for a tea every once in a while. The offer of barista B is the best example of an offered opportunity according to the Best Value methodology. See table 5 for an overview of the example.

<table>
<thead>
<tr>
<th></th>
<th>Barista A</th>
<th>Barista B</th>
<th>Barista C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price of cup of coffee</td>
<td>€ 2.25</td>
<td>€ 2.50</td>
<td>€ 2.00</td>
</tr>
<tr>
<td>Proposed Value Added</td>
<td>Exclusive beans with a fresh taste</td>
<td>Delivery of the coffee to the office</td>
<td>Variation of coffee and tea</td>
</tr>
<tr>
<td>Price of Value Added</td>
<td>€ 0.75</td>
<td>€ 1.00</td>
<td>€ 0.00</td>
</tr>
<tr>
<td>Alignment with objective - with dominant information</td>
<td>~</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>

Table 5 - Three offers to make a cup of coffee every morning.

2.2.3. Submission of the Value Added

Van de Rijt et al. aim at providing practical tools to implement the Best Value ideas in order to reduce the transaction costs (Rijt et al., 2016). In their book ‘Best Value Stroomt’ they provide standardised work sheets for the different files, including the Value Added. The content and structure of the Value Added is as follows. On maximum of two A4 pages the contractor has to:
- Give a priorisation of the opportunities
- Name the opportunity
- Give the price of the opportunity (can be positive and negative)
- Explain the connection of the opportunity with the project goals
- Substantiate (the connection with project goals and the effectivity of the opportunity) with dominant information
- Give the impact of the opportunity on the price, time and quality

Besides opportunities that add extra value to the project it is possible to submit opportunities that offer a cost saving for the client (De Wilde & Witteveen, 2015). It can be that the savings
imply a lower initial price or that they require an initial investment but will save costs during the life time of a project.

### 2.2.4. Assessment of the Value Added

Although the Value Added can consist out of various opportunities, it is assessed integrally. This means that the whole dossier receives one mark. The jury should judge the dossier on the following:

- Connection with the project goals as mentioned in the guiding documents based on dominant information.
- The value of the opportunity based on dominant information (irrefutable, verifiable and accurate)

As mentioned before, all the statements made in a BVP tender bid must be substantiated with dominant information. The argumentation must be formulated as SMART as possible (Rijt et al., 2016). (SMART = Specific, Measurable, Ambitious, Realistic and Time specific.) Underpinning with dominant information is a strict demand in the assessment of the Value Added: an offered opportunity which is not underpinned with dominant information should receive a low (6) score. The Value Added will be declared invalid if the proposed opportunities are necessary in achieving the project goals. Only opportunities which are not part of the project scope should be submitted. Therefore, the question of demand of the client must be clear, since an unclear question (i.e. ambiguous scope definition) may lead to disqualification of the bid. That a bid can be disqualified is a relative new insight. Before 2016 a grade of a 4 or 2 was given for an insufficient file, although this was a rare occasion (Rijt et al., 2016).

<table>
<thead>
<tr>
<th>Grade</th>
<th>Appreciation</th>
<th>% of maximum quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 (out of 10)</td>
<td>Excellent - good</td>
<td>100</td>
</tr>
<tr>
<td>8</td>
<td>Good - Sufficient</td>
<td>50</td>
</tr>
<tr>
<td>6</td>
<td>Insufficient / unclear</td>
<td>0</td>
</tr>
<tr>
<td>Insufficient</td>
<td>Value Added shows that the project goal cannot be met</td>
<td>invalid</td>
</tr>
</tbody>
</table>

Table 6 - Grading of the Value Added (v.d. Rijt, J. et al., 2018).

Differences between clients in their organisational culture lead to different values that are considered important (van Marrewijk, Veenswijk, & Clegg, 2014). The perception of the situation influences the way people act and make decisions (Heirs & Pehrson, 1982). The perception is influenced by previous experiences, expectations, values and attitudes (Boyd & Kerr, 1998). Since different assessors have different experiences, expectations, values and attitudes it is expected that their perception of what is offered in the value added is different as well. With other words, the personal background of the jury members might influence how they will judge the files. Experience from practice shows that different clients put a different emphasis on the various aspects related to the assessment of the Value Added (Houwing, 2016). These aspects are for example the price of the offered opportunities, the connection to the project objectives and the feasibility as is foreseen by the client.

According to Volker, the decisions associated with the selection of a suitable partner in the Dutch tendering context fits with two contrasting theories on decision making (Volker, 2010). The first theory is the rational decision model. This model assumes that a decision is made rationally: when all information is known a balanced decision can be taken for the best alternative. This is a fitting theory because a decision can be considered rational when the situation in which the decision is taken is clear (Simon, 1997). This is the case in a tender procedure because due to
the legal context the selection criteria are known on beforehand and the different submissions can be seen as alternatives out of which one must be selected.

However, research pointed out that the ability of decision makers to assess rationally is limited (Simon, 1997). This leads to the second theory on decision making that is applicable in this context: the naturalistic decision model. This theory is concerned with the effect of the experiences the decision maker has on the decision he takes. This includes the effect of intuition and emotions (Beach & Connolly, 2005). This theory is contrasting to the first one because it disagrees on the idea of a rational decision and proposes that decisions are made based on pattern matching, story construction and situation awareness (Lipshitz, et al., 2006). This is contradicting to the aim of Kashiwagi – who aims for an objective assessment with the BVP methodology.

The rational decision theory deals with how individuals take decisions. In this context the decision is not made in isolation by one individual since the tender takes place within the public client’s organisation. Several stakeholders who are not part of jury want to influence the outcome of the decision (Volker, 2010).

2.2.5. Legal implications of the Value Added
When applying the Value Added in the context of the European Procurement Law the fundamental principles of the European treaty must be considered. These principles are: equal treatment, non-discrimination, proportionality and transparency (Chao-Duivis et al., 2013). For the use of the Value Added this implies that the assessments frameworks must be clear, objective and unambiguous (Rijt et al., 2016) (Chao-Duivis et al., 2013). Furthermore, it must be clear from the start for all bidding contractors that variants in the scope (by using the Value Added) are allowed (Leeuwen, 2011).

In article 2.163 of the new procurement law (Dutch: Aanbestedingsregelement Werken 2016, ARW 2016) the maximum of changes in the scope of the contract is set at 10% of the price of the original scope. The changes that are proposed in the Value Added are not part of this 10%. This makes it possible to enlarge the scope of the work. When opportunities are bought in the beginning of the project there will be space left for changes later in the project.

2.2.6. Procurement of innovation
Procurement is aimed at selecting the contractor who can fulfil the project goals of the client. According to Edler & Georghiou, innovative solutions can contribute to the achievement of these goals. Procurement has a substantial influence on the innovation in the construction sector. It can either stimulate or discourage innovation (Kumaraswamy & Dulaimi, 2001). Discouraging factors are amongst others a focus on the lowest bid and opportunistic and self-protective behaviour. Since BVP is a reaction on a procurement environment focussed on these factors it is interesting to regard the potential role BVP can play in the procurement of innovation.

Various authors regard the important role the public construction client (can) play in the stimulation of innovation in the construction industry (Blayse & Manley, 2004; Ivory, 2005) (Nam & Tatum, 1997). According to Blayse and Manley, the client can play this role because he can exert pressure on the other actors related to the project (such as the contractors and the advisors) to get the best out of the project. The more experienced an technical competent the client is himself, the more likely it is that he will stimulate innovation (Blayse & Manley, 2004). Ivory emphasises the dependence of the contractor on the client when it comes to innovation. When the client is not supporting innovation it is less likely to happen, despetes the innovative ideas of the contractor (Ivory, 2005).
2.3. SQ3: How is BVP placed in the Dutch procurement context?

2.3.1. Introduction
To understand the landscape in which BVP is situated, this context will be described in the following section. The following aspects will be considered:

- Which procurement procedures can be followed
- Which criteria can be used to select a contractor
- Type of contracts, considering 1) the division of the responsibilities between client and contractor and 2) the level of specification of the work at the moment of tendering.
- Strategic considerations of a client in the selection of a procurement procedure, criteria and type of contract.

2.3.2. Which tender procedures are available?
Various tender procedures are available, depending on the character of the contract. The main difference is the amount of contact allowed during the procedure and the options to limit the amount of tenderers.

1. Open procedure
2. Restricted procedure
3. Competitive dialogue
4. Negotiated procedure with prior publication of a contract notice
5. Negotiated procedure without prior publication of a contract notice
6. Concession procedure
7. Framework agreement
8. Design contest

In the open procedure everybody who meets the selection criteria is allowed to apply. The tenderer and his bid are assessed at the same time. The advantage of the open procedure is that nobody is prematurely excluded from the process. In the restricted procedure a preselection is used to first select suitable parties, only the bids of these selected parties will be assessed. The advantage of the restricted procedure is that the transaction costs can be lower because the number of bids that are assessed are lower. In practice the open and the restricted procedure are the most used options.

The competitive dialogue was only allowed in particularly complex contracts. Complexity means in this case that the contracting authority is not able to objectively specify the technical means needed to fulfil their needs or to specify the legal or financial structure of the project (APUC, 2009). The competitive dialogue requires more investment (in time and money) than the open and restricted procedure. In the new procurement law (Dutch: Aanbestedingsregelement Werken 2016, ARW 2016) the use of the competitive dialogue is also allowed for projects with a design or innovation element.

The other options are either restricted in their use (4 and 5) or not relevant considering the nature of the project in this research (6 and 7) and therefore not further discussed here.

2.3.3. Which procedure suits the Best Value Procurement best?
Best Value Procurement is applied with both the open and the restricted procedures. The advantage of the open procedure is that parties are not excluded from the process to early. This increases the chance that a ‘better’ expert is found in an unexpected corner. The restricted procedure saves transaction costs which might also be an important consideration (van de Rijt & Santema, 2013).
Van Leeuwen (2011) describes the implications of the European legislation on the application of BVP. In her paper she states that the competitive dialogue is most suitable for BVP, because it provides more possibilities for a dialogue compared to the open and the restricted procedure. However, she points out that the dialogue in a BVP process is only conducted with the pre-awarded bidder (Dutch: voorlopige gunning) and not with all the bidders. The reason behind this is the reduction of transaction costs (Leeuwen, 2011).

2.3.4. Award criteria
Award criteria are invented to make it possible to award a contract in a transparent way. The criteria are the same for each bidder and known on beforehand. The following award criteria are allowed in the ‘ARW 2016’:

- Best price/quality ratio
- Lowest price
- Lowest costs (cost efficiency considering life cycle costs)

Each award criterion has its own advantages and it depends on the situation of the project which criteria should be chosen. They will be described briefly hereafter.

2.3.4.1. ‘Best Price/Quality Ratio’
Following the ARW 2016 ‘Best Price/Quality Ratio’ criterion must be used, unless there is a solid justification for doing otherwise. Selecting on the basis of this criterion allows for extra quality in a project. Above a minimum quality demand the bidders can score extra on certain quality or performance wishes of the client. These wishes can relate to the Iron Triangle (time, budget, quality) but also to other aspects like sustainability and minimal hindrance of the environment. Which criteria are used depends on the preferences of the client but they must be objective, transparent and proportional. BVP can only be applied using best price/quality ratio since the Performance Information, Risk Assessment, Value Added and the interviews needs to be scored in a criterion. Lowest price and lowest costs do not offer that option.

According to Pianoo, ‘Best Price/Quality Ratio’ can lead to various advantages: to more innovative solutions, shorter duration of a project, lower maintenance costs, less hindrance of the neighbourhood of the project, more functionalities of the project and higher sustainability levels. Using the ‘Best Price/Quality Ratio’ criterion leads to higher transaction cost for both the client and the contractor than when the ‘lowest price’ criterion is applied (Pianoo, 2017).

2.3.4.2. Lowest Price
When the ‘Lowest Price’ criterion is used the contract will be awarded to the contractor with the lowest bid. The client sets minimum quality demands, and only the contractors who meet this demand are considered in the tender.

The advantage of using ‘Lowest Price’ is the easiness of applying. This award criterion can be just objectively and therefore the chances on disputes are lower. The downside of this criterion is that is does not stimulate innovative solutions, since offering more quality than the minimum demand is not rewarded when this criterion is used. ‘Lowest Price’ is best applied in situations in which a differentiation in quality by the contractors is not expected, the project is elaborated on a detailed level very detailed, the higher transaction costs of ‘Best Price/Quality Ratio’ are disproportional compared to the extra value created or when it concerns the procurement of commodities.

2.3.4.3. Lowest Costs
The ‘Lowest Costs’ considers the price of the bid combined with the cost of the lifetime of a project. Maintenance costs are an example of the life cycle costs that can be included in the bid. By using the ‘Lowest Costs’ the client can reward the contract to contractors considering the durability of an object.
Different contract types: specification of a project at the moment of tendering

When making the decision of how to put a project to tender, various characteristics of the client, the market and the project must be considered. One aspect is the level of detail that is known by the client at the moment of tendering. This determines how the responsibilities between client and contractor are divided. This is related to the type of contracts, after all, in a contract the agreements between client and contractor are written down.

Construction contracts can be divided into 3 main categories: traditional, integrated and life cycle, see figure 7. These categories are divided based on how the responsibility of the project in each phase is divided.

In the traditional contract the client maintains a lot of control over the project. The hand over to the contractor is only done when the whole project is designed and engineered. This type of project combines best with the 'Lowest Price' reward criterion. It is chosen when for example the client has a lot of technical expertise or when he knows exactly what he wants. Furthermore, it is applied when a common method is suitable since it is less likely to procure an innovative concept or a new technique.

An integrated contract transfers more responsibilities to the contractor, the hand over from client to contractor is after the definition phase. The client gives a functional specification and the contractor will design and construct the project. It is chosen when the client does not have the technical experience himself or when it is unclear at the moment of tendering what the best solution is to achieve the project goals. The advantage of this type of contract is that the design and construction phases are both the responsibility of the same party. It is likely to lead to a more effective design when the construction method is already considered in the design phase. In the last category, the life cycle contracts, the contract does not end when the project is delivered, but the contractor will be responsible for the whole life cycle of the project. This includes for example the maintenance and operations. The advantage is comparable to the integrated contract type, it leads to a long-term mind set instead of a quick gain mind-set. By making the contractor responsible for various phases he will consider the maintenance of a project already in the design phase.

Within each category various variant can be found, making it possible to adjust to project specific characteristics. For example, an integrated contract variant is the Design & Construct, in which the contractor is responsible for the whole design process of the project. In the variant Engineer & Construct, the preliminary design is conducted by the client (or his advisors) and the contractor is responsible for the engineering of the definitive design.

BVP fits best with the integrated or life cycle contracts since functional specification is one of the cornerstones of BVP. This means that the design is not worked out by the client but by the contractor, see the responsibility division in figure 8.
2. Literature study

<table>
<thead>
<tr>
<th>Construction phase</th>
<th>Traditional</th>
<th>RAW</th>
<th>Construction team</th>
<th>Engineering &amp; Construct</th>
<th>Design &amp; Construct</th>
<th>Turnkey</th>
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Figure 7 - The division of responsibility between client and contractor in various contract types. (UAV-gc 2005)

<table>
<thead>
<tr>
<th>Turnkey management contracting</th>
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<tbody>
<tr>
<td>Design and build service</td>
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<td>Traditional methods with partial specification</td>
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<td>Traditional methods</td>
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Figure 8 - The division of design responsibilities between client and contractor (Skitmore & Marsden, 1988).

2.3.5. Strategic routes to choose a procurement method

When making the decision of how to put a project to tender, various characteristics of the client, the market and the project must be considered. The following aspects needs to be considered at the start of defining a procurement strategy according to van Leijten (2016):

- Definition of what is needed and when
- Definition of type of contractor that fits with the project profile
- Type of relationship that is preferred (long-term or short-term)
- Definition of the associated risks of the project
- Relationship and agreements between the client and contractor. This includes the scope, terms and conditions, remuneration and control.
The same aspects are used by Alhazmi and McCaffer, who created an overview of all these relevant aspects that need to be taken into account (Alhazmi & McCaffer, 2000). They considered the project characteristics, client characteristics, local construction regulations, contractor needs and market attributes. By means of an elaborated process the aspects are scored on four types of need of the client: cost, time, quality and general needs. In the process scores are assigned to the six axes. These scores are weighted in a multi criteria analysis which leads up to the preferred method.

