

MSc Thesis | Construction Management and Engineering

Delft University of Technology | Tom Gaaff

Getting the most out of BVP tenders: An exploratory research into the effects and implications of the introduction of BVP on Dutch construction market



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Construction Management and Engineering | Delft University of Technology

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Disclaimer

The research of this master thesis is aimed at obtaining the degree of Master of Science at the Delft University of Technology in cooperation with Infram.

Preface

During my master programme Construction Management and Engineering at the Delft University of Technology, procurement methods had always fascinated me and I was determined to do my master thesis about procurement processes. I encountered the procurement method 'Best Value Procurement' and it was clear to me that there was still research to be done on this relatively new procurement process.

In search of the problem area I was going to put my focus on, I had discussions with experts in the field and stumbled upon the area of alignment of project goals, understanding of the client's wishes and the learning aspect of tender processes. During the analysis phase of my research I found that there was a more dominant 'problem' at hand; shifts of expertise in the Dutch construction market due to the BVP award mechanism. It changed my original desire of a research design with a practical view to a more theoretical based research.

During the process of conducting my research I encountered many professionals with whom I had the pleasure of having interesting discussions with which helped me tremendously with my research. I also had the possibility to gain insight in the practices of professionals in the construction industry which helped me on a more personal level.

I would like to thank the members of my graduation committee for supporting my research, giving me new insights which helped to bring this thesis to a higher level and guarding me from possible pitfalls. Even though their schedules did not always allow it, they still found time to supervise my research. I would also like to thank Infram for providing me all the facilities needed, and more, to conduct my research. It really has been a great help and addition to my research to engage in discussions with the staff of Infram and being able to present and discuss my findings. I would like to thank friends, family and housemates, for supporting me when I asked for their help. All in all, conducting this research has been a great journey of mostly ups, some downs and hard work and helped me to grow as a person.

Tom Gaaff
Delft, 2014

Reading Guide

This is a master thesis with the goal to obtain the degree of Master of Science at the Delft University of Technology. The report is divided into several parts, being: The research design, theoretical model, the (empirical) data gathering, analysis of the data, conceptual model and conclusions and recommendations. To support the reader in his ability to scan through the report quickly, there are summaries of important information before several paragraphs. The reader should be able to only read these sections and comprehend the substance of this thesis report.

The summary sections look as follows:



These are the summary sections of this thesis report. There is a red indication symbol on the left of these boxes. In these sections, a summary of the material provided in the chapter has been made for the reader who does not want in-depth information, but only the main findings.

In §1.5, a summary of the research proposal made for this study can be found. Chapter §2 is the theoretical framework and helped the researcher in providing a broad scientific basis necessary for the analysis section in §3.

Empirical data has been gathered in the form of interviews and cases in section §2.8 (extended version can be found in the appendices, §9.2) to support the theoretical basis and provide the researcher with more insights for his analysis.

Chapter §4 is the syntheses part of this research and takes all previously gathered information and attempts to model an improved process. Validation of the most important constructs of this research will take place in §5.

A discussion into the scientific relevance and possible ambiguities in the research in §6. Conclusions and recommendations can be found in section §7.

Executive Summary

Procurement is not a profession of recent years and has evolved to its current form over a long period of time. Pressure of the Dutch Government because of collusion fraud, signals from the market that lowest bid didn't work anymore, and time for a change in the construction industry led to a demand for a new procurement system. Therefore BVP gained ground quickly. Best Value Procurement focusses on finding the best suitable vendor, spurring him to the highest performance while minimizing the client's managerial and risk control tasks. This is achieved by putting the vendor in the seat of expert and letting him guide the client throughout the project.

The problem

Currently, BVP works because of best practices and support by a multitude of organizations, including the largest authority on public works in the Netherlands (Rijkswaterstaat). Organizations are still constantly optimizing BVP methodology and therefore the procurement process has changed shape various times since its introduction. However, there was never research conducted into effects and implications this procurement method has on the future construction industry. The objective of this research is therefore to provide insight in the workings of the BVP vendor selection procedure and to explore the implications of the BVP award mechanism on the future Dutch construction industry. This research has used a combination of an extensive literature study and empirical data, e.g. interviews, discussions with experts and brainstorm sessions, as an input for the analysis phase before constructing a conceptual model.

Analysis

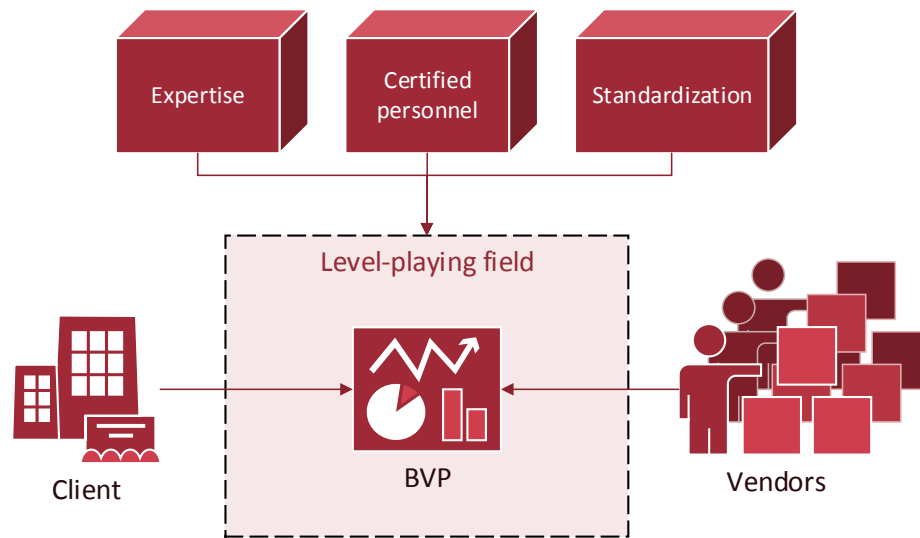
In the analysis section, the quest was to get more insight in the mechanisms involved in the vendor selection process and the effects on these on the Dutch construction market. This resulted in several constructs. First of all, usage of dominant information to assess expertise can lead to an altered perception of the expert. Secondly, alignment of organizational goals and abilities is currently only occurring on project level and to a limited extend on organizational and industry level. Furthermore, the safeguarding of objectivity is difficult and may lead to an altered perception of the expert. Currently, there is no organ who assesses the assessor. Also, prepossession of the client can lead to a solution bias, favoring one vendor over the other. Additionally, market education concerning future client's needs are below par.

Next, the implications of these mechanisms where studied and a 'quick and dirty' scenario analysis was made. First of all, choosing a perceived expert due to the mechanisms described above, possibly neglecting the actual expert and disadvantaging the top performer. Secondly, a limited learning process will result in a market where the competition in specific disciplines will diminishes. Thirdly, however BVP dictates it stimulates innovation, this research found arguments that there are sign of BVP slowing down innovation and improvements can be made. Furthermore, current market conditions emphasize the need for an improved learning process and raised awareness of client's to invest in their suppliers. Also, organization that implement BVP as a procuring method must be aware that it does not become a 'trick', since this results in vendors creating a bid which focusses on pleasing

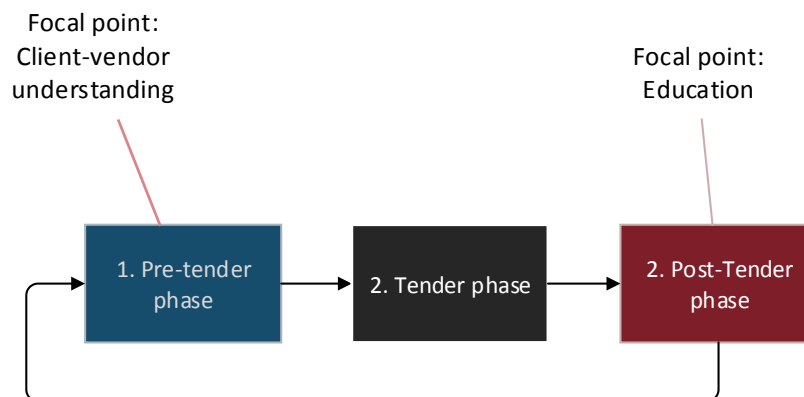
the client's assessment committee, not to maximize quality for the client. Another implication is that it is likely that BVP decreases the number of experts (organizations) in specific disciplines, but helps create more expertise in general (personnel).

Synthesis

In the synthesis section, all insights gathered in this research is combined and a proposal is made which attempts to resolve the issues and problem areas found in the analysis phase. Here, not a radical change from the BVP process itself is proposed, but a 3-phase model with boundary conditions to enhance the current implementation. The boundary conditions focus on creating a level-playing field. They are a (1) cross-check on expertise by the client during the interview element of the procedure, (2) BVP certified and capable personnel on both sides to ensure proper implementation of the B philosophy and (3) standardization of evaluation practices to get maximum gains from lessons learned.



The three phases consist of the pre-tender, tender and post-tender phase. The pre- and post-tender phase have a different focal point. The first focusses on client-vendor understanding and the latter on education. The set of boundary conditions combined with the three phases ensure an enhanced implementation of BV in the construction industry in the Netherlands.



Conclusions and Recommendations

The research has shown that the introduction of BVP has had its implication on the Dutch construction industry. Mainly being that with current practices, we are heading towards specific disciplines with fewer, but more specialized experts. Also, the mechanisms that have been studied have shown the influences they have on vendor selection, often leading to the perceived expert instead of selecting the top performer. Do we get *an* expert to do the job? Yes. Are we getting *the* best expert? Maybe not. Furthermore, there is room for improvement on the topic of client-vendor alignment. Efforts should focus more on the shifted responsibilities of client and vendor and the responsibility of the client to educate the market about its future needs. More implications of these conclusions and tangible recommendations can be found in section §7.3 and §7.6.

List of abbreviations

BVP	Best Value Procurement
BV	Best Value
PPP	Public-Private Partnerships
D&C	Design & Construct
PDC	Plan, Design & Construct
BVP/PIPS	Best Value Procurement/Performance Information Procurement System
CO	Contracting Officer
DBFM(O)	Design, Build, Finance, Maintain & Operate
DIKW	Data, Information, Knowledge and Wisdom
EMAT	Economically Most Advantageous Tender
EMVI	Economisch Meest Voordelige Inschrijving
I&M	Infrastructuur en Milieu
IM	Information Management
IMT	Information Measurement Theory
ISO	International Organization for Standardization
KPI	Key Performance Indicator
KSM	Kashiwagi Solution Model
NEVI	Nederlandse Vereniging voor Inkoopmanagement
OCA	Organizational Capabilities Approach
OKTA	Operational Knowledge Transfer Activities
PBSRG	Performance Based Studies Research Group
PPI	Past Performance Information
QPI	Quantifiable Performance Information
RAVA	Risk Assessment and Value Added
RWS	Rijkswaterstaat


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1 Introduction

This chapter will give a short introduction to the topic which is being researched in this thesis. After this brief overview of the current situation, there will be an introduction to the problem definition that instigated this research. After the problem definition, the research objectives, questions and methodology will be briefly introduced to the reader.

 *Procurement is not a profession of recent years and has evolved to its current form over a long period of time. Depending on the size and nature of the project, the procurement method itself varies. Best Value Procurement focusses on finding the best suitable vendor, spurring him to the highest performance while minimizing the client's managerial and risk control tasks. This is achieved by putting the vendor in the seat of expert and letting him guide the client throughout the project.*

In conversation with vendors a problem definition was distilled. BVP led to a change of paradigm in the construction industry and some organizations are still struggling to incorporate the 'BV way of thinking' in their organizations. Now, it is the vendor who is supposed to have all the expertise instead of the client. These shifted responsibilities also require a different market approach by the client. Is everybody aware of these responsibilities? Does the client choose the actual expert? What are the implications of current BVP practices the on construction market in the future?

The objective of this research is to provide insight in the workings of the BVP vendor selection procedure and to explore the implications of the BVP award mechanism on the future Dutch construction industry.

This research will use a combination of desk research and empirical data as an input for the analysis phase before constructing a conceptual model. The desk research will consist of underlying theories related to supplier-buyer relationships and the empirical data will be mainly gathered from interviews, discussions with experts and brainstorm sessions. Then conclusions and recommendations will follow after the discussion section of this research.

1.1 Procurement, an old profession

What is procurement? Why is it important? And how did it evolve over time? In order to answer the first question, we can look at the definition of procurement according to the Oxford dictionary: "Procurement is the action of obtaining or procuring something" (Oxford University Press, 2014). This tells us the technical definition, but does not explain what procurement actually is and what form it takes. Procurement has been an integral part of the free market society for centuries. It was in more evolved societies among Roman times that the first contracts between public and private parties were made. After the fall of the Roman Empire, and the loss of knowledge on many subjects, it took a while for the rebirth of the contract to take place. It was part of the economic, political, and intellectual renaissance of Western Europe (Mehren, 2013). As contracts evolved and legal liabilities grew due to an evolving legal system, concern for better contracts and living up to them was growing. In parallel, procurement took a leap due to growing economies, increased interest from the state in services and

goods of privately held corporations and various examples of public-private partnerships (PPP) from the 14th century and up can therefore be found. Conflicts between vendors and clients about delays and cost overruns are not only matters of recent years. A good example of client-supplier conflict in the beginning stages of procurement in the middle ages can be given of Gustav Eriksson (1496-1560), the King of Sweden, who procured a thousand armors and ten thousand arrowheads from a forgery (Gadde & Hakansson, 1993):

“... I have decreed onto you to forge one thousand suits of armor and ten thousand arrowheads. You have failed to obey this command! At the peril of having your heads fall to the axe, to the amusement of the inhabitants of Stockholm, in the city square one holiday eve at my discretion, I once again command you to comply with my wishes.”

Gustav Eriksson

This clearly demonstrates a client who selected a supplier which does not comply with the standards he envisioned. The methods for punishment for not complying with the contract terms (luckily) changed over the past centuries, but the idea of the client who has demands and a vendor who must supply goods or services to match that demand, stays intact. Procurement is about finding the right supplier to suit the client’s needs. Finding the ‘right’ supplier can be interpreted in many ways, depending on the way one looks at it. Some clients will only look at lowest prices of the bids, some to the maximum amount quality delivered, best reputation, etc.

1.2 The challenge of choosing the right supplier

From the late nineteenth century until the late twentieth century, the government had an increasing ambition to engage in public-private partnerships (PPP). During this period, the infrastructure market transformed into a market oriented economy where the government acted solely as a client, demanding services from a supplier in the private sector. These services extended from solely construction works, to maintenance and operate services as PPP’s developed. Parallel to the rising of PPP and integrated contracts (D&C, PDC, DBFM(O), etc.), procurement methods also evolved. Choosing the cheapest supplier wasn’t sufficient anymore due to the ever increasing responsibilities of the supplier demanded by the client.

In 2001, a whistleblower by the name of Ad Bos, announced in a documentary made by Zembla (Dutch TV program) that a large scale fraud in the Dutch construction industry was taking place (Dongen & Kroon, 2001). Illegal price agreements were made by construction cartels, pushing up prices between ten and fifty percent subsequently swindling the Ministry of Infrastructure and the Environment (RWS). Ad Bos was a member of the board of directors of the company Koop Tjuchem, a company which was active in the Dutch construction industry until 2006. Directly after, a Parliamentary enquiry by the Dutch government was initiated to fathom the case. The system of the cartel worked as follows: RWS was systematically charged with higher costs by the vendors (construction companies). Prices were fixed by vendors before submitting the tenders during illegal pre-tender meetings. Then the ‘winning’ vendor would pay compensation to the other ‘competing’ vendors in the tender to compensate the, sometimes high, costs when generating bids for tenders.

These events, together with the development of PPP's and integrated contracts, instigated the need for change in supplier selection in the Dutch construction industry. Already in 1998, under pressure of the European Union, the competition law (Dutch: 'Mededingingswet') was introduced to increase competition and forbid cartels and therefore stimulate the free market mechanism (Sorgdrager, 1997). In their business plan in 2004, RWS announced they were going to modernize, simplify their structure and develop a public-oriented reputation (Rijkswaterstaat, 2004). In the same plan, they describe the principle of 'Market, unless' (Dutch: 'Markt, tenzij') which describes their ambition to be a responsible client towards the Dutch economy concerning the construction and maintenance of public works. Since then, RWS placed extra effort into developing and using innovative procurement methods and contracts. From the scientific point of view, question marks arose about the effects of lowest price based competition. Dorée stated that price based competition leads to one-dimensional, static projects which does not allow for a more integrated approach and its associated efficiencies (Dorée, 2004).

In 2012, RWS published their corporate vision in which they further emphasized their active responsibility towards the Dutch construction market (Rijkswaterstaat, 2012). In this document, RWS highlighted their ambition to procure as many projects as possible by the way of EMAT (Dutch: 'EMVI') which they introduced in 2005. This way of procurement became obligatory due to new European legislation on procurement, which led to the new procurement law (Dutch: 'Aanbestedingswet') in the Netherlands in 2012. EMAT is an abbreviation that stands for 'Economically Most Advantageous Tender'. This procurement procedure does not only focus on price, but incorporates the ability for vendor to differentiate themselves on quality. Scoring high on quality aspects in the tender will lead to deductions from the total bid price (Dreschler, 2009). This way, there is an incentive for vendors to look beyond their ingrained focus on lowest price. In the EMAT procedure, there are EMAT-criteria which are set by the client. These 'quality' aspects account for 30% of the judgment of vendors, the weight of the price aspect is therefore usually around 70%. These quality aspects are abstracted project criteria on which the vendor can gain an advantage over other competitors.

EMAT is not the only innovation in procurement methods developed in recent years. The competitive dialogue method has also taken a flight. The competitive dialogue, as stated in the European Directive 52004/28 Art. 1(11)(c): "a procedure in which any economic operator may request to participate and whereby the Contracting Authority conducts a dialogue with the candidates admitted to that procedure, with the aim of developing one or more suitable alternatives capable of meeting its requirements, and on the basis of which the candidates chosen are invited to tender" . What that comes down to is that the design of the works is not set by the client and the vendor is now also seen as the expert who can come up with innovative solutions to the client's problem (Burnett, 2009). Competitive dialogue differs mostly from BVP in the fact that there is a dialogue in which vendor and client try to create a common ground to work on, rather than the situation in BVP where the vendor is presumed to be the expert and has to come up with solutions based on his expertise and perception on the client's wishes. EMAT criteria can also be combined with the competitive dialogue. A clearly visible trend over the last couple of decades is that procurement is no longer a one-way information stream, but rather a dialogue between client and vendor to establish synergy while maintaining a competitive character.

1.3 The Best Value philosophy

The following excerpt originates from a letter in 1683 of Sebastien Le Prestre (1633-1707). He was a French civil and hydraulic engineer, who was involved in the construction of many fortifications throughout France. This excerpt was sent by Mister Le Prestre who wrote about the vendor doing construction works for the client, Marquis of Louvois, minister for Public Works:

... He does not pay the merchants who supply the materials, pays badly his employees, cheats on those he can, has only the worst, and since he is cheaper than the others, uses the poorest materials, quibbles about everything and is always crying for mercy from this one and that one...

Sebastien Le Prestre (1633-1707)

Clearly, the client, Marquis of Louvois, did not get the best value for his money. He only attracted the most unexperienced, incompetent and untrustworthy vendors to complete his project. Clients have been wondering for a long time how to get the best vendor for their projects. As described in the paragraphs above, the development of procurement processes went from lowest bidding price to a numerous amount of procurement systems.

The Best Value Procurement/Procurement Information Performance System (BVP/PIPS, BVP hereafter), was developed over 17 years ago by Dean Kashiwagi, a researcher at the Arizona State University. The BVP award mechanism pushes the vendor to show his expertise instead of the client prescribing the project in great detail. In the BVP procedure, there are abstracted project goals, not exactly prescribing the vendor what to do. Here, the vendor can show his expertise by coming up with solutions of which he knows the risks, technical aspects and potential environmental conflicts. The vendor then shows, using a document named 'Dominant Information', that he understands the project by elaborating on risks and how to control them, showing capabilities via Quantifiable Performance Information (QPI) and how the vendor can add value to the project. This is a concise document containing no more than a few pages. The client then assesses the Dominant Information and conducts interviews with key personnel of the project from each vendor to get even more insight in their expertise. All of these elements account for about 70-75% in the BVP scoring system. The price only accounts around 20-25% in the BVP scoring system.

BVP holds a relationship with the EMAT procedure. Here, vendors also can get in front of the competition by cleverly constructing a thought trough solution package for the client. In the EMAT procedure, the client has certain EMAT-criteria the vendor can score points on. The better the vendor performs on these criteria, the higher the vendor is ranked. The quality aspects in EMAT tenders account for around 30%. BVP also has criteria the vendor has to perform on and is assessed by the client. This also results in a ranking of the vendors.

1.4 Problem Formulation

The BVP procedure is relatively new and lessons learned from the past and projects still in execution phase are regularly being implemented to enhance the process. As it became clear at the BVP conference held at the Delft University of Technology in 2014 where many experts on BVP were

invited, there is still no consent on the implementation of many elements that the BVP award mechanism has.

In discussions with experts in search of a topic for my research, I came across certain 'flaws' that might endanger the workings of BVP practices in the future. Many organizations and individuals applauded the introduction of BV philosophy in the Dutch construction industry, but there also was some criticism. BVP led to a change of paradigm in the construction industry and some organizations are still struggling to incorporate the 'BV way of thinking' in their organizations. Now, it is the vendor who is supposed to have all the expertise instead of the client. These shifted responsibilities also require a different market approach by the client. My interest focused on evaluation practices and their implications. Many evaluations of the tender documents in BV practices were of inadequate level and failed to thoroughly inform the vendor on his performances. Not only performances on project level, but also performances concerning the BVP procedure itself, thus creating an unequal market where some vendors have an advantage over others. Also, the client has to realize that these shifted responsibilities imply that he should take on a different role in the industry. Does the client take on these responsibilities? What are the mechanisms that play a role in vendor selection? What are the implications of introduction of BVP and these mechanisms in the Dutch construction industry? These are questions that need to be answered by this research.

1.5 Research Methodology

Here, the methodologies used in this research will be explained. This paragraph is a summary of the research proposal handed in for this thesis. This research is conducted from the viewpoint of neither vendor nor client, but looks at the process of vendor selection from a general standpoint. There are issues to overcome which affect both parties. Also, to demarcate this research, this study is only analyzing the BVP vendor selection process and its implications for current and future BVP tenders. The execution phase will be described briefly but not be incorporated in this research. Furthermore, the focus of this research will be process management as the main aspects is the BVP award process and its implications on the construction industry.

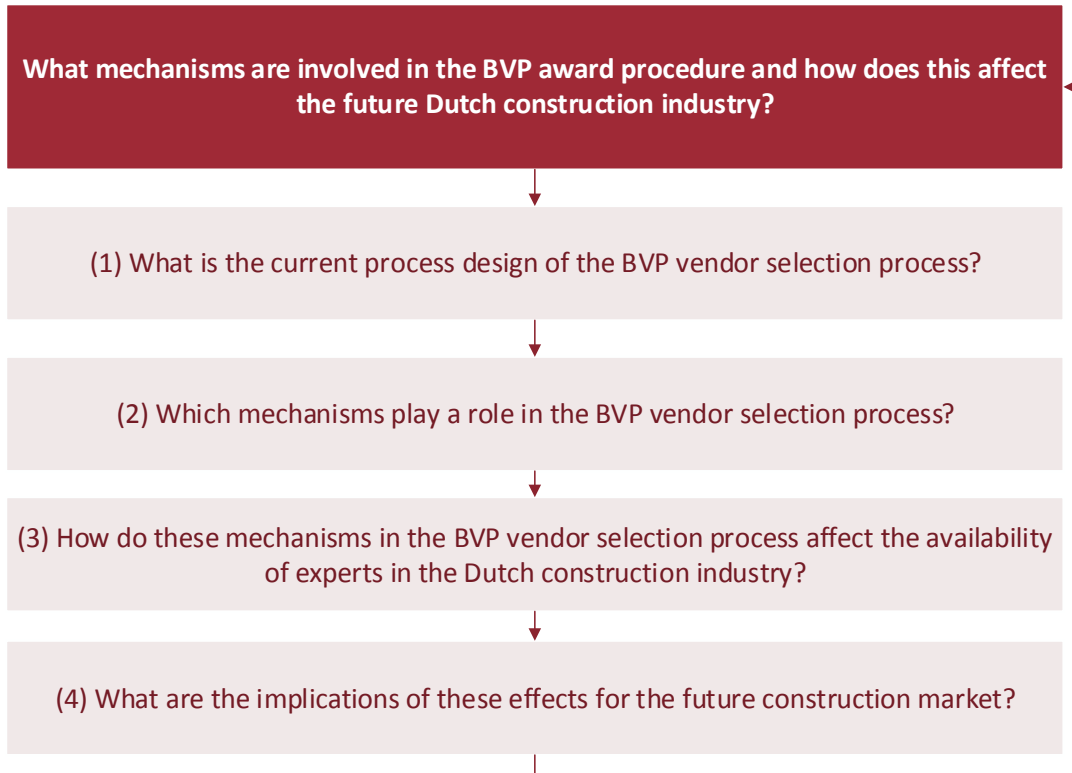


Figure 1 Research questions

The main research question is (as seen in Figure 1): "How does the BVP award mechanism affect the future availability of experts in the Dutch construction industry?". First, before explaining what the question entails, we need to get a definition for the term 'expert' because confusion can arise about the term 'expert'. Here, it entails the vendor (Organization or construction company) that is competing to win a BV tender not the individual (engineer, project manager, etc.) working for that vendor. What this research question attempts is to take the problem description and project this into the future, finding out what the implications of the BVP award procedure on the Dutch construction market are. The sub-questions are there to establish a solid knowledge base that helps to answer the main research question. The objective of this research is to provide insight in the workings of the BVP vendor selection procedure and to explore the implications of the BVP award mechanism on the future Dutch construction industry. There is no single problem owner for the problem at hand as both vendor and client (and the public) are possibly affected by the BVP award mechanism.

In order to answer the main research question and fulfill the research objective, this research will do a theoretical and practical research approach. The complete research approach can be seen in Figure 2. This is a combination of desk research which explores underlying and related theories and interviews which are aimed at gathering perceptions on the current practices by experts in the field at vendor and client side.

The key concepts of this research in order to reach the research objectives are BVP/PIPS and procurements methods, vendor selection, information and knowledge transfer, buyer-supplier relations and evaluation processes. The research perspective is not solely aimed at mostly benefiting

the vendor or client, but attempts to develop theory which can help either vendor, client or the public cause.

After this desk research, empirical data has to be gathered on current BVP practices. To accomplish this, there are several sources which are used:

- i. Meetings with experts. Conducting research at Infram, gives the benefit of access to a treasure of experience and information, freely available upon request.
- ii. Interviews are held in order to get more insight in the information streams and BVP selection phase processes and retrieving empirical data
- iii. Brainstorm sessions with my graduation committee supervisors, employees at Infram, fellow students, all aimed at providing a different perspective and extra insight on the situation or problem at hand
- iv. Discussions: Discussions with my graduation committee supervisors, employees at Infram and fellow students in order to come up with solutions for problems or the critically reviewing of my thesis
- v. The studying of case studies to gather empirical data and observe the practical implementation of evaluation practices

After the desk research and interviews, the theoretical and empirical data is gathered and the second phase of this research can initiate, the analysis phase. In this phase, the theories and practice come together and the current BVP practices can be analyzed from a scientific perspective. Here, the underlying mechanisms in vendor selection and availability of experts in the market will be examined.

The next phase is to take all the examined material and gathered knowledge and implement that into the synthesis section where solution will be presented, fulfilling the research objectives described in this section. After which this model has to be validated. The last phase is to discuss the results and make conclusions and recommendations.