Skitmore & Marsden developed a model to help clients choose the right procurement method. They considered the following seven aspects in their model: speed, certainty, flexibility, quality level, complexity, risk avoidance & responsibility and price competition, see figure 9. By means of a questionnaire the client prioritizes how important the seven aspects are in his project. For example, when the price competition is most important, this model will point towards the competitive traditional method which is rewarded on the criterion ‘Lowest Price’ (Skitmore & Marsden, 1988).

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<td>Speed</td>
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*Figure 9 - Method of scoring utility factors. (Skitmore & Marsden, 1988)*

**Legend of contract types (Skitmore & Marsden, 1988)**

**Traditional contracts**
- A) Negotiated traditional
- B) Competitive traditional

**Integrated contracts**
- C) Develop and contract
- D) Negotiated design and build
- E) Competitive design and build
- F) Management contracting
- G) Turnkey contracting
The most used contract type that is applied in combination with BVP in the Dutch construction is Design & Construct (D&C) (Witteveen, 2014). When reviewing this type of contract (D and E) in the model of Skitmore and Marsden, three aspects obtain a high score: speed, certainty and risk avoidance and responsibility, see figure 10. Speed is ranked high when early completion is an important aspect for the success of the project. Certainty is ranked high when certainty in price and completion date is required. Risk avoidance and responsibility is ranked high when a transfer of risks from client to contractor is desirable. This is in line with the goals of BVP. Early completion can be reached by shortening the procurement phase (For example in the Spoedaanpak projects). Certainty can be achieved by setting a price ceiling and by closely monitoring differentiations on time and budget in the Weekly Reports. And risk avoidance is connected to the Risk file. D&C can score high and low on price competition, depending on how the competition is organised in the project. In a BVP tender the ratio between price and quality determines the price competition. Lower scores are received on the following three aspects: flexibility, quality and complexity. Flexibility is in this model considered as the space needed for changes during the realisation phase. Quality is in this model the level of quality that is desired by the client. Complexity is ranked high when highly specialized and advanced techniques are required for the project. D&C contracts score average on the complexity aspect. When considering BVP in this aspect it is important to realize what the difference is between complexity and complicacy. Complex situations are situations consisting out of a lot of unpredictable connections. Complicated situations are situations consisting out of a lot of connections, which can be understood by an expert (De Ridder, 2016). An example of a complicated situation is a Swiss watch, which has a lot of interrelated elements. For a lay-man it is very hard to understand, but an expert can understand the system. According to Robbe, BVP works best in complicated projects, since it is expected that the expert knows how to tackle the problem (Robbe, 2012).

Besides D&C, other integrated contracts suits BVP as well. This can be seen when the full range of integrated contracts (C – G) is compared with the D&C contracts (D and E) in figure 9.
2.4. SQ4: What is the added value of infrastructure and how is this perceived by the public client and by the contractor in the Dutch infrastructure sector?

2.4.1. Introduction
When considering what value the contractor can add to an infrastructure project, it is important to first assess what the value is of the infrastructure project itself. Value is a subjective notion and therefore the perception of value from involved parties is important to take into account. This section deals with those questions. First, a definition of value in relation to infrastructure will be given. Furthermore the importance of how value is perceived will be described, followed by the perspective used by both the client and the contractor. Lastly, a comparison of the two points of view will be given.

2.4.2. What is the value of infrastructure projects?
Value has different definitions Merriam Webster gives the following:

a) “a fair return or equivalent in goods, services, or money for something exchanged”
b) “the monetary worth of something”
c) “a numerical quantity that is assigned or is determined by calculation or measurement”
d) “relative worth, utility, or importance”

In the context of infrastructure projects and BVP all these definitions are relevant. Firstly (a), BVP is aimed at a healthy collaboration between client and contractor. One where the contractor receives a fair price in exchange for his works or services for the client (Kashiwagi et al., 2009). Secondly (b, c), the value of an infrastructure project can be expressed in its monetary worth. This is done by a Cost and Benefit Analysis (CBA) (Eijgenraam, Koopmans, Tang, & Verster, 2000). Thirdly (d), the value of infrastructure projects is dependent on who’s viewpoint you are considering because different perceptions affect the relative worth of a project (Heirs & Pehrson, 1982).

2.4.2.1. Value – the monetary worth of infrastructure
The societal value of an infrastructure project can be expressed in terms of money. A Cost and Benefit Analysis (CBA) is a useful tool for this. A CBA systematically maps the cost and benefits inherent to a project, on three different effects: direct effects, indirect effects and external effects (Eijgenraam et al., 2000). These effects can be positive or negative, the sum of all the effects result in a (positive or negative) ratio. This ratio gives insight in the financial feasibility of a project. The results of a CBA are not completely objective. Since the analysis is performed on a future situation, assumptions must be made about how the future will evolve. These assumptions can influence the end ratio greatly. Therefore, a lot of discussion surrounds the valuation of infrastructure (Mouter, 2016; Mouter, Annema, & Wee, 2013). It is not within the scope of this research to validate the monetary worth of infrastructure.

CBA is mainly used as a tool to assist decision makers in deciding if a project should be initiated (Priemus, Flyvbjerg, & van Wee, 2008). This decision is made before a project is put out to tender. However, in the light of this research it is interesting to know how the client deals with the CBA. It gives an indication of how the benefits of the infrastructure project are valued. This might give insight in the reasoning of a to buy opportunities out of the Value Added. Van de Rijt et al. prescribe that the contractor should underpin each option in the Value Added with a mini CBA (2016).
2.4.2.2. Value – the relative worth of infrastructure

Investopedia defines ‘value added’ as follows: “the difference between the price of product or service and the cost of producing it. The price is determined by what customers are willing to pay based on their perceived value.” (n.d.) Interesting in this definition is the notion that value of a product or service is depended on how it is perceived. This complies with the last (d) definition of value by Merriam-Webster. Therefore, it is relevant to examine how the value of infrastructure is perceived by the client and by the contractor.

2.4.3. Different perception of value

Boyd & Chinyio say that the way the client and the contractor perceive the world around them is fundamentally different (Boyd & Chinyio, 2008). This different perception is described by Boyd & Chinyio in the model of the perceptual gap (see figure 11). The orientation of the two actors is different: the client is orientated outward to the environment. He needs the end results of the project for his daily businesses and to fulfil its (political) responsibilities. The contractor (in the work of Boyd & Chinyio the industry) is orientated inward to the project and concerned with the design and the construction. He needs the project for the profit, to keep his company vital. These differences result in a different perception of what is success in a project by the client and the contractor.

![Figure 11 - Model of the perceptual gap between clients and the construction industry (Boyd & Chinyio, 2008).](image)

2.4.4. How is the value of infrastructure perceived by the client?

To understand the client’s perception of value it is necessary to first understand who the Dutch public client is and from which viewpoint he approaches the project. In the Best Value methodology the expertise of the contractor stand central, assuming a certain level of inexperience of the client (Kashiwagi et al., 2009). The classification made by Masterman & Gameson takes the (in) experience of the client into account. Their classification is based on the following criteria:

1) their level of experience in the construction industry,
2) whether their main source of income is derived from the construction project (primary) or not (secondary) (Masterman & Gameson, 1994).

In the light of this research, only the secondary clients are relevant. The infrastructure projects are not the main business and primary source of income of public authorities (Boyd & Chinyio, 2008). It is interesting to consider the difference between experienced and unexperienced clients, since this seems to clash with the BVP reasoning that the client is a lay-man.

Besides their experience with construction projects, the objective the client aims to achieve with the project and his perception of when this is achieved is relevant. The level of achieving the project objectives determines how successful a project is, and thus the value of the project.
Success and value are however subjective terms: if a project is considered successful depends on which perspective is taken (Koops et al., 2015). Since the Value Added is supposed to be an enrichment of the project objectives, it is interesting to know how project success is determined. The criteria for success are the measures by which projects can be judged in terms of failure or success (Cooke-Davies, 2002).

Koops et al. identified how public project managers perceive project success (2016). This resulted in the following classification:

- Conventional project manager – focus on the safety and Iron Triangle
- Product driven manager – focus on end result of a project
- Parent oriented manager – focus on the effect of the project on the parent organisation
- Focus on stakeholders – focus on Iron Triangle and stakeholders

The criteria mentioned in this research (see table 7) are broader than the success criteria mentioned most often by Kashiwagi (time, budget, quality, client satisfactory) (Kashiwagi & Byfield, 2002). The criteria mentioned by Kashiwagi are apparently not the only criteria determining how project success is perceived by Dutch public clients. (Koops et al., 2016; Wit, 1988). According to Bryde & Robinson, there can be a mismatch in what is said to be an important success criteria and on which aspects is the project management is controlled (2005).

The example that is given from the client perspective is the importance that is assigned to the satisfaction of stakeholders which is not always followed up in the project management practice (Bryde & Robinson, 2005).

<table>
<thead>
<tr>
<th>Success criteria</th>
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<tr>
<td>Delivered on time</td>
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<tr>
<td>Quality</td>
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<tr>
<td>Within budget</td>
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<td>Right process is followed</td>
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<td>Safety</td>
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<tr>
<td>Efficient use of available resources</td>
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<td>Fit for purpose</td>
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<td>Effect on the professional image of client organization</td>
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<td>Continuation of client organisation</td>
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<td>Learning opportunities for client organisation</td>
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<td>Personal growth and development</td>
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<td>Satisfies needs of project team</td>
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<td>Satisfies needs of stakeholders</td>
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<td>Satisfies needs of users</td>
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<td>Satisfies needs of shareholders</td>
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<td>Impact on the environment / sustainability</td>
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<tr>
<td>Project specific political or social factors</td>
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<tr>
<td>Profitability for contractor</td>
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Table 7 - Success criteria from a public client perspective (L. Koops et al., 2016).

One thing must be noted when using these success criteria. These success criteria result from a research considering the perspective of public client project managers. The client is until now simplified as one actor: ‘the client’. But the client is an organisation with different actors within the organisation. The person who initiated the project might be somebody else then the one who assessed the different bids during the tender procedure and might be somebody else than the one who is eventually guiding the project as a project manager. Although the client’s organisation as a whole might have a certain identity and associated interests, the individuals within the organisation have interests and believes as well, which can result in different outings of one
organisation (van Marrewijk et al., 2014). This does not only apply to the client’s organisation but to the contractor’s organisation as well.

2.4.5. How is value of infrastructure perceived by the contractor?
The contractor uses other success criteria than the client (Bryde & Robinson, 2005). The contractor puts a stronger emphasis on minimizing project duration and costs. Which success criteria are considered important depends on the maturity of the project (Shenhar, Levy, & Dvir, 1997). Four success dimensions are identified by Shenhar et al., see table 8.

<table>
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<tr>
<th>Dimension</th>
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</tr>
<tr>
<td>Impact on the customer</td>
<td>Meeting performance requirements</td>
</tr>
<tr>
<td></td>
<td>Meeting technical specifications</td>
</tr>
<tr>
<td></td>
<td>Client’s satisfaction</td>
</tr>
<tr>
<td>Business success</td>
<td>Gained revenue</td>
</tr>
<tr>
<td></td>
<td>Profits</td>
</tr>
<tr>
<td></td>
<td>Gained market share</td>
</tr>
<tr>
<td>Preparing for the future</td>
<td>Preparedness for future opportunities</td>
</tr>
</tbody>
</table>

Table 8 - Four dimension of success from the viewpoint of the contractor (Shenhar et al., 1997).

Each dimension has a relative importance depended on which moment in time it is assessed, see figure 12. This does not imply that the second till fourth dimension are not important at the start of the project, it is simply hard to measure these at that time (Pinto & Slevin, 1988). When no data is available it is harder to control the project on these aspects. Therefore, it is assumed that the time depended importance of the success criteria give an indication of the role the criteria play during the tender and execution phase of the project.

![Figure 12 - The relative importance of the success dimensions in time (Shenhar et al., 1997).](image-url)
2.4.6. Comparison of the success criteria from a contractor and client point of view

When comparing the success criteria from a contractor’s point of view (table 8) to the success criteria from a client’s point of view (table 7), a few differences are worth mentioning. Firstly, it is remarkable that only the satisfaction of the client is emphasised. The satisfaction of the end users, shareholders and stakeholders is not specifically mentioned in the success criteria of the contractor. This could indicate that the contractor does not consider this as his responsibility. Secondly, the role the project plays for future opportunities plays a less significant role in the client’s success criteria than in the contractor’s success criteria. It is embodied in the criteria “effect on the professional image of client organisation” and “continuation of client organisation”. However, the research of Koops et al. showed that these criteria are valued important by the Dutch public project managers. The contractor’s organisation however is depended for his future existence on what projects he can acquire in the future. The public client is not subject to these market forces. Lastly, an interesting point are the criteria “meeting performance requirements” and “meeting technical specifications” on the contractor’s side. Which requirements and specifications must be met by the contractor? Are these the one which are demanded by the client (which does not align with the BVP thought that the client is the layman) or are these envisioned by the contractor himself? On the client’s side the criterion “fit for purpose” is used. This relates to the criteria “meeting performance requirements” and “meeting technical specifications” but is different on a crucial point. Performance requirements and technical specifications can be determined at the start of the project, while the purpose of a project (and thus if a project is “fit for purpose”) can change in time.
2.5. Conclusions literature study

The following sub-questions formed the basis for the literature study conducted in this chapter:

1. What is Best Value Procurement?
2. How is the Value Added embedded in the Best Value Procurement methodology?
3. How is BVP placed in the Dutch procurement context?
4. What is the value of infrastructure and how this perceived by the public client and by the contractor in the Dutch infrastructure sector?

A comprehensive answer on these questions can be given, since these are descriptive questions, explaining an existing method (Baarda et al., 2015). These answers are summarised below.

2.5.1. SQ1: What is Best Value Procurement?
Best Value Procurement (BVP) is a method aimed at solving the inefficient practice of the construction industry. It is not solely a procurement method, as the name might suggest, but a method that evokes a paradigm change in the industry and especially a new form of cooperation between client and vendor. BVP is based on the idea that with all information available, the selection of the contractor can be made objectively. Another core concept is that the vendor who is selected using BVP is the expert-vendor who

- knows the best method to reach the goal of the client;
- does not have risks inside his own sphere of influence and will act pro-active to control the risks outside his own sphere of influence;
- can see opportunities to create extra value for the client.

2.5.2. SQ2: How is the Value Added embedded in the BVP methodology?
The Value Added is a file in which the bidder proposes opportunities for enhancing the project’s objectives, outside the scope of the project. The aim of the Value Added is to make optimal use of the expertise of the vendor in enhancing the project objectives. Two things are crucial in the use of the Value Added:

- the offered opportunities must be aligned with the project objectives and should not randomly add extra features to the project;
- the offered opportunities must be underpinned with dominant information, to allow for an objective judgement.

2.5.3. SQ 3: How is BVP placed in the Dutch procurement context?

2.5.3.1. Procurement procedure
Eight different procurement procedures are available according to the Procurement Law. Best Value Procurement is applied with both the open and the restricted procedures. The advantage of the open procedure is that parties are not excluded from the process to early. This increases the chance that a ‘better’ expert is found in an unexpected corner. The restricted procedure saves transaction costs which is a claim of the BVP method as well (van de Rijt & Santema, 2013).

Van Leeuwen (2011) describes the implications of the European legislation on the application of BVP. In her paper she states that the competitive dialogue is most suitable for BVP, because it provides more possibilities for a dialogue compared to the open and the restricted procedure. However, she points out that the dialogue in a BVP process is only conducted with the pre-awarded bidder (Dutch: voorlopige gunning) and not with all the bidders. The reason behind this is the reduction of transaction costs (Leeuwen, 2011).
2.5.3.2. Award criteria

Three award criteria are available according to the Procurement Law: best price/quality ratio (EMVI), lowest price and lowest costs. BVP can only be applied using best price/quality ratio since the Performance Information, Risk Assessment, Value Added and the interviews needs to be involved in a criterion. Lowest price and lowest costs do not offer that option.

2.5.3.3. Procurement selection strategy

Various authors created a list of aspects that need to be considered when selecting a procurement method (Alhazmi & McCaffer, 2000; Skitmore & Marsden, 1988; van Leijten, 2016). Aspects of a project that they consider in their model are: project characteristics, clients characteristics, local construction regulations, contractor needs, market attributes (Alhazmi & McCaffer, 2000) and speed, certainty, flexibility, quality level, complexity, risk avoidance, responsibility and price competition (Skitmore & Marsden, 1988). Based on these aspects a client can choose the most appropriate selection strategy. Since every client has his own desires and every context of a project is unique it is not appropriate to name one solution that best fits BVP. However, in general integral contracts align with the core aspects of BVP – speed, certainty, risk avoidance and responsibility (Rijt & Santema, 2013; Skitmore & Marsden, 1988).

2.5.4. SQ 4: What is the added value of infrastructure and how is this perceived by the public client and by the contractor in the Dutch infrastructure sector?

When considering the added societal value of infrastructure two perspectives are important: the monetary worth of infrastructure and the relative worth of infrastructure. The monetary worth includes the ( economical) effects an infrastructure project can have on its environment. In the light of this research it is interesting to consider the relative worth of infrastructure: how is the value perceived? This is an interesting point of view because it is expected that the perspective on value will influence the use of the Value Added.

Literature agrees on a different approach of the client and the contractor towards a project (Boyd & Chinyio, 2008; Boyd & Kerr, 1998; Bryde & Robinson, 2005; Masterman & Gameson, 1994; Van Marrewijk, Clegg, Pitsis, & Veenswijk, 2008). This different approach influences the perception of value. The perception of value of an infrastructure project is approached in this thesis by analysing how both parties assess the success of a project. Since the Value Added is assessed by the client and must be aligned with the project objectives of the client the success criteria of the client will be used in a further analysis of the Value Added. However, to understand the contractor the following differences between the client’s and the contractor’s approach towards projects success are worth mentioning.

- The client puts a stronger emphasis on the satisfaction of all actors connected to the project, whereas the contractor is focussed on the satisfaction of the client.
- The success of a project plays an important role for the continuation of the contractor’s organisation (for his budget as well as for his reputation). For the client this role is less significant.
- The contractor success criteria are related to the fulfilment of performance requirements and technical specifications. These can be determined at the start of the project and therefore have a static nature. The client is project success is determined on the “fit for purpose”. The purpose of a project is dynamic in nature and can change in time, influenced by the interests of the various actors.

Further research is needed to assess the perception of value by the client and the contractor and how this relates to the used of the Value Added.

2.5.5. To take into account in the rest of the research

The literature review provided insight in the following aspects, which are relevant to take into account when conducting the case study.
The BVP methodology makes two assumptions. Firstly, it assumes that the client is the lay-man and the contractor the expert (Kashiwagi et al., 2009). It is not hard to imagine situations in which this is not the case. For example, public authorities in the Netherlands like Rijkswaterstaat or the Waterschappen, have gained a lot of experience in their projects throughout the years. How does this influence the use of the Value Added? The second assumption is that the availability of data will allow an objective selection of the best expert (Kashiwagi et al., 2009). The judgement of the Value Added is depended on if the statements are underpinned with dominant information (Rijt et al., 2016). But what if this data - which should be irrefutable, verifiable and accurate - is not available? Do the contractors have access to the data to underpin their promises? Does the method allow for innovative opportunities?

When conducting the interviews, it is important to pay attention to the role the interviewee has played in the tender. The client’s and contractor’s organisations are build up out of various individuals, each with their own preferences and believes. This might blur the expression of interests and objectives of the project (van Marrewijk et al., 2014).

Van de Rijt and Santema present BVP as a continuous learning cycle (2016). This implies that the method can evolve over time, and that lessons learned are incorporated in changes in the guidelines of the method. Their book ‘Best Value Stroom’ is based on these new insights. When comparing different cases with each other it is important to know how they applied the method.

2.5.6. Knowledge gap
The aim of this chapter is to give answer to the first sub-questions by using the existing literature related to the topic of this thesis. In the sections above an overview is given of the answers that were found.

However, to be able to answer the research question the following information is needed which could not be found in the existing literature. It is not known how the Value Added is currently applied in the Dutch context. Furthermore, the factors influencing the use of the Value Added are not known.
PART 2
analysis

3. Extensive Research
4. Intensive Research
3. Extensive research

Introduction
The extensive research is performed to create a general image of the current use of the Value Added and to generate input for the interviews. Central in the extensive case study stands sub-question 5: “What is the current use of the Value Added in the Dutch infrastructure sector?” To be able to systematically gather all the data, a framework is set up before the actual study starts. Six steps will be taken to answer this question, using information from both the client and the contractor. See figure 13. The steps will be described hereafter.

0. general info  1. tender  3. assessment  4. decision  5. implementation

CLIENT

CONTRACTOR

2. submissions

Figure 13 - Six steps in the document analysis of the Value Added.
3.1. Framework

3.1.1. General information of the case
Before the start of the analysis general information of the selected case will be gathered. This is necessary to know which cases can be compared with each other in the cross-case analysis. Furthermore, it will help to choose a balanced selection of cases for the intensive case study. The following information will be gathered in this step:

a. Type of client (national, provincial, municipal) (anonymised, to secure confidential data)
b. Type of work (anonymised, to secure confidential data)
c. Price ceiling (Incremental, to secure confidential data)
d. How is dealt with the total budget of the project? Scope + costs of Value Added below or above the price ceiling?
e. What is the relative importance of the Value Added in the selection of the contractor?
f. Number of bids received
g. Number of bids included in research
h. Reasoning for excluding bids in research

3.1.2. The tender and the project objectives
Next, the demand of the client will be analysed. The reason behind this is that the whole tender procedure starts with a demand on the client side, therefore it is logical to start the analysis there. The Value Added must add value to the projects objectives (Rijt & Santema, 2013; Rijt et al., 2016). To be able to submit a relevant Value Added the project objectives must be clear to the contractors (Bower, G, Gerald, & W, 2002). To examine the way the project objectives are currently presented, this step in the document analysis concerns what type of project objectives are named in the guiding document.

This will create insight in which aspects are important for the public client in his project. It is assumed that what is considered a ‘successful project’ will influence the type of Value Added that is bought. Research showed that public clients do not value projects in the same way (Koops et al., 2015). By categorising the project objectives insight can be gained about the client’s perception of value. The objectives will be categorised using success criteria (Koops et al., 2015). These criteria are used because four perspectives of Dutch public project managers on project success are defined using these criteria. Since the Dutch public construction sector is the target group of this research this classification is considered relevant and useful. The following table will be used to give an overview of the named objectives. The success criteria as identified by Koops et al. can be grouped using the Square Route as proposed by Atkinson. This is a way to consider the whole palette of success criteria of projects. The Square Route consists out of four categories, namely: Iron Triangle, Information System, Benefits of client organisation and benefits of the stakeholder community (Atkinson, 1999).
### Case → 1 2 n

<table>
<thead>
<tr>
<th>Objective ↓</th>
<th>1</th>
<th>2</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron Triangle</td>
<td>Delivered on time</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Within budget</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information System</td>
<td>Right process is followed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Safety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits Client Organisation</td>
<td>Efficient use of available resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fit for purpose</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Effect on the professional image of client organisation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continuation of client organisation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Learning opportunities for client organisation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits Stakeholder community</td>
<td>Personal growth and development</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Satisfies needs of project team</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Satisfies needs of stakeholders</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Satisfies needs of users</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Satisfies needs of shareholders</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Impact on the environment / sustainability</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Project specific political or social factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Profitability for contractor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9 - Format that will be used to give an overview of the given prioritisation of project objectives and used project objectives, categorised by the client’s success criteria they contribute to.
3.1.3. The submitted Value Added

Secondly, the submitted Value Added will be investigated. This will create insight in the current use of the Value Added by contractors. Various (minimal 2, preferably 3) submissions will be used. This way it can be checked whether the contractors respond differently to the same question. In the Best Value methodology the following two demands are important considering the Value Added: the opportunities have to be aligned with the project objectives and they have to be underpinned with dominant information (Rijt et al., 2016). How this in implemented in practice will be assessed in this step. The following questions will be answered in this step:

- a. How many opportunities are submitted per dossier?
- b. To which success criteria do the opportunities contribute?
- c. What are the cost of the offered opportunity in relation to the total cost of the project?
<table>
<thead>
<tr>
<th>Objective ↓</th>
<th>Total number of opportunities in dossier →</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron Triangle</td>
<td>Delivered on time</td>
</tr>
<tr>
<td></td>
<td>Quality</td>
</tr>
<tr>
<td></td>
<td>Within budget</td>
</tr>
<tr>
<td>Information System</td>
<td>Right process is followed</td>
</tr>
<tr>
<td></td>
<td>Safety</td>
</tr>
<tr>
<td>Benefits Client Organisation</td>
<td>Efficient use of available resources</td>
</tr>
<tr>
<td></td>
<td>Fit for purpose</td>
</tr>
<tr>
<td></td>
<td>Effect on the professional image of client organization</td>
</tr>
<tr>
<td></td>
<td>Continuation of client organization</td>
</tr>
<tr>
<td></td>
<td>Learning opportunities for client organisation</td>
</tr>
<tr>
<td>Benefits Community</td>
<td>Personal growth and development</td>
</tr>
<tr>
<td></td>
<td>Satisfies needs of project team</td>
</tr>
<tr>
<td></td>
<td>Satisfies needs of stakeholders</td>
</tr>
<tr>
<td></td>
<td>Satisfies needs of users</td>
</tr>
<tr>
<td></td>
<td>Satisfies needs of shareholders</td>
</tr>
<tr>
<td></td>
<td>Impact on the environment / sustainability</td>
</tr>
<tr>
<td></td>
<td>Project specific political or social factors</td>
</tr>
<tr>
<td></td>
<td>Profitability for contractor</td>
</tr>
</tbody>
</table>

Table 10 - Format that will be used to give an overview of the submitted opportunities in the Value Added.
3.1.4. Assessment of the Value Added
Thirdly, the assessment of the submissions by the client will be investigated. How the client assesses the file is crucial in getting insights in the use of the Value Added. The whole tender procedure is based on selecting a suitable partner – how the client values the submission of the contractors is core of the selection. The following questions will be answered in this step:

   a. What is the grade the Value Added received?
   b. What was the reasoning behind this score? (If written evaluation is available.)
   c. Was the Value Added a decisive factor in the assessment of the total bid?
   d. Is there a relation between the score of the dossier and the type of opportunities offered?

3.1.5. Buying decision of opportunities
Fourthly, the decision of buying or not buying the opportunities offered in the Value Added is explored. The following questions will be answered in this step:

   a. How many opportunities are bought by the client?
   b. What type of opportunities are bought?
   c. Is there a relation between the perspectives of public project managers of project success and the type of opportunities that are bought?
   d. Are opportunities bought from a not winning submission?
3.2. Results

3.2.1. General information of the cases
The case study consists out of 14 cases. These are projects procured by five clients from different governance levels (national, provincial and municipal). The data is retrieved from 65 unique submissions of the Value Added. For an overview of the selected case see table 11.

Two variations in how the client dealt with the Value Added can be found. First the way the client deals with the Value Added in relation to the price ceiling. In case 1 – 11 the total offer of the client must be below the price ceiling. This means that the scope + the sum of the offered opportunities must be below the price ceiling. This is the maximum budget the client is willing to spend on the project. In case 12 the scope + individual opportunities must be below the price ceiling. In case 13 and 14 the client did not set a limit on the price of the opportunities. Next, the relative importance of the Value Added differs per case, ranging from 10% till 15.5%.

<table>
<thead>
<tr>
<th>Case</th>
<th>Client</th>
<th>Year</th>
<th>VA within price ceiling</th>
<th>Relative importance VA in selection</th>
<th>Bids included in research</th>
<th>Limited information?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Province A</td>
<td>2014</td>
<td>yes</td>
<td>7.5%</td>
<td>8/8</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Province B</td>
<td>2014</td>
<td>yes</td>
<td>15%</td>
<td>3/4</td>
<td>No price information of the opportunities.</td>
</tr>
<tr>
<td>3</td>
<td>Province C</td>
<td>2013</td>
<td>yes</td>
<td>10%</td>
<td>6/6</td>
<td>No substantiation of the assessment available</td>
</tr>
<tr>
<td>4</td>
<td>RWS</td>
<td>2013</td>
<td>yes</td>
<td>15%</td>
<td>5/7</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>RWS</td>
<td>2014</td>
<td>yes</td>
<td>15.5%</td>
<td>5/6</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>RWS</td>
<td>2014</td>
<td>yes</td>
<td>15%</td>
<td>5/5</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>RWS</td>
<td>2015</td>
<td>yes</td>
<td>15%</td>
<td>4/4</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>RWS</td>
<td>2015</td>
<td>yes</td>
<td>15%</td>
<td>4/5</td>
<td>winning bid excluded</td>
</tr>
<tr>
<td>9</td>
<td>RWS</td>
<td>2015</td>
<td>yes</td>
<td>14.8%</td>
<td>4/5</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>RWS</td>
<td>2016</td>
<td>yes</td>
<td>15%</td>
<td>4/4</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>RWS</td>
<td>2016</td>
<td>yes</td>
<td>15%</td>
<td>2/3</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>RWS</td>
<td>2014</td>
<td>yes (individual opportunities)</td>
<td>10%</td>
<td>5/5</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Municipality</td>
<td>2014</td>
<td>no</td>
<td>10%</td>
<td>5/8</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Province A</td>
<td>2014</td>
<td>no</td>
<td>11%</td>
<td>5/5</td>
<td></td>
</tr>
</tbody>
</table>

Table 11 - Overview of the cases in the extensive research.

3.2.2. The tender and the project objectives
The project objectives of the client form the basis for the Value Added, since the alignment of the opportunities to the project objectives is an important criterion on which basis the Value Added should be judged. The objectives are categorised using success criteria (Koops et al., 2015). The success criteria as identified by Koops et al. are grouped using the Square Route (Atkinson, 1999). This way the whole palette of success criteria of projects can be considered. The Square Route consists out of four categories, namely: Iron Triangle, Information System, Benefits of resultant organisation and benefits of the stakeholder community (Atkinson, 1999). The five different clients are grouped in three groups, national, provincial and municipal. Which objectives
they have set for their projects can be seen in figure 14. A description of the success criteria and the way how the objectives are classified according to the success criteria follows below. Not all criteria have objectives that related to them, see table 12.

![Figure 14- Number of times a project objective is named by the client in the guiding documents, categorized by the success criteria (Own illustration, based on (Koops et al., 2015) (Atkinson, 1999))](image)

<table>
<thead>
<tr>
<th>Category without project objective</th>
<th>Success criteria (Koops et al., 2015)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right process is followed</td>
<td>Quality, Within budget, Safety</td>
</tr>
<tr>
<td>Fit for purpose</td>
<td>Delivered on time, Safety</td>
</tr>
<tr>
<td>Effect on the professional image of client organization</td>
<td>Efficient use of available resources, Fit for purpose, Deliverd on time, Quality</td>
</tr>
<tr>
<td>Satisfies needs of stakeholders</td>
<td>Satisfies needs of users</td>
</tr>
<tr>
<td>Impact on the environment / sustainability</td>
<td>Satisfies needs of stakeholders, Satisfies needs of users, Impact on the environment / sustainability</td>
</tr>
<tr>
<td>Project specific political or social factors</td>
<td>Efficiency use of available resources, Fit for purpose, Deliverd on time, Quality, Satisfies needs of stakeholders, Satisfies needs of users, Impact on the environment / sustainability</td>
</tr>
</tbody>
</table>

Table 12 - Categories (Success criteria and Square Route) that have no ‘assigned’ project objectives.
3.2.2.1. Delivered on time
Project objectives that fit in this category are used in 9 out of 14 projects. These objectives were concerned with the delivery of the project on a certain date, or as much as possible before this date. These objectives have a clear relation with the success criteria ‘delivered on time’.

3.2.2.2. Quality
Project objectives that fit in this category are used in 1 out of 14 projects. The project objective included in this category dealt with the quality of the public space. When talking about infrastructure, the level of accessibility the road offers could be interpreted as quality. But these objectives are not comparable to the objective that is already included in this category and which is more relevant to quality. Therefore, these accessibility objectives are not included in this category but in the category, satisfies needs of users.

3.2.2.3. Within budget
Project objectives that fit in this category are used in 7 out of 14 projects. In 6 projects the objective was: ‘realisation within the price ceiling or as far as possible below’. One project an outsider in this category is included: the life cycle cost (LCC) of the project were mentioned as a project objective. How much the offered opportunities contribute to the LCC cannot be assessed.

3.2.2.4. Safety
Project objectives that fit in this category are used in 6 out of 14 projects. Various aspects of safety were mentioned in the project objectives. This category includes the following:

- Traffic safety during construction
- Traffic safety after realisation
- Meeting water safety standards
- Safe public space
- Safe construction

3.2.2.5. Efficient use of available resources
Project objectives that fit in this category are used in 5 out of 14 projects. Two different types of project objectives are placed within this category. One deals with the efficient use of the materials at the project site, the other with efficient and predictable input of the client during the project. This means that both the material and organisational resources are included. When in the description of a project objective it is explicitly stated that the way of dealing with materials is aimed at a sustainable solution the objective is categorised in the category: “Impact on environment / sustainability”. This occurred in case 1.