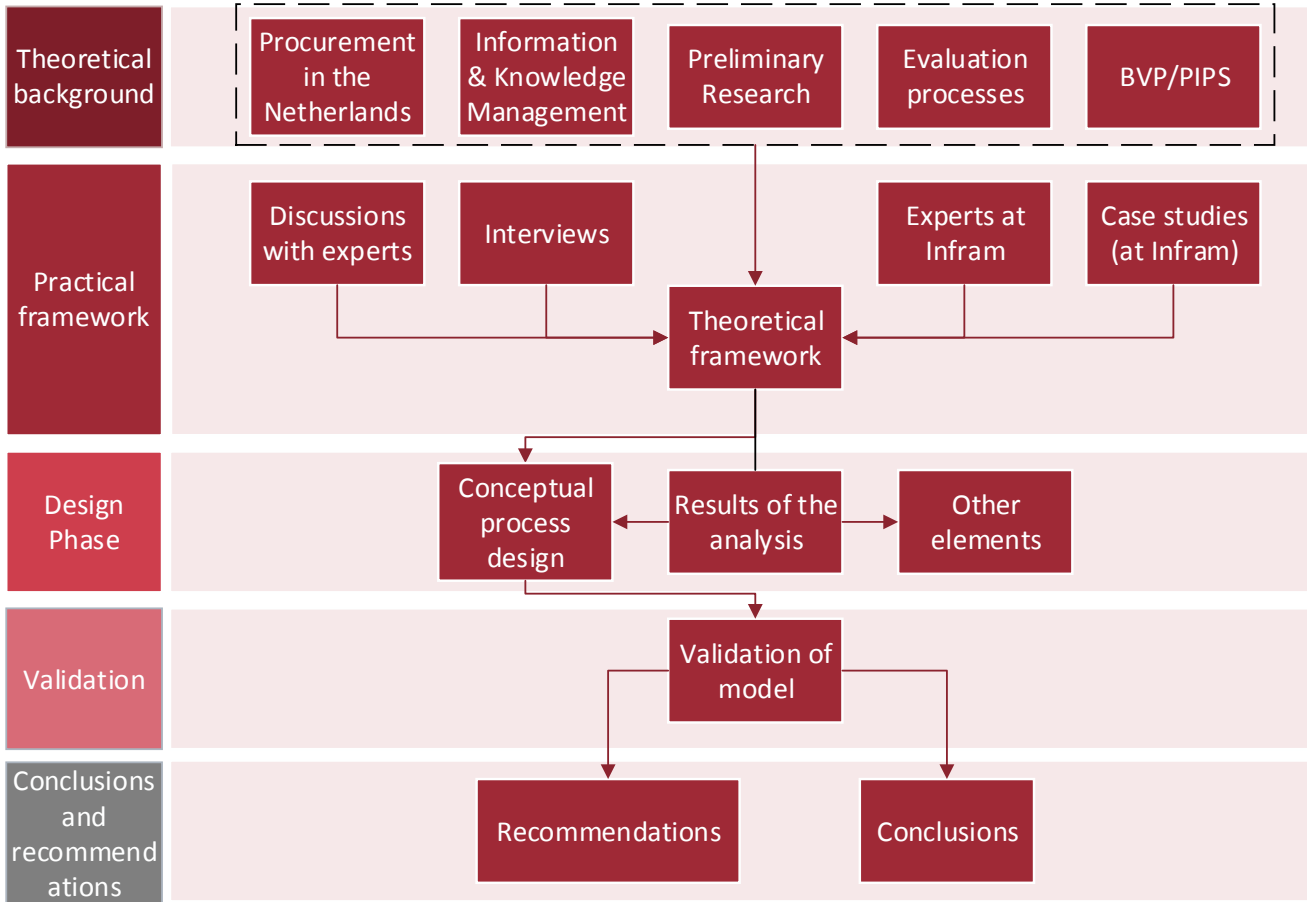


Figure 2 Research process design

2 Theoretical framework

The theoretical framework will serve as the theoretical basis for the analysis later on in this research. First, in §2.1, Best Value and its concepts will be discussed. Because there is a lot of information handling in BVP procedures, this research also looks into Information Management systems in §2.2. Then, to gain more insight in process effectiveness, §2.3 attempts to describe an effective process. Afterwards, insight is gained in the educative character of BVP tenders.

***i** Under pressure of the Dutch Government because of collusions fraud, signals from the market that lowest bid didn't work anymore, and time for a change in the construction industry, there was a demand for a new procurement system. Therefore BVP gained ground quickly and is on its way to becoming the main procurement method in the Netherlands. The BVP award mechanism helps to improve the procurement and management of construction projects by reducing risk in selecting the top performing vendor using performance information.*

We begin the theoretical framework by exploring the details of the BVP award mechanism. Then, information and knowledge management is elaborated on as this plays an important role in any process or organization. For this research, the theoretical model of the DIKW pyramid has been selected to analyze the BVP selection phase which identifies data, information, knowledge and wisdom as separate elements and describes the interactions between them.

Then, theoretical framework focuses on the educative character of the BVP award mechanism and goes into learning cycles and evaluation theories. In a changing market from push to pull, the client must uptake the role of supplier development to ensure a healthy and competitive market.

From the interviews and analysis of the case studies, we can draw several conclusions. Current BVP practices do not ensure full objectivity (as far as that is even possible). IT is not always clear what the client had envisioned with the project goals. The latter two result in a vendor who does not spur himself to the greatest heights and offer the best solution possible, but instead, tries to please the client as much as possible by judging the frame of reference of the client and construct his bid accordingly. The client efforts to engage the market in their (future) needs are below par. Tender evaluation practices show fluctuating efforts and quality from clients, sometimes leaving the vendor confused.

2.1 Best Value Procurement

Minimize Risk, most value for money, best expert available for your project, almost no cost or time overruns! These are all terms associated with the BVP award mechanism and almost sounds like it's a procurement method too good to be true. But what exactly is BVP? What is it based on? How does it work? And what does it mean in practice?

In 1994, a research group named 'The Performance Based Studies Research Group', or PBSRG in short, was created with the purpose to actively test and improve performance information and best value

practices in the contracting community. Performance information is defined as “the set of metrics used to quantify both the efficiency and effectiveness of actions” (Kashiwagi & Egbu, 2008).

How did it evolve to BVP and what is BVP? Over 17 years ago in the 90’s of last century, a researcher called Dean Kashiwagi developed a procurement method based on the IMT and Performance Information theories. The objective of the method is to improve the procurement and management of construction projects by reducing risk in selecting the top performing vendor using performance information. It aims to select the most suitable vendor for the job and push the vendor to his highest performance while reducing the efforts and expertise needed by the client. Also, there was an incentive for the Dutch construction industry to adapt to new procurement methods. After the construction collusion in 2002, The Parliamentary Committee which conducted a Parliamentary Inquiry proposed stricter procurement methods and believed in the cleansing capacity of a competition driven market (van de Rijt, et al., n.d.). This led to BVP quickly gaining ground in the Dutch construction industry with the first project in 2005. Also, the efforts made by NEVI, a knowledge network in the Netherlands for procurement and supply management, led to the development of BVP in the Dutch construction industry (Witteveen & van de Rijt, 2014).

If we look at other significant construction countries in the world, we can also see a change in procurement methodology. China for instance, adopted the lowest bidding price system in 2003 which, at that time, was entrenched in the western world, but quickly observed that this only led to an overly fierce competition in the construction market, lowering quality, deteriorating conditions for workers and nonpayment of suppliers and so there was a cry for a change in the procurement system (Zhang, et al., 2008). Or Pakistan, where there is a need for more professionalism in construction management, tools, skills and techniques and also a proposal was done to replace the low bid procurement system with best value procurement system (Farooqui & Ahmed, 2008).

While the BVP/PIPS method was mainly focused and tested specifically for the construction industry, in 2008, an evaluation of the first large BVP test in the services was conducted, the dining services at the Arizona State University, a contract worth \$300+ million, was published (Sullivan & Michael, 2008). The test had proven successful and showed that there are more industries where BVP can be applied successfully.

2.1.1 BVP Award Process

Now we know how BVP award mechanism became a more and more leading form of procurement in the Netherlands. Also why it is important it was introduced and that it is still developing as more hands-on experience becomes available. The next step is to look at the procedure itself. How does it look like and what elements differ from the ‘traditional’ procurement methods?

Best Value (BV) can be called a philosophy, this is because it is not simply a method for awarding projects, extends as it covers collaboration between client and vendor, risk control and project/quality performance. There are several tools provided within the award mechanism which will be explained below. Beware, as risk and quality control are not in the scope of this research, these elements will be elaborated on less extensively. Instead, they will be touched upon in a way in which the reader can understand the basic principles behind them without going in to much detail.

The idea in the BV process is that the vendor is the expert and he will take the lead. The expert will come up with a solution for the problem owner, the client, and because he is an expert, he can oversee the risks involved in the project and takes responsibility for the risks he can control the best. This does not imply that risks are shifted from the client to the vendor, but merely mutual minimizing of risks. The BV philosophy also asks for a paradigm shift of the client. Instead of trying to guide the expert, they should let the expert guide them. After all, why should the client interfere with what the expert knows how to do best?

This whole process of selecting a vendor and the continued project control during the execution is divided into four different phases (Santema & van de Rijt, 2013):

1. Preparation phase
2. Selection phase
3. Pre-award phase
4. Execution phase

As already stated in the research design section and research objectives, the main focus of this research is the selection phase of the BVP award mechanism.



Figure 3 BVP award mechanism phases

A notion towards the reader has to be made on the slight differences in implementation of the BVP/PIPS in the Netherlands compared to the 'pure' Best Value philosophy (van de Rijt, et al., 2011). For some bigger project for example, extra 'consultation sessions' were implemented before the selection phase. Here, vendor have the opportunity to find out risks and concerns of the client (This is only with very large projects with a higher level of uncertainty). BV practitioners in the Netherlands have built a research platform which has been doing research and implementing BV best practices, adding to the knowledge of BV in the Netherlands. Due to these developments, there are some differences in practices specific for the Dutch construction industry and 'pure' BV philosophy. These have been for sometimes practical and sometimes legal reasons. Also varying legislation between the different states in the US cause the BVP procedure or elements to vary within the US itself. One of the most important differences for this research though, is the labeling of certain elements in the procedure. The 'Selection phase' must not be confused with the 'Selectiefase' in the Netherlands. Instead, in the Netherlands this can be compared to the 'Beoordelingsfase' (English: "Assessment phase"). The 'Selectiefase' in the Netherlands entails the stage where all potential vendors can show interest in competing in the tender, after which the client can make a selection of vendors it wants to continue with. Furthermore, the RAVA documents are assessed separately.

2.1.1.1 Preparation phase

The first of the four phases of BVP as seen in 'Figure 3 BVP award mechanism phases', is the preparation phase. Before the path of making preparations for the tender can be taken, a 'sponsor' has to be chosen within the client's organization. The sponsor has to understand the BVP procedure

thoroughly and actively promote the Best Value philosophy within the organization. The BVP award mechanism can, by the uninitiated, seem like a 'trick' or just another procurement method. Resistance looms for the sponsor and it is his responsibility to convince the organization and the decision making parties to adapt to the BV philosophy. Once the sponsor is chosen, the organization has to compose a strategic framework or broader vision to determine the context of the project. Afterwards, a tender team (chosen by the sponsor) is set-up and starts to realize the tender. Within the team, a CO, or contracting officer, is chosen. The CO has a neutral position and does not get involved in the contents of the project, he or she only monitors the process. After a project which is suited for the BVP (i.e. the more complex the better) is chosen, the team has to formulate abstracted project goals and create a tender planning. Then, in order to determine to what extent quality is weighed in the tender, the scoring methodology (i.e. the weight of the different elements) is determined. In line with the BV philosophy, the element 'price' only accounts for about 25% of the total as quality in terms of a vendor's performance (QPI), RAVA documents (risk assessment and value added documents) and interviews. The weight factors can vary from project to project. Once the assessment criteria and weights are set, the client makes a 'core document'. This document contains all of the previously determined elements as the project goals, scope and budget, tender planning and weighing factors. This document acts as a guidance for possible vendors who are willing to engage in the project. In line with the Best Value philosophy, the vendor determines if he has the expertise to engage in the project, any vendor can apply after which they are invited to a kick-off meeting. If there are multiple vendors who have not yet engaged in a BVP procedure, the client can offer a training seminar.

2.1.1.2 Selection phase

In the selection phase, vendors are by now familiar with the project and have been handed over the tender documents. They can now start preparing their bid for the client to be assessed. This consists of the preparation of 3 documents, all in concise form (a couple of pages). These documents are the Risk Assessment, the Value Added and the QPI (Performance Information). The, the client can choose to use exclusion criteria, set-up in the preparation phase, to exclude vendors from the interviews which are conducted after the assessment of the bids. The price is concealed and will be revealed after the assessment of the documents and interviews. More details on this phase will be given in section §3.1.

2.1.1.3 Pre-award phase

Once the ranking is made and the top performing vendor is chosen, the pre-award phase (Dutch: 'Concretiseringsfase') takes off. Here, the vendor transforms the dominant information and his solutions into a detailed description of his plans and how he is going to execute these plans with minimum risks. This all happens in consultation with the client. If the client agrees with the proceedings of the vendor, and therefore has validated his expertise, the contract between the two parties is signed.

2.1.1.4 Execution phase

Different from traditional procurement methods, the Best Value philosophy extends up to the execution phase of the project and continues to monitor the vendor's performance in terms of risk and quality. The execution phase marks the end of the procurement process. During execution, the

vendor does its best to control the risks as he described in his risk assessment. If he does everything required to minimize the risks as described in the risk assessment and the risk turns up anyway, then the client is accountable. The vendor reports to the client weekly via WRR or Weekly Risk Reports. This keeps both parties actively involved in the project and enables the two parties to identify and mitigate risks swiftly. This process continues itself until the end of the construction of the project.

2.1.2 Dominant Information

During the selection phase, the client is *not* the expert and the vendor has to show his expertise. The vendor has to show to the client his ability to perform well during the project in terms of quality (performance) and risk control. As discussed in the paragraphs above, the vendor produces deliverables during the selection phase of the BVP procedure where he shows this expertise. These deliverables are called 'dominant Information'. This is not an extensive document containing numerous technical details, instead, the document is usually limited to a couple of pages. This forces the vendor to show his expertise concisely and leave out any irrelevant information. It should be dominantly clear to the client who the expert is. The document is split up into three sections and each section must be written down in a fashion where they can be judged separately:

1. Quantifiable Performance Information (QPI)
2. Risk Assessment
3. Value Added

2.1.2.1 QPI

Within the construction industry, the main objective of performance information is to impact and improve construction performance (Kashiwagi, 2008). QPI has undergone changes in the BVP award mechanism since its introduction to increase efficiency of the process. E.g. in 1999, there was an extra requirement for performance information on key personnel working on the project. And from 2000 until 2004, the modifications were aimed at minimizing the client's efforts to verify the QPI by e.g. not having to physically visit project sites, standardize documents and shift the responsibility of collecting information on past project to the vendor (Sullivan & Savicky, 2010).

2.1.2.2 RAVA

RAVA is an acronym of 'Risk Assessment & Value Added'. Though there is a single term for these two documents, the client must be able to perform a separate evaluation of the documents (Practices in the Netherlands (Santema & van de Rijt, 2013)). Different from the QPI document, the RAVA documents are there for the vendor to differentiate himself from the rest of the competition in terms of value and expertise. In the Netherlands, the RAVA document is separated a reviewed seperatley.

2.1.3 Criticism

If one looks at the literature on BVP/PIPS, one can only see institutions, clients, researchers and other users involved in BVP practices praising the system. The promises made in terms of user satisfaction,

risk control and cost- and time-overruns are almost always acknowledged and hardly debated. Still, the BVP award mechanism does have its limitations and opponents which will be discussed here.

For instance, there is little scientifically basis whereupon the method is based, it relies heavily on good performance reviews from case studies. The IMT and KSM (Kashiwagi Solution Model) are the theoretical foundation of the Performance Information studies which resulted in the BVP award mechanism. IMT and KSM however, lack scientific validation.

Some of the issues professionals have with BVP is that it is hard to guard the level playing field. Some vendors have more experience with certain clients and therefore has more insight in what the client's needs. Their solutions will align better with what the client had envisioned and therefore have the upper hand in tenders.

Correctly assessing ones capabilities and solutions based on a brief amount of information cannot always be objective and is often based on a 'gut feeling'. It is not always dominantly clear who is the best expert. Hence objectivity is hard to guarantee and subjectivity can be found in several components of the BVP method. For clients, it is especially hard to guarantee objectivity during the interviews.

Some persons also struggle with the dynamic character of the philosophy. The underlying theories (e.g. Performance Information theory) and implementation of the theories in BVP tenders (e.g. method of collecting and verifying QPI) are subject to change over the past years. It must be said though, that the introduction of BVP in the Netherlands has been recent and constant adjustment to suit the Dutch construction industry is needed for the method to optimally function.

There are also limitations to the types of projects in which application of BVP is desired. Dean Kashiwagi says that the BVP award mechanism is applicable in all supply chain management projects (Kashiwagi, 2013). But not all type projects in every industry is suited for the BVP award mechanism. Below, a list is presented with a number of projects and the argumentation why BVP is not suited for that specific type of project.

Project type	Arguments why BVP should not be applied
Technically innovative oriented projects	The BVP/PIPS procedure requires several inputs from the vendor, one of those elements is QPI, or Quantifiable Performance Information. When, for example, a new type of bridge in the construction industry needs to be constructed, none of the vendors in that industry will have experience with the new type of technology. QPI gathering and expertise assessment then proves difficult for both client and vendor.
Innovative design projects	The main problem here is the idea behind the BVP award mechanism is that the client is not an expert and the vendor has to come up with the solutions. A client not setting standards, norms and specifications in innovative design projects will result in a wide variety of solutions by vendors. Objectively and correctly assessing performance (quality, aesthetics) of the designs in terms of QPI, RAVA and

	interviews is difficult. Creating a dialogue between vendor and client seems more appropriate in this case.
New industries	Again, relevant QPI is impossible to proof, this time in new (emerging) industries. As both the number of vendors is limited and the experience they possess is of inadequate level, it's not possible to correctly assess ones expertise and make a valid decision to distinguish vendors. Also, risk assessment in new industries proves difficult as there are likely to be more uncertainties and 'Black Swans'.
Environments with no experts	There may be projects or industries where there are no experts available. The vendor will always be underperforming

Table 1 Types of projects BVP difficult to apply

2.2 Information Management

As the introduction of electronics provided us with more connectivity, abilities to store information on fewer space, produce and share more knowledge, the need for information handling also increased. Especially large governments and ever growing multinational firms struggled with the difficulty of keeping track of the produced knowledge in their firm, and subsequently where is was located and how to get the right information in the right place. Information Management (IM) is collective term for a wide range of issues and theories related to handling information. The BVP award mechanism is based on Performance Information and the Information Management Theory of Dean Kashiwagi, both related to information management theories.

2.2.1 Information ≠ knowledge

We have to make a clear distinction between data, information and knowledge and eventually wisdom. Albert Einstein (1879-1955) said: "Information is not knowledge", but what are the key differences between information and knowledge then? It can be best explained by using a graphical model entitled the 'DIKW Pyramid' (Rowley, 2007).

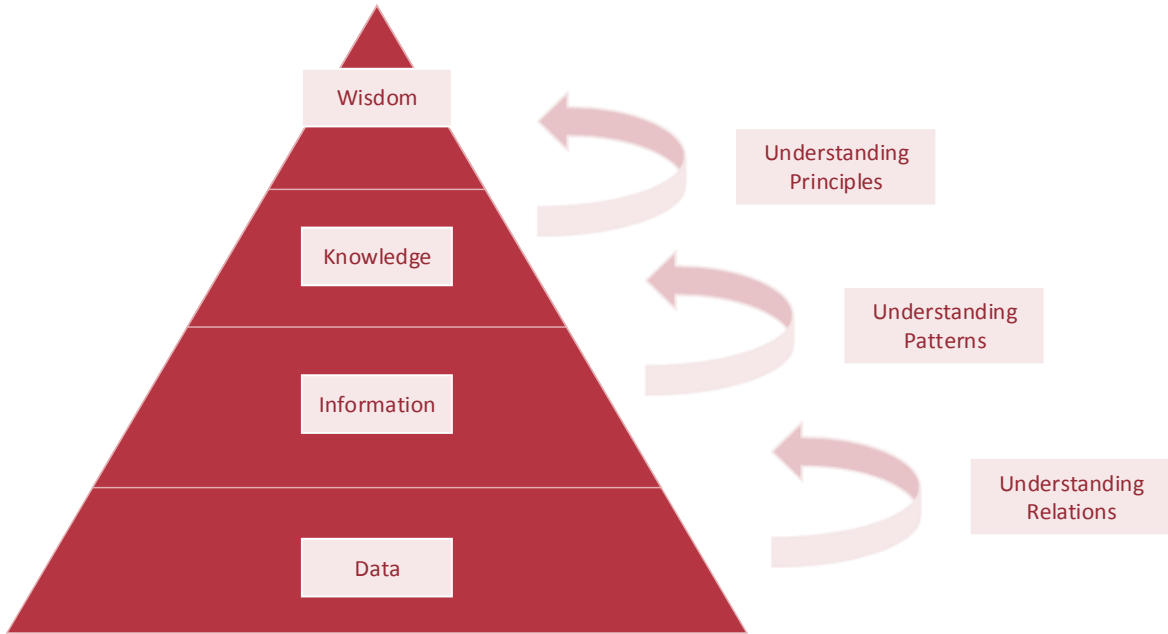


Figure 4 Modified DIKW model

This model is slightly adapted from the original DIKW model and combined it with Akhoffs 'Understanding' element (Ackoff, 1989). It implies that data is available in abundance and wisdom is scarce. In information science, data is known as unprocessed information. Information has more substance and arises when relationships between data is found. It furthermore differs from data in that it is quantifiable, objective, transparent and transferable (Hey, 2004). Knowledge has a more personal character as it is based on patterns between information held by the interpreter. Therefore knowledge is more subjective and local.

What makes this DIKW model interesting is that it shows relevance to the underlying IMT theory and BVP award mechanism. At first, data is collected by the client concerning a project to be procured. The relationships between the data are then sought to come up with useable information. Then, patterns between information are found and information becomes knowledge. In the procurement process, the knowledge is then shared with the vendors after which the knowledge for the client becomes data for the vendor again. It is this knowledge stream that is interesting for this research. Interesting questions follow from this sequence of actions are. Is the data interpreted correctly? Do the needs expressed by the client align with the interpretation of those needs by the vendor? How does the client make sure no information and/or knowledge gets lost in the process?

2.2.2 Information Measurement Theory

The fundamental principles behind PIPS/BVP originate from the Information Measurement Theory of Dean Kashiwagi. The underlying theory is that all information is available at any moment. It is just the lack of processing speed of an individual that he/she believes there is a lack of information. To fill the information gap, the individual traditionally uses his own experience and expertise to fill the gap and solve the problem. According to Kashiwagi, this leads to the application of a personal and subjective

bias, which is incomplete and very limited (Kashiwagi, 2010). It implies that misperceptions arise as a result of the information handling capabilities of the user of information, not the information itself. All information is readily available at all times and therefore the future, if all relevant laws are taken in consideration, can be perfectly predicted. All law exist, but maybe are not discovered yet, like the law of gravity was once unknown to men. This induced Kashiwagi to develop IMT with the purpose of (Kashiwagi, 2010):

1. minimizing subjective decision-making through the use of dominant information
2. minimize the required amount of data to transfer information
3. Identify a structure that minimizes the requirement for decision-making, direction and control of another entity
4. Identify a relationship between information usage, processing speed and performance
5. Optimize processes by removing entities that introduce risk and are redundant

IMT can be defined as: “A deductive, logical, and dominant explanation of an event. It includes the use of relative and related data to create information that predicts the future outcome of the event”. An event in the IMT has initial conditions and is subjected the previously mentioned laws, in time, a certain output will be generated. This outcome is subjected to the same laws as during the input. Therefore, if all information about the initial conditions and laws were readily available at the entity, the output could be predicted. If we reflect that to the construction industry, we want a vendor who is best able to predict the outcome of a project so he possesses the most expertise when it comes to identifying risks and quality control. This also reflects on the BVP award mechanism, all information held by the client should be available to vendors as the client wants the best result and this is only achieved if all information is available at any moment.

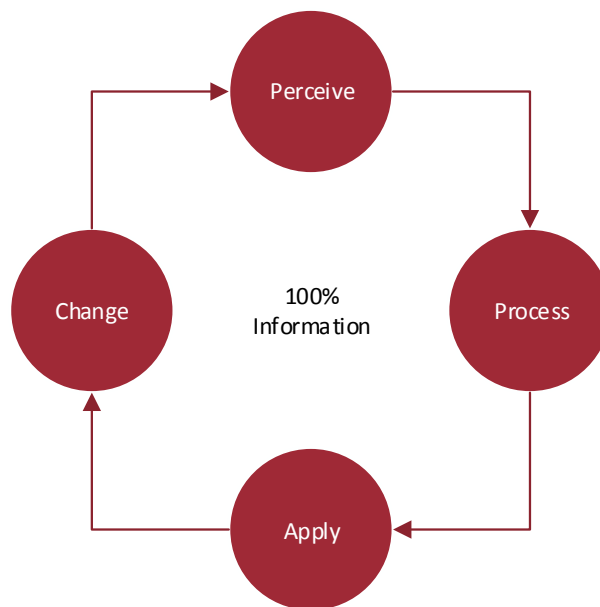


Figure 5 Cycle of learning

In practice, every client and vendor processes perceived information and subsequently changes its approach in future events. This can be illustrated in something that is known as the cycle of learning

(Figure 5). Also, the more cycles of the learning cycle are experienced, the faster the cycle goes. This implies that a vendor who has undergone more learning cycles will perform better.

2.3 Process effectiveness

In describing processes, concepts as 'efficiency' and 'effectiveness' are often used (Sundqvista, et al., 2014). This research puts a bit more focus on effectiveness rather than efficiency for the main goals of procurement is that the best expert available in the market has to be chosen (quality). Not a vendor who constructs within the smallest timeframes or budget. The following quote illustrates this principle.

Person 1: I am so efficient I can fold 60 parachutes in an hour.

Person 2: I am so effective I can fold 40 parachutes in an hour and every single one of them will open right.

Who would you rather give your parachutes to?

Chris Shuster (2010)

Who would you rather give your parachutes to? The efficient, or to the effective person? Furthermore, how does effectiveness and success relate to, and possibly benefit, BVP? The selection phase and evaluations are both important processes within the BVP award mechanism and partially determine the success of the tender. In the end, the client is only interested in a solution which fits his needs. If there are no solutions offered by tenders which suit the client's needs, the tender lost its effectiveness. Effectiveness of the process can be defined from several perspectives. Below, an attempt is made to bundle the different perspectives on what defines a successful or effective process from a scientific point of view.

Literature	Key Concept	KPI's
(Paarberg & Perry, 2007)	Alignment of goals and values to boost process effectiveness and ultimately performance	Alignment of internal, affective, normative and task-oriented values
(De Wit, 1988)	A process is effective if it satisfies relevant needs of stakeholders and if it receives praise from press and public	Stakeholder satisfaction
(Collins & Baccarini, 2004)	A process is successful if there is product and management success	Stakeholder satisfaction, time, cost, quality, meeting goals of user and client
(Pillai, et al., 2002)	An effective process should have an analytical and quantifiable measurement of overall process performance as a function of many objectifiable variables.	The benefits, risk, category bias, the progress deviation, the cost deviation, the decision effectiveness, the customer commitment, the cost effectiveness and the production preparedness
(Shenhar, et al., 1997)	Effectiveness is based on four main criteria derived from a comparative investigation over 80 projects.	Customer satisfaction, budget and schedule control, business success and future potential
(Kesel, 2007)	If a process exhibits transparency, obviousness, efficiency, and completeness, there will be an improved probability that each execution of the process will result in the most desirable outcome.	Transparency, obviousness, efficiency, completeness
(Davis, 2009)	A process is considered 'good' if the process is tailored to the needs of the task at hand and implemented in the correct way.	Efficiency, relevancy, validity, usability, level of being used and reused, quality of process management and measurability.
(Maire, et al., 2005)	A typology of best practices which can help a company to discern more effectively.	relevance, coherence, robustness and sustainability

Table 2 – Perspectives on process performance

As can be deduced from the table above, effective process measurement can be defined in many approaches, varying from simple to complex methods with a large variation of KPI's. What has to be determined is what matters the most for BVP tenders to enable us to optimize the vendor selection process later on in this research. In the search for performance indicators, several sources were analyzed, being interviews, literature on process effectiveness and studying of current selection phase practices. This is an exploratory research into performance indicators in the BVP vendor selection process. It shows that measuring performance is strongly dependent on the type of process. As the research objective is not about the gathering and selecting of KPI's, we do not go further into BVP

vendor selection process effectiveness and do not incorporate this in the validation process. More details on the first findings can be found in the appendices in §9.3.

2.4 Dealing with uncertainty

Transparency and accountability are the central concept in the Best Value approach and is best created by incorporating dominant metrics; clear and irrefutable data (Witteveen & van de Rijt, 2014). On paper this sounds logically valid, but there is no real mechanism inside the BVP award mechanism to cope with this phenomenon. In fact, one of the main struggles for vendors with BVP is dealing with assumptions (in essence uncertainty of the client) in the tender. This manifests itself in the following form when “It is up to the vendor to make an estimation of the needed quantities”.

Within the BVP procedure, there are three main options in the procedure to cope with ambiguities of the client’s assumptions and boundary conditions.

- i. Possibility to ask questions during the kick-off meeting
- ii. Summary of Additional Information and Changes (Dutch: ‘Nota van Inlichtingen’)
- iii. Individual inquiries

Some of these options do not fully take away all uncertainty of the vendor about the project goals. First, let us elaborate on these options. All vendors on the shortlist of the client are invited for the kick-off meeting. Here, the client’s project management team is presented together with the vision and goals. The possibility to ask questions during the Kick-off of meeting (i) is the first of the milestones in the procedure where the vendor can take away unclearness in the tender. The vendor gets the announcement of the project some time before the kick-off meeting, but the actual information transfer, i.e. all documents available for the vendor to construct his bid, is usually done at the kick-off meeting itself. This new information needs to be processed first after the kick-off meeting by the vendor before it becomes useable knowledge and raises new questions about ambiguities. Now the vendor has questions about the available information. It can send in questions to the client and these will be answered and made publicly during the ‘Summary of Additional Information and Changes’ (ii) for every competing vendor. The client is hesitant to be ‘transparent’ towards the vendor about his perception of the projects risks. This is due to a possible advantage it will give to the vendor over the competition. This attitude is experienced by the vendor during the ‘individual inquiries’. The client will often respond “This is up to the insights of the vendor” towards questions which are too specific. This attitude leads to an uncertainty at the vendor’s side and possibly a misperception of the project goals or the risks the client has envisioned. In practice, the situation has occurred that the projects goals were misinterpreted which came to light during the pre-award phase (Dutch: ‘Concretiseringsfase’) and execution phase of the project (Bos, 2012).

2.5 Evaluation processes

As this research is going to focus on the evaluation process of the BVP award mechanism, this section is here to provide the theoretical background on the basics of evaluation. Evaluation is an important component of refining programs and documenting impacts (Vaterlaus & Higginbotham, 2011). As the

theoretical basis of the Best Value philosophy is quite limited, qualitative evaluations play a large role in underpinning the workings and effectiveness of the BVP method. The second level of evaluations are the evaluations towards vendors. These play a crucial role for vendors and the construction industry as a whole (See also '§3.3.2'). Vendors have to learn from their mistakes in being able to perform better at future bids and projects. This learning cycle needs to be encouraged and should be incorporated within the procurement method itself. Currently, there is no standard in bid evaluations for vendors by clients. Therefore there are signals from vendors that there is a need for a better and more consequent evaluation system.

2.5.1 Current BVP evaluation practices

As explained in the paragraph above, there are two levels of evaluations in BVP related project. The first is the external evaluation, which identifies the performance and the experiences with the BVP procedure and projects in general. The second is the internal evaluation in which the client gives feedback on the performance of the bid of the vendor of a project.

The BVP award mechanism has limited scientific basis but instead, is based on best practices. Because the introduction of BVP based tenders in the Netherlands is relatively recent, constant monitoring and evaluating BVP case studies is crucial in underpinning and improvement of the method (Kashiwagi, 2014). For example, in 2014, a case study book "Best Value Werkt" was published, showing many case studies and interviews with people involved in BVP projects (Witteveen & van de Rijt, 2014). Also, different platforms (e.g. NEVI, NLIingenieurs and RISNET) support the method and actively give seminars to professionals in the industry, boosting the BVP related knowledge and expertise in the Netherlands. There is also an online platform, the PBSRG (Performance Based Studies Research Group) which actively encourages and publishes research into the BVP/PIPS method. As one can see, a lot of effort is done on external evaluation on the BVP process.

2.6 Performance development

To enhance the performance of the learning cycle (Kashiwagi, 2010), the performance of the vendor in the tender should be measured and properly evaluated. Supplier-buyer evaluations are a fundamental activity to manage buyer-supplier relationships (Osiro, et al., 2014). Also, supplier/vendor development contributes to a healthy competitive market. Measuring and evaluating vendor performance is a much debated subject in the available literature on supply chain management. To maintain and extend a healthy, competitive and innovative industry, it is important that the performance and capabilities of vendors meet the needs of the client (Monczka, et al., 1993). Also, free flow of information adds value to the supply chain (Santema, 2011). Contributing to vendors' performances in the market can be achieved by the client via the measures seen in 'Figure 6' (Osiro, et al., 2014).

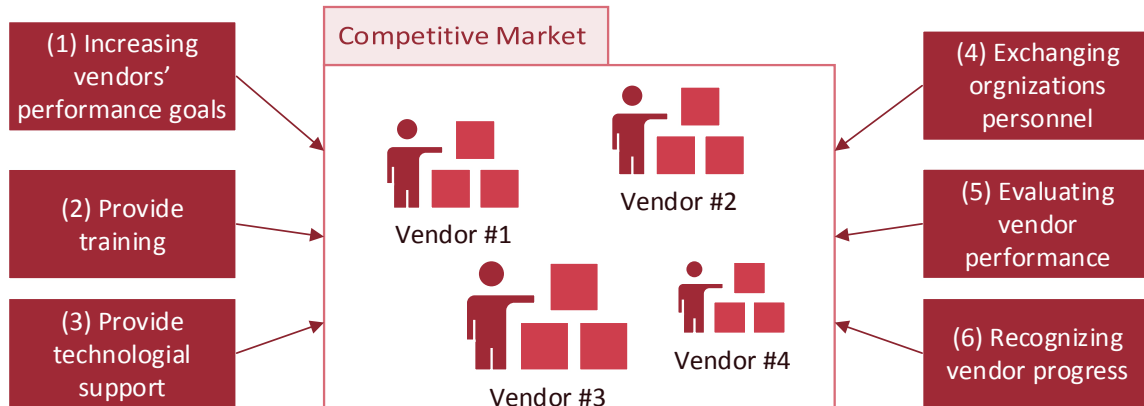


Figure 6 Increasing vendor performance

As one can see in item (5) in Figure 6, evaluating vendor performance contributes to the performance of the vendor and subsequently the market. As observed in practice while doing preliminary research in the field, seen in the interviews and cases in §2.8, the evaluations in BVP tenders by the client are of inadequate and inconsistent level and do not contribute enough to the vendor's insight in his current performances. More on possible scenario's in §3.3.2.

As shown in Figure 6, a supplier has several means to encourage the performances of a supplier. Why is this necessary in BVP tenders? Developing suppliers helps improve the supply base, improve quality and delivery, increase capacity, reduce lead times and improve productivity (Modi & Mabert, 2006).

Also, effective communication in BVP tenders, and any other supply chain interface, is an important factor in developing an environment where both vendor and client can achieve the highest performance. Ineffective communication only leads to misunderstandings, incorrect strategies and mutual feelings of frustration (Etgar, 1979).

Furthermore, operational knowledge transfer activities (OKTA) are activities aimed at expanding the knowledge and skills of suppliers to increase their performances. Studies show (Modi & Mabert, 2006) that enabling the transfer of 'tacit' knowledge (know-how, or in this case, feeling with the BVP procedure, formulation of Performance Information, etc.) improves the vendors' skills which benefits the client's organization in the form of a better performing vendor.

2.7 Capability assessment

Capability measurement and assessment are used by organizations to enhance their organizational learning (Rauffet, et al., 2013) and are the framework used to look after this is the Organizational Capabilities Approach (OCA). It embodies a resource based view and focusses on the identification of resources, knowledge and competencies in order to create sustainable and competitive advantage for an organization (Hamel & Prahalad, 1990). It also states that more insight in an organization's capabilities helps an organization to gain a competitive advantage (de Pablos & Lytras, 2008) and will help sustain (or create) a competitive market system. OCA can be divided in two kinds of systems; a consequential and a causal analysis (Rauffet, et al., 2013):

- **The consequential analysis** focusses on the performance of the organizational capabilities. It identifies and monitors the performance of activities and sees capabilities as 'black boxes'. If an activity performs well, it is assumed that all underlying capabilities were acquired. If an activity was underperforming, the capabilities are probably not grasped and an organization can focus on those specific capabilities.
- **The causal analysis** looks at capabilities from an opposite point of view. Via constant monitoring and improving capabilities with the organization long-term visions in mind, it uses a more preventive philosophy. Both problematic and unproblematic activities are controlled in order to boost learning around all processes.

Especially the latter analysis method is preferred and researched in literature and practice (Harzallah & Vernadat, 2002) (Lhote, et al., 2002) (Geneste, et al., 2009). Some limits of capability appraisal methods like CMMI-ACQ (Team, 2010) or ISO guidelines, are that they can become isolated within an organization, monitoring but not changing the paradigm or dogma.

2.8 Empirical data

Information which is collected during the empirical data gathering phase is used to gain more insights in current practices and to support the hypothesis and theories set out in this research. The methodology can be found in the appendices in section §9.2.

2.8.1 Source selection

The potential amount of sources for information about BVP have grown tremendously over the past years. Where a couple a year ago just a handful of people were considered BVP experts, now, there is a wide range of BVP professionals in different industries with hands-on experience, not only in the Netherlands but also other parts of the world, working with the BVP award mechanism. An up-to-date overview of almost all BVP projects in the Netherlands can be found at the PBSRG website. As mentioned in the research design section, the main groups of interviewees are the clients, vendors and experts concerning BVP projects.

2.8.2 Conclusions

Below, an overview can be found of the main findings from the interviews. The conclusions are based on the interview results, which are fully described in §9.2.

- The vendor does not always get full insight in the goals and client's vision on the project. It is not always clear to them what the knowledge, background or profile of the assessors is and what their focal points (main points of interest) are. This has influence on the way vendors construct bid. This does not lead to a situation where the best expert available is chosen, but merely the vendor who understands the workings of BVP the best.
- n) In this situation, vendors do not spur themselves to the greatest heights and offer the best solution possible, but instead, try to please the client as much as possible.
- Vendors feel that interviewing more than 2 or 3 key personnel will not provide more insight in his expertise, but does state that the team surrounding them is just as important as they are the ones making small decisions on the building site every day. Literature states that it is believed that the interviews in its current form provide the best prediction of whether the project can be successful in terms of reaching the project goals (van Veenendaal & Witteveen, 2011).
- Against BV philosophy, vendors agree that they are not offered maximum scope freedom because of too many boundary conditions and regulations.
- While conducting the interviews and analyzing the results, a link could be made between the opinions of vendors and the professionalism of their organization and/or their understanding of the BVP procedure. Vendors which fathomed the project and the BVP procedure seemed more confident in the workings of the BVP award mechanism.
- There is no consistency in evaluation practices by clients after BVP tenders. It is not always clear why certain grades have been awarded and which set of criteria was used in the process
- It is not clear to the vendor how objectivity of the client is safeguarded.

- Clients seem to try to objectify as much as possible, but do not always succeed
- Bid evaluations show a large variance in quality, clarity and extensiveness
- Clients tend to work from an 'ivory tower'. Once a vendor is awarded a project, they do not feel the need to look back and go in discussion with the losing vendors. They'd rather continue their work and don't look back. They are therefore and also not fully aware of what is happening in the market and its capabilities.

3 Analysis of current BVP practices

The topics being researched in the analysis phase will reflect the topic of the research question. Here, we will dissect the main question (“What are the effects of BVP on the availability of experts?”) into several sub-topics as described in the research sub-questions. First, we will start off by describing the mechanism of vendor (expert) selection, after which the underlying mechanisms that play a part in this process will be explored. Then, taking the current practices and mechanisms, the effects on the Dutch construction industry will be described.

i *The analysis of the vendor selection process design, combined with the information gathered from desk research and interviews gave insight in the mechanisms involved that influence the workings of that process. The most important findings are that (1) the usage of dominance to assess expertise can lead to an altered perception of the actual expert. (2) Prepossession of the client can lead to a solution bias, favoring one vendor over the other. This is supported by theories from the science of psychology. (3) Alignment of organizations is only occurring on project level and to a limited extend on organizational and industry level. (4) The safeguarding of objectivity is difficult and may lead to an altered perception of the expert. Currently, there is no organ who assesses the assessor. (5) Market education concerning future client’s needs are below par.*

Furthermore, the implications of these mechanisms were studied. (1) A perceived expert due to the mechanisms described above has two major reasons and will lead to vendors creating a bid to please to client, not to maximize quality. (2) A limited learning process will result in a market where the competition diminishes, a smaller selection of vendors on specific disciplines. (3) A combined set of effects stemming from BVP possibly leads to less innovation. (4) Current market conditions emphasize the need for an improved learning process and raised awareness of client’s to invest in their suppliers. (5) Users of BVP must be aware that it does not become a ‘trick’. (6) It is likely that BVP decreases the number of experts (organizations) in specific disciplines, but helps create more expertise in general (personnel).

3.1 Vendor selection process

This paragraph will go into the process of vendor selection in the BVP procedure. As described in §2.1.1, the complete procedure consists of four main phases. As soon as the first phase end, the preparation phase, the client can continue with the second phase, the selection phase. By now, the vendors have put all their insight into the assembling of QPI’s or performance information, risk assessment and value added documents. The current process of the selection phase is divided into four steps. The first step is the judgment of the document the vendor handed in, but not the price, this is only revealed at the last step. In advance, the client has drawn knock-out criteria that may exclude vendors based on poor performance. Step 2 excludes the underperforming vendors and invites the vendors for interviews that are selected to continue in the process. Step 3 is the conducting of interviews with the key personnel (backgrounds of the persons indicated by the client) involved if the project if it were to go through. The fourth step is the preliminary granting of the project based on the

performances of the vendors on all elements in the previous steps including the price. The 'quality' elements of the BVP procedure (risk assessment, value added and performance indicators) account for about 75% in the scoring mechanism. If a vendor performed well, this will lead to a reduction in their proposed budget. If a vendor performed poorly, it will lead to an increase of their proposed budget, similar to the workings of the EMAT procurement system, and results in a ranking of vendors. A general overview of the selection phase process design can be seen below in Figure 7. The detailed process design of the selection phase can be found in §9. This diagram, combined with the detailed process design found in §9 answers the first research sub-question.

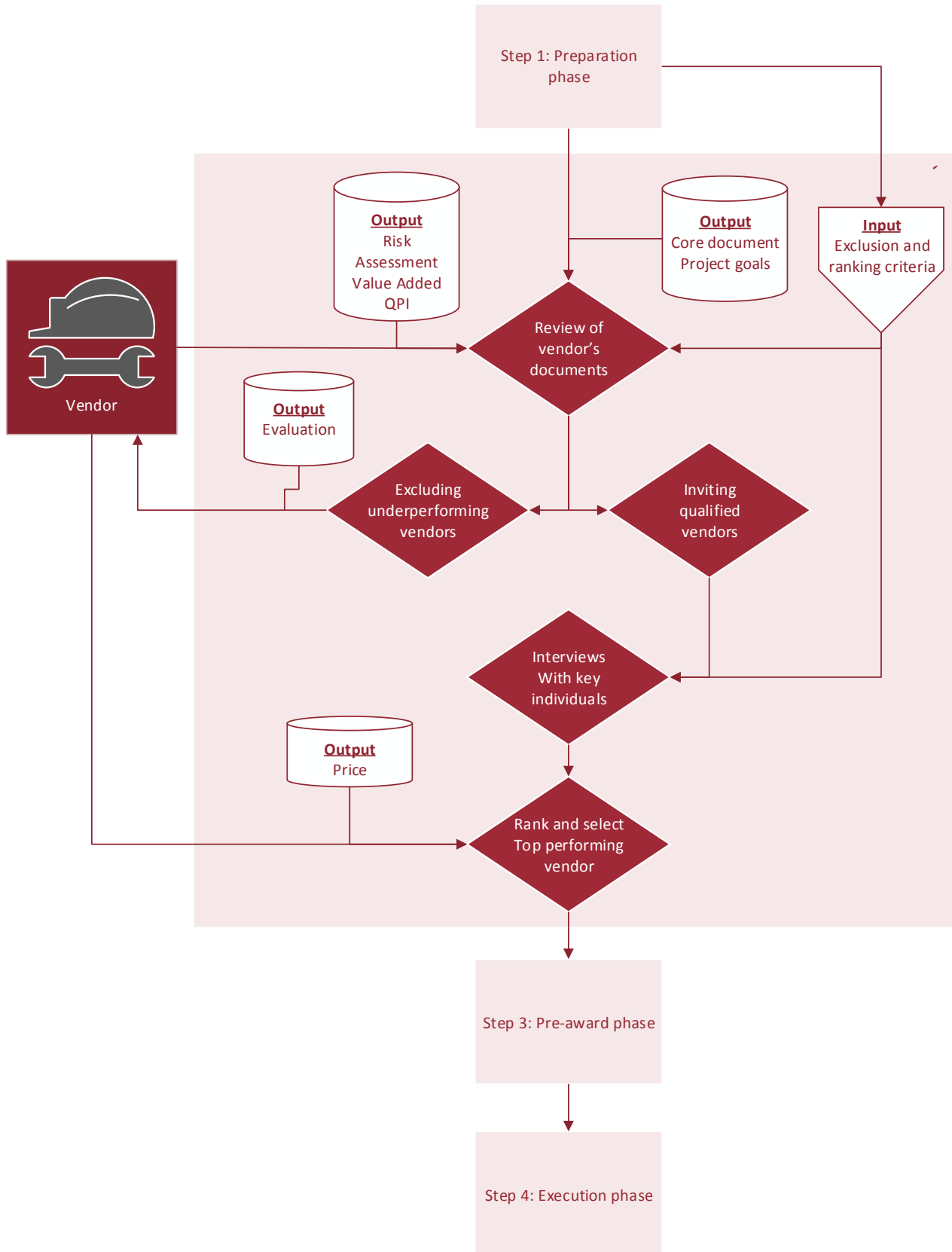


Figure 7 Overview of BVP selection phase

3.2 Mechanisms involved in BVP vendor selection

This paragraph will go into the second research sub-question: “Which mechanisms play a role in the BVP vendor selection process?” It is necessary in order to determine what the causes of the implications of the BVP award mechanism on the Dutch construction industry are. First, we will go into the perceived versus the actual expert and its implications on vendor selection, after which a paragraph will be devoted to the solution bias. This is a mechanism which explains the prepossession and effects of biased vendor selection. Following on the solution bias, client-vendor understanding will be elaborated on. On what levels do client and vendor interact? And how does this influence vendor selection?

3.2.1 Dominance of information in vendor selection

The Best Value philosophy dictates that dominance of information plays a central role in vendor selection. And it is only that the dominance, not expertise (because the vendor is the expert and not the client) should be assessed in the tender documents, not the project-specific information. For instance in the risk assessment, risks and mitigations by the vendor should be written down in a SMART fashion, with QPI. Then the dominance of this formulation should be assessed and graded by the client. In practice, the client also perceives and assesses the project-specific information described in the risk document, judging expertise.

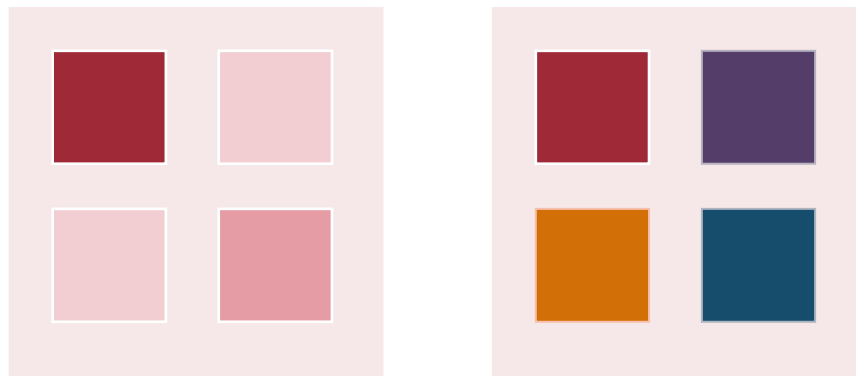


Figure 8 Dominance vs. Expertise

Figure 8 illustrates this principle. The box on the left illustrates dominance. If we were to measure the saturation level of the color red, the top-left square is performing dominantly better than the other three squares in the box. Dominance is determined by the clarity in which the vendor describes his risks and mitigations and how well he uses performance information (dominant metrics; clear and irrefutable data) to back these up. There should therefore be no assessment of the substantive quality of the risks and mitigations in the evaluation form, only on the quality of the dominance. Hence, dominance does not directly show expertise, but does this via induction. Observation of behavior (metrics) to enable the client to make the generalization that the vendor is the expert. If a vendor shows he has mitigated certain risks correctly before, we can assume his mitigations will also prove correct

in the future. This is also done for the 'Value Added' (Dutch: 'Kansendossier') and QPI. Now, the client can observe patterns throughout these assessments and create a tentative hypothesis about the expertise of the vendors. The most dominant vendor will be selected and this tentative hypothesis will be tested in the Pre-award phase. Thus, expertise induced through dominance. This is where this research conflicts with the IMT theory described by Kashiwagi (Kashiwagi, 2010). In his publication, Kashiwagi proposes that the IMT (based on Dominant information) is a: "A deductive, logical, and dominant explanation of an event. It includes the use of relative and related data to create information that predicts the future outcome of the event" (Kashiwagi, 2010). This research disagrees with that definition. Using dominant information is a method in which the premises (QPI) seeks to provide strong evidence, not absolute proof, for the truth of the solution (Shuttleworth, 2008). Hence, induction.

The line of reasoning used in assessing expertise is inverted of that of dominance and can be illustrated differently, as seen in right box in Figure 8. If we were to measure what the best color of the four is, we start seeing the difference from the first example where we tried to measure the saturation of the color red. Now, it is evident that it is not directly possible to point out a 'winner'. Here, deduction is used to assess expertise. The different solutions of the vendors are illustrated as different colors as they can differ by nature. Here, the 'quality' of the colors must be assessed, Thus their substantive quality. From existing knowledge, the client will assess the bids individually, creating a hypothesis on the best expert. This is then tested in the Pre-award phase. This does lead to a situation where multiple facets of the colors are assessed, not only the saturation (dominance).

Currently, there is often a hybrid form of the two assessment types described above, clouding the correct evaluation of the bids handed in by the vendors. Where according to the BV philosophy solely dominance should be assessed, we see an intermingling in the assessment of expertise and dominance. This has consequences for the vendor selection procedure (§9.2.2 'BV2b', 'BV1b'). Below, an excerpt from quote BV2b (§9.2.2) is portrayed:

If I see that person X or Y will be in charge of the assessment committee of the client, I will advise the vendor to adjust his bid accordingly to fit the personal preference of X or Y." - BV2b

Of course, if dominance was truly the only factor taken into consideration in assessment, this statement couldn't be valid. Apparently, substantive issues are taken into account by the client's assessors and personal preferences influence the outcome of the vendor selection process. In later paragraphs, we will go into these consequences of these practices (§3.3.1 and §3.4.3.5).

3.2.1.1 Solution bias

Following on the difference between dominance and expertise, the solution bias is a mechanism that affects the vendor selection process. The client will have developed, maybe subconsciously, a certain view on the project and its possible solutions while doing preliminary research in the preparation phase of the tender. The abstracted project goals (Dutch: vraagspecificaties) do not reflect this as in the Best Value philosophy, the vendor is the expert and he has to come up with the solutions. The vendor can only make judgments based on the client's abstracted project goals. Because the client has already given the project, its risks and other facets some thought and envisioned possible solutions and mitigations for those risks. This may lead to a bias in assessing the bid. The client will favor bids which are more aligned with his preliminary solutions and will leave a bias in the solution space of the vendor. The solution bias, in essence, describes the client-vendor understanding as the vendor whom

(unintentionally) maximizes his alignment with the vendor is more likely to get picked. In theory, this shouldn't be possible as only dominance is supposed to be the decisive factor with which the assessment should take place. But then again, in practice, as seen in §3.2.1, clients do have the tendency to also assess expertise and involving their personal preferences into the assessment of information.

This bias is supported by psychology of information theories describing the behavior of people in dealing with (new) information. Individuals like to believe that they make rational decisions, but in reality this is often not the case (Leijten, 2013). People possess preference functions which are fed by their subconscious mind. Therefore we cannot speak of information one possesses, but merely the perception of the information one has. There are a couple of psychological mechanisms which play a role in the case of the solution bias of the BVP selection phase (Plous, 1993). The first mechanism is cognitive dissonance, an effect that describes the stress or conflict individuals feel when they are subjected to contradicting information, beliefs or perceptions (Festinger, 1957) (de Boer, 2012). Implicating that the tender team reviewing the bid of the vendor will feel more comfortable with a solution he can relate to, than rationally choosing the best solution. One's decision is strongly affected by association with the familiar. The second mechanism is framing and formulation. In constructing the abstracted project goals, the client can (unwillingly) alter the vendor's perception of the solution by means of formulating the problem. The regency and primacy effect play a role here (Lexicon, 2014). These effects describe that the first and last element mentioned sticks with the observer the longest. A client stating that, e.g., a bridge that needs to be developed has to be: "Functional, esthetically appealing, according to ISO standards, durable and delivered on time." will subconsciously result in a vendor thinking that "Functional" and "Delivered on time" are the most important wishes of the client. The third effect is based on heuristics, previous experiences of the client and vendor which influence decision making. This effect holds a relation with 'cognitive dissonance'. In the situation where a vendor which has won a previous tender and has performed works for the client, he knows the goings of the client. Competing in a new tender of the same client will result in a vendor who constructs a bid (e.g. in terms of risk management) which feels familiar is therefore preferred by the client, regardless of a rationality. Heuristics has been validated among BVP experts and can be found in §5.

3.2.2 Client-vendor alignment

Alignment of goals is an important factor in effective decision-making processes and will help to maintain healthy, competitive markets. What is seen in value management is that working units which aligned their (project) values, reported the highest performance (Paarlberg & Perry, 2007). Aligning mutual goals and creating a level of understanding pushes motivation of entities to perform better.

During the conducting of the interviews and studying current practices in the Dutch construction industry, there was a situating at hand concerning client-vendor alignment. It seems that the client often has little affection with the construction industry and doesn't know the capabilities available at the market. Also, with some exceptions, there is little alignment of future demands by clients. In shifting markets where the client has specifications and the supplier is the expert, the market has to be fully aware of the current and (maybe more important) future demands of the buyer. Below, we go into three different levels where cooperation between organizations can occur.

3.2.2.1 Multi-level understanding

In client-vendor understanding, we can distinguish several levels upon which understanding can be created. This is on a (1) project, (2) organization and (3) industry-level. From micro to macro. This is due to the fact that on project level, client and vendor deal with other problems than on an industry level. Also, values, vision and knowledge interpretation on project-level are more short-term than organizational and/or industry level, which are more long-term by nature.

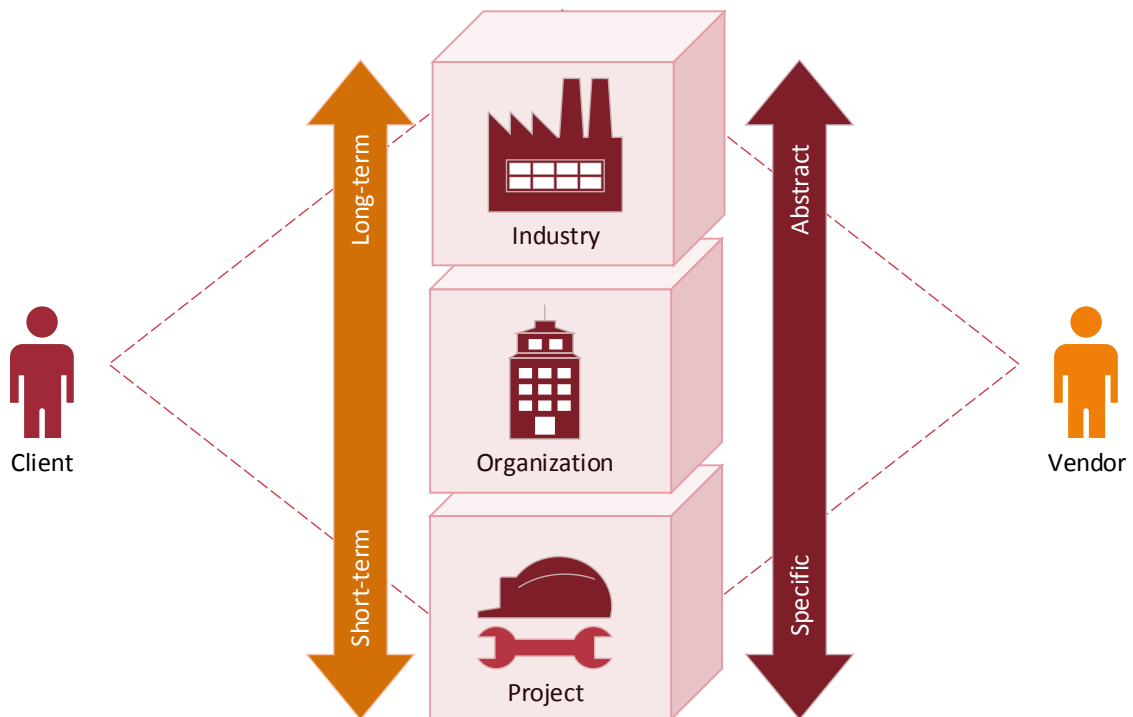


Figure 9 Multi-level client-vendor understanding

In Figure 9, we can see the different levels client-vendor understanding acts upon. Client and vendor are positioned on both sides of the figure to portray the different perceptions they can have on collaboration on the different levels. The arrows left and right of the multi-level column picture display the timescale and level of detail of the collaboration. While projects are temporary undertakings, on an industry level, involved parties engage in a more long-term relation in which future needs and desirable futures are (or should be) discussed.