3.2.2.6. Satisfies needs of stakeholders:
Project objectives that fit in this category are used in 10 out of 14 projects. Merriam Webster gives the following definition of a stakeholder: “one who is involved in or affected by a course of action”. Following this definition, the following two types of project objectives are included in this category. To decrease the hindrance for the surroundings is the most used project objective in this category, used in 8 projects. The project objective “a content maintenance organisation” is placed in this category as well. This objective is used 2 times. The combination of the two objectives named above in one category implies that both internal and external stakeholders are included in this category.

3.2.2.7. Satisfies need of users:
Project objectives that fit in this category are used in 7 out of 14 projects. Objectives included in this category are:

- 4 times: ‘improvement of accessibility and traffic flow’
- 2 times: “minimal hindrance for road users”. Road users can be considered as stakeholders of the project as well. It is placed in this category because this way it is more specifically defined.
- 1 time: “user friendly solution”

It can be argued that the objective ‘improvement of accessibility and traffic flow’ must be placed under ‘fit for purpose’. However, due to the mentioning of maximal accessibility this objective fits better under ‘satisfies need of users’ because ‘fit for purpose’ does not imply a maximal level but a level in which it is fit for purpose.

3.2.2.8. Impact on environment / sustainability:
Project objectives that fit in this category are used in 5 out of 14 projects. Objectives included in this category are both on the scenic environment and sustainability in a more general sense:

- Maximize scenic fitting
- Optimize conditions nature development
- Sustainability
- Sustainable with the accent on rainwater drainage and CO2 use.

3.2.2.9. Project specific political or social factors:
Project objectives that fit in this category are used in 8 out of 14 projects. These objectives dealt with maintaining or/and enlarging the support base (Dutch: draagvlak) of local residents and governance authorities.
3.2.3. The submitted Value Added

3.2.3.1. Alignment to project objectives

In appendix 6 an overview of the number of opportunities per file and per case can be found. These are categorised by the success criteria, like the project objectives. The opportunities are categorised as much as possible at the same time, within the time span of one week. This stimulates that the categorisation is interpreted in the same way in each case.

Although the alignment with opportunities is an important criterion according to the BVP methodology, not all opportunities were aligned. The offered opportunities are divided in three groups, see figure 15. This division is based on the alignment with the project objectives. The three groups are:

1) Offered opportunities that are aligned to the project objective. (Green)
2) Offered opportunities that are both aligned to the project objective (Blue) and adds value to an aspect that is not explicitly asked by the client as well (Purple). These aspects are categorised using the success criteria. This extra value was explicitly named in the description and substantiation of the opportunity.
3) Offered opportunities that are not aligned to the project objectives. The aspect to which does add value are categorised using the success criteria. (Yellow)

Some contractors submitted an offer in multiple cases that are included in this research. There is no trend line discovered in the alignment of the opportunities they offer in the various cases.

3.2.3.2. Aligned opportunities

Most of the opportunities are aligned with the project objectives. In 2 of the 14 cases all opportunities were aligned with the project objectives (case 3 and 10). These cases include 10 different submissions. Opportunities aligned with the project objectives are mostly in the following categories, see figure 16.

- Satisfies needs of stakeholders (82 opportunities)
- Satisfies needs of users (66 opportunities)
- Project specific or social factors (46 opportunities)
- Sustainability and Safety (both 50 opportunities)
3.2.3.3. Partly aligned opportunities

The opportunities that are partly aligned with the project objectives, the third group in figure 15, are categorised in figure 17. In 9 out of 14 projects opportunities were offered that are partly aligned to the project objectives. These opportunities were offered in 18 different submissions, which is 27% of all the submissions. These opportunities are mostly offered in categories in the first three sides of the Square Route. The opportunities are offered in the following categories: delivered on time, within budget, safety, efficient use of resources, and effect on the professional image of client organisation. In 2 cases all the contractors offered opportunities that are not completely aligned (case 6 and 8). In case 6 all 5 submissions contain partly or nonaligned opportunities. In all these submissions an opportunity was offered in the category ‘efficient use of available resources’. The opportunity was used as extra substantiation of the objective ‘satisfies needs of users’ and ‘project specific political or social factors’ in 3 submissions. In 2 submissions it was not related to the project objectives at all. In case 8, 3 out of the 4 submissions that were included in this research submit an opportunity in the category ‘delivered on time’ that counts as extra substantiation for the asked project objective ‘satisfies needs of stakeholders’.

The following categories received the most opportunities which were partly aligned to the project objectives:

- Efficient use of available resources (8 opportunities - in 3 cases, in 7 submissions)
  - Used as extra substantiation of ‘satisfies needs of users’ and/or ‘project specific political or social factors’
- Delivered on time (7 opportunities – in 2 cases, 4 submissions)
  - Used as extra substantiation of ‘efficient use of available resources’, ‘satisfies needs of stakeholders’, ‘satisfies needs of users’ and/or ‘project specific political or social factors’.
- Within budget (5 opportunities – in 2 cases, 4 submissions)
  - Used as extra substantiation of: ‘satisfies needs of stakeholders’ (3x), of ‘Impact on the environment / sustainability’ (1x) of ‘quality’ (1x)
3. Extensive research

In general, it can be said that these opportunities are mostly an extra substantiation for opportunities in the group ‘Benefits Stakeholder Community’, see figure 18.

![Diagram of opportunities partly aligned with objectives](image)

**Figure 17** – Offered opportunities in the categories that were not asked for by the client that are used as an extra substantiation for asked project objectives (linked to figure 18).

![Diagram of objectives extra substantiated by a not aligned objective](image)

**Figure 18** - Overview of in which categories the partly aligned opportunities are ordered.

3.2.3.4. *Non-aligned opportunities*

The opportunities that were not aligned with the project objectives contributed to other aspects which were not asked by the client but can contribute to the value of the project, see figure 19. The categorisation is done based on what the contractor wrote in the description of the opportunity. The aspect to which is does add value are categorised using the success criteria as well. In 8 out of 14 projects opportunities were offered that are not aligned to the project.
objectives. In 3 cases there were 2 submissions with non-aligned opportunities, in the other 5 cases it was only 1 submission. These opportunities were offered in 10 different submissions, which is 15% of all the submissions. These opportunities are mostly offered in categories in the first three sides of the Square Route with a few on the fourth side ‘Benefits Stakeholder Community’. The opportunities are offered in the following categories: quality, within budget, safety, efficient use of resources, fit for purpose and effect on the professional image of client organisation. There is not one specific success criterion that received outstanding more opportunities.

![Opportunities not aligned with objectives](image)

**Figure 19** - Overview of the number of offered opportunities not related to the project objectives per success criteria.

### 3.2.3.5. Price of offered opportunities

In figure 20 an overview of the average price of the offered opportunities is shown. The percentage is the price of the average cost of opportunities per case relative to the price ceiling of the case. The price of the individual opportunities is marginal relative to the price ceiling of the project. This occurs in all the cases: when the price ceiling was the limit for the Value Added and when there was no limit for the Value Added. There are more opportunities (in total 191) offered that cost money than that save money (in total 21). A few opportunities were free, they had no price tag at all (in total 17).
When dividing the cases in groups based on the magnitude of the price ceiling a slightly differentiation in the average price is found, see table 13. The price is viewed per category. In the category ‘Satisfies needs of users’ the opportunities in the most expensive projects are a smaller relative to the price ceiling than in the other projects. In the most expensive projects the price of opportunities in the category ‘Satisfies needs of users’ are of the same size as in the category ‘Satisfies needs of stakeholders’. In the projects with a price ceiling lower than 25 million the price of the opportunities in the category ‘Satisfies needs of stakeholders’ are significantly than in the category ‘Satisfies needs of users’.
### Table 13 - Average price per category and different heights of the price ceiling.

<table>
<thead>
<tr>
<th>Category</th>
<th>Price Ceiling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 10M</td>
</tr>
<tr>
<td>Delivered on time</td>
<td>0.28%</td>
</tr>
<tr>
<td>Quality</td>
<td>1.86%</td>
</tr>
<tr>
<td>Within budget</td>
<td>1.32%</td>
</tr>
<tr>
<td>Safety</td>
<td>2.82%</td>
</tr>
<tr>
<td>Efficient use of available resources</td>
<td>-1.87%</td>
</tr>
<tr>
<td>Fit for purpose</td>
<td></td>
</tr>
<tr>
<td>Effect on the professional image of client organization</td>
<td></td>
</tr>
<tr>
<td>Satisfies needs of stakeholders</td>
<td>0.45%</td>
</tr>
<tr>
<td>Satisfies needs of users</td>
<td>2.97%</td>
</tr>
<tr>
<td>Impact on the environment / sustainability</td>
<td>4.67%</td>
</tr>
<tr>
<td>Project specific political or social factors</td>
<td>1.64%</td>
</tr>
</tbody>
</table>

#### 3.2.3.6. Price of the total Value Added

In the cases a different use of the price ceiling can be distinguished. In most of the cases (11 in total) the price ceiling was the limit for the price of the basic scope + the total price of the Value Added (Situation 1 in figure 22). A bid more expensive than the price ceiling will be disqualified in these cases. In one case the price ceiling was the limit for the basic scope plus the price of the individual opportunities (Situation 2 in figure 22). In two cases the Value Added had no budget limit, the price ceiling was the ceiling for the basic scope only (Situation 3 in figure 22). This only occurs with the provincial and the municipal client.

![Figure 22 - The different ways of dealing with the price ceiling.](image)
3. Extensive research

<table>
<thead>
<tr>
<th>Situation price ceiling</th>
<th>Number of projects per client per situation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of client v</td>
<td>1 (scope+VA) 2 (scope+individual opportunities) 3 (scope)</td>
</tr>
<tr>
<td>RWS</td>
<td>8 1</td>
</tr>
<tr>
<td>Provincial</td>
<td>3 1</td>
</tr>
<tr>
<td>Municipal</td>
<td>1 1</td>
</tr>
</tbody>
</table>

Table 14 - Number of project in the different price ceiling situations per client type.

3.2.3.6.1. Price of the total Value Added when the price ceiling is the limit for basic scope + Value Added (situation 1).

In 9 out of the 14 cases in this research this combined price must be under the price ceiling of the project (Case 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11). There is a wide variety in how the contractors bid, some reach the price ceiling with only the price of the basic scope and some have a lot of budget left, see figure 23. The theoretical budget space they have left for the Value Added thus varies greatly. However, as can be seen in figure 24, the budget space used for the Value Added is much more concentrated in one range. 22 out of 40 bidders propose a Value Added with a relative price to the price ceiling of 0% - 5% and 10 bidders in the range from 5% - 10%. More than half of the bidders (23) have 5% or more of the budget left. The price ceiling is not reached in most of the cases, see figure 25. Note that the 2 submissions in the range < 0% did not submit a disqualified bid but offered cost savings in their Value Added.

![Theoretical Budget Space for Opportunities (Price Ceiling - Bid Scope)](image)

Figure 23 - The bid of the contractor determines the theoretical space he has for the Value Added.
3.2.3.6.2. **Price of the total Value Added when the price ceiling is the limit for the basic scope + individual opportunities (situation 2).**

In one case (case 12) the basic scope and the individual opportunities must be under price ceiling. The total price of the Value Added could exceed the price ceiling. How the bidders bade in this situation can be seen in figure 26. Most of the bidders did not use the whole budget space available. In four submissions the price of the individual opportunities is summed up it stays below the price ceiling (A, B, D & E). Only submissions C made use of this application of the price ceiling.
3.2.3.6.3. Price of the total Value Added when there is no limit (situation 3).

In two cases (Case 13 and 14) the price ceiling counted as the limit of the bid of the contractor with the Value Added not included. Fewer bidders are included in this sample so the results are not one on one comparable. How their bid relates to the price ceiling can be seen in figure 27. This follows the same bidding pattern as when the price ceiling is the limit for both the scope and the Value Added, ranging from 0% - 30%. It is striking that the Value Added uses the same percentage of the price ceiling when the price ceiling is not the limit as when it is the limit. 9 out of 10 bidders offer a Value Added with a price ranging from 0% - 10%.

However, the proposals in these cases make use of the freedom and offer a slightly higher bid than that would have been possible when the price ceiling was the limit. Case 13B, 13C, 14A and 14D are examples of this. They used the budget below the price ceiling for the scope and offered opportunities on top of it. 14B is an outlier: the price of his Value Added is much higher than the other bidders offered in case 14. See figure 28.
The different use of the price ceiling appeared not to be of significant influence on the price of the individual opportunities or the total price of the Value Added. Comparing these figures, as is done in table 15, shows that the price slightly differs but remains in the same order of magnitude.
3. Extensive research

### 3.2.4. Assessment of the Value Added

The following aspects are mentioned in the reasoning behind the score. The emphasis that is put on the different aspects and the elaboration on the reasoning differs per case.

- Added value to the project objectives
- Effectiveness opportunity, substantiated with VPI
- SMART description
- Display of ambition (not in all cases)

The Value Added is assessed as a whole. The reasoning behind the score just gives a few examples out of the file to explain why that score was given but no feedback on the individual opportunities. Therefore, it is not possible to say something about how the individual opportunities were appreciated or which type of opportunities were appreciated or not.

The theory prescribes that the following grades can be given: 10, 8 or 6. Before 2016 it was also possible to give a 2 or 4 (Rijt et al., 2016). The Value Added was most often rated with a 6 (35 out of 66 submissions). The winning bidders often had a high grade for their Value Added, from the 13 winning submissions 9 received an 8 and 2 a 10.

Whether the Value Added was a decisive factor in the assessment of the total bid is hard to say. The distribution of received graded per winning bid shows that the majority of the winning bids received an eight or higher on the Value Added (9 out of 11). However, not all information of the bidders was available: the scores on the other two files was not given. Therefore, the role the Value Added played in the selection cannot be determined. The weight given to the Value Added in the total selection was on average not a large part of the total selection. The weight differs per case and per category of client, an overview can be found in table 16.

### Table 16 - The weight of the Value Added as selection criteria.

<table>
<thead>
<tr>
<th></th>
<th>Number of cases</th>
<th>Average Weight</th>
<th>Lowest weight</th>
<th>Highest Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>RWS</td>
<td>9</td>
<td>14%</td>
<td>10.0%</td>
<td>15.5%</td>
</tr>
<tr>
<td>Province</td>
<td>4</td>
<td>12%</td>
<td>7.5%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Municipality</td>
<td>1</td>
<td>10%</td>
<td>10.0%</td>
<td>10.0%</td>
</tr>
</tbody>
</table>

### 3.2.5. Buying decision of opportunities

The last step in the Value Added is the buying and implementation of the opportunities. In figure 29 the number of offered opportunities in de winning bid and the number of bought opportunities per case are displayed. In 9 out of 14 cases half of the opportunities or more are bought, see figure 30. This indicates that the client has a willing attitude towards the Value Added. The provincial clients bought on average slightly less opportunities than the other clients, see figure 31. In three of the four cases the provincial client bought less than 40% of the offered opportunities.
Figure 29 - Number of offered opportunities that are aligned with the project objectives in winning bid vs bought opportunities.

Figure 30 - Percentage of the offered opportunities in the winning bid that are bought by the client.
3. Extensive research

3.1.6. Type of bought opportunities.

When reviewing which type of opportunities are bought, the same division can be made between opportunities that are aligned with the objectives (figure 33), that are partly aligned (figure 34) and opportunities that are not aligned at all (figure 35).

In the submitted files it was striking that most of the opportunities were offered in the group ‘benefits stakeholder community’. However, these opportunities are not bought more often than the other type of opportunities, see table 17. This might indicate that the client is not more interested in the opportunities in the group ‘benefits stakeholder community’ than in the other opportunities. Opportunities in the category delivered on time and efficient use of resources are bought as often, in terms of percentage.

When arranging the cases per year it can be seen that the amount of offered opportunities that are bought varies throughout the years. Based on the limited amount of cases it cannot be said whether there is a progressive or regressive trend.

Figure 31 - Percentage of offered opportunities that are bought by the different types of clients ranges from 50% - 67%.

Figure 32 - Percentage of bought opportunities per case by different type of clients, arranged by year of tendering.

3.2.5.1. Type of bought opportunities.

When reviewing which type of opportunities are bought, the same division can be made between opportunities that are aligned with the objectives (figure 33), that are partly aligned (figure 34) and opportunities that are not aligned at all (figure 35).

In the submitted files it was striking that most of the opportunities were offered in the group ‘benefits stakeholder community’. However, these opportunities are not bought more often than the other type of opportunities, see table 17. This might indicate that the client is not more interested in the opportunities in the group ‘benefits stakeholder community’ than in the other opportunities. Opportunities in the category delivered on time and efficient use of resources are bought as often, in terms of percentage.
Figure 33 - Number of offered opportunities that are aligned with the project objectives in winning bid vs bought opportunities per category. Input 13 cases.

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage of offered opportunities that are bought</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivered on time</td>
<td>50%</td>
</tr>
<tr>
<td>Quality</td>
<td>0%</td>
</tr>
<tr>
<td>Within budget</td>
<td>33%</td>
</tr>
<tr>
<td>Safety</td>
<td>40%</td>
</tr>
<tr>
<td>Efficient use of available resources</td>
<td>50%</td>
</tr>
<tr>
<td>Fit for purpose</td>
<td></td>
</tr>
<tr>
<td>Effect on the professional image of client organization</td>
<td></td>
</tr>
<tr>
<td>Satisfies needs of stakeholders</td>
<td>65%</td>
</tr>
<tr>
<td>Satisfies needs of users</td>
<td>52%</td>
</tr>
<tr>
<td>Impact on the environment / sustainability</td>
<td>50%</td>
</tr>
<tr>
<td>Project specific political or social factors</td>
<td>83%</td>
</tr>
</tbody>
</table>

Table 17 - Percentage of the aligned, offered opportunities that are bought.

Opportunities that were partly aligned to the project objectives are also bought, see figure 34. The most opportunities are bought in the category ‘efficient use of available resources’. These opportunities were an extra substantiation for ‘satisfies needs of users’.
Two opportunities are bought that were not aligned with the project objectives at all. These opportunities were bought by RWS, in two different cases. It is interesting that the contractor apparently brought something valuable to the surface that was not expected by the client (no project objectives were given on this subject).

3.2.5.2. Price of bought opportunities
Firstly, the average price of the bought opportunities is analysed, see figure 36. One outlier is notable, in the category ‘impact on the environment/sustainability’. This average price is built up out of 3 opportunities in one case.
The price of the opportunities that are partly aligned to the project objectives can be found in figure 37. These opportunities were an extra substantiation for ‘satisfies needs of users’. The price is around the average price per individual opportunity (1.37%) although the price of the category project specific or social factors is slightly lower.

Two opportunities were bought that are not aligned with the project objectives at all, their prices can be found in figure 38. The opportunity in the category safety is far above the average price of opportunities.
3. Extensive research

### 3.2.5.3. Price of the bought Value Added

Besides looking at the price of the individual opportunities it is interesting to considering the total price of the Value Added in relation to the total budget that was available. Figure 39 shows the budget that was available for the Value Added, how much the contractor used of this space and how much is eventually bought by the client. Of course, the client can only choose from what is offered. In case 11 for example, there was 15% of the price ceiling available but the contractor offered only 2%. The client bought all the contractor offered but still had 13% ‘left’ because of the low offer of the contractor. In 4 of the 8 cases the client bought of the same worth as the total Value Added, as can be seen in figure 39. (Note that in case 7 not all opportunities were bought, as can be seen in figure 30. Due to cost saving opportunities the sum of bought opportunities equals the total price of the Value Added.)

In figure 39 the cases are grouped by the height of the price ceiling. The clients buy a larger part of the Value Added in the cases with a lower price ceiling, with case 11 as the exception. However, the absolute value that is bought is lower.

![Average relative price bought opportunities which are aligned with project objectives](image)

**Figure 38** - Average price bought opportunities non-aligned to the project objectives per category.
Figure 39 - The available budget space for the Value Added and how it is used by the contractor and the client.
3.3. Conclusions extensive research

The central sub-question in the intensive research was: “What is the current use of the Value Added in the Dutch infrastructure sector?” and will be answered in this sub conclusion. In the light of the research question, the following observations are most relevant.

3.3.1. Type of offered opportunities
Most of the offered opportunities add value in the domain of the stakeholders and users of the project. The objectives that are named by the client do not receive an equal number of opportunities. ‘Delivered on time’ is an objective that is used more often than ‘Satisfies needs of uses’, ‘Impact on the environment/Sustainability’ and ‘Project specific political and social factors’. But very few opportunities are offered related to ‘Delivered on time’ while this objective is often used by the client.

3.3.2. Non-alignment project objectives
The Best Value methodology prescribes that opportunities should be aligned to the project objectives but this does not always happen in practice. Three groups of opportunities can be distinguished, based on the level of alignment of the opportunities with the objectives. The first group contains the opportunities that are aligned, this is with 81.8% of all opportunities the biggest group. The second group consist out of aligned opportunities that are substantiated with a contribution to a project objective that was not asked. This occurred in 8 out of 14 cases, spread over 18 individual submissions. In total there were 30 partly unaligned opportunities which is 11.5% of all opportunities. The opportunities were mostly used as substantiation of project objectives in the ‘Benefits Stakeholder Community’ group. The third group consist out of opportunities that are not aligned with the project objectives at all, mostly in the categories ‘Delivered on time’, ‘Within budget’, ‘Safety’ and ‘Efficient use of available resources’. This occurred in 8 out of 14 cases, spread over 10 individual submissions. In total there were 15 unaligned opportunities which is 5.7% of all opportunities.

3.3.3. Price
Two facets of the price are considered: the price of the individual opportunities and the price of the total Value Added. To be able to compare the different cases with each other the price is considered relatively of the price ceiling of the project.

The price ceiling is the maximum amount the client is willing to spend. The price ceiling can be applied in different ways, being the limit for the scope and the Value Added together, for the scope and the price of the individual opportunities or for only the scope.

The offered opportunities are marginal in relation to the price ceiling. The average price of the individual opportunities is 1.37%. The different ways of applying the price ceiling seems to have an influence, although not significantly. The price is slightly lower than average when the price ceiling in binding for the scope plus the Value Added. But in all situations the offered opportunities are, concerning the price, in the marge.

The price of the total Value Added is also marginal in relation to the price ceiling. The price of the Value Added is lowest when the total Value Added must be under the price ceiling. The price is highest when there is no limit given by the client at all, although it differs just a few percent. This might suggest that the lower price is due to the limited budget space. However, 35 of the 41 submissions for which the price ceiling was the limit for scope + Value Added did not use the whole budget. The average not used budget space is 9.27%.
### Situation price ceiling

<table>
<thead>
<tr>
<th></th>
<th>1 - price limit for scope + VA</th>
<th>2 – price limit for scope + individual opportunities</th>
<th>3 – price limit for scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of submissions</td>
<td>41</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Average price individual opportunity</td>
<td>1.17%</td>
<td>1.97%</td>
<td>1.87%</td>
</tr>
<tr>
<td>Average price Value Added</td>
<td>4.77%</td>
<td>6.31%</td>
<td>8.53%</td>
</tr>
<tr>
<td>Average not used budget space</td>
<td>9.27%</td>
<td>4.48%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Table 18 - Overview of the price of the Value Added.

### 3.3.4. Assessment

The winning bid often received a high score for the Value Added. When the winning bid received a low grade, opportunities were still bought from this file. The different clients placed different accents on aspects that they considered important. However, in general the assessment criteria as mentioned in the BVP methodology are used.

### 3.3.5. Bought opportunities

On average the clients bought 63% of the offered opportunities in the winning bid. RWS and the municipal client bought on average more opportunities than the provincial clients (65% and 67% vs 50%). Most of the bought opportunities are aligned to the categories in the group ‘Benefits Stakeholder Community’. Not only opportunities aligned with the project objectives were bought, the clients also bought unaligned opportunities. These were opportunities in the categories ‘Safety’ and ‘Impact on environment/sustainability’. In half of the cases the clients bought the whole Value Added. This happened more often in projects with a relative low (below 10 million) price ceiling.
4. Intensive research

Introduction
The intensive research is performed to be able to interpret the data of the extensive research. Central in the extensive case study stands sub-question 6: “Which factors influence the use of the Value Added by clients and by contractors?”. Three cases with clients from different governance levels from the extensive research will be selected. Interviews will be conducted with the client, winning contractor and another contractor from these cases.
4.1. Description intensive research

4.1.1. Description selected cases
The selection of the cases is done in such a way that the three different types of clients are represented in the cases. Furthermore, the availability of the key actors was taken into account. This all led to the selection of the cases 3, 9 and 13 for the intensive research.

<table>
<thead>
<tr>
<th>Case</th>
<th>Client</th>
<th>Value Added within price ceiling</th>
<th>Relative importance VA in selection</th>
<th>Number of bids included in research</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Province C</td>
<td>Yes</td>
<td>10%</td>
<td>6/6</td>
</tr>
<tr>
<td>9</td>
<td>Rijkswaterstaat</td>
<td>Yes</td>
<td>14.8%</td>
<td>4/5</td>
</tr>
<tr>
<td>13</td>
<td>Municipality</td>
<td>No</td>
<td>10%</td>
<td>5/8</td>
</tr>
</tbody>
</table>

Table 19 - The 3 cases included in the intensive research.

4.1.3. Framework for analysis
Interviews are conducted with clients on the three different governance levels: national, provincial and municipal. Furthermore, interviews are held with two contractors per case: the winning contractor and a not winning contractor. On each subject of the interview, these perspectives will be compared.

To be able to generalize the findings from each singular case a cross case analysis is performed. The cross case analysis will help to overcome information-processing biases, such as basing conclusions on limited data, ignorance of statistical properties and ignoring disconfirming evidence (Eisenhardt, 1989). These biases can be overcome when the different cases are treated as different experiments in which a hypothesis (in this research a theme) is tested in in each case (Yin, 1984).

This analysis is based on the approach of Stake (2013). The steps of this analysis are shown in figure 40. The first step is to formulate a ‘quintain’. The quintain is a central theme which is derived from the research question and will help answering the research question. The researcher does not start on a blanc sheet when starting with the analysis. The researcher is already familiar with the cases because he conducted and transcribed the interviews. The researcher has a feeling about which topics may be of importance in the light of the quintain. To be sure this is not just a gut feeling the analysis helps to produce a systematic substantiation of the findings which will answer the research question. The topics that are expected to be of importance are formulated into themes. Each interview will be searched for evidence that is related to the theme. It is analysed whether this evidence (statements) are confirming or contradicting the themes. The occurrence of the themes is used to verify the relevance of the theme. It indicates whether a statement is a rare occurrence or a generalizable given. The assumption is made that the occurrence of a theme indicates the usability of the theme in answering the quintain. Themes that occur in at least half of the interviews are selected as the tentative assertions. To ensure that important information is not overseen by putting the not selected themes aside they are regarded a second time. The discarded themes should not contradict the selected themes.

In the approach of Stake the case study reports are checked for evidence that support the tentative assertions. In this research a slightly different approach is chosen. The assertions will be discussed in the validation meeting. This is done because the interviews are held with a limited amount of people (9). By gathering the viewpoints of other actors that are related to the cases of the extensive research, the findings can be validated and the final conclusions will be more generalizable.
The quintain of this analysis is: “What is the reasoning behind the current application of the Value Added?” The following themes are set-up and used in this analysis, see table 20.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>When using the Value Added there is a stronger focus on selection than on value creation.</td>
</tr>
<tr>
<td>2.1</td>
<td>Technical demands limit the Value Added when the background of a demand is not known.</td>
</tr>
<tr>
<td>2.2</td>
<td>Technical demands limit the Value Added when a substantiated deviation is not allowed.</td>
</tr>
<tr>
<td>3</td>
<td>The Value Added is not used as a self-contained file.</td>
</tr>
<tr>
<td>4.1</td>
<td>The price of the Value Added is marginal relative to the price ceiling of the project because the price ceiling is perceived to be too tight to leave room for opportunities.</td>
</tr>
<tr>
<td>4.2</td>
<td>The price of the Value Added is marginal relative to the price ceiling of the project because tender procedure is too late in the total process of the infrastructure project.</td>
</tr>
<tr>
<td>4.3</td>
<td>The price of the Value Added is marginal relative to the price ceiling of the project because contractors assume that the client is only appreciating low prices/scared away by high prices.</td>
</tr>
<tr>
<td>5.1</td>
<td>The Value Added is not suitable for offering cost saving opportunities when it is not allowed to deviate from the technical demands.</td>
</tr>
<tr>
<td>5.2</td>
<td>The Value Added is not used for offering cost saving opportunities because the contractor’s mind set is set on extra value.</td>
</tr>
<tr>
<td>5.3</td>
<td>The Value Added is not used for offering cost saving opportunities because savings are already included in the basic offer.</td>
</tr>
<tr>
<td>6</td>
<td>Stakeholders in client organisation limit the buying of opportunities.</td>
</tr>
<tr>
<td>7</td>
<td>Opportunities in the category ‘benefits stakeholder community’ are most suitable for the Value Added.</td>
</tr>
</tbody>
</table>

Table 20 - The themes used in the cross-case analysis.
4.2. Interview results

4.2.1. Profile of the interviewees
As explained in the interview lay-out, information about the personal background of the interviewees was gathered. This is done to be able to compare the interviews with each other. In table 21 an overview of this information is given.

<table>
<thead>
<tr>
<th>Actor</th>
<th>Role interviewee</th>
<th>Experience with BVP</th>
<th>Experience tenders in general</th>
<th>Work experience client/contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td>3i Provincial client</td>
<td>Tender manager</td>
<td>Case was first, after case more projects</td>
<td>25 years</td>
<td>Contractor &amp; Client</td>
</tr>
<tr>
<td>3i Provincial client</td>
<td>Project manager</td>
<td>Case was first project</td>
<td>30+ years</td>
<td>Client</td>
</tr>
<tr>
<td>3ii Winning contractor</td>
<td>Tender manager</td>
<td>4 projects</td>
<td>15 years</td>
<td>Contractor</td>
</tr>
<tr>
<td>3iii Another contractor</td>
<td>Tender manager</td>
<td>Case was first, after case more projects</td>
<td>5 years</td>
<td>Client &amp; Contractor</td>
</tr>
<tr>
<td>9i National client</td>
<td>Contract manager</td>
<td>4 projects</td>
<td>23 years</td>
<td>Client</td>
</tr>
<tr>
<td>9ii Winning contractor</td>
<td>Project manager</td>
<td>4 projects</td>
<td>13 years</td>
<td>Contractor</td>
</tr>
<tr>
<td>9iii Another contractor</td>
<td>Project manager</td>
<td>5 projects</td>
<td>20 years</td>
<td>Client &amp; Contractor</td>
</tr>
<tr>
<td>13i Municipal client</td>
<td>Project manager</td>
<td>Small projects, on the side</td>
<td>2 years</td>
<td>Client &amp; Contractor</td>
</tr>
<tr>
<td>13i Winning contractor</td>
<td>Tender manager</td>
<td>7 projects</td>
<td>3 years</td>
<td>Contractor</td>
</tr>
<tr>
<td>13i Another contractor</td>
<td>Tender manager</td>
<td>Case was first</td>
<td>13 years</td>
<td>Contractor</td>
</tr>
</tbody>
</table>

Table 21 - Profile of the interviewees.

4.2.2. Comparing findings per theme
Different actors are interviewed and a categorisation of the actors can be made to be able to compare the interviews. The following comparisons will be made per theme, see table 22.
4.2.2.1. **Comparing findings theme 1 – When using the Value Added there is a stronger focus on selection than on value creation**

In all the interviews statements were found that relate to this theme. The theme is both confirmed and contradicted. When comparing the viewpoints of the different interviewees on this theme the following observations can be made. First, the perspective of client and contractor is radically different on this theme. The contractors (winners and others) unanimous confirm the theme. The contractors who did not win the tender are confirming the theme more strongly than the winning contractors. The clients are not confirming the theme at all. The interviewees with experience with BVP are mostly confirmative about the theme.