3.2.2.2 Project level - Tender process and perceptions

The first level of understanding is on a project level. Here the relations are, as shown in Figure 9, short term and specific. If we take the theories found in the theoretical framework, we can combine this with the problems associated with project-level understanding. We can link §2.2, which introduced us to the fact that information is not equal to knowledge and the results from the interviews, to construct a model of possible misperceptions between client and vendor. Understanding between the two parties will result in satisfactory project results, a misperception on needs by either side can result in arguments about risks, financial issues, responsibilities, functionality, etc.

It is interesting to see the transfer of data, information and knowledge in BVP tenders. As already known, the BVP award mechanism presumes that the client is not the expert and that the vendor has to come up with solutions. This does not entail that there is no knowledge available at the client's side.

Before a tender is put on the market, especially is larger BVP projects by professional organizations and knowledge institutes (e.g. Rijkswaterstaat), there is a large amount of 'frontload' which can affect the decision-making process of a tender. At first, the client does preliminary research in order to put the tender on the market. It produces field data, political agreements, research documents and other information, which it converts to knowledge. In this phase, it is preparing the knowledge to be transferred to the vendor. During this phase, only relevant (in the eyes of the client) data and information will be converted to knowledge. Distilled from that knowledge, together with the client's wishes and view on the project, follow the abstracted project goals. In this 'arena', knowledge is transferred from the client to the vendor. It is in this process, that the most interference and misperceptions can arise. The vendor then follows his perception of the client's needs and extends the knowledge by adding his own expertise (e.g. expertise of the team members and field research). Hence the vendors build on the abstracted project goals and extend this knowledge. This is the interpretation phase. In an ideal situation where the vendor can read the mind of the client, the vendor can align his bid with the needs of the client perfectly. In reality, even in the BV proposed '100% information environment', a (slight) misperception can occur. (Bos, 2012). Also, as shown in the interviews (§9.2.2), there are situations where vendors have misperceived the project goals. What can be deduced from the examples below is that vendors feel they always find 'a' solution for the client, but if it is a suitable solution to the client's problems? The alignment of project goals is however sometimes not always clear and have led to inadequate bids in the past.

"[...] the quality of the goals as stated by the client differ in quality and are sometime not complete." - BV2g

"I often understand them, but they are usually the same." – BV4g

"If the vendor doesn't understand the project goals, it is the mistake of the client. In general, they understand them." – BV6g

"There is always a solution, but if it's the right one... that is the question. There are always decisions to be made during the construction of the works which affect the outcome of the project." - BV1h

"Disagree. They are not always clear." – BV2h

This will lead to an altered perception of the project problem and finally the bid the vendor constructs. If the vendor had a misperception of the client's view on the project, it is possible that the vendor is coming up with the wrong risks and corresponding mitigations and not showing the right expertise. Notice that this does not entail that the vendor has no expertise. It means that the vendor merely had a faulty perception of the project, resulting in an inadequate bid and the client perceiving the vendor as non-expert. In practice, it is shown that sometimes the projects goals are misunderstood which comes to light during the later pre-award phase (Dutch: 'Concretiseringsfase') or even execution phase of the project (Bos, 2012). An underpinning of this model can be found in §9.6.

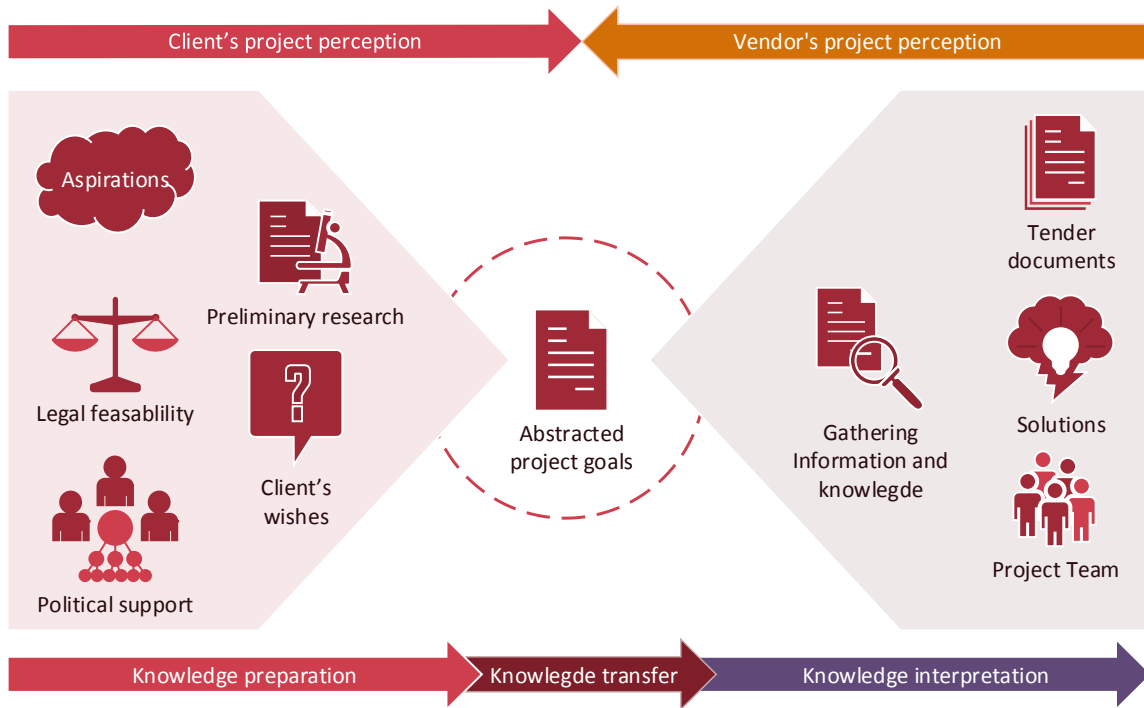


Figure 10 BVP perception model

3.2.2.3 Organization level – Mutual understanding

The second level of understanding on which client and vendor can act is on an organizational level. Where on project-level we deal with project specific information and knowledge, here, the focus is on inter-organizational alignment and getting the most out of collaboration. The collaboration between organizations is not as short-term as project level understanding as the client-vendor relationship between organizations usually transcends over multiple projects and goals and vision are more conceptual by nature. Here, by inter-organizational relationships, we mean the cooperation between vendor and client. Not the individual projects being carried out.

Literature on supply-chain management has shown that constructing collaborative communication skills or competencies can have direct, positive effects on the bottom lines of the supply chain partners (Paulraj, et al., 2008). If we take this statement and project it on client-vendor understanding in BVP procedures, we can deduce that construction communication skills have direct benefits for the client and vendor (and possible sub-contractors) supply chain. A direct reflection of this statement on current practices showing that these communication competencies are not yet fully exploited is that one of the conclusions of the interviews in §9.2.1 was that clients do not always have a clear view of the (technical) capabilities of the vendors. Therefore not utilizing opportunities to its full potential.

Inter-organizational trust is a cornerstone required to develop and establish business collaboration and cross-organizational data exchange and knowledge sharing (Chen, et al., 2014). Organizations that try to take advantage of opportunities through inter-organizational knowledge sharing and data exchange should endeavor to develop mutual trust and shared visions. Currently, only the more professional organizations (vendors) have set up intra-organizational structures to share knowledge concerning BVP.

3.2.2.4 Industry level – Meeting expectations

Studies show that supplier involvement, which reflects the buyer's decision to involve suppliers early in its new product development activities, positively affects the supplier's perception of the buying firm (Ellis, et al., 2012). With this analogy, vendors being actively engaged in the creating of specifications before a new product is procured (BVP or any other method except traditional low bid procurement), will give the client more insight in the vendor's capabilities and enable the vendor to contribute more in this value-creating process.

As already indicated in §3.2.2.3, clients are often not fully aware of the capabilities of the vendors. Literature also shows that in general, buyers (clients) do not have a different perspective on short vs. long-term relationships in terms of trust (Ekici, 2013). They see trust as a service of the project which is being procured. This is a possible explanation why clients in the Dutch construction industry have a short-term focus and don't feel there is an incentive to focus on long-term goals and developing desirable future competences of the market. Clients continue their proceedings after a project is finished while the project is the core business of the supplier. This might be deduced to a dedication problem. Literature (Morgan & Hunt, 1994) shows that parties should develop shared goals and bounded relationships to enhance the perceived trustworthiness. Market development is an important factor in sustaining a healthy competitive market, more on the effects of this on the construction industry in section §3.3.1.

3.2.3 Assessing the assessor

The results of the interviews show that vendors did not always get a clear few on the honesty or objectivity of the tender assessments (§9.2.2). While the procedure and its planning was clear to the vendors, the criteria used in assessing the bid, and its corresponding objectivity safeguarding, remained uncertain. This is depicted in the excerpts from the interviews as seen below. This can have several reasons. As the BVP method is subject to change and has been constantly adapted since its introduction to optimize the method and to correspond to the Performance Information and Best Value philosophy, vendors had to adapt too. They are looking for a foothold and try to optimize their practices to increase their chances of winning BVP tenders.

"[...] you know what the process of the assessment is like, but not which pair of 'goggles' are used by the client to look at these bids. You often do not know who assessed it and with what backgrounds these persons have." - BV1b

"It is not always clear to the vendor how a bid is assessed. There are clients who do not always clearly communicate how they assess bids [...]" - BV2b

"Agree. I do not now who is in the client's assessment team and I don't want to know the names. I do look at the team and want to know what type of person I'm dealing with. A technician, process manager, purchaser, etc." - BV4b

"He should be able to assess your bid correctly. You do not know however, how the client interprets your bid. - BV1n

"Some vendors are really skeptical about the capability of the client to assess bids objectively. I like to believe that, maybe a bit naively, clients are capable of doing it." - BV2n

“The client can partially objectively assess the bids. It remains personal, does your bid appeal to the client? You have to sell your ideas. How do they measure ambition and commitment? You don’t know. But that is part of the game, you have to earn the award. [...]” – BV4n

Because of this unstable nature of the method, vendors do not feel that every client interprets and adheres to the method in the same way. This creates an uncertainty at the vendor’s side because now he thinks understands the method, but is not sure how the client will interpret and assess his bid. This is because there are still no exact guidelines (only best practices) on how to conduct interviews, which persons to incorporate in the BVP core team, dialogue procedures before and after the tender, etc. Especially clients who are unexperienced with the BV philosophy and corresponding procurement method, often have a hard time sticking to the philosophy during all phases of the project. This results in the questioning of the capabilities of the client by the vendor. They question themselves, “Who assesses the assessor?” Can the vendor trust that the client conducts the tender according to the BV philosophy?

We can also look at this problem the other way around; from the perspective of the client. As a client, you want the best expert available. The larger the selection of vendors, the higher the chance of experts showing up during the tender process (more vendors do diminish dominance). Because of the nature of the BVP selection phase, this process of selection by dominance might be compromised. Only vendors who are the expert *and* familiar with the methods will stand out. A vendor might be the right expert, but unfamiliar or less experienced with BVP practices, and therefore lose the tender. For the client, in order to have the largest selection of experts to choose from, vendors must all be on the same level in terms of familiarity and expertise of constructing their bids according to BV principles.

3.2.3.1 Objectivity safeguarding

The paragraph above gave a short introduction to the problem of objectivity safeguarding. How can the client guarantee objectivity and, a potentially more important matter in terms of trust and commitment, prove this to the vendor?

An organization may portray a sense of personal objectivity in which people assume their own beliefs are valid and worthy of being acted on (Uhlman & Cohen, 2007). This implies that individuals who perceive themselves or their methods as objective, feel they act according the best practice possible and do not feel the urge to validate their findings. This explains the perception of vendors who sometimes perceive the BVP selection phase as non-transparent or non-objective.

But how does one actually validate and safeguard objectivity in BVP tenders? To tell something about the objectivity in the BVP selection phase, we first must identify the main elements in the selection phase process which can compromise objectivity. Then, we will take a look what mechanisms play a role that jeopardize this objectivity and its impacts on vendor selection.

Some main elements in the selection phase process which can compromise objectivity are the Individual inquiries, composition of the client’s core team, criteria used by core team to assess bids, methodology of interview, solution bias. Not all of these elements are indicated as main problem areas by vendors or clients. The most criticism by vendors and clients is however the ‘goggles’ the client wears (involving the composition of the client’s core team) in assessing bids and the methodology used to conduct interviews.

To the perception of the vendor, it is not always clear who the members of the client’s core team are and/or what knowledge is available in that team. In theory, this shouldn’t be a factor as only dominance is the performance indicator (§3.2.1). If the vendor has a view of the core team members, he then ‘scans’ the client’s team and tries to please the team members as much as possible by meeting personal preferences (§9.2.2 BV2b). If the vendor does not have a clear view on the participants and/or their knowledge, it remains a guessing game with what ‘goggles’ the client is going to assess the bid. It is obvious that neither of these two situations will ultimately deliver the actual best expert available, but merely the perception of the best expert.

The second important element of objectivity safeguarding is the interview methodology. According to literature, currently the core team members, who eventually make the assessment during the interview, are picked by the BVP process manager (sponsor) (Santema & van de Rijt, 2013). Current practices show that this picking process entails that the sponsors pick core team members based on their affinity and level of comfort with the BV philosophy. This ignores the content and project specific knowledge of the project which is being procured. Clients say they feel comfortable with this as BVP forces the vendors to only show dominant (non-technical) information which should be able to be correctly interpreted by a layman. In contrast, some vendors have the feeling that clients have too little affinity with the technical side of the project and can therefore not correctly assess their ideas. In practice, there are several forms used for conducting the interviews but they all come down to a representative from the client leading the interview, an expert from the vendor answering questions and an assessment committee assessing and reviewing the answers of the vendor. Within this basic setup, there are some variations which occur in practice.

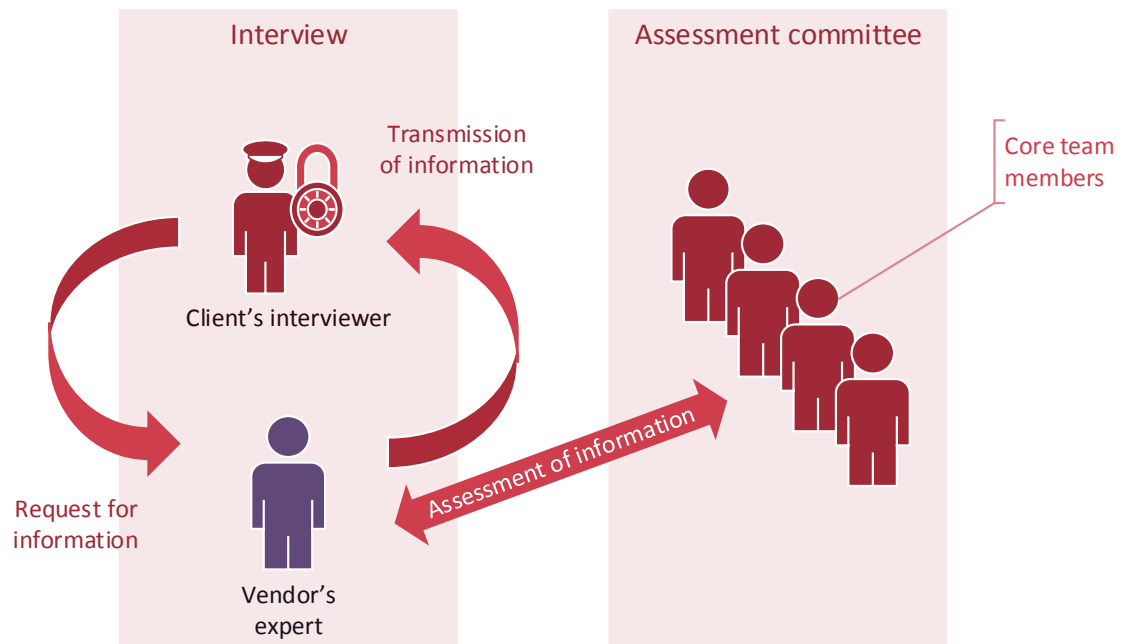


Figure 11 Basic interview setup

As already cited in §2.8, professional bodies as RWS attempt to create the highest level of objectivity possible, often resulting in overdoing it and creating a stiff, distant and impersonal atmosphere.

“The procedure overpowers the content.” - BV1r

“Disagree, emotions and personality play a role in the interviews.” – BV4r

Some parties however, agree that the interviews are somewhat subjective, but that the method currently used is the least subjective method imaginable. Other forms currently being used are 2 interviewers, where one is the process manager from the client’s side and the other a specialist. Others only use a specialist instead of a process manager. Literature (Santema & van de Rijt, 2013) tells us that the interviewer is a member of the client’s BVP core team and that the assessment committee is composed of the remaining core team members. Within these forms of interviewing, different approaches have been made, e.g. where the interviewer only had questions for the first 10 or 20 minutes, and the assessment committee took over the remaining hour. Vendors are not always comfortable with the interview setting and agree that objectivity is hard to establish. The assessment committee is always going to pick up non-verbal communication, charisma, confidence level, likability, etc., of the key personnel being interviewed.

3.3 Effects of current BVP vendor selection practices on the Dutch construction industry

There are several topics that were illustrated in §3.2, being the usage of the dominance of information in decision making, the solution bias and heuristics, alignment of client and vendor and assessing the assessor. This paragraph will attempt to answer the third research sub-question: “How do these mechanisms in the BVP vendor selection process affect the availability of experts in the Dutch construction industry?” It will go into the (short-term) effects of the mechanisms as described in §3.2, while the next paragraph will look at the (long-term) implications of these effects on the future Dutch construction market (§0).

3.3.1 Actual vs. perceived

Is the vendor chosen the real expert? Were there others who might have gotten awarded the project if their bid was slightly different? Does a bid truly reflect one’s expertise? Below, we will continue on the discussions in §3.2 that will cause the client the perceived and not the actual expert.

The first cause, continuing on the discussion started in §3.2.1, which introduced us to the usage of dominance in the vendor selection process, we now look at the effects that this might cause. We illustrated that one of the cornerstones of the BV philosophy is the IMT from Kashiwagi (Kashiwagi, 2010) and that it differs from traditional methods by assessing dominance rather than expertise. Expertise is only recognized when presented dominantly to the client. The most important consequence is that this can lead to a vendor having the expertise, but not adequate enough (familiarity with BVP) to transfer his knowledge towards the client. In ideal circumstances, the client should be able to select a vendor because he is the actual best expert available. However, current BVP practices seem to show us that the vendor who gets awarded the project does not only have to be (1) an expert, but also (2) has to fathom the BVP method. Meaning that the winning vendor probably is an expert, but is also the one who is better than competitors in procuring projects using the BVP method. A vendor might be the right expert, but unfamiliar or less experienced with BVP practices, and therefore

lose the tender. For the client, in order to have the largest selection of experts to choose from, vendors must all be on the same level in terms of familiarity and expertise of constructing their bids.

The second cause is alignment of goals (§3.2.2.2). An altered perception of the project problem will result in a bid that deviates from the original project goal. If the vendor had a misperception of the client's view on the project, it is possible that the vendor is coming up with the wrong risks and corresponding mitigations and not showing the right expertise. Notice that this does not entail that the vendor has no expertise. It means that the vendor merely had a faulty perception of the project, resulting in an inadequate bid and the client perceiving the vendor as non-expert.

3.3.2 The educative character of the BVP award mechanism

The research objective suggests that there is a need for a more educative character of the selection and evaluation phase. Before we go into the analysis of the current process and possible future improvements, let us first question ourselves why we need a more educative character in the first place.

In search of a problem definition for this research and discussions with vendors, one could notice that there was a need for a better and more constant evaluation of the tender documents handed in by the vendor. A vendor might receive a certain grade for his risk assessment, but this does not entail the vendor understands what mistakes he made, or what the client rather would have.

"There is still a lot of room for improvement in the bid evaluation documents." - BV2t

"Disagree, it is dependent on the client. Mostly useless. A client will never be fully transparent." – BV4t

Also, with the current economic climate, vendors see the amount of project and their turnover diminish. Firms cannot afford themselves the time to engage in a long-lasting learning period. Losing or winning 3 project projects in a row can mean the difference between a flourishing company and bankruptcy (van Belzen, 2014). Again emphasizing the importance of the responsibility of both client and vendor to accelerate the educating of the market.

The following sequence of actions describes the current situation in the construction industry. For terminology reasons, 'expert' in this context means the vendor, not individual personnel working on projects. The client wants a market where multiple experts are available. This way, with every project the client initiates, an expert is available suited for different natures of the varying projects. This is not only desired in the present, but also in the future. In a competitive construction market, there should be an incentive for vendors to innovate in their methods and to actively improve on their business operations. This benefits the market, and it is this mechanism that BVP tries to stimulate. Let the vendor come up with innovative and unique solutions.

It is also where a possible defect in the BVP award mechanism can occur. BVP not only focusses on solutions of the vendors, but also the expertise these experts have. The experience of a vendor has a positive effect on winning a tender by (1) a better judgment of possible risks and in a project, (2) higher performance of the vendor in terms of QPI's and (3) experience with the client, better able to interpret his needs and (4) more acquainted and familiar with the BVP award mechanism itself. As already

analyzed and confirmed in the problem description, vendors feel that current evaluation practices are inconsistent, do not offer optimal insights in their performances and where to improve, thus not enabling them to perform better in future tenders.

“A BVP tender is future past performance”

Adriaan Hage (2014)

So winning a BVP tender increases experience and therefore increases chances of winning a future tender. See Figure 12 BVP learning mechanism 1. Here, the size of the vendors at the top of the figure represent the experience and the arrows represent the information and knowledge being transferred.

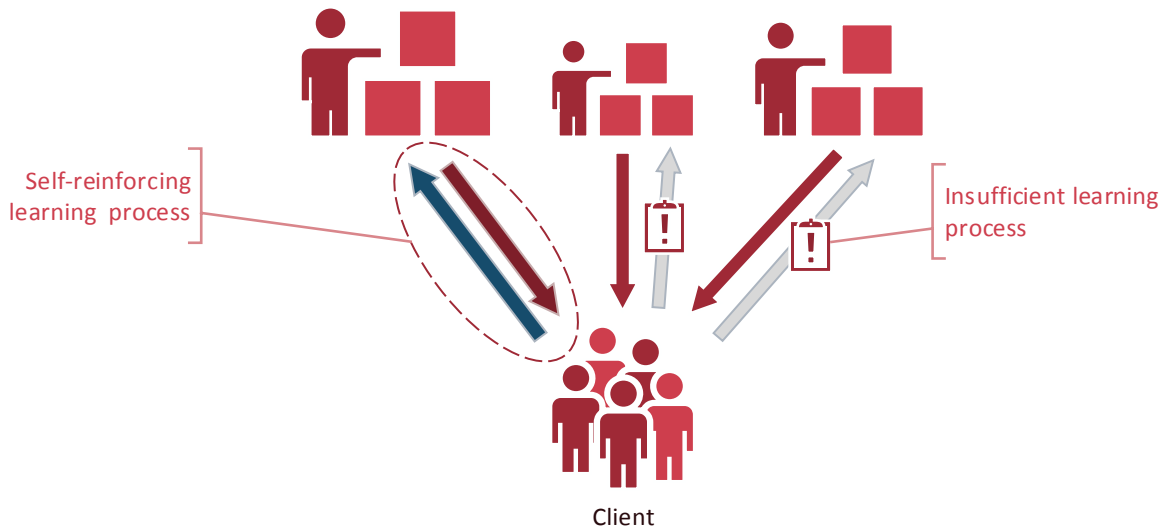


Figure 12 BVP learning mechanism 1

This has an undesired effect. Vendors not winning a tender start lagging behind the vendors who get awarded the projects and, in terms of experience, have higher chances of losing future tenders. This in turn takes away the incentive for the more experienced vendors to innovate because they lose competition. With every iteration cycle, we will be driving out experts from the market of specific disciplines. See ‘Figure 13 BVP learning mechanism 2’. Especially number (2) and (4) in the list of effects described above, the experience with the BVP award mechanism and performance information, is something that can be solved by improving the educative character. As described in §2.6, in a changing market where clients pull instead of the vendors push (Santema, 2011), clients have a responsibility to educate the market in order to keep a healthy, competitive market. Also, when organizations gain more insight in their organizational capabilities, strengths, weaknesses and the aptitudes they must assess and develop, they will remain more competitive (de Pablos & Lytras, 2008). Another important cause and effect relationship that contributes to the diminishing number of experts on certain project types, also inherent with the BVP methodology, is that vendors are forced to choose their expertise. A vendor cannot be an ‘expert’ on a multitude of project types, but has to specialize and become the expert on certain project types in order to enable him to win tenders. If a vendor does not completely fathom the project, he is not able to win the project and gain experience (expertise) as winning a tender by lowering the bid is not sufficient anymore. This fundamentally drives out competition as not all vendors can compete in the same type of project any longer.

“BVP forces you to make choices. What is your expertise, and what do you want your expertise to be?”

Thijs Mackus, Ballast Nedam (2014)

Sometimes, it also occurs that a project manager, or other key vendor positions in a project, who was accountable for the first stages in a BVP tender gets replaced by someone else. This does not benefit the learning cycle (Santema & van de Rijt, 2013).

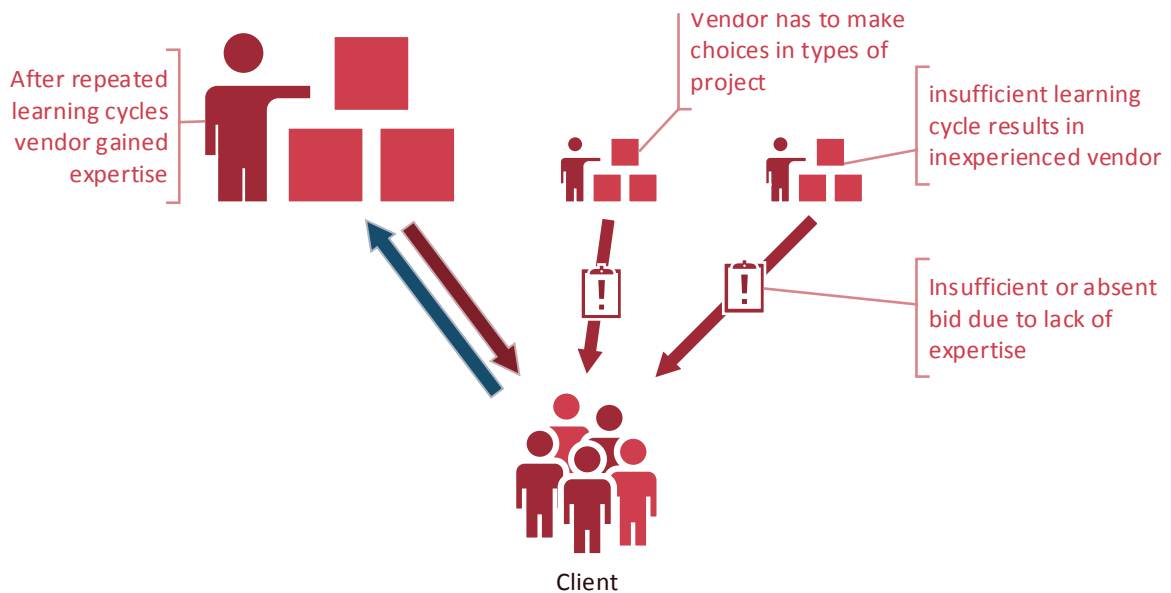


Figure 13 BVP learning mechanism 2

3.3.3 Innovation

Simultaneous with the limited learning character of BVP tenders is the absence for an incentive in the construction industry to innovate. The client wants maximum performance, synergy between vendor and client and innovative solutions. Meanwhile, partly due to strict procurement regulation from the EU, vendors try to deliver no more quality than is necessary, even in EMAT environments (Koenen, 2014). While BVP tries to stimulate vendors to spur to higher performances, incentives in the procedure to innovate are scarce:

1. Project budgets are often tight. This leaves little room for deviation of the scope set out by the client in terms of extra chances or innovative technologies. It is usually more efficient for companies to optimize current practices. Past performance stimulates optimizing current practices.
2. Although BV opts for maximum solution space for vendors by minimizing the scope, in reality, vendors feel like they have little freedom and the scope framed by too much specifications and regulations. This leaves little room to, radically, innovate by vendors (Hendriks, 2014) (§2.8.2).

3. Clients often have less insight and involvement in the markets capabilities than is generally supposed. They operate with a tunnel vision, focusing on their own needs instead of supporting and exploiting market capabilities (§2.8.2).
4. Clients often scan the tender team of the client, gathering information on the assessors and their preferences. Vendors adjust their bid in a way to please the client, not optimizing their design or implementing innovation. (§2.8.2).
5. With the increasing exchange of information and leveling of expertise, technically and BV related, we will come to a situation where everybody will be able to score high on quality and price is leading again. Resulting in dangerous financial positions for vendors (Koenen, 2014).
6. Coming up with the same type of solution ensures the vendor, thus also the client, that he knows the risks and has higher chances of showing he fathoms the project.
7. QPI ensures that there is an incentive for vendors to come up with a similar type of solution because he can underpin his performances.
8. The beginning stages for new technology brings uncertainty and usually higher costs, this increases the subscription price, hence decreasing chances of winning tenders.