The interviews with the contractors show that the consideration whether an opportunity is submitted or not is more determined by the selection criteria than by the added value of the opportunity. The criteria for submitting opportunities that are mentioned are: the alignment to the project objectives (3ii, 3iii, 9i, and 13ii), the substantiation with VPI (9ii, 13ii), the weighing scores of the files (3ii, 3iii) and the accordance with the technical demands (3ii, 3iii, 9ii, 9iii, 13ii). The alignment with project objectives and the technical demands are mentioned most often. The opportunities with a potential good score are preferred above the opportunities which are potential the best for the project. This does not mean that the offered opportunities are not valuable, but they might not be the best opportunities. The clients confirm the importance the alignment with the project objectives. But this is mentioned in the context of value creation. One client said to aim at setting broad project objectives to not limit the possibilities for opportunities (9i).
<table>
<thead>
<tr>
<th>Category</th>
<th>Client</th>
<th>Winning contractor</th>
<th>Another contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>3i, 9i, 13i</td>
<td>3ii, 9ii, 13ii</td>
<td>3iii, 9iii, 13iii</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>+/-, -?, +, +, +</td>
<td>++, ++, ++</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>National client</th>
<th>Provincial client</th>
<th>Municipal client</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>9i</td>
<td>3i</td>
<td>13i</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>-</td>
<td>+/-</td>
<td>?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Client with contractor experience</th>
<th>Client with only client experience</th>
<th>Contractor with client experience</th>
<th>Contractor with only contractor experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>3i, 13i</td>
<td>9i</td>
<td>3iii, 9iii</td>
<td>3ii, 9ii, 13ii, 13iii</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>+/-, -?</td>
<td>-</td>
<td>++, ++</td>
<td>+, +, +, ++</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Experienced with BVP</th>
<th>Inexperienced with BVP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>3ii, 3iii, 9i, 9ii, 9iii, 13ii</td>
<td>3i, 13i, 13iii</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>+, ++, -, +, +++, +</td>
<td>+/-, ?, ++</td>
</tr>
</tbody>
</table>

This theme is related to the question about the goal of the Value Added: whether this is that value creation of selecting the best contractor? When considering the viewpoint of the interviewee on the goal of the Value Added with the attitude towards the theme it is outstanding that one interviewee (13ii) who considers value creation as the main goal of the Value Added confirms the theme. This implies that although he believes that value creation is the goal of the Value Added he recognizes that the Value Added is determined by the selection process. Most of the interviewees who see the goal of the Value Added as twofold confirm the theme (3ii, 9ii, 9iii, 13iii). One interviewee contradicted the theme, he saw the goal of the Value Added as a combination between selection and value creation. It must be noted that all the contractors who did not win the tender had a stronger focus on selection than on value creation.

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>3i</th>
<th>3ii</th>
<th>3iii</th>
<th>9i</th>
<th>9ii</th>
<th>9iii</th>
<th>13i</th>
<th>13ii</th>
<th>13iii</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirmative towards theme 1?</td>
<td>+/-</td>
<td>+</td>
<td>++</td>
<td>-</td>
<td>+</td>
<td>++</td>
<td>?</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>Goal of VA?</td>
<td>both</td>
<td>both</td>
<td>selection</td>
<td>both</td>
<td>Selection /both</td>
<td>Selection /both</td>
<td>value</td>
<td>value</td>
<td>Selection /both</td>
</tr>
</tbody>
</table>

4.2.2.2. Comparing findings theme 2.1: Technical demands limit the Value Added when the background of a demand is not known
When comparing the viewpoints of the different interviewees on this theme the following observations can be made. Statements related to this theme are only found in the interviews with the contractors. Two contractors confirmed the theme. It seems that the clients are not aware of the importance of the background of the demands for the understanding of their question by the contractors.
4.2.2.3. Comparing findings theme 2.2: Technical demands limit the Value Added when a substantiated deviation is not allowed

When comparing the viewpoints of the different interviewees on this theme it stands out that only one interviewee, a client, contradicts the theme. This client argues that rigid demands create a level playing field and give clarity to the market (3i). All experienced interviewees confirm the theme. The contractors confirm the theme more strongly than the clients.

<table>
<thead>
<tr>
<th>Category</th>
<th>Client with contractor experience</th>
<th>Client with only client experience</th>
<th>Contractor with contractor experience</th>
<th>Contractor with only contractor experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>3i, 13i</td>
<td>9i</td>
<td>3iii, 9iii</td>
<td>3ii, 9iii, 13iii</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>x, x, +</td>
<td>+, ? , ++</td>
<td>++, ++, x</td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Experienced with BVP</td>
<td>Inexperienced with BVP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interviews</td>
<td>3ii, 3iii, 9i, 9ii, 9iii, 13ii</td>
<td>3i, 13i, 13iii</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>x, +, +, ?, x, +</td>
<td>x, +, +</td>
<td>x, +, +, x</td>
<td>x, x, x</td>
</tr>
</tbody>
</table>

Table 25 - Comparison viewpoints interviewees theme 2.1.

4.2.2.4. Comparing findings theme 3 - The Value Added is not used as a self-contained file

Most interviewees confirm theme 3. When comparing the viewpoints of the different interviewees on this theme it stands out that the contractors are stronger confirming this theme than the clients. Experienced and non-experienced interviewees confirm the theme. The clients who had worked in the past in a contractor’s organisations confirm the theme, the client with work experience only at the client’s organisation did not.

Opportunities can jump from the Value Added to both the Performance Information and the Risk Assessment, this is recognised by eight interviewees. Different explanations are given to explain this. The behaviour of the contractor (the rotation of the statements in the three files) can be explained by the drive to win the tender (9iii, 13ii, 13iii). An optimal balance between the files will increase the probability of winning tender. This implies that a good opportunity might transform in a risk control measurement or performance statement and vice versa to bring both files to the maximum level. One client thinks that the preference for offering statements in the Performance Information instead of the Value Added is because of to the security the Performance Information

4. Intensive research
4.2.2.5. Comparing findings theme 4.1 - The price of the Value Added is marginal relative to the price ceiling of the project because the price ceiling is perceived to be too tight to leave room for opportunities

Evidence related to this theme was found in interviews with the clients and with the winning contractors. The interviewees have varying viewpoints about this theme. From the contractors, only the interviewees with only work experience at a contractor organisation had statements related to this theme.

The clients who worked with a price ceiling for the Value Added explained that when determining the price ceiling an estimation is made of the potential opportunities (3i, 9i). The clients did not expect larger opportunities due to the timing of the tender in the total process of the project (3i) and because the client felt a responsibility to be modest with spending money as a public authority (9i). One contractor explicitly said that price ceiling is often a challenge and is therefore a limitation for the therefore the Value Added (9ii).

<table>
<thead>
<tr>
<th>Category</th>
<th>Client with contractor experience</th>
<th>Client with only client experience</th>
<th>Contractor with client experience</th>
<th>Contractor with only contractor experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>3i, 13i</td>
<td>9i</td>
<td>3ii, 9ii</td>
<td>3ii, 9ii, 13ii</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>+/-</td>
<td>x</td>
<td>+/-</td>
<td>++</td>
</tr>
<tr>
<td>National client</td>
<td>3i</td>
<td>3i</td>
<td>13i</td>
<td></td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>+, +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced with BVP</td>
<td>3i, 3ii, 9i, 9ii, 9iii, 13ii</td>
<td>3i, 13i</td>
<td>13i</td>
<td></td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>x, +, x, ++, ++</td>
<td>++</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 27 - Comparison viewpoints interviewees theme 3.

4.2.2.6. Comparing findings theme 4.2 - The price of the Value Added is marginal relative to the price ceiling of the project because tender procedure is too late in the total process of the development of an infrastructure project

In two interviews, with a client and a contractor, statements were found that are related to this theme (3i, 9iii). Both interviews strongly confirm the theme. These interviewees claimed that less
variations are possible because the solution is already funnelled during the planning phases preliminary to the realisation of the project. Since just 2 out of 9 interviews were related to this theme, a further comparison is not adding value.

4.2.2.7. Comparing findings theme 4.3 - The price of the Value Added is marginal relative to the price ceiling of the project because contractors assume that client is only appreciating low prices/scared away by high prices

This theme is not about the assessment of the effectiveness of the price (the cost/benefit ratio), but about the assumptions that the client might make about the whole offer when seeing the prices of the opportunity. (For example: “If there is room for such an expensive opportunity, they must be ‘price-divers’ when they have budget left for this.” (9i))

In four interviews statements were found that are related to this theme. The theme is not contradicted: in three out of four interviews these statements are confirmative. In one interview it is not known if it is contradicted or confirmed. The theme is confirmed by a client, a winning contractor and another contractor. All these interviewees are experienced with BVP.

One client thinks that contractors anticipate on the attitude of the client towards the price of an opportunity, although he emphasised that this plays no role during the assessment (9i). This client has no work experience at a contractor’s organisation. One contractor thinks that the client will be negatively influenced by a high price during the assessment (9iii). One contractor says that when no price ceiling is given they anticipate on the assumption that the client generally reserves a 10-20% of their budget for opportunities (13ii).

<table>
<thead>
<tr>
<th>Category</th>
<th>Client</th>
<th>Winning contractor</th>
<th>Another contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>3i, 9i, 13i</td>
<td>3ii, 9ii, 13ii</td>
<td>3iii, 9iii, 13iii</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>x, +, ?</td>
<td>x, x, +</td>
<td>x, ++, x</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Client with contractor experience</th>
<th>Client with only client experience</th>
<th>Contractor with client experience</th>
<th>Contractor with only contractor experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>3i, 13i</td>
<td>9i</td>
<td>3ii, 9ii</td>
<td>3ii, 9ii, 13ii, 13iii</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>x, ?</td>
<td>+</td>
<td>x, ++</td>
<td>x, x, +, x</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Experienced with BVP</th>
<th>Inexperienced with BVP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>3ii, 3iii, 9i, 9ii, 9iii, 13ii</td>
<td>3i, 13i, 13iii</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>x, x, +, x, ++, +</td>
<td>x, ?, x</td>
</tr>
</tbody>
</table>

4.2.2.8. Comparing findings theme 5.1 - The Value Added is not suitable for offering cost saving opportunities when it is not allowed to deviate from the technical demands

In three interviews statements were found that are related to this theme. All these interviews are strongly confirmative. When comparing the different interviews on this theme it stands out that only in interviews with contractor’s evidence related to this theme was found, which is all confirmative. 3 of the 6 contractors strongly support the theme. These are both the winning and the other contractors. Only the experienced contractors support the theme. In the other interviews no statements were found related to the theme. This might imply that clients are not aware of the impact the technical demands can have on the ability of the Value Added to save costs.
4.2.2.9. Comparing findings theme 5.2 - The Value Added is not used for offering cost saving opportunities because the contractor’s mind set is set on extra value

In five interviews statements were found that are related to this theme. Four of the five are strongly confirmative. When comparing the different interviews on this theme it stands out that both clients and contractors confirm the theme. The clients can only confirm the theme in an assuming manner, the contractors admitted that they approach the Value Added only for added value. These are only contractors with no work experience at a client organisation. Furthermore, it is striking that only contractors who won the tender are confirming the theme.

4.2.2.10. Comparing findings theme 5.3 - The Value Added is not used for offering cost saving opportunities because savings are already included in the basic offer

In four interviews statements were found that are related to this theme. These are all confirmative or strongly confirmative towards the theme. This theme is recognised by both clients and contractors, experienced and inexperienced with BVP. The clients who confirmed the theme have worked for a contractor in the past. The main argument that is used is that possible savings are already included in the basic offer because of the competitive advantage that it gives to the contractor (when price is one of the selection criteria) (3i, 3iii, 13i, 13ii).
4.2.2.11. Comparing findings theme 6 - Stakeholders in client organisation limit the buying of opportunities

In four interviews statements were found that are related to this theme. These are all confirmative or neutral about theme 6. When comparing the different interviews on this theme it stands out that the interviewees with experience with BVP are more confirmative of the theme than the inexperienced. The theme is only confirmed by contractors, the clients are not strongly confirmative or contradictive.

The maintenance organisation is mostly mentioned as an actor in the client’s organisation influencing the purchase of opportunities. The aim of BVP to use the expertise of the contractor can be endangered when stakeholders within the client organisation have a strong opinion about the usability and applicability of the opportunities.

<table>
<thead>
<tr>
<th>Category</th>
<th>Client</th>
<th>Winning contractor</th>
<th>Another contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>3i, 9i, 13i</td>
<td>3i, 9i, 13i</td>
<td>3i, 9i, 13i</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>+/-, +/-, x</td>
<td>+, x, x</td>
<td>++, x, x</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>National client</th>
<th>Provincial client</th>
<th>Municipal client</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>9i</td>
<td>3i</td>
<td>13i</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>+/-</td>
<td>+/-</td>
<td>x</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Client with contractor experience</th>
<th>Client with only client experience</th>
<th>Contractor with client experience</th>
<th>Contractor with only contractor experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>3i, 13i</td>
<td>9i</td>
<td>3i, 9i</td>
<td>3i, 9i, 13i</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>+/-, x</td>
<td>+/-</td>
<td>++, x</td>
<td>+, x, x, ++, x</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Experienced with BVP</th>
<th>Inexperienced with BVP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>3i, 9i, 9i, 9ii, 9iii, 13ii</td>
<td>3i, 13i, 13iii</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>x, +, x, x, x, ++</td>
<td>+/-, x, x</td>
</tr>
</tbody>
</table>

4.2.2.12. Comparing findings theme 7 - Opportunities in the category ‘benefits stakeholder community’ are most suitable for the Value Added

When comparing the different interviews on this theme it is striking that 7 out of 9 interviewees are confirmative of this theme. The reasoning behind it differs though. Two contractors give as explanation for the many opportunities in this category, that it is what the clients appreciate most (9ii, 9iii). Another explanation that is supported by two contractors is that the opportunities lay in the domain of the client. When offering opportunities in this domain it is not already in the scope of the project (9ii, 13ii). This explanation is also supported by one client (9i). The other clients explain that the contractors seek for opportunities that are related to the image of the client (3i).
or that it is easier for the tender team of the contractor to relate to objectives in this category (13i).

At this moment the Value Added is used mostly to enhance the project objectives in the category ‘benefits stakeholder community’ but this might not be what the clients wants most. One client would appreciate opportunities related to ‘delivered on time’ (3i), the other clients do not share this opinion (9i, 13i). Another client would prefer opportunities related to ‘efficient use of resources’ (9i). The third client did not have a clear image of what type of opportunities he would prefer (13i).

<table>
<thead>
<tr>
<th>Category</th>
<th>Client</th>
<th>Winning contractor</th>
<th>Another contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>3i, 9i, 13i</td>
<td>3ii, 9ii, 13ii</td>
<td>3iii, 9iii, 13iii</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>+, +, +</td>
<td>+/-, +, +</td>
<td>x, +, +</td>
</tr>
<tr>
<td>Category</td>
<td>National client</td>
<td>Provincial client</td>
<td>Municipal client</td>
</tr>
<tr>
<td>Interviews</td>
<td>9i</td>
<td>3i</td>
<td>13i</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Category</td>
<td>Client with contractor experience</td>
<td>Client with only</td>
<td>Contractor with</td>
</tr>
<tr>
<td></td>
<td>3i, 13i</td>
<td>client experience</td>
<td>only contractor</td>
</tr>
<tr>
<td>Interviews</td>
<td>9i</td>
<td>3i</td>
<td>3ii, 9ii, 13ii, 13iii</td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>+</td>
<td>+</td>
<td>x, +, +, +</td>
</tr>
<tr>
<td>Category</td>
<td>Experienced with BVP</td>
<td>Inexperienced with BVP</td>
<td></td>
</tr>
<tr>
<td>Interviews</td>
<td>3i, 3ii, 9i, 9ii, 9ii, 13i</td>
<td>3i, 13i, 13ii</td>
<td></td>
</tr>
<tr>
<td>Supporting evidence?</td>
<td>+/-, x, +, +, +</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

Table 34 - Comparison viewpoints interviewees theme 7.

### 4.2.3. Determining the tentative assertions

In table 35 on overview is given of the occurrence of the themes in the interviews. This occurrence is used to determine the tentative assertions. To keep the research focussed and to avoid a division of the research in too many side paths Stake advises to set-up tentative assertions (2013). These tentative assertions will later be checked in the validation meeting to arrive at the definitive assertions.

The number of interviews that contained statements related to the theme is used to rank the themes (#interviews). When the theme occurs in 5 or more interviews the theme the utility is High. In 3 or 4 interviews the utility is Medium and in 2 or less the utility is low. See table 36. Theme 7 is left out of the ranking. This theme is based on questions that were asked by the researcher. Therefore, the relevance of the theme cannot be determined by the occurrence of the theme because the occurrence is biased by the researcher.

<table>
<thead>
<tr>
<th>Theme</th>
<th>3i</th>
<th>3ii</th>
<th>3iii</th>
<th>9i</th>
<th>9ii</th>
<th>9iii</th>
<th>13i</th>
<th>13ii</th>
<th>13iii</th>
<th>#interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>6</td>
<td>21</td>
<td>7</td>
<td>8</td>
<td>12</td>
<td>3</td>
<td>13</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>2.1</td>
<td>x</td>
<td>x</td>
<td>3</td>
<td>x</td>
<td>2</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>3</td>
</tr>
<tr>
<td>2.2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>x</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>x</td>
<td>3</td>
<td>x</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>7</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>4.1</td>
<td>4</td>
<td>3</td>
<td>x</td>
<td>4</td>
<td>2</td>
<td>x</td>
<td>x</td>
<td>2</td>
<td>x</td>
<td>5</td>
</tr>
<tr>
<td>4.2</td>
<td>2</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>1</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>2</td>
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<tr>
<td>4.3</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>1</td>
<td>x</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>x</td>
<td>4</td>
</tr>
<tr>
<td>5.1</td>
<td>x</td>
<td>x</td>
<td>4</td>
<td>x</td>
<td>2</td>
<td>4</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>3</td>
</tr>
<tr>
<td>5.2</td>
<td>3</td>
<td>2</td>
<td>x</td>
<td>3</td>
<td>3</td>
<td>x</td>
<td>x</td>
<td>1</td>
<td>x</td>
<td>5</td>
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<tr>
<td>5.3</td>
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<td>x</td>
<td>1</td>
<td>x</td>
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<td>2</td>
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<td>x</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 35 - The relevance of the themes based on the occurrence in the interviews.
The themes with a high utility factor are used for further research. Theme 7 is included as well, because the utility factor could not be determined based on the occurrence of the theme. Therefore, the relevance of theme 7 will be discussed during the meeting. The themes that are not selected are checked whether they contradict or strongly influence the selected themes.

### 4.2.4. Validation of the tentative assertions

A validation meeting is used to validate the generalizability of the tentative assertions. Persons involved with the projects that are used in the extensive research but were not selected for the intensive research are invited. Both actors from the client as the contractor organisation were invited. The actors of the different contractor companies are grouped in this section as ‘the contractor’ since they had a shared opinion and have the same perspective in a tender. The actors of the client’s organisation were all from one client organisation and are therefore grouped in this section as ‘the client’. More contractors responded to the invitation than clients, so the group did not have a 50/50 division. This should be considered when processing the statements of the meeting. After the validation meeting the not selected themes are reviewed to check whether or not they were mentioned during the meeting.

The themes are transformed into statements to stimulate discussion during the validation session. For the used statements see table 38.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Expected Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>When using the Value Added there is a stronger focus on selection than on value creation.</td>
</tr>
<tr>
<td>2.1</td>
<td>Technical demands limit the Value Added when the background of a demand is not known.</td>
</tr>
<tr>
<td>2.2</td>
<td>Technical demands limit the Value Added when a substantiated deviation is not allowed.</td>
</tr>
<tr>
<td>3</td>
<td>The Value Added is not used as a self-contained file.</td>
</tr>
<tr>
<td>4.1</td>
<td>The price of the Value Added is marginal relative to the price ceiling of the project because the price ceiling is perceived to be too tight to leave room for opportunities.</td>
</tr>
<tr>
<td>4.2</td>
<td>The price of the Value Added is marginal relative to the price ceiling of the project because tender procedure is too late in the total process of the infrastructure project.</td>
</tr>
<tr>
<td>4.3</td>
<td>The price of the Value Added is marginal relative to the price ceiling of the project because contractors assume that client is only appreciating low prices/scared away by high prices.</td>
</tr>
<tr>
<td>5.1</td>
<td>The Value Added is not suitable for offering cost saving opportunities when it is not allowed to deviate from the technical demands.</td>
</tr>
<tr>
<td>5.2</td>
<td>The Value Added is not used for offering cost saving opportunities because the contractor’s mind set is set on extra value.</td>
</tr>
<tr>
<td>5.3</td>
<td>The Value Added is not used for offering cost saving opportunities because savings are already included in the basic offer.</td>
</tr>
<tr>
<td>6</td>
<td>Stakeholders in client organisation limit the buying of opportunities.</td>
</tr>
<tr>
<td>7</td>
<td>Opportunities in the category ‘benefits stakeholder community’ are most suitable for the Value Added.</td>
</tr>
</tbody>
</table>

Table 38 - Expected utility factor of the theme (Low, Medium, and High)
### Theme | Statement
--- | ---
1 | The Value Added is in the first place a selection tool.
2.2 | It must be allowed to deviate from the technical demands in the Value Added.
3 | There is no clear line between the Performance Information, Risk Assessment and Value Added.
4.1 | The price ceiling leaves to little space for the Value Added.
5.2 | The Value Added is not used for offering cost saving opportunities because the contractor’s mind set is set on extra value.
7 | Opportunities in the category ‘benefits stakeholder community’ are most suitable for the Value Added.

Table 38 - The statements for the validation meeting.

In Appendix 5 the minutes of the meeting can be found (in Dutch). The discussion around the statements is summarized below.

**Statement 1 – The Value Added is in the first place a selection tool**
This statement is contradicted by the whole group. The goal of the Value Added is to add extra value to the project above the scope, something extra the client did not think of himself. Selection does play a role, but according to the validation group this is not a dominant aspect. However, later in the meeting various examples from practice and comments show that the selection aspect of Value Added is larger than claimed by the group.

**Statement 2 - It must be allowed to deviate from the technical demands in the Value Added**
This statement is confirmed by the whole group. Both client and contractor experience the technical demands as a limitation for the Value Added. The contractor emphasises that the process of making the Value Added is more creative when the demands are not the starting point. The contractors feel limited in their expertise role when the technical demands are strict, since it displays that the client is trying to keep control over the chosen solution in the project. The client explains that it is often hard for the project teams within the client organisation to let go of the technical demands. They are not used to it or have technical expertise themselves as well – and thus an idea about the standards the solution should meet.

**Statement 3 - There is no clear line between the Performance Information, Risk Assessment and Value Added**
This statement is confirmed by the whole group. Contractors admit the struggle they experience during the tender process to decide in which dossier the statements should be placed. The client does not consider this a problem.

**Statement 4 - The price ceiling leaves to little space for the Value Added**
This statement is contradicted by the group, although not strongly. The contractors explain that when a limited budget is left for the Value Added they will generate small opportunities.

**Statement 5 - The Value Added is not used for offering cost saving opportunities because the contractor’s mind set is set on extra value**
This statement is confirmed by the contractors in the group, they explain that they often search for the opportunities that can add extra scope to the project. In their experience the client is often not open for cost saving opportunities. The client did not recognize this. If the client appreciates cost savings differs per client and cannot be generalized.

**Statement 6 - Opportunities in the category ‘benefits stakeholder community’ are most suitable for the Value Added**
This statement is confirmed by the contractors of the group. The explanation they give is that these opportunities are easier to substantiate with VPI. Furthermore, the financial impact can be estimated accurately and therefore these opportunities carry little risks for the contractor.
According to the client, these are not the most desired opportunities. Opportunities in the category 'delivered on time' can be very valuable for the client.
4.3. Conclusions intensive research

The central sub-question in the intensive research was: "Which factors influence the use of the Value Added by clients and by contractors?" and will be answered in this sub conclusion. The themes used in the cross-case analysis will form the basis for this conclusion.

4.3.1. Tension between selection and value creation

There is a friction between the two goals of the Value Added, as seen from the perspective from the contractor. The attitude of the contractors towards theme 1 (When using the Value Added there is a stronger focus on selection than on value creation) is compared with their opinion of the goal of the Value Added. It is striking that the focus of some contractors is on getting selected while at the same time they name value creation - or a combination of value creation and selection - as the goal of the Value Added. During the process of making the Value Added the decisions of the contractor are guided by the drive to get selected. The result is that the opportunities with a potential good score are preferred above the opportunities which are potentially the best for the project, client and/or contractor. This does not mean that the offered opportunities are not valuable, but they might not be the best opportunities. This might be disappointing for the client, who says in the interviews to prefer value creation.

The validation session showed that this process is not preferred by both client and contractor: selection plays a role but it should not be a dominant aspect. According to the validation group, the main goal of the Value Added is to add extra value to the project above the scope, to add something extra the client did not think of himself.

4.3.2. Technical demands limit the Value Added when a substantiated deviation is not allowed

In the interviews both clients and contractors said that a deviation from the technical demands should be allowed. This was confirmed in the validation session. When the demands are leading it will limit the use Value Added and the expertise of the contractor. A deviation from the demands makes it possible to offer cost saving opportunities. One client did not agree with a deviation, in his opinion demands give clarity to the market. Letting go of the demands is a learning process for actors within the client organisation. The prioritisation of the demands – deviation allowed for the lower demands, not for the top demand - could be a good step in the direction of no demands. This is in line with the request in the interviews for the background of demands, prioritizations being a part of the background. When they know the reason behind a demand they can better estimate whether a deviation can still be in line with the reason behind the question.

4.3.3. The Value Added is closely related to the Performance Information and the Risk Assessment

In the interviews it was brought up that the contractors did not use the three dossiers (Performance Information, Risk Assessment and Value Added) as separate dossiers. Statements can easily transform from an opportunity into a risk control measurement into a performance statement. The choice for a dossier was made by weighing of in which dossier the statement would have the biggest impact on getting selected. Almost all contractors confirmed this, only
4. Intensive research

one claimed to regard the dossiers separately. The interviewed clients recognised this process. The close relation between the different dossiers is confirmed in the validation meeting.

4.3.4. The explanation for a lack of cost saving opportunities
In the interviews three explanations were given for the rarity of cost saving opportunities. One is discussed in the validation meeting, but the others are worth mentioning too because various aspects will influence this.

The first reason is that the savings are not offered because the contractor is focussed on how he can add extra value to the project. In the interviews not all contractors said relevant comments towards this explanation. The ones who did confirmed it. It was also endorsed by clients. This focus on extra value is recognized and confirmed in the validation meeting.

Another explanation that is given for the rarity of cost saving opportunities is that offering them is often not possible due to the technical demands. Often a deviation from the demands is needed to apply the cost saving measurement. Which is not allowed in each project. Lastly, a cost saving measurement is often already included in the basic offer because this gives the contractor a competitive advantage. Note that this is often only possible when a deviation from the demands is allowed in the basic offer.

4.3.5. Opportunities in the category ‘Benefits of the Stakeholder Community’ preferred by contractors, not by clients
Not all categories of opportunities are offered just as often as others. The extensive research showed that the Value Added is mostly used for offering opportunities that have an impact on the context and environment of the project. The contractors give various explanations for this in the interviews. Firstly, in their experience it is easy to obtain a high score on that type of opportunities. The downside of this is that it is harder to be distinctive and stand out from the crowd. Another reason is that it is often obvious that these opportunities are not part of the scope, thus the risk of a disqualifying offer (offering opportunities that are part of the scope) is minimized. In the validation session the preference of the contractor for this type of opportunity is confirmed. The explanation is that the financial impact of these opportunities is relative easy to estimate, which decreases the risks for the contractor.

Plenty reasons for the contractor to offer these opportunities. However, these are not most wanted by the client. In both the interviews as in the validation session the clients say that opportunities in the group ‘Benefits of the Stakeholder Community’ are not the ones they prefer.
5. Recommendations

PART 3
synthesis
5. Recommendations

In this chapter the final sub-question will be answered: “Which recommendations can be given to optimise the application of the Value Added in the Dutch infrastructure sector?”

Based on the findings out of the extensive and intensive research the following recommendations are given to optimise the application of the Value Added.

5.1. Recommendation 1

Findings of this research show that in the current application in the Dutch construction industry the Value Added does not reach its full potential. The Value Added is currently used as a selection criterion in all the tenders, whether the clients main aim of the Value Added is to add value or to select a contractor. It is recommended that the automatic use of the Value Added as a selection criterion should be changed. The client must be aware of what he wants to achieve with the Value Added. When his primary goal is adding value to the project he should not use the Value Added as a selection criterion. The reason for this is that the contractor will be focussed on getting a high score, when the score on his Value Added (partly) determines whether the project is awarded to him or not. During the interviews contractors explained that they make decisions in the process of making the Value Added based on the assessment criteria of the Value Added. The result is that the opportunities with a potential good score are offered, instead of the opportunities which are potentially the best for the project.

The following recommendation is formulated based on the findings of this research:

**Recommendation 1:** Do not use the Value Added as a selection tool when the primary goal of the client is to add value to the project.

When the Value Added will not be used in the selection but pure as a tool to add extra value to the project the contractors will approach the Value Added differently. They will be stimulated to offer opportunities that are feasible and add value instead of opportunities that will receive a high score but may have little chance on implementation. This is expected to have a positive effect for both parties. The contractor does not invest time in making opportunities that will not be implemented and the client will only receive realistic opportunities.

When the Value Added is not used as a selection criterion it is still interesting for the contractor to invest energy into it. In article 2.163 of the new procurement law (Dutch: Aanbestedingsreglement Werken 2016, ARW 2016) the maximum of changes in the scope of the contract is set at 10% of the price of the original scope. But bought opportunities that lead to changes in the original scope do not count in this 10%. This means that when opportunities worth 5% of the price of the original scope are bought, later in the project changes can be applied of the size of 10% of the original price. This sums up to 15% changes in total. This is an opportunity for the contractor to enlarge the value of the work and could be a stimulus to offer a Value Added when this is not needed to be selected.

An addition to this recommendation is the following:

**Recommendation 1-b:** In consultation with the involved contractors the client can buy opportunities from all the offered Value Added.
To enlarge the potential of the impact of the Value Added, the client should be able to buy opportunities from all the offered dossiers. It would be a waste of energy when good opportunities cannot be used because they do not originate from the winning party. Of course, this can only be done in consultation with the winning contractor and with the contractor who offered the opportunity in question. The consultation with the other contractor should be about if he is willing to ‘give’ his idea to the winning contractor. A financial compensation could be discussed, to reward his idea and the energy he invested into it. The consultation with the winning contractor should be about if the opportunity fits in with his plans.

This recommendation developed during the interviews and various interviewees were consulted about it. The interviewees understood the idea from an idealistic and best-for-project perspective. The main objection was the competitive advantage an opportunity can give to a contractor. Especially with opportunities that are not project specific but could be applied in multiple projects the contractors prefer to keep them for themselves. But, when the Value Added is not used as a selection criterion this objection is irrelevant. In that case the possibility to purchase opportunities from all the dossiers increases the possibility that the contractor can add value to the project.

These recommendations are discussed with the representatives of Best Value Procurement in the Netherlands and the authors of the books ‘Prestatie-inkoop’ and ‘Best Value stroomt’: Sicco Santema, Wiebe Witteveen and Jeroen van de Rijt.

They emphasised that it is the main goal of BVP to select the best available contractor. The Value Added plays a role in this and when it is left out of the equation BVP would be less effective. This aligns with the final conclusion of the intensive research: two perspectives on the use of the Value Added can be distinguished.

Van de Rijt wondered whether the contractor would still be motivated to invest energy in the Value Added when this would not get him selected. The argument of article 2.163 of the procurement law convinced him that this would provide a motivation for the contractor to submit a Value Added. Furthermore he considered the possibility to purchase opportunities from all dossiers an enrichment of the Value Added.
5.2. Recommendation 2
According to interviews with both clients and contractors, the Value Added is limited when the bidders have to follow the technical demands of the client. This is confirmed in the validation meeting.

The use of the expertise of the contractor, a crucial aspect according to Kashiwagi, is hampered when a deviation from the demands is not allowed. By setting up strict demands the client stays in control. In a situation like that the solution space is smaller and for a large part determined by the client. During the validation meeting both clients and contractors said that the Value Added would fulfil its potential better when the technical demands are not mandatory.

One reason for mandatory demands that was given by a client in an interview was the maintaining of a level playing field. All bidders should submit a solution that meets the same demands to be able to compare them. In his opinion this is fairer because it provides clarity to the bidders. However, this clarity can also be achieved when it is known by everybody that it is allowed to deviate from the demands in the Value Added. The level playing field is maintained in the offering of the basic scope.

This lead to the second recommendation:

**Recommendation 2:** It must be allowed to deviate from the technical demands in the Value Added.

Allowing a deviation from the demands asks for a change in attitude from the client organisation. It will take time to let all the involved actors get used to this change. This should be considered when the recommendation is applied.