This can be contested however by the fact that BVP pushes diversification of vendors. Inherent to measuring expertise through dominance, is that someone has to stand out (Dutch: 'Boven het maaiveld uitsteken'). While vendors are often bound by laws and regulations (in infrastructure projects) which does not leave much room to diversify, they must diversify in the Value added documents. Here, vendors are pushed to think differently than competitors.

3.4 Future implications of BVP vendor selection on the Dutch construction industry

Where the previous paragraph (§3.3) discussed the (short-term) effects of the introduction of BV in the Dutch construction industry, this paragraph will go into the future implications and the consequences for the Dutch construction industry. As we have no crystal ball, the situations and scenarios below will describe best guess and most likely developments and will represent a 'quick and dirty' analysis on which further research can be based. This section will attempt to answer the fourth research sub-question.

Investigating the future implications will help us develop a clear view on how BV will affect the construction industry. Currently, efforts concerning the implementation of BV in the Netherlands have been based on Best Practices, lessons learned from the past. An investigation into the future has not been conducted to this point in time and this research attempts to make an exploratory scenario analysis to achieve this.

The term scenario comes from the world of movies and describes a course of events or the story in its context (Enserink, et al., 2010). It wasn't until the 1950's that scenario planning has made its way into the world of policy planning and only in more recent decades it has been used more extensively.

Scenario planning does not predict the future, but instead tells us different stories to underscore the fundamental uncertainties of the future (ter Weel, et al., 2010). There are two character types of scenarios, explorative (possibilities of the future) and normative (desired future) (Enserink, et al., 2010). Here, an exploring scenario is used, for this research attempts to create an insight in and not a desired future.

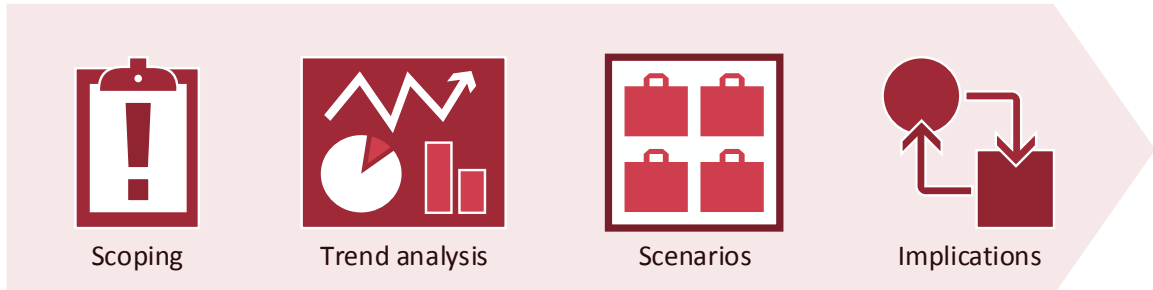


Figure 14 Scenario planning phases

For this scenario analysis, we conduct four phases. The first phase will focus on the scoping of the issues that are to be addressed. The second phase is a trend analysis to identify external forces to be taken into account when entering the third phase, the options or scenarios that are likely to happen. Then, the implications of BVP project on the Dutch construction industry will be analyzed.

3.4.1 Scoping

In the scoping phase, we identify the question that is addressed in this scenario analysis. The question we want to address is how the introduction of BVP affects the Dutch construction industry. The core issues have been identified in the previous paragraphs (§3.2, §3.3) which in detail exposed the workings and the effects that play a role in vendor selection using BVP.

3.4.2 Trend analysis

This section will provide a scenario background and identifies external forces to be taken into account when constructing the scenarios and implications in the next sections (§3.3 and §3.4). The basis for procuring projects, next to the will to engage in them, is the ability of clients to fund them. Therefore first, we will explore the economic climate of the Netherlands in general after which the current situation for the construction industry will be examined.

The economic crisis that hit the world in 2008 provided us with the worst recession we've seen in 80 years. There were massive monetary and fiscal implications for all nations in the world and in Europe, the financial crisis has evolved in the Euro crisis or European debt crisis (Anon., 2013). Countries had to financially help each other due to massive government debts, which affected the value and trade of the euro currency. Countries growth started to plummet and government were forced to cut down on budget. Publications by the Netherlands Bureau for Economic Policy Analysis (leading policy analysis organization in the Netherlands) tell us that growth of the economy remains low, 1.5% per year up until 2017 (CPB, 2012). Of course, the cutting of budgets by the government also affected the

construction industry. The number of new project declined and current ones were put on hold or postponed. For example, the construction of new dwellings already dropped by 35% since the outbreak of the crisis has shrunk again by 7% in 2014. The crisis also hit the construction firms in terms of employees. The number of full-time employee jobs since the outbreak of the crisis fell by 80,000 (van Hoek, 2014). The total construction output has declined with 5%, 2.5 billion euros, in 2013, and the projections for 2014 were not much better. The construction sector has also been hit hard in terms of bankruptcies. In 2013, there were 1367 companies that went bankrupt, an increase of 13% compared to 2012 (CBS, 2014). It goes without saying that these market conditions have hit the construction industry hard. There are, however, signs that the construction industry will stabilize. For instance, the number of bankruptcies of construction firms has stabilized (CBS, 2014) and there was a slight growth in renovation and maintenance work (van Hoek, 2014). And concerning the use of BVP in the Netherlands, after a few pilot projects in 2008, BVP is gaining ground quickly and RWS has the objective of using BVP in a wide range of projects and intensify the use of BVP in procuring practices.

3.4.3 Scenarios and implications

In discussion with experts, certain problem areas were distilled which led to the problem definition which instigated this research. Further interviews were held and research conducted to establish a theoretical base of the workings of BVP which is described in the analysis phase of this report (§3). This paragraph will take the background of the previous section (§3.4.2) as a basis to project the possible scenarios on. Then, the implications on the construction market will also be deduced.

3.4.3.1 Choosing your expertise

In §3.3.2 we elaborated on the fact that BVP forces vendors to choose their expertise. Competing and bidding on all types of projects is no longer a viable strategy for a construction firm. As the price has an increasingly smaller criteria weight in bid assessment, lowering the price of their bids (sometimes below break-even point) to win projects, in e.g. low-bid, EMAT or DBFM(O) contracts where price aspects are still significant, no longer suffices.

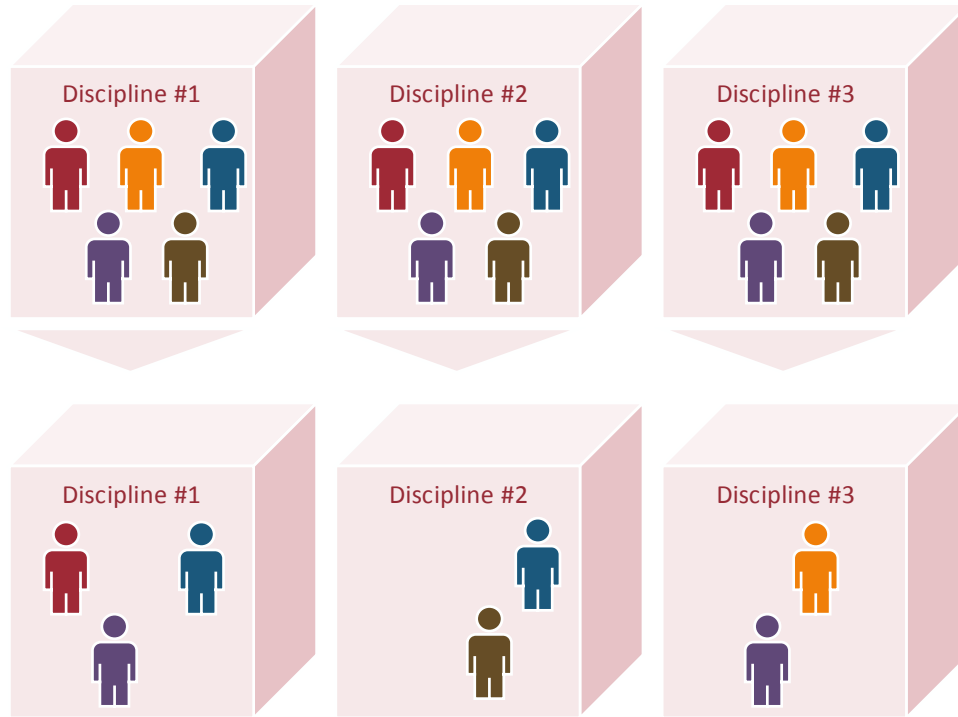


Figure 15 Forcing choice

The main implication of this scenario is that a vendor cannot be the ‘expert’ on a multitude of disciplines but is forced to specialize. This fundamentally drives out competition as not all vendors can compete in the same type of project any longer (Figure 15). This is not necessarily a bad scenario as clients would be more than happy to only have 1 supplier for simplicity reasons, but it does support the lack of innovation (§3.3.3) and monopoly (vendor lock-in) effects.

3.4.3.2 No time to adjust

The instigator for this research was in fact the sometimes disappointing experiences with the assessment and review of the tender documents towards the vendor. Documents from varying clients showed the diversity and fluctuations in bid evaluation quality and extensiveness. This is also reflected in the interviews (§9.2.2 BV1t, BV2t, BV3t, BV4t).

“[...] Dependent on the client you get more or detailed or less detailed bid reviews. Different clients deal with the bid reviews differently. [...] - BV1t

“There is still a lot of room for improvement in the bid evaluation documents.” - BV2t

“We always engage in a dialogue after receiving the evaluation to get clarifications. Disagree” – BV3t

“Disagree, it is dependent on the client. Mostly useless. A client will never be fully transparent.” – BV4t

Especially with the introduction of a ‘new’ technology or organizational philosophy, involved organizations need time to adjust to this change to fully fathom it and incorporating it into their own organization. This principle shows analogies with the introduction of BVP. A new philosophy which has

to be implemented in the working methods of construction companies. Accelerating the implementation is a responsibility of both client and vendor. Currently, efforts to educate the market are limited to training sessions before BVP tenders by only professional organizations e.g. Rijkswaterstaat (Ministerie van I&M, 2014). Vendors unfamiliar with BVP are dependent on external advice in the form of BVP consultants. We already described that in the current economic climate, construction firms do not have the time to adjust to a new system. Losing a tender 3 times in a row can lead to bankruptcy of the firm (van Belzen, 2014). This puts great stress on construction firms. As shown in the trend analysis (§3.4.2), the consequences of this economic downfall have already presented itself in the construction industry. Bankruptcies and severe governmental budget cuts have presented themselves and many construction firms are struggling to survive. It is therefore essential that clients take up the responsibility to make efforts into educating the market (construction firms).

We now explore the possible implications of this inadequate learning process. There are several implications. First, entering the market after repeated learning cycles (Figure 12 and Figure 13) on a project specific discipline becomes difficult for construction firms inexperienced in that discipline. Secondly, the situation at hand can lead to a vendor lock-in where one vendor will be the main supplier of services because his vision and expertise is aligned better with the client than other competitors in the market and he has specialized in that certain discipline. Thirdly, the other vendors will not be suited anymore to execute large works by themselves and will find themselves in positions as sub-contractors thus creating the vendor lock-in. This was already explored in §3.3.2 and §3.4.3.1 and we can question ourselves if this is necessarily a bad scenario.

3.4.3.3 Shifting markets

With current BVP evaluation practices and market conditions where educating the market is underdeveloped and competition is likely to weaken (§3.3.2), there will be a shift in Kashiwagi's industry classification matrix (Figure 16) from Value-based to the negotiated bid quadrant. This will have several implications. With the diminishing amount of experts (for larger works) and the increasing familiarity with the BVP procedure, assessing experts will come down to the situation where the price is leading again, as is the case with tenders in an EMAT environment (Hendriks, 2014) (Manunza & Telgen, 2014) (Anon., 2014). The events above again underpins the importance of the responsibility of the client to educate the market.

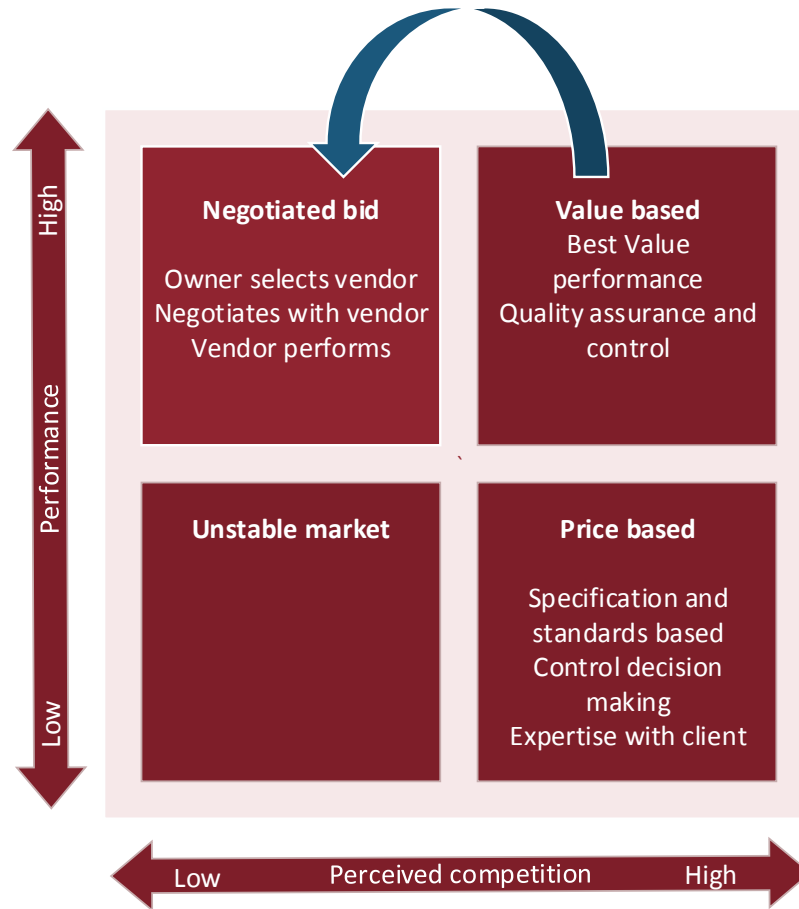


Figure 16 Kashiwagi's industry classification matrix

This research has already explored knowledge management and buyer-supplier relations in the theoretical framework in '§2 Theoretical framework'. In a market where we see a trend from push to pull (Santema, 2011), vendors' performances must be managed and developed in order to meet the needs of the buying party (Krause, et al., 1998). Supplier development takes an important role in creating a healthy competitive market (Humphreys, et al., 2004).

3.4.3.4 Less experts, more expertise

Inherent to the shift of responsibilities concerning the buyer-supplier relationship, is the shift in expertise. Where in the traditional system the expertise was at the client's side, now, the expertise is located at the vendor. This is a trend which has been strongly visible over the last couple of decades. This is due to the introduction of new contract types that ask for the expertise of the supplier. Therefore the shift is not solely due to the introduction of BVP, but it does reinforce it. Now, not only at the client's side, but at all the vendors, there should be expertise. We should make a clear separation between experts and expertise. As described above (§3.4.3.1, §3.4.3.3), it is likely that there will be less experts in specific disciplines (construction firms), but at the same time the expertise, due to the shifting responsibilities, more expertise (more specialized personnel).

3.4.3.5 BVP, more than a trick?

In §3.3.1, this research stated that one of the effects of current BVP vendor selection practices is that it is possible that the perceived and not the actual expert is selected to conduct the project. This paragraph will continue on that discussion. The two phenomena introduced in (§3.2.2.2), usage of dominant information to assess expertise and alignment of project goals, have several implications. The first and most important being that a vendor gets chosen who might actually not be the actual best expert available, but merely the one who understands the BVP methodology the best. From the vendor's perspective, vendor A might not get awarded the project whilst actually being a better expert than vendor B, but lagging behind from B in dominance showing capabilities, less experience with the client in terms of familiarity with its preferences, therefore losing the tender, income and experience.

The other implication has to do with the line of reasoning behind dominance. The inducing of expertise through performance information (§3.2.1) does not automatically entail that the chosen expert did indeed have the best bid. Now, vendors will invest more time in constructing a bid to please the client's assessment committee. Trade-offs that have to be made are now dependent on the vendor's perception of the client's assessment committee personal preferences rather than quality.

The latter two can lead into a situation where BVP becomes a 'trick'. Of course, expertise must be present, otherwise a constructed bid will be of inadequate quality. But on a smaller market with a few players, who are no longer dominantly distinguishable, the one who comprehends the BVP 'trick' the best, wins (first pick of the projects). In current market conditions, this is highly understandable. Winning a tender becomes even more important as time invested is cost-intensive and the amount of project is also shrinking.

4 Synthesis – Design of the conceptual model

All the results from the analyses, interviews, literature reviews, discussions and other sources of knowledge led to insights that form the basis for the synthesis section. Here, a proposal will be made that attempts to resolve the connected issues and problem areas concerning BVP which were portrayed in the analysis section (§3).

i *In the synthesis section, all insights gathered in this research is combined and a proposal is made which attempts to resolve the issues and problem areas found in the analysis phase. Here, a 3-phase model with boundary conditions is proposed. The boundary conditions focus on creating a level-playing field. The three phases consist of the pre-tender, tender and post-tender phase. The pre- and post-tender phase have a different focal point. The first focusses on client-vendor understanding and the latter on education. The set of boundary conditions combined with the three phases ensure the correct implementation of BV in the construction industry in the Netherlands.*

4.1 Conceptual model – the need

The preceding chapters have focused increasingly on the underlying mechanisms and in-depth theoretical analysis of BVP practices. In this chapter, it is now time to zoom out again, take the gathered knowledge and combine them with research objectives and come up with a practical implementation in this synthesis section. First, the need for an adapted process design will be pointed out after which a proposition will be made.

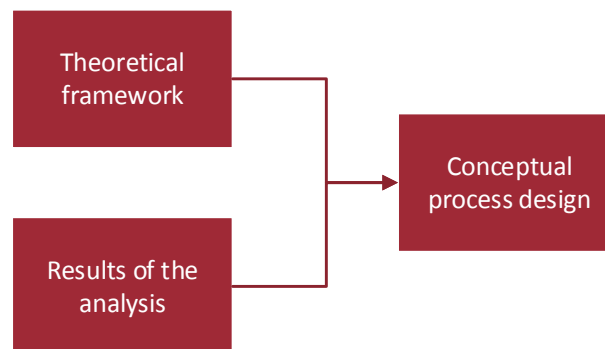


Figure 17 Sub-process conceptual process design

The analysis we can draw a significant conclusion being that current practices are not sufficient enough to assure the right implementation of BVP in the Dutch construction industry. The analysis section therefore shows that there is a necessity for an adapted process design of the BVP vendor selection procedure. First, let's determine what goals have to be achieved in order to enable this research to

come up with a proposition. The most important areas of attention and their implications that came to light relevant to this research are as follows:

1. Assessing the assessor (§3.2.3): As discussed in the analysis part of this research, current BVP practices merely give the *perception* of the best vendor using performance information. This entails that the selected vendor *can* be the real expert, but is not necessarily better than the other vendors competing in the tender. This is due to several mechanisms and ‘flaws’ in the BVP methodology as discussed in the analysis part of this research in §3.2. For example, the solution bias (§3.2.1.1), ability of the client to safeguard objectivity (§3.2.3.1) and the capabilities of the client to value expertise (§3.2.1). Current practices also show that the client operates from an ‘ivory tower’, meaning that there is no alignment or awareness of needs vs. capabilities. The market is currently insufficiently aware of the future needs of the client.
2. Client-vendor alignment (§3.2.2): The better buyer-supplier are aligned, the better the solution will fit the need. The analysis showed that current efforts are sometimes below par and can result in the incorrect vendor choice.
3. Educating the market (§2.6, §3.3.2): Currently, with the procedure as is, vendors who grasp BVP will be more likely to win and increase their experience and familiarity with BVP tenders. The losing vendors will slack behind due to insufficient learning cycle (partly due to fluctuating quality of tender documents evaluations). With the current economic climate, this will leave a market with fewer experts (§3.4.3.1). Also, we have to be aware that BVP does not become a ‘trick’ (§3.4.3.5).
4. Choosing expertise (§3.3.2 and §3.4.3.1): As the weight of the price aspect drops, competing in tenders a vendor has no specialization in is time wasted. A vendor is therefore forced to choose his expertise and focus on competing in those tenders. Leaving less experts in specific disciplines.
5. Lack of innovation (§3.3.3): Also, to spur the vendors to greater heights, there should be more incentives innovate. Current practices show however that there are arguments to be made that there are ample incentives for vendors to, radically, innovate.

4.2 Conceptual model – The proposition

The problems areas depicted in the previous paragraph have to be given thought. In the effects and implication section this research has explored the effects of the introduction of BVP on the construction industry in the Netherlands, here a proposition is made to deal with these areas of attention. The ideal situation would be is that a level-playing is to be created in which both vendor and client can spur to highest performances to ensure a healthy construction market in the future. Now, the market can diverge and the amount of experts in specific disciplines can diminish due to the fact that vendors have to make decisions in what their expertise is going to be (§3.4.3.1). The roadmap that is proposed in this conceptual model will therefore put extra emphasis on the relationship and working environment of client and vendor.

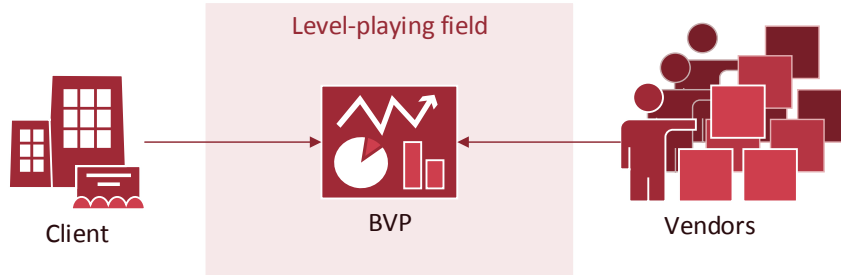


Figure 18 BVP environment

The main idea behind the conceptual model is illustrated in Figure 18. This is to not change anything (radically) about the BVP procedure itself, but creating an environment where client and vendor can both spur to greater performances and also ensure to do so in the future. According to the researcher, this is achieved by *guaranteeing a level-playing field*.

4.2.1 Boundary conditions

In order to achieve the goal of creating a level-playing field, there is a need to introduce boundary conditions that will ensure both supplier and buyer of more equalized starting conditions. The boundary conditions and their implications are shown below:

- In §3.2.1 we discussed the usage of dominance to assess expertise and the possible pitfalls that can be linked to that. The core of the philosophy delivers great efficiency in assessing expertise, but we have to be aware that this may lead to the perceived instead of actual expert (§3.3.1). A cross-check on the assessment of dominance in the tender documents is needed to correctly assess expertise: Project-specific expertise is required to do so. It is only when the client has project specific expertise of the matter at hand, it can assess the value of the information provided by the vendor correctly. This research therefore proposes to keep dominance as a way of inducing expertise by the assessment committee, but introduce an expert with project-specific knowledge during the interviews to cross-check the expertise. Use both methods to get the highest level of certainty. Alternatively, openly share what expertise is present in the BVP core team and what the backgrounds of the people involved are (as this may affect the assessment and constructing of the documents).
- Certified client and vendor: It is only when all vendors fathom the BVP procedure (or 'trick' §3.4.3.5) well enough, clients can truly compare tender documents on dominance. Otherwise they might get a skewed few on who is the expert. This research therefore proposes that the client, in the tender specifications, has to oblige competing vendors to have at least a person with B/A/A+ certification on board (Either in-house or by means of a consultant). On the other hand, it are only the more professional clients who adopt the BV philosophy to its full extend. Unprofessional clients can result in 'hybrid' BVP procedures and incorrect assessments of vendors, confusing the vendor and not selecting the real expert. This research therefore also proposes to create a system for clients to ensure the correct implementation of the BV philosophy in a tender. A person with BV certification, B/A/A+, should be involved in the procuring organization (client side), ensuring all vendors involved of a properly conducted BVP tender. If the person with certification moves from one organization to another, he will still

be able to conduct BVP procedures at the new organization. Alternatively, a certification system has to be set up for organizations itself, with the same benefits as. The downside however is that if personnel capable of conducting BVP tenders changes organization, this certification does not migrate as well.

- Standardize evaluation practices: There are large fluctuations in the quality of tender evaluations. Some are better and more comprehensive where others are barely informative, leaving the market even more unequal as it was before. The suggestion is made by this research to also educate how to conduct tender evaluations as a part of the BVP certification system. Let the contracting officer (CO), who is a certified person, be responsible for the evaluation process so that they are more consistent and better quality comes in the evaluation process.

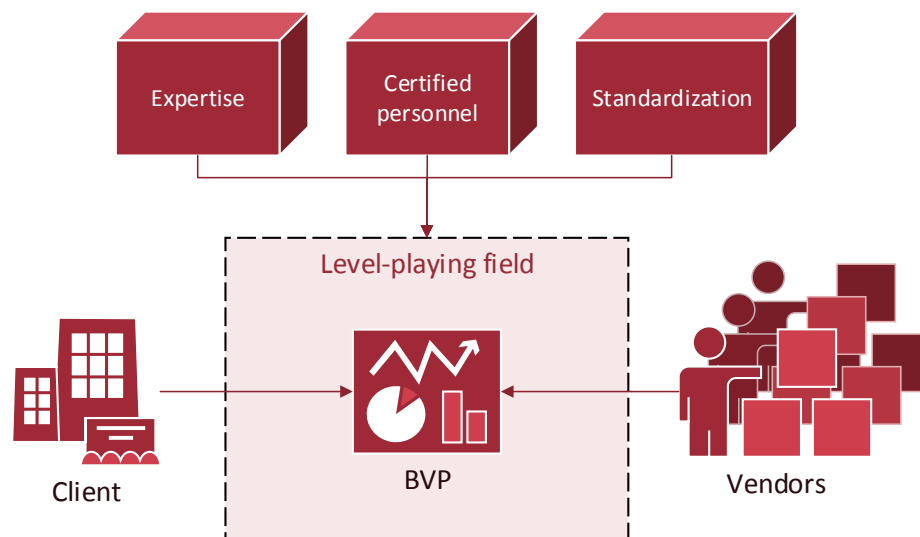


Figure 19 BVP environment boundary conditions

4.2.2 Three-phase model

Now that the boundary conditions for creating a level-playing field have been set, we can continue with the proposition phase of this research. The process design for the conceptual model as proposed below shows three phases with a different emphasis on the first and last phases. The different elements of the main research hold a strong link and the conceptual model portrays that fact. The pre-tender phase mainly focusses on increasing effectiveness, while the second phase is about the learning experience and consolidating the construction market.

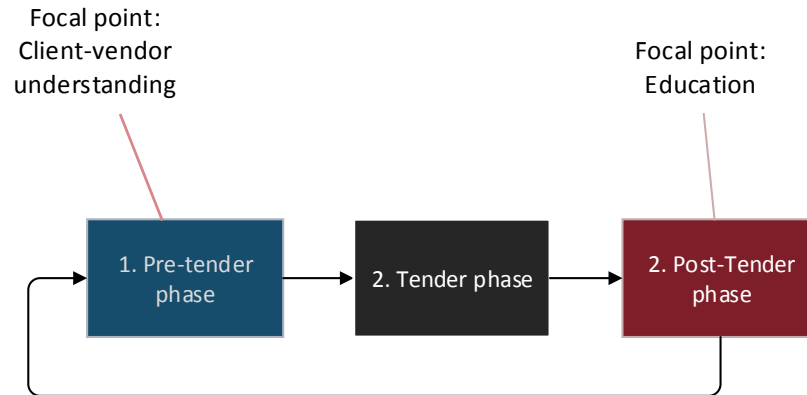


Figure 20 Three-phase model

The choice for three phases is because there is not one single solution or measure that can be taken in a specific point in time around the BVP procedure to resolve the areas of attention described in §4.1. Also, before and after a tendering procedure, there are different requirements into what approach has to be taken to guarantee a level-playing field. It is therefore that the conceptual model as proposed by this research portrays three phases, being the pre-tender, tender and the post-tender-phase. Each of these phases has a different focal point.

4.2.2.1 Phase 1: Pre-tender (Focal point: Client-vendor understanding)

The pre-tender phase describes the period leading up to (a) new tender(s) to be put on the market. During this phase, preparations have to be made for the tender to raise vendor selection effectiveness by creating equal opportunities for all competitors. Vendors who are being actively engaged in the creating of specifications before a new product is procured (BVP or any other method except traditional procurement), will give the client more insight in the vendor's capabilities and enable the vendor to contribute more in this value-creating process, comparable to the 'chain thinking' (Dutch: Ketendenken) in systems engineering (Alsum, et al., 2013). It is only when both client and vendor have a mutual perception (§3.2.2.2) on the project and the information available, the quality of the bids will be of the highest level. Currently, there are market consultations conducted by Rijkswaterstaat where they ask the market to help with the development of an idea, plan or initiative, which encourages both vendor and client to engage in a dialogue. It can be used in preparation for a tender, but this is not obliged and always the case (Ministerie van I&M, 2014). Market consultations, or any form of actively involving the market in the front-end of a project in less professional organizations and clients who only occasionally engage in tenders (and possibly BVP) is almost nonexistent. Furthermore, the client can go one step further than only consultations and really seek collaboration in the front-load of a project. This research therefore proposes a more active attitude of both vendor and client leading up to a tender. All ambiguities should be taken away.