*These recommendations are discussed with the representatives of Best Value Procurement in the Netherlands and the authors of the books ‘Prestatie-inkoop’ and ‘Best Value stroomt’: Sicco Santema, Wiebe Witteveen and Jeroen van de Rijt.*

This recommendation is endorsed by van de Rijt and Witteveen. They refer to a section in their book ‘Best Value Stroomt’ where they make a similar suggestion. They propose four options regarding the demands, ranging from prescribed till complete freedom. The first option is that the client gives strict demands which the contractors have to follow. This occurred in one of the cases in this research as well. This option does not fit well with BVP according to van de Rijt and Witteveen. The section option is that a deviation from the demands is allowed in the Value Added, as suggested in this recommendation. The third option is that the client formulates his demands as wishes but the contractor can come up with something else when they have a better idea. This fits in the BVP philosophy of utilising the expertise of the contractor by letting him decide upon the best solution. The fourth option is that the client does not give demands at all.
PART 4
results

6. Discussion
7. Conclusions
6. Discussion

The objective of this research is twofold: to create insight in and to optimise the current application of the Value Added in the Dutch infrastructure sector. Fourteen tender projects are analysed to gather data on the current use of the Value Added. The reasoning behind this data is assessed by interviewing actors involved in the tender from both the client’s and the contractor’s organisation.

6.1. Limitations of the research

When critically assessing the applied research method the following limitations of the research should be mentioned.

The sample of cases used in this research is relative small to use for a qualitative analysis. Including more cases would give a more generalizable image of the current application of the Value Added.

The categorisation of the opportunities by type can contain an interpretation bias. This is minimized by analysing the dossiers within a time span of one week. The confidential character of the dossiers limited the access to the files. A second review by the researcher or a review by an assistant to validate was not possible.

In the category ‘within budget’ one objective is different than the others. 6 Project objectives included in this category were ‘delivering the project within budget or as much as possible below’. One project took the life cycle costs of the project into account. This is a different way of approaching the cost of a project and will attract different opportunities. By including them all in one category this differentiation cannot be made.

In the category ‘satisfies needs of stakeholders’ both internal (maintenance organisation) as external stakeholders are included. Both stakeholders require a different handling and thus different opportunities. With both internal and external stakeholders included in the category a less specific image is created.

The themes in the cross-case analysis are based on the first impressions of the researcher. It can be that the interviews contain more information than the analysis shows at the moment. When a thematic approach would have been applied the coded words in the firsts step of the analysis are broader than in the cross-case analysis that is applied in this research (Braun & Clarke, 2006).

6.2. Recommendations for further research

The recommendations include a change in the way the Value Added is used. Whether this change will fit into the current juridical framework was not within the scope of this thesis but is worthwhile to look into.

Research into the application of the recommendations, testing them in practice, would enlarge the value of the recommendations and is therefore recommended.

This research showed that the three dossiers in a Best Value tender are strongly interrelated. This research was focussed on the Value Added. Since opportunities can change into risk control measurements or performance statements a focus solely on the Value Added does not provide a complete image. Further research could take all the three dossiers into account. The willingness of contractors to cooperate in the research might decrease because they are hesitant to share their whole proposal.
7. Conclusions

The main research question of this thesis is: “What is the reasoning behind the current application of the Value Added in Best Value Procurement tenders in the Dutch infrastructure sector and how can this application be optimised?” This question will be answered in this conclusion. The sub-questions lead up to the main research question and will be answered first.

SQ 1: What is Best Value Procurement?
Best Value Procurement (BVP) is a procurement method which is focussed on solving inefficient tender procedures. BVP is based on the Information Measurement Theory (IMT): the idea that with all information available, the selection of the contractor can be made objectively (Kashiwagi 2002). Another core concept is that the contractor who is selected using BVP is the expert-contractor who
- knows the best method to reach the goal of the client;
- can control risks inside his own sphere of influence and will act pro-active to control the risks outside his own sphere of influence;
- can see opportunities to create extra value for the client.

SQ 2: How is the Value Added embedded in the Best Value Procurement methodology?
The Value Added is one of the three dossiers a vendor has to submit during a tender, the other two being the Performance Information and the Risk Assessment. In the Value Added the bidder proposes opportunities to enhance the project’s objectives, outside the scope of the project. Two rules are crucial in the use of the Value Added according to the BVP methodology:
- the offered opportunities must be aligned with the project objectives and should not randomly add extra features to the project;
- the offered opportunities must be underpinned with dominant information, to allow for an objective judgement.

SQ 3: How is BVP placed in the Dutch procurement context?
BVP is applied with both the open and the restricted procedures. The advantage of the open procedure is that parties are not excluded from the process to early. This increases the chance that the expert is found in an unexpected corner. The restricted procedure saves transaction costs, which is a claim of the BVP method as well (van de Rijt & Santema, 2013). BVP can only be applied using award criteria ‘best price/quality ratio’ since the Performance Information, Risk Assessment, Value Added and the interviews needs to be involved in a criterion.

Integrated contracts align best with the core aspects of BVP. According to Skitmore & Marsden, integrated contracts have a high score on speed, certainty and risk avoidance and responsibility (1988). This aligns with the objectives of BVP.

SQ 4: What is the added value of infrastructure and how is this perceived by the public client and by the contractor in the Dutch infrastructure sector?
In this thesis the perception of value of an infrastructure project is approached by analysing how client and contractor assess the success of a project. Success of a project is measured by the client in terms of money, time and quality but also the effects on the client’s organisation and on the stakeholders of the project. In addition to this, the contractor’s project success is measured by the satisfaction of the client. The following differences between the client’s and the contractor’s approach towards projects success are found in the literature:
The client puts a stronger emphasis on the satisfaction of all actors connected to the project, whereas the contractor is focused on the satisfaction of the client.

- The success of a project plays an important role for the continuation of the contractor’s organisation (for his budget as well as for his reputation). For the client this is less significant.
- The contractor success criteria are related to the fulfilment of performance requirements and technical specifications. These can be determined at the start of the project and therefore have a static nature. In the eyes of the client project success is determined by “fit for purpose”. The purpose of a project is dynamic in nature and can change in time, influenced by the interests of the various actors.

SQ 5: What is the current use of the Value Added in the Dutch infrastructure sector?

*Most opportunities are in the category ‘Benefits Stakeholder Community’*

By arranging the opportunities in categories insight is created in what kind of opportunities are offered. For the categorisation of the offered opportunities the success criteria of Koops et al. (2015) are used. By using this categorisation, it is possible to take all aspects of project success into account. The success criteria are grouped using the Square Route of Atkinson (1999). Most offered opportunities contribute to: ‘Benefits Stakeholder Community’. This group includes the following categories: ‘Satisfies needs of stakeholders’, ‘Satisfies needs of users’, ‘Impact on the environment / sustainability’ and ‘Project specific political or social factors’. How often an objective was asked by the client does not determine the number of opportunities that are offered aligned to this objective. ‘Delivered on time’ was asked more often than ‘Satisfies needs of users’, ‘Impact on the environment / sustainability’ and ‘Project specific political or social factors’ but received far less opportunities.

*Not all opportunities are aligned with the project objectives*

The Best Value methodology prescribes that opportunities should be aligned to the project objectives in order to receive a high score (Rijt & Santema, 2013). This is not always done in practice. Three groups of opportunities can be distinguished, based on the level of alignment of the opportunities, see figure 41. Some opportunities were not aligned with the project objectives at all (the third group in figure 41). The unaligned opportunities contributed mostly to the categories ‘Delivered on time’, ‘Within budget’, ‘Safety’ and ‘Efficient use of available resources’. In total 5,7% of all opportunities included in this research were not aligned. Some aligned opportunities were substantiated with an alignment to project objectives that were not asked (the second group in figure 41). In total 11,5% of all opportunities included in this research were partly aligned.

![Figure 41 - Three groups of offered opportunities, division based on the alignment with the project objectives. ‘Aligned opportunities’ is the biggest group, with 81,8% of all offered opportunities.](image-url)
Price is marginal

Regarding the price of the Value Added two aspects were considered: the price of the individual opportunities and the price of the total Value Added. To be able to compare the different cases with each other, the price is put into relation with the price ceiling of the project.

The price ceiling is applied in different ways in the cases in this research. In eleven cases the price ceiling was the limit for scope + Value Added. In the other cases the price ceiling was the limit for the scope + the price of an individual opportunity or was the limit for the scope. In the latter the Value Added had no budgetary limit at all. The different ways of applying the Value Added seem to have an influence, although not significantly, see table 39.

The price of the individual opportunities and of the total Value Added is marginal relative to the price ceiling. The average price of an individual opportunity is 1.37% of the price ceiling. The price is slightly higher when there is no budgetary limit on the Value Added at all than when the price ceiling is the budgetary limit. Most of the bidders did not use the whole budget space available. The average not used budget space is 9.27%.

<table>
<thead>
<tr>
<th>Situation price ceiling</th>
<th>1 - price limit for scope + VA</th>
<th>2 - price limit for scope + individual opportunities</th>
<th>3 - price limit for scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of submissions</td>
<td>41</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Average price individual opportunity</td>
<td>1.17%</td>
<td>1.97%</td>
<td>1.87%</td>
</tr>
<tr>
<td>Average price Value Added</td>
<td>4.77%</td>
<td>6.31%</td>
<td>8.53%</td>
</tr>
<tr>
<td>Average not used budget space</td>
<td>9.27%</td>
<td>4.48%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Table 39 - Overview of the price of the Value Added relative to the price ceiling of the project.

Bought opportunities

On average the clients bought 63% of the offered opportunities from the winning bidder. Most of the bought opportunities are aligned to the categories in the group ‘Benefits Stakeholder Community’. Furthermore, client bought a large part of the opportunities in the categories ‘Delivered on time’ and ‘Efficient use of available resources’.

Not only opportunities aligned with the project objectives were bought, the clients also bought unaligned opportunities. These were opportunities in the categories ‘Safety’ and ‘Impact on environment/sustainability’. In half of the cases the clients bought the whole Value Added. This happened more often in projects with a relative low (below 10 million) price ceiling.

SQ 6: Which factors influence the use of the Value Added by clients and by contractors?

Competition

The first factor influencing the use of the Value Added is the competition between contractors in the tender phase. This is expressed in different ways which will be discussed hereafter.

The competition is tangible in the drive to win that the contractors express during the tender phase. This results in a focus on the selection criteria when the contractors make the Value Added. Opportunities with a potential good score are offered instead of the opportunities which are potentially the best for the project, client and/or contractor. This does not mean that the offered opportunities are not valuable, but they might not be the best opportunities. Also, contractors are inclined to offer the opportunities of which they expect that the client will appreciate them.
Furthermore, the interviews revealed that most contractors are not willing to share their opportunities with the winning contractor if they have lost the tender. Especially when the opportunity might be applied in another project as well, because they do not want to lose the competitive advantage. If the opportunity would be shared with other contractors the distinctive value of the contractor decreases.

The drive to win influences the whole offer, not solely the Value Added. The contractor regards and treats the three different files as a whole. Statements that could be good opportunities might transform into performance statements or risk control measurements if this leads to a higher score. The price of the basic offer has its influence on the Value Added. In most cases the basic offer determines the budget space for the Value Added and cost saving opportunities are more likely to be offered in the basic offer to keep the price low.

Technical demands
The second factor influencing the use of the Value Added are the technical demands. This influence both the client and the contractor.

Change in attitude of the client
The client can decide how he deals with the demands. His options range from set strict demands – thereby influence the end results of the project – to give complete freedom. Traditionally the client was in control in a project. Setting strict demands is something that fits in the traditional role division between client and contractor. The change in role division that is expected in a BVP tender demands a different attitude of the client. The client loses a feeling of control over the project when he allows deviation from the demands or sets no demands at all. It takes time to let the actors within the client’s organisation get used to it. Allowing the contractor to deviate from the demands in the Value Added can help the client in the process of letting go of control. He can still choose if he will purchase the opportunities that deviate from the demands.

Space for the expertise of the contractor
The technical demands determine for a large extend the solution space of the Value Added. With strict demands the solution space is smaller meaning that less opportunities can be offered. This limits the possibility to use the expertise of the contractor.

Avoiding risks
The third factor influencing the use of the Value Added is the risk avoiding behaviour of the contractor. This is notable when he prefers to offer opportunities that do not introduce risks for him. This can be risks associated with executing the opportunity with the tender procedure, like the chance of getting disqualified or a low score.

Main research question:
What is the reasoning behind the current application of the Value Added in Best Value Procurement tenders in the Dutch infrastructure sector and how can this application be optimised?

The main research question consists out of two parts which will be answered below.

Two perspectives to approach the Value Added
Not every client has the same goal in mind when asking for a Value Added. The contractors pursue a different goal while writing the Value Added as well. Based on the findings of this research two perspectives can be distinguished, providing two viewpoints on aspects surrounding the use of the Value Added. See figure 42. Perspective 1 is focused on the selection of the best expert. Perspective 2 is focussed on the creation of extra value for the project, the client and the contractor. A combination between the two perspectives also exist, in which the two goals are
balanced. However, as the aspects hereafter will show, it is hard to fulfil both goals in a balanced way.

Figure 42 – Two perspectives on the goal of the Value Added.

Marginal price of the Value Added
The fact that the Value Added has a marginal price is valued differently in the two perspectives. From the viewpoint of perspective 1 the price of the Value Added is not very relevant. It is important that the contractor shows his expertise by offering a realistic price. Whether the Value Added substantially contributes value to the project comes second. In the validation session a contractor illustrated the first perspective as follows. He explained that when he has little budget left for the Value Added he will offer cheap opportunities. He did not consider this as a limitation, because he could still receive a high grade for the Value Added.

Following perspective 2 the price is relevant. The price of the Value Added is not equivalent with the value that is added by the Value Added, this can include non-monetary aspects as well. However, the price is an indication of the value and therefore an indication of how much value is created, which is the core of perspective 2.

Purchase of opportunities
In perspective 1 the goal of the Value Added is fulfilled at the moment the best expert is found. It might be that he offered a Value Added which was assessed with a high grade but none of the opportunities are bought. This is not a failed case in the eyes of the first perspective: the goal of selecting the expert is fulfilled. The following comment illustrates this viewpoint. In an interview a contractor said about opportunities that are not bought: “That does not really matter to me, it has already fulfilled its role during the tender.” (Interview 9ii).

According to the second perspective it would be a failed case when no opportunities are bought. It is considered a waste of time and energy because without buying opportunities no extra value is added to the project, leaving the goal unfulfilled.

Freedom in the Value Added: allowing deviation from the technical demands
In both perspectives the permission to deviate from the technical demands is preferred, although being for different reasons. In perspective 1 the deviation of demands is preferred because it will give the contractor the opportunity to display his expertise. He gains more freedom to provide a solution which he considers best. The various bids will be more distinctive which will make the selection more interesting.

According to perspective 2, the deviation from the demands is preferred because it would create more possibilities to add value to the project.
Optimisation of the current application

The two perspectives on the Value Added should be taken into account when the tender procedure is designed. This implies that the Value Added should not be applied the same way in every case. When applying the Value Added the client should be aware of what he wants to achieve with it. If his goal is to create extra value and if he would like to be surprised by the ideas of the contractor another approach is advised than when he is using the Value Added predominantly as a selection tool.

Based on the findings in this research the following recommendations are given.

Recommendation 1: Do not use the Value Added as a selection tool when the primary goal of the client is to add value to the project.

Based on the findings of this research it is recommended to not automatically use the Value Added as a selection criterion. The client, or his advisor, should first contemplate what he wants to achieve with the Value Added. When the primary aim of the client is to add extra value by using the Value Added it should not be used as a selection criterion. When the Value Added is used to determine which contractor should win the tender it will steer the focus of the contractor while writing the Value Added. He will be focussed on the opportunities with a high chance of a good score. This might lead to a situation in which the contractor is offering what the client wants to hear, while the client is hoping to get things he had not thought of himself.

Recommendation 1-b: In consultation with the involved contractors the client can buy opportunities from all the offered Value Added.

It is advised to apply this recommendation in combination with recommendation 1. This recommendation will maximize the value that can be added by the Value Added by using all the offered dossiers. This way the energy that is put into it by the contractors will not be wasted. Furthermore, it increases the probability that opportunities will be purchased, which can work as a stimulus for the contractor to invest energy in the Value Added.

Recommendation 2: It must be allowed to deviate from the technical demands in the Value Added.

Technical demands reduce the solution space of the project. By allowing a deviation from the demands in the Value Added the contractor has a greater opportunity to show his expertise and to add value to the project. Also, it is possible to offer cost saving opportunities when a deviation is allowed.

Note that if a deviation from the demands is allowed in all aspects of the tender (not only in the Value Added but also in the Performance Information and Risk Assessment) the Value Added might become less relevant. The basic scope is less clear defined which implies that a lot of options can already be included in the basic offer. In such a case the Value Added will mostly be used to offer expensive options.
8. References


Robbe, T. (2012). Wanneer Best Value geen Best Value meer is