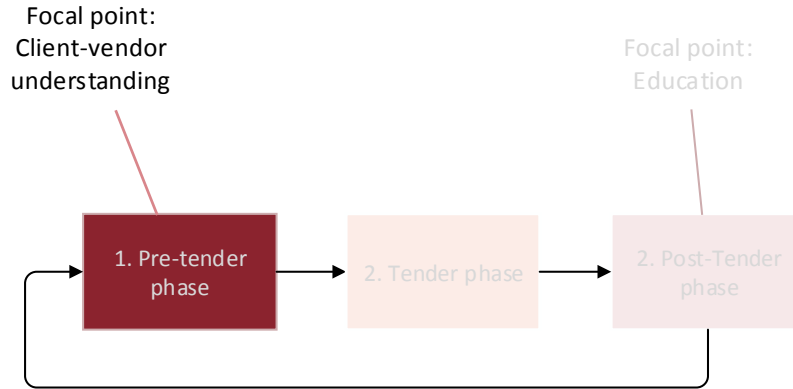


Figure 21 Phase 1 - Pre-tender

To establish a base for collaboration, there are certain conditions that often have to be met, with the most important ones being: Specialists on each side, trust, commitment, shared and common goals (Woolley, 2012). The pre-tender phase consists of checking collaboration, incorporate market in front-load of the project and setting measures for future development. As can be deduced from Figure 21, this is an iterative process, stimulating the learning cycle. The short-term effect on an increased collaboration will be a boost in understanding of market capabilities and a better alignment of clients' projects with the market. Long-term effects are increased project quality due to better defined project specifications and alignment with market capabilities. Again, showing analogies with systems engineering thinking (Alsum, et al., 2013), but now, specifically tailored for procurement. Also, due to the boundary conditions set in §4.2.1, BVP will become more than just a 'trick' and effectiveness is raised.

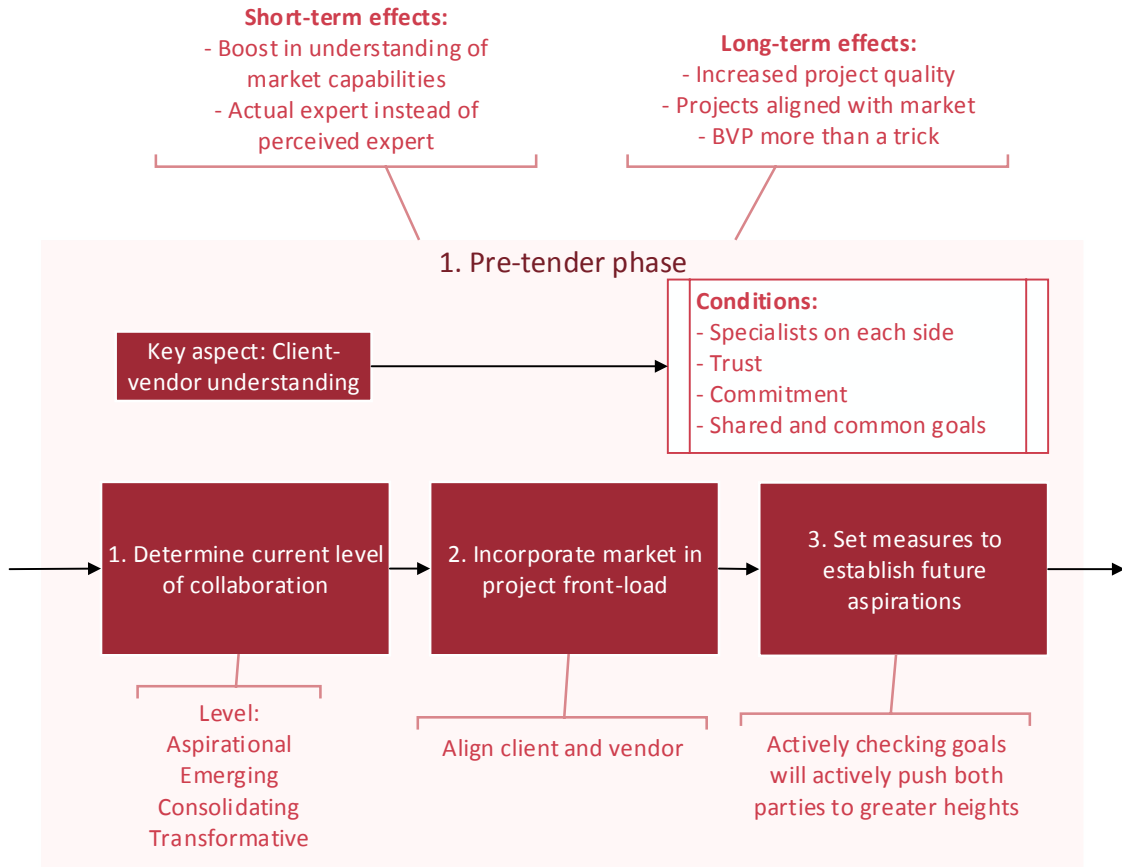


Figure 22 Pre-tender phase detailed

The checking of the level of collaboration can be achieved by executing an organizational self-assessment. In that self-assessment, several levels from, weak to strong, of collaboration can be distinguished, being aspirational, emerging, consolidating and transformative (NZG, 2013). The next step is to incorporate the market into the front-load of the project to ensure the alignment of capabilities with the market when the tendering procedure starts. For example, in framework contracts, the client can oblige the vendor to participate in interactive sessions with the vendors, not only to develop a plan or initiative, but to actively work on (realistic and challenging) project specifications. This ensures that the client is aware of the capabilities of the market. The last step is to check and set the aspirations of both vendor and client. It is here where the client can make agreements with vendors, and vice versa, to actively push themselves to higher performances in terms of client-vendor understanding. Basically meaning, is knowledge at the client also knowledge at the vendor's side (Ackoff, 1989)?

4.2.2.2 Phase 2: Tender phase

The second phase consists of the BVP tender itself. As described in the proposition in the beginning section of the synthesis, this model focusses mainly on the environment of BVP and not the procedure itself. There is however one adjustment this research proposes concerning the verification of expertise. Currently, as well covered in (§3.2.1 and §3.3.1), measuring expertise through dominance has its implications and possible pitfalls. To ensure the client is correctly assessing the capabilities of

the vendor and not to undermine the principles of the ‘BV way of thinking’, this research proposes a change in the conducting of the interview. The methodology has to have a slight change, it is proposed that the client uses 2 interviewers, one process manager who keeps track of the interview progress and one expert who can ask in-depth questions when more insight in project specific expertise is required. The tender documents are already checked on dominance during the first assessment round. Checking dominance again during the interviews evokes turning BVP interviews into a play of which currently, there are signs of this happening. Namely, vendors are being trained by consultants to perform better during the interviews. This should be avoided and expertise should have the central role.

4.2.2.3 Phase 3: Post-Tender (Focal point: Educating the market)

The third phase of the conceptual model focusses on educating the market. As already cited in the analysis phase of this report, in shifting markets, there is also a shift in responsibilities of buyer and supplier. This phase entails the period after the tender, whereas after a tendering procedure, performances need to be reflected and the market, lessons learned incorporated and all parties have be prepared for upcoming tenders. In literature (Osiro, et al., 2014), several suggestions are made to increase the markets performance with the client taking the lead.

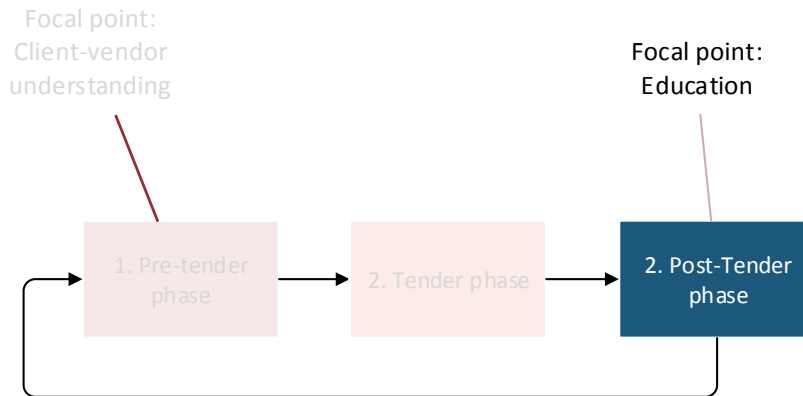


Figure 23 Post-tender phase

The short-term effects will be encouragement of the market, stimulating competition. While the long-term effects will be a broader base of experts, higher quality bids and a boost in innovation. The latter is achieved due to a possible stimulus of the client by actively raising the vendor’s performance goals, and create an increased project quality. Again, certain conditions have to be met to establish a solid base for the second phase. There must be a sense of responsibility in the new shifted markets and, relating to the latter, the client must be actively engaged in raising performance. Also, as described in the core principles of Prince2 project management method (Bentley, 2010), the lessons of the past for each project should be implemented in the next project.

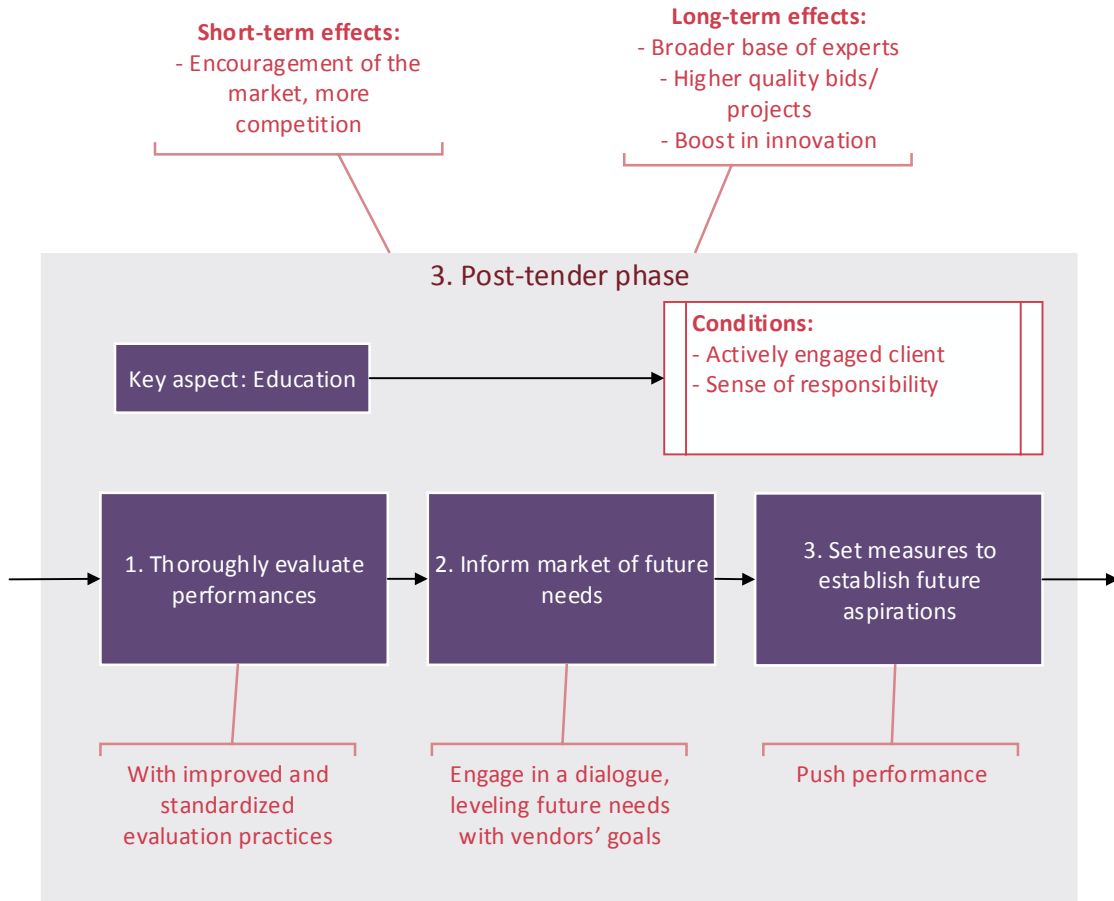


Figure 24 Post-tender phase detailed

The first step is to thoroughly evaluate performances of both vendor and client. A proposal has been made in the boundary conditions to standardize these evaluation methods (§4.2.1). The phase after a tender when the client reflects on his own performances, feedback from vendors should be included. Also, the winning vendor is able to see the most important risks of other vendors he has overlooked in his bid. This gives him extra advantage and experience over competitors, increasing chances of winning a future tender. This should be changed if more a more equal system is to be established. All vendors should be informed about the risks they have overseen. This does not include de mitigation measures for those risks as they are part of the intellectual property of an organization. The second step is the client actively taking the responsibility in educating the market. She has to let the vendors know what her future needs are. The third step is for all parties to set performance standards and aspirations to actively push themselves to higher performances. On small scale, this is already happening in the form of systems engineering. Incorporating lessons learned and integrating the supply chain. Efforts however have to be emphasized as this is still not standard working practice and most clients have a short term vision. The short term effect of these steps is that the market is enlightened about the future needs of client, it encourages them to innovate in the long run. And because vendors learn more from projects and procurement procedures, we establish a broader base of experts in specific disciplines.

5 Validation

This section will go into the validation of the underlying theories found in the analysis phase of this research on which the conceptual model (§4) is based. This important step will consist of checking the research for factual errors or a bias by the researcher.

i *The validation of the theories and models found and constructed by this research are validated through construct, internal and external validity. Emphasis is put on the educative character and the availability of future experts, as this is the most important part of this research. The validation took place on three levels, a session with an expert at the vendor's side, an expert at the client's side and a discussion with a group of independent consultants. The validation showed that the propositions were partly supported and that there were some nuances to be considered in the constructs. The conceptual view does not align completely with real-world situations. Internal validity is guaranteed as much as possible, but external validity is limited as this research confines itself, with some exceptions, to the Dutch construction industry.*

The validation of the analysis will consist of several levels of validation. The theories and models found and constructed by this research are checked on construct, internal and external validity (van Aken & Berends, 2007). Construct validity refers to the validating of the constructs (theories), how well do cause and effect describe real world situations? Internal validity refers to how well the experiment is free of outside influence that could influence the results. External validity refers to how well this study reflects the real world and not just a conceptual situation and can be generalized to other industries or environments. More emphasis will be put on the educative character and the availability of future experts (§3.3.2), as this is the most important part of this research.

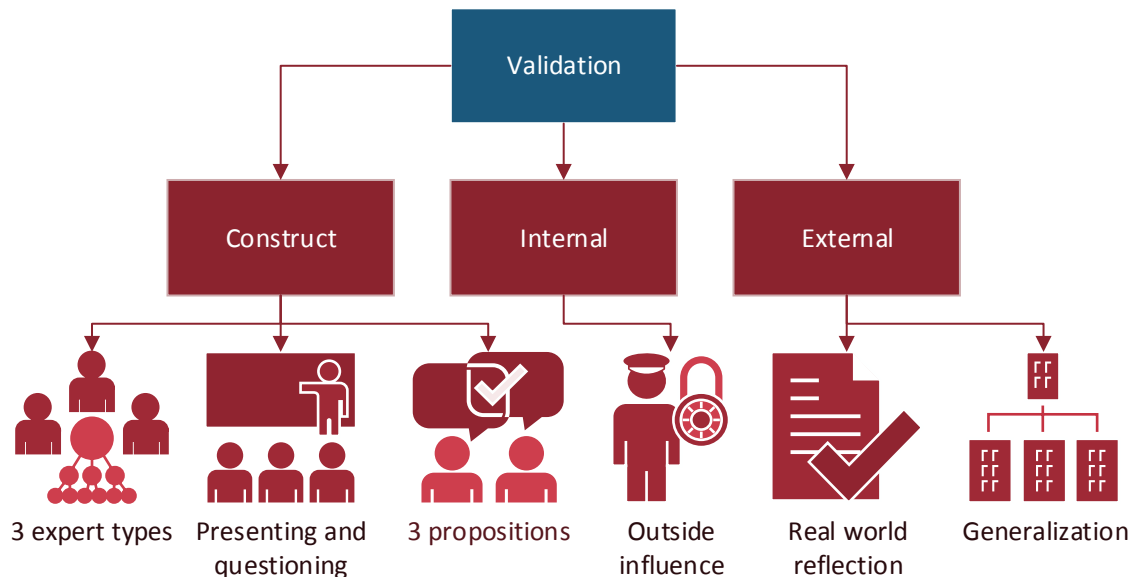


Figure 25 Validation model

To validate the propositions made by this research, they have been submitted to three different kind of expert(s) (groups). The first expert is an employee of a large Dutch construction company, who has experience with a multitude of BVP tenders in multiple companies and has been involved with BVP since the introduction of the award mechanism in the Netherlands. The second is a group of consultants at Infram, the company where this research is (independently) executed at. Here, a presentation was given in front of 20-25 consultants with a discussion on the propositions to be validated. The third is an expert at Rijkswaterstaat who has helped introduce BVP in the Netherlands and has been actively promoting and developing the BVP procedure.

5.1 Propositions

The validation of this research makes use of a couple of main propositions. These are the bases for the constructs as proposed in this research.

- a. The current integration of the BVP award mechanism in the Dutch construction industry ensures, through the steep learning curve of the new methodology and the use of performance information, that there will be less experts available in the future. (Relates to constructs proposed in §3.3.2 and §3.4.3.3)
- b. Without project-specific specialist knowledge in the client's assessment committee, the client is not able to assess the value of information in the tender documents and interviews (Related to constructs proposed in §3.2.1 and §3.4.3.5).
- c. In general, clients using the BVP award mechanism do not put enough effort in thoroughly informing the losing vendors on their performances after and tender and inform them of their future needs, resulting in unequal competition for future tenders (Related to constructs proposed in §3.3.2 and §3.4.3.1).

5.2 Validating the propositions

Construct validity

(a) One of the most important constructs in this research is the BVP learning mechanism (Figure 12, Figure 13 in §3.3.2) which describes the declining number of experts due to BVP practices. The validation interview with the vendor expert showed that he agreed partly with this proposition. He agreed with the fact that winning a BVP tender gives an extra advantage (over competitors) in future tenders to ones expertise in terms of experience and familiarity with the BVP procedure and performance information. He also agrees that BVP, and other procurement methods, forces a vendor to make choices, he cannot simply be an expert on all disciplines in the construction industry. This forces a vendor to specialize, because only a true expert can win tenders. This results in a market where there is less competition on certain project types, because only the experts that chose a certain discipline will get awarded those projects, gaining more expertise with every project they win, driving out competition. The vendor's expert disagrees in some level that the level-playing field is compromised by the fact that a vendor can only put their key personnel (who conduct interviews and

the project) on one project and cannot compete in all projects the vendor wants to win, leaving more room for competition. Next to that, the interviewee said that a vendor can also get performance information from 'normal' projects, not being tendered via BVP. This last argument however, can be refuted by the fact that the BVP award mechanism will be mainly used on projects where the client has no expertise, thus not concerning 'normal' projects. The group of consultants was divided and saw the overall conceptual view of the mechanism but questioned themselves if this was a realistic scenario. The expert at the client's side partly concurred with the proposition, but we did have a discussion about the terminology. The client had the opinion that there was a decaying number of vendors in a certain discipline due to BVP, but the amount of 'experts', in this case being personnel working at vendors is growing.

(b) The second construct is the proposition that without expertise, the assessment committee is not able to value the expertise of the vendor (§3.2.3). Literature, as referenced to in the corresponding paragraph (§3.2.3), literature and other studies agree with this proposition. The vendor's expert disagrees with this proposition in a sense that if you truly believe in the BV philosophy and information is dominant, "the blind can see" and the assessment committee should be able to correctly assess the vendor's performances. The expert does agree with this proposition from a conceptual viewpoint. An exercise during the group meeting with the consultants where an example question was posed concerning a medical question (consultants had no medical education or background) (§9.7), showed that without proper expertise, valuing information without the right context is hard to establish. The same question was posed to the expert at the client's side. He understood the underlying theory of not being able to value information without the right context, but has problems with the formulation of the question. In his view, the formulation of the risks was not SMART enough and would grade both risks with an insufficient grade. He also thought that too much or too little expertise at the client's side would block objective valuing of information and that there was an ideal trade-off. He described it as a bathtub-model.

(c) The final proposition is that the client does not put enough efforts in educating the market (§3.3.2). The vendor's expert disagrees with this for the case of Rijkswaterstaat (a main client for many vendor's), but agrees with this proposition for other, less professional client's. Concerning tender evaluations, the vendor's expert confirms the proposition in a sense that he states that evaluations can sometimes be frustrating due to insufficient feedback and there is definitely room for improvement. The group of consultants stated that this proposition heavily depends on the type of client. Thus partly confirming, from a conceptual viewpoint, this proposition. The client's expert has great difficulty formulating an opinion about this proposition. He agreed that evaluation practices are not always professional. But had trouble finding causal relations between insufficient quality of tender documents and the diminishing competition in the market.

Internal validity

This research has been conducted independently at a consultancy firm (Infram). During the execution of this research, the researcher has been given maximum freedom and has undergone unbiased discussions. Next to that, the proposal for this research came from the researcher himself, not the company thus Infram was not served by any outcome of this research.

For this research, as a means of gathering empirical data and validation, interviews have been conducted. Partly to confirm or reject proposition made by the research and partly to gain new insights

into the BV award mechanism. Questions posed at the interviews were provocative and may seem biased, but this was merely done to elicit a response. The interview methodology led to interesting and open discussions where interviewees could talk freely (also because of anonymity), therefore guarding from a possible bias in their answers.

External validity

This research has limited external validity as it has not been validated in other industries outside the Dutch construction industry. This is due to the fact that this research focused mainly on BVP practices in the Dutch construction industry and that is also where (almost) all interviewed experts originated from. This was however pre-determined in the project demarcation in the research proposal section (§1.5). Furthermore, this research is also limited to the construction industry in the Netherlands and does not give a guarantee that all the found will work the same in similar industries in other countries.

5.3 Conclusion

The validation showed that the propositions were partly supported and that there were some nuances to be considered in the three propositions presented in §5.1. The conceptual view does not align completely with real-world situations. Internal validity is guaranteed as much as possible as the research has attempted to create a view as independently as possible on BVP practices. External validity is limited as this research confines itself, with some exceptions, to the Dutch construction industry.

6 Discussion

In the analysis part of this research we have been discussing the ‘flaws’ in the BVP methodology and how it is hard to create a level-playing field and ensure the future availability of experts. But in practice, projects procured with BVP procedures do score well on client satisfaction and risk control (Kashiwagi, 2011) (Santema & van de Rijt, 2013). So questions could be raised in why it is necessary to increase vendor selection effectiveness and why it is studied in this research. This has several reasons, the introduction of BVP in the Netherlands is, in a historical perspective of procurement methods, fairly recent. Only a select amount of ‘experts’ have been involved in implementing and refining the BV philosophy for use in the Dutch construction industry. Danger therefore lies in the fact that a tunnel-vision concerning the use and implementation of BV philosophy would be developed. If one searches for publications on research platforms as PBSRG, it is hard to find a critical review of BVP practices. This research’s view on BVP originates from a neutral, scientific standpoint and can therefore independently assess and review the workings of the method. Furthermore, the research done in the field of BVP has little scientific background or scientific bases. Most of the procedure is refined using best-practices. Also, publications on PBSRG mostly limit themselves to reviewing BVP practices and the studying of cases. Never was there a research which critically assessed BVP proceedings from a scientific point of view. This research combines the latter two.

Also debated in the synthesis section of this research is the need for a ‘level-playing field’. Aristotle had a view on trying to create an ‘equal’ setting.

“The worst form of inequality is try to make unequal things equal.”

Aristotle (384B.C.-322B.C.)

This except tells shows us a principle that plays a role in multiple lines of work. Trying to create equal chances for everybody involved, when taken too far, can take away incentives to excel and create unequal competition by unfair distribution of resources. When taken into politics, this leads to communism.

As already cited in the external validation section (§5.2), the focus of this research is only on the implementation of BV, with some exceptions, in the construction industry. Questions could therefore be raised if the constructs work for industries or disciplines outside the construction industry (e.g. IT). Implementation of the results are therefore limited.

Also in the analysis phase, there was a construct that described the lack of collaboration on multiple levels (§3.2.2.1). Being project-, organizational- and industry-level client-vendor understanding. Here, the analysis referenced to literature stating that intensifying collaboration and aligning organizational values (Paarlberg & Perry, 2007) will result in higher project performance. Other research however suggest, that building social capital in a collaborative buyer-supplier environment, positively affects buyer performance, but that if taken to an extreme it can reduce the buyer's ability to be objective and make effective decisions as well as increase the supplier's opportunistic behavior (Villena, et al., 2011). So beware of too intense relations.

Following the discussion on BVP evaluations practices in §3.3.2 **Error! Reference source not found.** and as mentioned in the problem description (§1.4), more could be done to accelerate the implementation and learning cycle of BVP knowledge. There are also research platforms (e.g. PBSRG and NEVI) that are expanding the knowledge on BVP. It is however questionable how much this contributes to the knowledge and expertise of vendors, as some still struggle, or are hesitant, to implement the BV philosophy in their organizations.

7 Conclusions and recommendations

The conclusions and recommendations are the end result of this research. First, findings from the literature study will be shown after which the insights found during the analysis phase will be discussed. Finally, the general conclusions will be presented that are the result of this research. Next, there is a section with recommendations and leads to future research.

The main research question that is answered is: “What are the mechanisms involved in the BVP award procedure and how does this affect the future Dutch construction industry?”

7.1 Findings from literature

In the search of defining a theoretical framework to facilitate a more effective vendor choice and increase the learning experience of both vendor and client, this thesis explored an elaborate amount of theories related to BVP. When studying the BVP process, one has to conclude that the method is based on best practices and personal experiences by its developer, Dean Kashiwagi, but a fundamental, scientific foundation is absent. The method is mainly supported by (mainly positive) results from case studies.

An important theoretical model to be considered while studying any information process is the DIKW model (Rowley, 2007) (Ackoff, 1989) with its distinction between data, information and knowledge (and less relevant here, wisdom). It is interesting to see where in the selection phase these elements are located and, ultimately, how the transfer of information and knowledge between vendor and client can be optimized. Of the DIKW model, only the information and knowledge elements are of importance. This is due to the fact that the vendor, before participating in a tender, already know the context of the data and therefore starts off at the information element in the DIKW model. On the other end, wisdom is only relevant if we are discussing policy-making on a higher level where the time spans are larger (Ackoff, 1989).

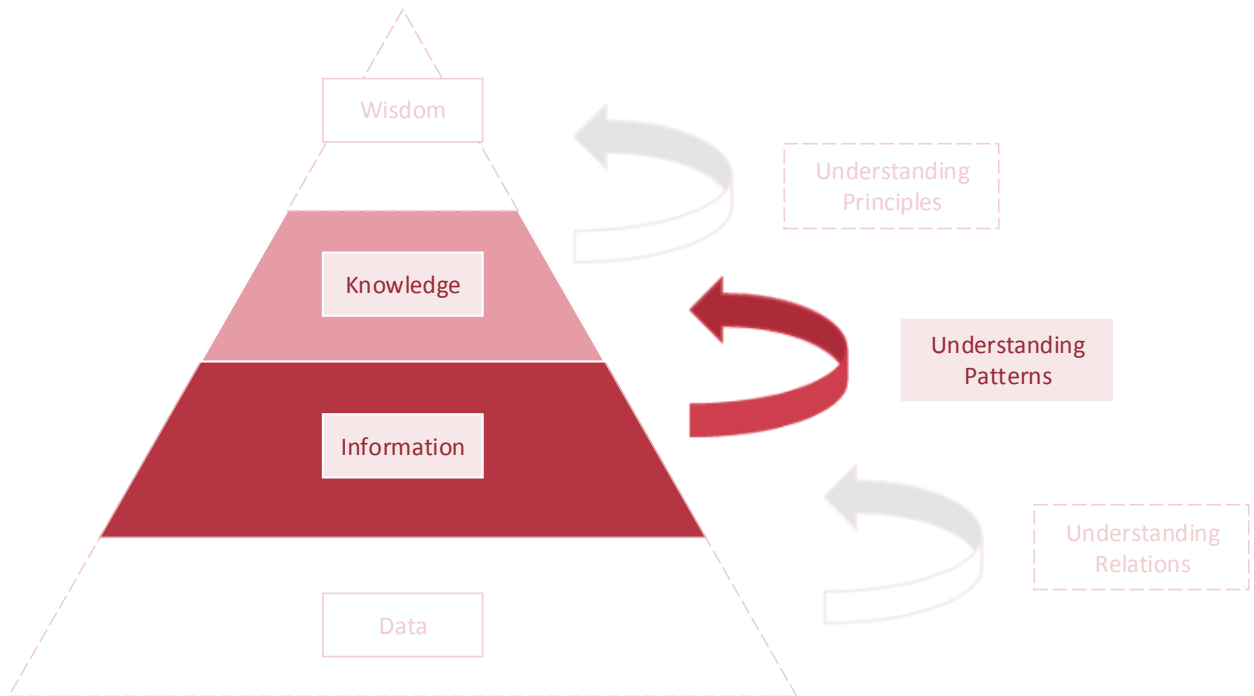


Figure 26 Relevant DIKW elements

This research also looked into process effectiveness and found that there are many systems and theories that describe effectiveness §2.3. In later chapters, the performance indicators for an effective process will be researched in more detail, specifically tailored for the BVP vendor selection process.

“History is written by the victors”

Winston Churchill (1874-1965)

In the current works on BVP practices in the Netherlands, the literature, and corresponding scientific basis, on how to perform and communicate effective evaluations of the performance of vendors in BVP projects is limited. It is therefore no surprise that there are fluctuating experiences and degrees of satisfaction with the current evaluation process as every client has a different approach and method in conducting the evaluation.

Literature also shows that in general, buyers (clients) do not have a different perspective on short vs. long-term relationships in terms of trust (Ekici, 2013). They see trust as a service of the project which is being procured. This is a possible explanation why clients in de Dutch construction industry have a short-term focus and don't feel there is an incentive to focus on long-term goals and developing desirable future competences of the market. (3.2.2.4)

Another important aspect of BVP tenders is the learning cycle. In the current economic climate, vendors do not have time to learn the new BVP ‘trick’. Losing or winning a tender a couple of times can be the difference between a flourishing or near bankruptcy company (van Belzen, 2014). Information and knowledge sharing about the project and BV related aspects and increasing the educative character of procurement procedures is therefore important.

7.2 Findings from the analysis

In the analysis section, the pursuit was to get more insight in the mechanisms involved in the vendor selection process and the effects on these on the Dutch construction market. This resulted in several constructs.

- Usage of dominant information to assess expertise can lead to an altered perception of the expert.
- Alignment of organizational goals and abilities is currently only occurring on project level and to a limited extend on organizational and industry level.
- The safeguarding of objectivity is difficult and may lead to an altered perception of the expert.
- Currently, there is no organ who assesses the assessor (client).
- Prepossession of the client may lead to a solution bias, favoring one vendor over the other.
- Market education concerning future client's needs are below par.
- It seems that the client often has little affection with the construction industry and doesn't know the capabilities available at the market (operating from an 'ivory tower').

Following the effects, the implications of these mechanisms where studied and a 'quick and dirty' scenario analysis was made.

- Choosing a perceived expert due to the mechanisms described in §3.2 will lead to a perceived expert, possibly neglecting the actual expert and disadvantaging the top performer.
- A limited tender learning process will result in a market where the competition in specific disciplines will diminish due to the fact that BVP forces vendors to choose their expertise. This is due to the fact that the weight of price aspects are low and winning tender by low bidding no longer suffices.
- However BVP dictates it stimulates innovation, this research found arguments that there are signs of BVP slowing down innovation.
- Current market conditions emphasize the need for an improved learning process and raised awareness of client's to invest in their suppliers. A new system, more responsibilities and expertise lower in the supply chain, asks for a different attitude of clients. This responsibility is however not taken up by many clients.
- Organizations that implement BVP as a procuring method must be aware that it does not become a 'trick'. In current market conditions, the need to win projects is higher than ever, resulting in vendors creating a bid which focusses on pleasing the client's assessment committee, not to maximize quality for the client.
- Due to the forcing nature of BVP to choose ones expertise, it is likely that the number of experts (organizations) in specific disciplines decreases, but helps create more expertise in general (personnel) since it also forces vendors to truly fathom the project.

7.3 Overall conclusions

This section will show the conclusions that are a result of the various sections of the analysis section and the research sub-questions that helped to answer the main research questions. The original intend of this research was to gain more insight in current BVP vendor selection practices and provide recommendations to further improve effectiveness. However, while conducting the analysis, a more important topic than improving effectiveness arose. Being the implications of the introduction of BVP on the Dutch construction industry, which hasn't been explored before. It is not only important that expertise is available now, but that there is also a healthy market in 20 years. This research is therefore switched to an exploratory research into the workings and implications of BVP vendor selection process on the future construction industry. Below, a list of conclusions are presented.

- The current integration of the BVP award mechanism in the Dutch construction industry ensures, through the steep learning curve of the new methodology and the use of performance information, that there will be less experts available in the future. (Relates to constructs proposed in §3.3.2 and §3.4.3.3).
- Clients using the BVP award mechanism do not put enough effort in thoroughly informing the losing vendors on their performances after a tender and inform them of their future needs, resulting in unequal competition for future tenders. (Related to constructs proposed in §3.3.2 and §3.4.3.1).
- A limited tender learning process will also result in a market where the competition in specific disciplines will diminish due to the fact that BVP forces vendors to choose their expertise. This is due to the fact that the weight of price aspects are low and winning tender by low bidding no longer suffices.
- Without project-specific specialist knowledge in the client's assessment committee, the client is not able to truly assess the value of information in the tender documents and interviews due to the inducing of expertise, inherent to the BV philosophy (Related to constructs proposed in §3.2.1 and §3.4.3.5).
- Current BVP practices merely give the *perception* of the best vendor using performance information. This entails that the selected vendor *can* be the real expert, but is not necessarily better than the other vendors competing in the tender. This is due to several mechanisms and 'flaws' in the BVP methodology (§3.2.3). For example, the solution bias (§3.2.1.1), (un-)ability of the client to safeguard objectivity (§3.2.3.1), heuristics and cognitive dissonance (§3.2.1.1) and the capabilities of the client to value expertise (§3.2.3.1). So the actual top performer is possibly neglected.
- Contrary to claims made by BVP concerning the incentives for innovation, this research has investigated and shown arguments that BVP has in fact constraining effects on innovation (§3.3.3).

- It is only in a BVP environment where the vendor and client truly understand each other, that the presented solutions fully match the needs of the client since creating an environment with shared values will create bounds and limits on buyer-supplier behavior (§3.2.2). This provides predictability and stability and reduces role conflict and ambiguity in decision-making processes (Meglino & Ravlin, 1998). In a different market with shifted responsibilities, it is therefore important for the client to see his new role in the supply-chain.
- Client-vendor understanding could be raised to a higher level, which affects the quality of both the tender and the bids (§3.2.2). Currently, efforts mostly confine themselves on project level, but not enough efforts are being put into aligning client and vendor on organization and industry level.
- Due to the forcing nature of BVP to choose ones expertise, it is likely that the number of experts (organizations) in specific disciplines decreases, but helps create more expertise in general (personnel) since it also forces vendors to truly fathom the project.

7.4 Scientific relevance

BV is a theory or philosophy, formed around best practices of mainly 1 person, Dean Kashiwagi. Further research limits itself to the studying of cases and refinement of the BVP method has been carried out by a select group of experts. The scientific basis of the methodology is therefore weak and is only supported by a large group of people because of its real-world (positive) results. This research has attempted to delve deeper and find theoretical constructs that support the BV philosophy. This research contributes to the scientific basis of BV and has shown that many elements in the award mechanism lack validation and that more research is needed. The overall approach of this research was done via a conceptual view, whereas all the other publications (e.g. by the PBSRG platform) have been conducted from a practical approach, taking case studies as their data input. The conceptual implications of the constructs suggested this research differ from the practical implications as is also shown in the validation section.

7.5 Practical relevance

This research began as a practical research, attempting to come up with real-world and practical recommendations concerning the BVP selection phase. Instead, through the insights gained in doing more in-depth research and discussions with experts, I have found more fundamental problems with the BVP procedure, which in my opinion, could possibly affect the construction market. It is therefore that this research has taken on a more conceptual approach to the workings of BVP and studied its underlying mechanisms which contribute to this problem. The conceptual model proposed in the synthesis section is therefore not overly specific and directly adoptable in current day practices, instead, it gives a view into the possible improvement of BVP practices in the Netherlands. This research can be seen as a study which provides more insights in the workings of vendor selection in general, since many of the mechanisms (e.g. solution bias, heuristics) also apply for other procurement methods.

7.6 Recommendations

7.6.1 Conceptual recommendations: Changing BVP environment

As suggested in the conceptual model (§4), the recommendation that this research proposes is not to (radically) change the BVP vendor selection process, but instead, focus on the environment of BVP tenders and creating a level-playing field where all parties involved can spur to the highest performances and BVP becomes more than just a 'trick'.

This can be achieved by taking action in different phases, before and after a tender, with different focal points in each phase. But first, some boundary conditions need to be introduced that will enhance the performance of BVP tenders:

- Expertise not only at the vendor's side, but also on the client's side. Expertise is needed to assess expertise.
- In the tender specifications, oblige competing vendors to have at least a person with B/A/A+ certification on board to ensure both sides implement the BV philosophy correctly.
- Standardize tender evaluation practices.

Then a three-phase conceptual model is proposed to help create an ideal environment for vendor and client to operate in. The first phase focusses on client-vendor understanding and leveling project expectations and specifications. As discussed in the analysis section, the client's involvement in the market is often involved and a more active stance towards the vendor has to be taken. The second phase is the tender phase and it is proposed to introduce an extra step in verifying the vendor's expertise. An expert with project specific expertise during the interview besides the process manager who can ask follow-up question to gain extra insight in the actual expertise of the vendor. This to go from perceived to actual expert, instead of solely making a second dominance check that already occurred when the bid documents were assessed. The third phase of the conceptual model focusses on educating the market, raising market capabilities and meeting future needs. This conceptual model is, as the name suggests, conceptual of nature as needs to be developed and detailed further.

7.6.2 Practical recommendations

There are however some tangible recommendations that can be made by this research:

- Conduct interviews with 2 interviewers. The process manager from the core team conducts the interviews and guards the interview progress while a specialist with in-depth expertise is sitting next to the process manager and can ask follow through questions to clarify or verify the expertise of the vendor.

- Create a more even learning experience by sharing the risks. Currently, only the winning vendor gets insight in the main risks he overlooked in his bid (not the mitigations), gaining an advantage over competitors. In order to create a level-playing field in future tenders, the same should happen with the losing vendors. Give them insight into what they've missed, so they can perform better in the future.
- Also, according to literature, currently the core team members are picked by the BVP process manager (sponsor) (Santema & van de Rijt, 2013). Questions could be raised why there is no open application procedure. This gives the chance of a scenario where the same individuals (and their biases) are being picked for the tender team over and over again. The danger of knowledge lock-in looms. Furthermore, the project specific expertise of the team members can also be questioned when following this procedure. The process prevails over the content.
- Give the ability to reassess the risk report after conducting the interviews. Currently, the risk report is graded after which the vendors are invited for the interviews. During the interviews, the vendor can give extra feedback on the risks, clarifying his poorly formulated risks and mitigation. The problem is that he will get graded higher for this in the interview (after correctly clarifying), but will still have the lower grade for his risk report, thus lowering his chances of winning. This is merely a BVP procedural lack of expertise, because apparently the vendor was not able to formulate his risks and mitigations well enough. This has nothing to do with the real expertise. The recommendation is a choice of two:
 - o Give the committee the ability to reassess the bid documents, with good argumentation, after the interview has been conducted. (Possible pitfall: giving the ability to manipulate tenders)
 - o Only use the risk report as a means of selection (no grading) (possible pitfall: Even more weight for the interview criteria)
- As already mentioned in the boundary conditions for creating a level-playing field: Assure that there are certified persons on both the client's and vendor's side. It is only when both parties fathom the BVP philosophy and procedure (or 'trick') well enough, the award mechanism works best, creating a level-playing field. Therefore the client, in the tender specifications, has to oblige competing vendors to have at least a person with B/A/A+ certification on board (Either in-house or by means of a consultant) and show the vendors they have certified personnel on their own side.
- Standardize evaluation practices: There are large fluctuations in the quality of tender evaluations. Some are better and more comprehensive where others are barely informative, leaving the market even more unequal as it was before. The suggestion is made by this research to also educate how to conduct tender evaluations as a part of the BVP certification system, standardizing practices. Let the contracting officer (CO), who is a certified person and leading the core team of the client, be responsible for the evaluation process so that they are more consistent and better quality comes in the evaluation process. Implications of this measure:
 - o The CO should monitor the evaluation process
 - o CO training in supervisor evaluations

- More consistent tender evaluations
 - Higher quality evaluations through training
 - Better understanding by vendor
 - Better knowledge transfer from client to vendor resulting in increased experience of the vendor
-
- There is a need for an increased awareness of the client about his new role in the supply-chain as responsibilities have shifted. Especially on higher levels (organizational and industry), all organizations involved should invest effort in understanding future needs of the market. Current market conditions emphasize the need for an improved learning process and raised awareness of client's to invest in their suppliers. A new system, responsibilities lower in the supply chain, asks for a different attitude of clients.

 - As explored in the analysis phase of this research, organizations must be aware that, when conducting a BVP tender, it does not become a 'trick' for the vendor. In current market conditions, the need to win projects as construction companies' turnovers and the amount of potential projects are dwindling is higher than ever, resulting in vendors creating a bid which focusses on pleasing the client's assessment committee, not to maximize quality for the client. Objectivity compromising elements in the procedure play an important role and are to be reviewed. Vendors should be concerned about quality and building expertise, not on pleasing the client's assessment committee.

8 Bibliography

- Ackoff, R., 1989. From Data to Wisdom. *Journal of Applied Systems Analysis, Volume 16*, pp. 3-9.
- Alsum, D. et al., 2013. *Leidraad voor Systems Engineering binnen de GWW-sector - De samenhang centraal - versie 3*, s.l.: ProRail, Rijkswaterstaat, Bouwend Nederland, NLIingenieurs, de Vereniging van Waterbouwers en Uneto-VNI.
- Anon., 2013. The origins of the financial crisis. *The economist*, 7 September.
- Anon., 2014. Prijs leidend bij BDFM-contracten. *Cobouw*, 30 September, pp. 1-1.
- Baarda, B., 2009. *Dit is onderzoek*. s.l.:Noordhoff Uitgevers B.V..
- Bentley, C., 2010. *Prince2: A practical handbook*. Oxford: Elsevier Ltd..
- Bos, A., 2012. Case Study: Implementation at Hanze University of Applied Sciences. *Journal for the Advancement of Performance Information and Value Vol. 4 No. 2*, pp. 240-254.
- Burnett, M., 2009. *Using Competitive Dialogue in EU Public Procurement - Early Trends and Future Developments*, s.l.: European Institute for Public Administration.
- CBS, 2014. *Record Failisementen in 2013*, Den Haag: CBS.
- Chao-Duivis, M., 2005. *Prequalification of Contractors based on Past Performance*, s.l.: Knowledge Centre for Procurement - Dutch Ministry of Environment .
- Chen, Y., Lin, T. & Yen, D., 2014. How to facilitate inter-organizational knowledge sharing: The impact of trust. *Information & Management, Volume 51*, pp. 568-578.
- Collins, A. & Baccarini, D., 2004. Project Success - A Survey. *Journal of Construction Research*, pp. 211-231.
- CPB, 2012. *De Nederlandse economie tot en met 2017, inclusief Begrotingsakkoord 2013*. The Hague: CPB.
- Davis, R., 2009. *What makes a good process?*, United Kingdom: IDS Scheer.
- de Boer, R., 2012. *Seneca's Error: An Affective Model of Cognitive Resistance*, Delft: TU Delft.
- de Pablos, P. & Lytras, M., 2008. Competencies and human resource management: Implications for organizational competitive advantage. *Journal of Knowledge Management*, 12(6), pp. 48-55.
- De Wit, A., 1988. Measurement of Project Success. *International Journal of Project Management vol. 6 no. 3*, pp. 164-170.
- Dongen, J. v. & Kroon, O. v. d., 2001. *Sjoemelen met miljoenen*. s.l.:VARA.
- Dorée, A., 2004. *Collusion in the Dutch construction industry: An industrial organization perspective*, Twente: UTwente.

- Dreschler, M., 2009. *How to apply the 'Economically Most Advantageous Tender'*, Delft: TUD.
- DTI, 2014. *Process understanding and Improvement*, s.l.: UK Government.
- Ekici, A., 2013. Temporal dynamics of trust in ongoing inter-organizational relationships. *Industrial marketing magazine*, Volume 42, pp. 932-949.
- Ellis, S., Henke, J. & Kull, T., 2012. The effect of buyer behaviors on preferred customer status and access to supplier technological innovation: An empirical study of supplier perceptions. *Industrial marketing management*, Volume 41, pp. 1259-1269.
- Enserink, B. et al., 2010. *Policy analysis of multi-actor systems*. The Hague: LEMMA.
- Etgar, M., 1979. Sources and types of interchannel conflict. *Journal of Retailing* 55, pp. 61-78.
- Farooqui, U. & Ahmed, S., 2008. Assessment of Pakistani Construction Industry – Current Performance and the Way Forward. *Journal for the Advancement of Performance Information and Value Vol. 1 No. 1*, pp. 51-72.
- Festinger, L., 1957. *A theory of Cognitive Dissonance*. California: Stanford University Press.
- Gadde, L. & Hakansson, H., 1993. *Professional Purchasing*. London: Routledge.
- Geneste, L., Grabot, B. & Houe, B., 2009. *Competent management for business integration*, Moscow: INCOM Conference.
- Glöckner, H., Pieters, R. & de Rooij, W., 2005. IMPORTANCE OF THE KRALJIC MATRIX AS A STRATEGIC TOOL FOR MODERN PURCHASING. *LogForum*, 1(3).
- Hamel, G. & Prahalad, C., 1990. The core competence of the corporation. *Harvard Business Review*, 68(3), pp. 79-93.
- Harzallah, M. & Vernadat, F., 2002. IT-based competency modeling and management: From theory to practice in enterprise engineering and operations. *Computers in industry*, 48(2), pp. 157-179.
- Hendriks, B., 2014. *Innovatieremmers*, Den Haag: Cobouw.
- Hey, J., 2004. *The Data, Information, Knowledge, Wisdom Chain: The Metaphorical link*. s.l.:Dataschemata.
- Humphreys, P., Li, W. & Chan, L., 2004. The Impact Of Supplier development on buyer-supplier performance. *The international journal of Management Science*, pp. 131-143.
- Kashiwagi, D., 2008. *Best Value*. Tempe: Performance Based Studies Research Group.
- Kashiwagi, D., 2010. Information Management Theory. In: *IMT*. s.l.:s.n., p. 16.
- Kashiwagi, D., 2011. *Presentation On Best Value Performance Information Procurement System (PIPS)*. Arizona: PBSRG.
- Kashiwagi, D., 2013. *Prestatieink - Met Best Value naar Succesvolle Projecten*. Driebergen: Graphicom International.
- Kashiwagi, D., 2014. Update on best value visionaries. *Performance Based Studies Research Group*, 23 6, p. 1.

- Kashiwagi, D. & Egbu, C., 2008. Letter from the Editor. *Journal for the Advancement of Performance Information and Value Vol. 1 No. 1*, pp. 1-5.
- Kesel, P., 2007. What makes a "good" process. *Project and Portfolio Management*, 28 June, pp. 1-2.
- Koenen, I., 2014. Innovatie en aanbesteden zijn elkaars vijanden. *Cobouw*, 20 August, p. 1.
- Koenen, I., 2014. Onhoudbaar. *Cobouw*, 1 October, pp. 1-1.
- Koolwijk, J., Geraedts, R. & Chao-Duivis, M., 2005. *Prequalification of Contractors based on Past Performance*, Kenniscentrum Aanbesteden - Ministerie VROM: s.n.
- Kraljic, P., 1983. *Purchasing must become Supply Management*, Harvard: Harvard Business Review.
- Krause, D., Handfield, R. & Scannell, T., 1998. An empirical investigation of supplier development: reactive and strategic processes. *Journal of Operations Management* 17, pp. 38-58.
- Leijten, M., 2013. *Psychology in policy analysis*. Delft: TU Delft.
- Lexicon, 2014. *Lexicon - Methoden en Technieken*. Leiden: Universiteit Leiden.
- Lhote, F., Dulmet, M. & Bonjour, E., 2002. *An internal modelling of competency, based on a systemic approach, with socio-technical systems management in view, Proceedings of IEEE International Conference on systems*, s.l.: Man and cybernetics.
- Maire, J., Bronet, V. & Pillet, M., 2005. A Typology of "Best practices" for a benchmarking process. *Benchmarking: An International Journal*, 12(1), pp. 45-60.
- Manunza, E. & Telgen, J., 2014. EMVI ontbeert goede gunningsmethode. *Cobouw*, 28 August, pp. 1-1.
- McNamara, C., 1999. *General Guidelines for Conducting Interviews*. Minnesota: s.n.
- Meglino, B. & Ravlin, E., 1998. Individual values in organizations. *Journal of Management*, pp. 351-389.
- Mehren, A. T. v., 2013. *Contracts*, Cambridge: Encyclopaedia Britannica.
- Ministerie van I&M, 2014. *Marktconsultaties*. [Online]
Available at:
http://www.rijkswaterstaat.nl/zakelijk/zakendoen_met_rws/marktconsultaties_en_marktdagen/marktconsultaties/
[Accessed 2014].
- Modi, S. & Mabert, V., 2006. Supplier Development: Improving supplier performance through knowledge transfer. *Journal of operations management*, 18 April, pp. 42-64.
- Monczka, R., Trent, J. & Callahan, T., 1993. Supply base strategies to maximize supplier performance. *International Journal of Physical Distribution & Logistic Management*, pp. 42-54.
- Morgan, R. & Hunt, S., 1994. The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58(3), pp. 20-38.
- NZG, 2013. *MSD Organisational Capability Self-Assessment Tool*. s.l.:Ministry of Social Development.

- Osiro, L., Lima-Junior, F. & Carrpinetti, L., 2014. A fuzzy logic approach to supplier evaluation for development. *Int. J. Production Economics*, pp. 95-112.
- Oxford University Press, 2014. *English Dictionary*. [Online]
Available at: <http://www.oxforddictionaries.com/definition/english/procurement?q=procurement>
- Paarlberg, L. & Perry, J., 2007. Aligning Employee Values and Organization Goals. *The American Review of Public Administration* vol. 37, pp. 387-408.
- Paulraj, A., Lado, A. & Chen, I., 2008. Inter-organizational communication as a relational competency: Antecedents and performance outcomes in collaborative buyer–supplier relationships. *Journal of Operations Management*, Volume 26, pp. 45-64.
- Pillai, A., Joshi, A. & Rao, K., 2002. Performance measurement of R&D projects in a multi-project, concurrent engineering environment. *International Journal of Project Management* vol. 20 no. 2, pp. 165-177.
- Plous, S., 1993. *The Psychology of Judgment and Decision Making*. US: McGraw-Hill Inc..
- PSCC, 2009. *Structured Interviewing: How to design and conduct structured interviews for appointment process*. Ontario: Public Service Commission of Canada.
- Rauffet, P., Da Cunha, C. & Bernard, A., 2013. *A dynamic methodology and associated tools to assess organizational Capabilities*, Lorient: Universite Bretagne Sud.
- Rijkswaterstaat, 2004. *Ondernemingsplan - Een nieuw perspectief voor Rijkswaterstaat*, s.l.: Ministerie van Verkeer en Waterstaat.
- Rijkswaterstaat, 2012. *Toonaangevend Opdrachtgever*, s.l.: Ministerie van Verkeer en Waterstaat.
- Rijkswaterstaat, 2014. *Best Value Procurement*. [Online]
Available at:
http://www.rijkswaterstaat.nl/zakelijk/zakendoen_met_rws/werkwijzen/gww/aanbesteden_en_contracteren/best_value_procurement/
- Rowley, J., 2007. *The Wisdom Hierarchy: representations of the DIKW hierarchy*, Bangor: Bangor Business School - University of Wales.
- Santema, S., 2011. What is Happening in Supply Chain Management? From Push to Pull through Best Value Thinking. *Journal for the Advancement of Performance Information and Value* vol. 3. no. 1.
- Santema, S. & van de Rijt, J., 2013. *Prestatie Inkoop - Met Best Value naar succesvolle projecten*. Driebergen: Graphicom.
- Shenhar, A., Levy, O. & Dvir, D., 1997. Mapping the dimensions of project success. *International Journal of Project Management* vol. 28 no. 2, pp. 5-13.
- Shuttleworth, M., 2008. Deductive reasoning. *Explorable*, pp. 1-1.
- Sorgdrager, W., 1997. *Mededingingswet*. s.l.:s.n.

- Sullivan, K. & Michael, J., 2008. Industry Transformation: Testing Best-Value and Leadership in Non-Construction Industries. *Journal for the Advancement of Performance Information and Value* Vol. 1 No. 1, pp. 20-34.
- Sullivan, K. & Savicky, J., 2010. *Past Performance Information: Analysis of the Optimization of a Performance Evaluation Criteria*. Tempe: Performance Based Studies Research Group.
- Sundqvista, E., Backlund, F. & Chroneer, D., 2014. *What is project efficiency and effectiveness?*, Luleå : Elsevier Ltd..
- Team, C. P., 2010. *CMMI for Acquisition*, s.l.: Software Engineering Institute.
- ter Weel, B., van der Horst, A. & Gelauff, G., 2010. *The Netherlands of 2040*. 88 ed. The Hague: CPB Netherlands Bureau for Economic Policy Analysis.
- Uhlman, E. & Cohen, G., 2007. "I think it, therefore it's true": Effects of self-perceived objectivity on hiring discrimination. *Organizational Behavior and Human Decision Processes*, November, 104(2), pp. 207-223.
- Unknown, 2012. *PPP - definition, origin and evolution*. [Online]
Available at: http://ppp4krakow.net/About_PPP/Definition,_origin_and_evolution/
- van Aken, J. & Berends, H., 2007. *Problem Solving In Organizations*, s.l.: Cambridge University Press.
- van Belzen, T., 2014. *Als je drie keer pech hebt met aanbesteden, val je om*, Den Haag: Cobouw.
- van de Rijt, J., Hompes, M. & Santema, S., n.d. *The Dutch Construction Industry: An Overview and Its Use of Performance Information*. s.l.:s.n.
- van de Rijt, J., Witteveen, W., Santema, S. & Vis, C., 2011. *Best Value at the Directorate-General for Public Works and Water Management in the Netherlands - A Case Study of the Procurement of Infrastructure Projects Worth \$1,200M*, s.l.: Journal for the Advancement of Performance Information and Value Vol. 3 no. 1.
- van Gunsteren, L., 2013. *Stakeholder Oriented Project Management - Tools and concepts*, Delft: IOS Press.
- van Hoek, T., 2014. Bouwsector dit jaar nog onder druk, maar krachtig herstel is onderweg. *Economisch Instituut voor de Bouw*, 28 January, pp. 1-3.
- van Veenendaal, S. & Witteveen, W., 2011. Tender Environmental Impact Assessment Extra Discharge Capacity Afsluitdijk. *Journal for the Advancement of Performance Information and Value* vol. 3 no. 1, pp. 102-110.
- Vaterlaus, J. & Higginbotham, B., 2011. *Qualitative program evaluation methods*. Utah: Utah state University.
- Verschuren, P. & Doorewaard, H., 2010. *Designing a research project*. The Hague: Eleven International Publishing.
- Villena, V., Revilla, E. & Choi, T., 2011. The dark side of buyer-supplier relationships: A social capital perspective. *Journal of Operations Management*, 29(6), pp. 561-576.

Witteveen, W. & van de Rijt, J., 2014. *Beste Value Werkt - ervaringen uit de praktijk*. Driebergen: Graphicom International.

Woolley, D., 2012. Did you want collaboration, cooperation or coordination with that marketing process?. *Trinity P3*, 27 August, pp. 1-3.

Yasamis, F., Arditi, D. & Mohammadi, J., 2002. Assessing contractor quality performance. *Construction management and economics*, Volume 20, pp. 211-223.

Zhang, W., Cao, D. & Wang, G., 2008. The Construction Industry in China: Its Bidding System and Use of Performance Information. *Journal for the Advancement of Performance Information and Value Vol. 1 No. 1*, pp. 6-19.

9 Appendices

9.1 Appendix A – Detailed vendor selection process

The first step of the selection process where the vendor hands in the dominant information is shown below in 'Figure 27 Selection phase process 1'. The Risk Assessment, Value added and Performance Information (in the form of QPI) will be assessed by the client who will use criteria as determined in the preparation phase. The output of the vendor reflects his perception of the project's goals and will construct a bid accordingly. If there are any ambiguities in the tender documents provided by the client, the vendor has the opportunity to clarify on them in the Summary of Additional Information and Changes (Dutch: 'Nota van Inlichtingen'). All of the questions by all vendors are bundled into one document and made available for all. The questions can be asked in the Individual Inquiry session.

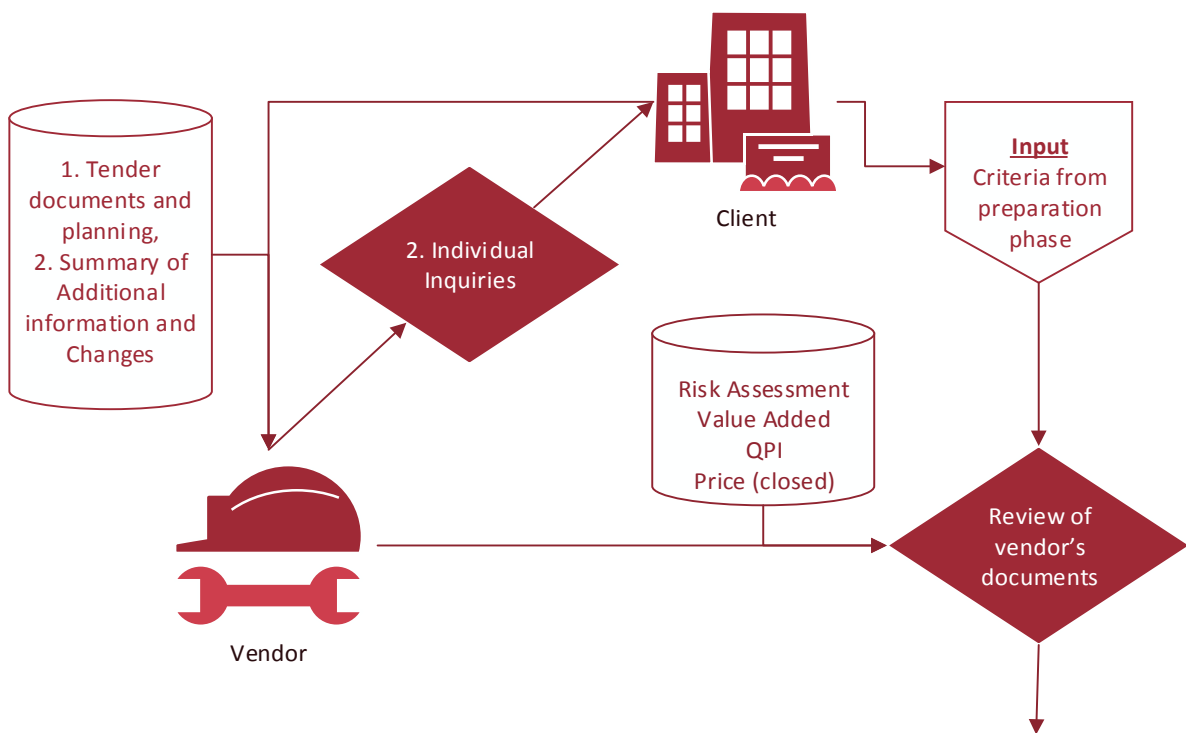


Figure 27 Selection phase process 1 – Preparing the bid

Below in Figure 28, the detailing of the vendors' tender documents review procedure can be seen. This sub-process has four main elements; Controls, resources, input and output (DTI, 2014). The input of this sub-process is that what is transformed into output. Here, the tender document by the vendor serve as an input and which being assessed. The process controls are externally or internally imposed.

The client has to take into account procurement legislation (e.g. reviewing Past Performance) and staying close to the BV philosophy. Internally, the contracting officer is there to monitor and control the tender process. Also, the client's strategy and scope specifications are there for the tender documents to be reflected on. The tangible outputs of this sub-process are the letter of exclusion and invitation to respectively the excluded en progressing vendors. Also, the client may choose to hand over a bid evaluation. The intangible output is the selection of vendors who progress in the tender and are invited to the interviews. The resources for this sub-process are necessary to convert the input into outputs. They are the BVP methodologies toolbox for reviewing bids (i.e. the SMART formulation, dominance of information, weighing factors) and client's tender team who assess the tender documents.

The anonymized documents (by the project sponsor or process manager) are separately reviewed by each member of the client's tender team. The results are then put together by the sponsor which, in case of a draw or indecisiveness of the tender team members, has the power to make the final decision. This decision determines which vendors are excluded based on specifications, performance and exclusion criteria set in the preparation phase and which vendor go on to the next round. This procedure is set-up to enhance objectivity of the tender documents assessment (Chao-Duivis, 2005).

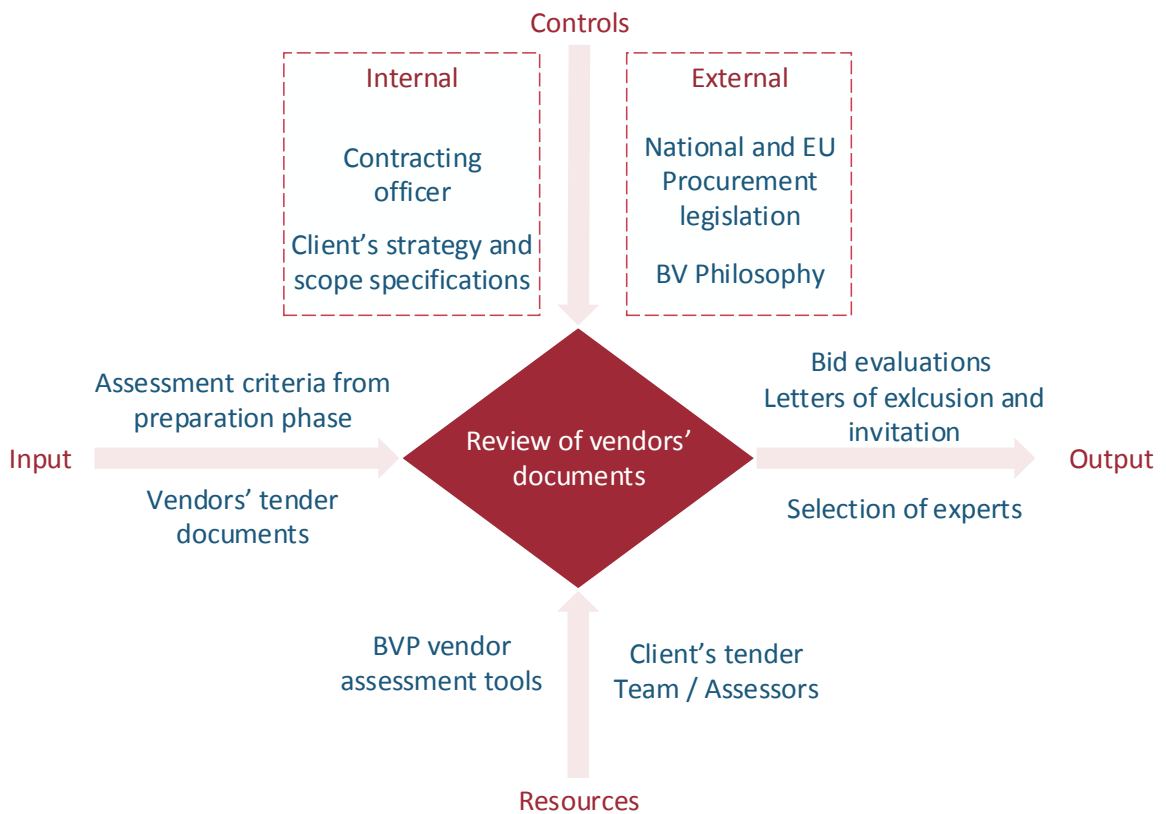


Figure 28 Selection phase process - Input-output model

After the documents of the vendor have been reviewed by the client and the vendors who underperformed (via exclusion specifications) are excluded from the tender, the vendors are invited

for the next step in the BVP procedure, the interviews. In the letter of exclusion there usually is a brief explanation why a vendor did proceed in the tender procedure. Figure 29 shows this process.

These letters are often limited size. Not a standard element in the process, but a vendor can opt for a dialogue on why he didn't progress in the tender. The invited vendors are asked to deliver 2 or 3 key personnel related to the project with whom the interviews are conducted. Often, these are the project manager and an environmental or technical specialist.

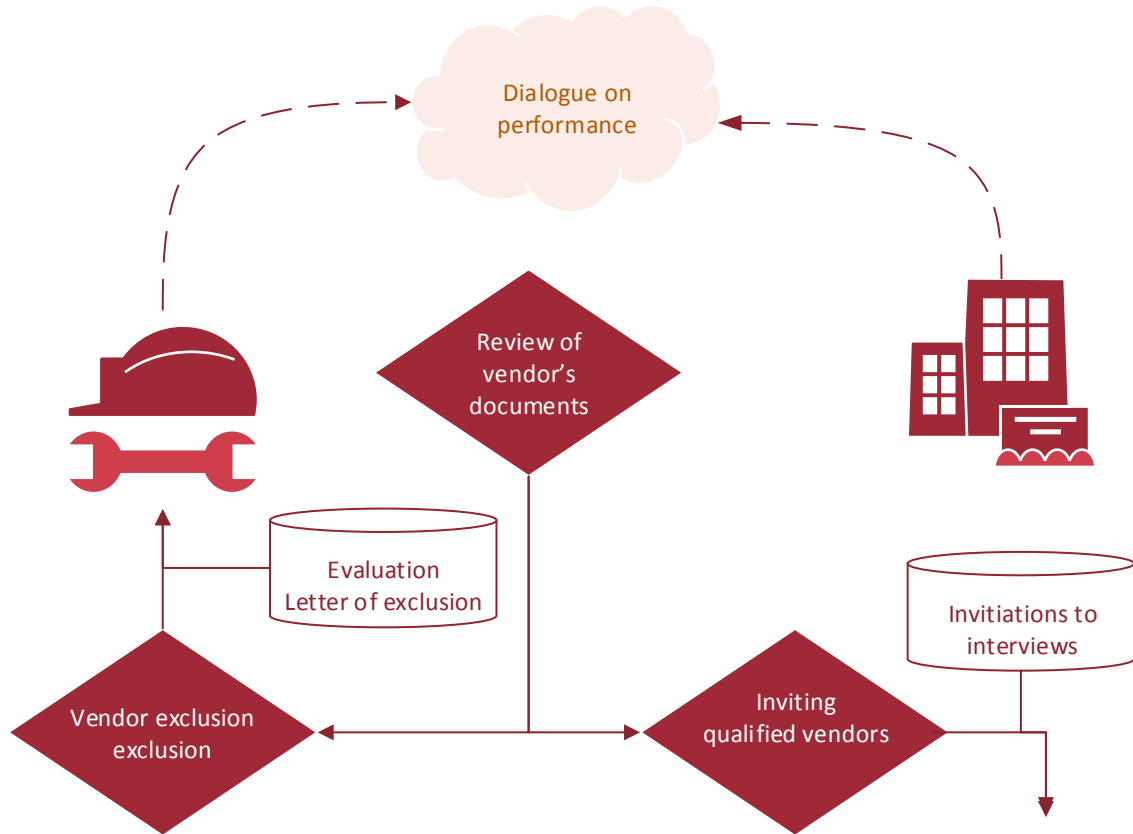


Figure 29 Selection phase process 2 – excluding and selecting vendors

The interviews itself last for 1 to 1.5 hours. Professional bodies as RWS attempt to create the highest level of objectivity possible, often resulting in overdoing it and creating a stiff, distant and impersonal atmosphere (§2.8.2). The person conducting the interview is usually a process manager without too much technical knowledge. Next to the vis-à-vis setting, there is an assessment committee to value the answers of the vendor. These measurements have been taken to enhance objectivity of the interviews, see Figure 30.

After the interviews session, the assessment team of the client collects the scores of all the vendors and it is at this moment that the 'envelope' with the price is opened. After the collection of all data, the client ranks the vendor according to their previously set EMAT criteria and deducts or, in case of an underperforming vendor, increases the subscription price. It is by this quality adjusted price that the expert is chosen.

The client then collects the assessments and hands these bid evaluation back to the vendors. Currently, there is no standardized procedure or format for bid evaluations. More on this in §2.5 Evaluation processes.

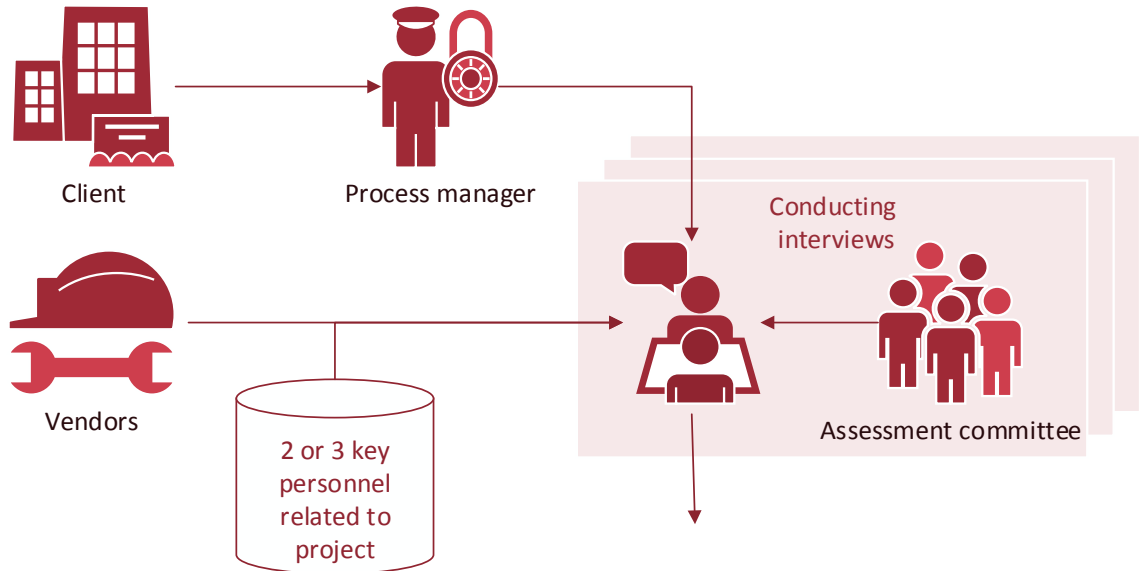


Figure 30 Selection phase process 3 - Interviews

9.2 Appendix B – Interview results

9.2.1 Methodology

As already mentioned in §1.5, the interviews will be the main source of data. Interviews are useful to obtain in-depth information surrounding the topic that is being questioned and can serve as a follow up for questionnaires (McNamara, 1999). In this research, the questionnaires are incorporated in the interviews themselves to acquire direct feedback from the questions itself.

As this is a qualitative research, no large amounts of respondents are necessary compared to a quantitative research model. More important is the quality of the group selected interviewees. The number of interviewees is also dependent on the complexity of the topic and heterogeneity of the research units on relevant characteristics. (Baarda, 2009). The interview structure and methodology is shown below in Figure 31 Interview process' (PSCC, 2009).

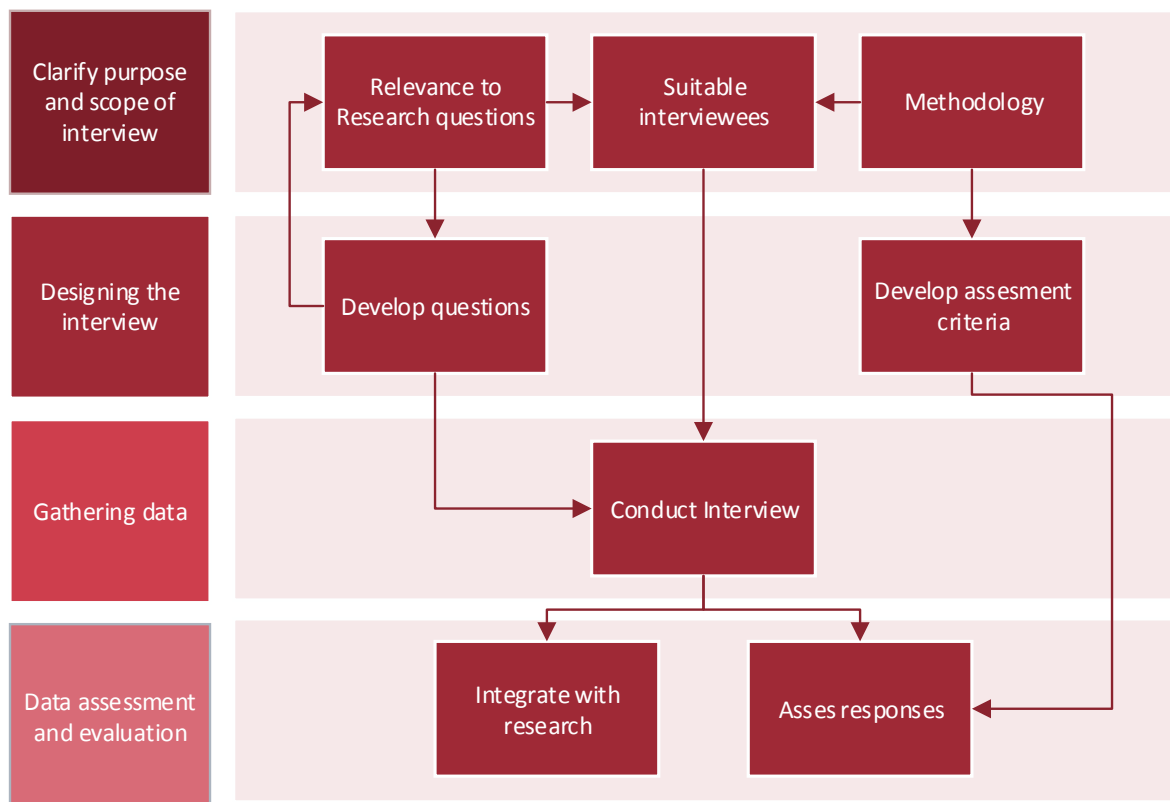


Figure 31 Interview process

The goal of the interviews is to gather information which is not found in literature and to gain extra insight in the current BVP practices in the Netherlands. The information to be sought after is:

- i. The client's and vendor's perception of the clarity and effectiveness of the selection phase

- ii. The vendor's and client's view on the alignment of project goals
- iii. The vendor's experiences with the selection phase process
- iv. The client's perception on the available tools to judge and evaluate bids
- v. The vendor's experiences of the practicality and educative character of bid evaluations

This five information types are needed to be able to answer, together with the theoretical knowledge, the research questions. Information type i, ii and iii are there to assist the answering of the first two sub-questions and will look at the selection phase process. Information type iv and v will help to gather insights in bid evaluation procedures and will help to answer sub-question 3 and 4.

The developed research questions and assessment criteria can be found under §1.5. The conducting of the interviews will take place in a vis-à-vis setting and will be recorded with the consent of the interviewee. The interviews will last from 45 minutes to an hour. The total number of interviewees will consist of around 15-20 individuals from a variety of organizations.

9.2.2 Interview Results

As explained in the methodology section, the interviews took place to gather qualitative information from various sources using a hybrid form between an interview and an enquiry. The interviewees had the possibility to answer every of the 24 statements with "Strongly disagree" (SD), "Disagree" (D), "Agree" (A) or "Strongly agree" (SA). The enquiry style questions were there to induce a dialogue about the stand. As this is a qualitative research, the arguments and insights were more important and are summarized below. Each of the questions have some excerpts from the interview (quotes) which can be used in this research.

- a) The tender planning is communicated clearly towards the vendor.

"Strongly agree. This is stated in the tender documents." – BV1a

"The planning is clearly stated in the tender documents provided by the client" - BV2a

"Agree, this can be found in the tender documents." – BV3a

"Yes, strongly agree" – BV4a

"Strongly agree. We don't know when the assessment committee meets, but do have full insight in the planning concerning the assessment of our bid." – BV5a

"Agree." – BV6a

"Agree. This should be the case." – BV7a

- b) Although vendors have insight in the methods/procedure which are used to assess a bid as described in the enrollment guidelines, it is not always clear to them what the knowledge, background or profile of the assessors is and what their focal points (main points of interest) are. This has influence on the way vendors construct bid. They might push forward some risks or opportunities of which they know are being appraised higher by person X or Y in the client's tender team. So bids are constructed in a way to please the assessors as much as possible.

"We create an image of the contract for ourselves and give our own interpretation of that contract in the bids. You know what the process of the assessment is like, but not which pair of 'goggles' are used by the client to look at these bids. You often do not know who assessed it and with what backgrounds these persons have." - BV1b

"It is not always clear to the vendor how a bid is assessed. There are clients who do not always clearly communicate how they assess bids. If I see that person X or Y will be in charge of the assessment committee of the client, I will advise the vendor to adjust his bid accordingly to fit the personal preference of X or Y." - BV2b

"The manner of procuring is clearly stated in the tender documents." - BV3b

"Agree. I do not now who is in the client's assessment team and I don't want to know the names. I do look at the team and want to know what type of person I'm dealing with. A technician, process manager, purchaser, etc." - BV4b

"Strongly agree." - BV5b

"It has to be the task of the vendor to be dominant in their bids." - BV6b

"Agree, this should be the case." - BV7b

- c) Conversations in the Individual Inquiries are not always perceived as pleasant and open conversations. To vendors it is not clear if this is a problem of the BVP philosophy/procedure or the execution of it by the client's personnel. It also strongly depends on the client. RWS is more professional organization who is more consistent in their integration of individual inquiries, though not always clear, but more decentralized governments sometimes fail to correctly implement it a leave vendors with ambiguities. Clients do feel that the BVP procedure enables them to deal with ambiguities in the tender.

"In the sessions I have had taken a part in, I did not experienced them as comfortable and open conversations. Rather distant and impersonal." - BV1c

"Often, inquiries leave too many ambiguities" - BV2c

"You are supposed to be the expert (vendor) and have to determine how to fill the gaps." - BV3c

"In our organization it is very important to measure the scope of the project and we ask questions about that during the selection phase. We do not want to be send home with an inadequate answer. We want to be taken seriously as a vendor. Luckily this often happens most of the time. When answers aren't adequate and leave room for interpretation, a guessing game arises in which the vendor who is willing to take the most risks wins." - BV4c

"In general, yes. We can ask oral and written questions to the client." - BV5c

"Yes, agree" - BV6c

"Agree. They are there to answer the questions. And if its right, then every BV tender is preceded by a market consultation. During the Market consultation the market is usually very enthusiastic." - BV7c

- d) It is clear to vendors who to contact when there are ambiguities in the tender (Contracting Officer). Clients also perceive that they communicate the contact towards vendor clearly.

“Strongly agree” – BV1d

“Strongly agree” – BV2d

“Agree.” – BV3d

“Agree.” – BV4d

“Yes, there is only one point of contact” – BV5d

“Yes, agree” – BV6d

“Agree, this is always stated clearly in the tender documents.” – BV7d

- e) If all ambiguities are eliminated during the Individual inquiries or by questions in the Summary of Additional Information and Changes (Dutch: Nota van Inlichtingen), as already mentioned in c), is often dependent on the persons working on the client’s side. Clients often know what they want and have a hard time making the right scope specifications and do not want to give away too much information, this sometimes gives tension. Sometimes vendors have even more questions after the Summary of Additional Information and Changes and Individual Inquiries. Although clients feel that they can deal with ambiguities in a BVP tender, they do not think that the Summary of Additional Information and Changes take away all of them.

“There are ambiguities after the inquiries, that much is true. I question however if that is a result of the BVP process or the result of the people (client) involved in the project.” - BV1e

“An often recurring response from clients in the ‘Summary of Additional Information and Changes’ in response to questions from vendors is: “It is up to the expertise of the vendor to judge this”, leaving too much room for interpretation.” - BV2e

“Not always all ambiguities are taken away after the ‘Summary of Additional Information and Changes’. Often, the vendor has even more questions after these sessions. I think it would be better to engage in a more extensive dialogue.” - BV3e

“Often not, or too late. But this has more to do with the client rather than the procedure.” – BV4e

“This is not always the case. They try, but do not always succeed.” – BV5e

“Disagree. It should.” – BV6e

“This should be the case and if not, the ambiguities should be eliminated during additional questions after the Summary of Additional Information and Changes” – BV7e

- f) There is a need for a dialogue to better understand the client’s wishes and vision for the project from a vendor’s perspective. Clients also feel that there is a strong need from vendors to engage in a dialogue before the tender procedure begins. Sometimes, there is a market consultation before the start of a tendering procedure which is considered as pleasant. However, some say that when you would follow the BV procedure strictly, it shouldn’t be necessary to engage in a dialogue on forehand, as it should be dominant who the expert in the line of suppliers is. If a vendor has questions, it means they do not fathom the project.

“Yes” – BV1f

“There is a need of vendors to engage in a dialogue” - BV2f

"It is good that the client emphasizes and elucidates the project in a dialogue. Furthermore, you get to see them. What kind of people are they? What do they want? It helps to meet the team." - BV3f

"There is a need for a dialogue before the project starts. We often get the opportunity to do this." - BV4f

"I have the need. Strongly disagree. I always enter in a dialogue." - BV5f

"Yes. Definitely." - BV6f

"From a purely theoretical standpoint, there is no need for a dialogue." - BV7f

- g) Vendors understand the goals of the client, however, it is not always clear how to interpret them or how to align visions. They perceive the quality of the project goals as sometimes poor and often not elaborate enough. Clients feel that project goals are generally interpreted correctly. There are cases however, where vendors did not interpret them correctly. The vendor in this case makes a mistake, but the responsibility lies with the client (client's point of view). Some clients obligate the vendor to hire a BV consultant so they fathom the BV philosophy and can create a bid of sufficient quality.

"Agree" - BV1g

"Especially when vendors compete in BVP tenders for the first time, I have to put extra effort in emphasizing the importance of the project goals in relation to their solutions. However, the quality of the goals as stated by the client differ in quality and are sometime not complete." - BV2g

"Often they are quite clear" - BV3g

"I often understand them, but they are usually the same." - BV4g

"Strongly agree. And if we don't get them, we keep on asking until we really get them." - BV5g

"If the vendor doesn't understand the project goals, it is the mistake of the client. In general, they understand them." - BV6g

"If he is an expert, he will understand them." - BV7g

- h) Vendors have the feeling they always find 'a' solution, however it is not always sure it is the right one. During the selection phase not all specification are clear are to vendor. Clients consider the project goals elaborate enough for the vendor for them to construct their bid.

"There is always a solution, but if it's the right one... that is the question. There are always decisions to be made during the construction of the works which affect the outcome of the project." - BV1h

"Disagree." - BV2h

"The project goals are on average simple are short" - BV3h

"Agree, I usually understand them." - BV4h

"Strongly agree." - BV5h

"Yes, agree." - BV6h

"Yes, in discipline it is. I can imagine that in other industries might interpret this differently." – BV7h

- i) In a tender, there are always ambiguities. This has led to problems in the past. In some projects, the vision of the client was misinterpreted and multiple vendors' solutions didn't match with what the client had envisioned. Most clients consider that there are always ambiguities in the tender. It is however interesting to see quote BV7i, which was an outlier in the dataset.

"There are almost always ambiguities in tenders." - BV1i

"Strongly disagree, there are always ambiguities in tenders! I have been in a project where wrong interpretations led to faulty bids." - BV2i

"Disagree. Always. Otherwise there would be no need for questions. Some clients are better in dealing with these questions than other." - BV3i

"There are always ambiguities in the tender." – BV4i

"Disagree. We have had the situation where we didn't get enough information about existing structures in the tender documents and couldn't fully construct our bid." – BV5i

"Disagree." – BV6i

"In our tender, there are no ambiguities." – BV7i

- j) Boundary conditions are mostly correctly interpreted by vendors, but not always clearly formulated or communicated by the client. Clients consider that they clearly formulate boundary conditions.

"When working on the project often new boundary conditions pop-up, not even familiar with the client when the project specifications were written. The boundary conditions that are formulated are stated clearly." - BV1j

"It is not always clear what the scope of the project is" - BV2j

"Disagree. We do not always know what the boundary conditions are. Depends on the quality of the client. There are cases where some research documents in tenders by the client even contradict each other or are outdated." – BV3j

"Agree." – B4j

"Agree." – BV5j

"Agree." – BV6j

"Agree." – BV7j

- k) While sometimes vendors perceive assumptions clear (and if not clear, they keep on asking), sometimes they struggle with assumptions made by the client. There are fluctuating experiences with clients who sometimes formulated and documented assumptions really well and sometimes formulated poorly, resulting in incorrect bids. Also, vendors want to have constructed their bid with the same assumptions other vendors have. Otherwise some vendors might include more risks and their price will turn out higher, decreasing their chances of winning the tender. Clients feel they clearly formulate and communicate assumptions made.

"Assumptions and formulation of assumptions in tenders differ in quality. Some are adequate, some are chaotic." - BV1k

"I have seen unclear formulated assumptions in project description concerning a hydraulic engineering project, which have led to faulty interpretations of parts of the project by some vendors, making some bids completely inadequate." - BV2k

"Disagree" – BV3k

"This is often not the case. But it is not the task of the client to make the assumptions. You just want to be sure that the vendors all have the same assumptions to have the same scope and marking down their prices similarly. If we have questions, we can ask them to the client." – BV4k

"Strongly agree." – BV5k

"Agree." – BV6k

"We have had tender where we had to make assumptions. We clearly stated this in the tender documents." – BV7k

- l) In contrary with the BV philosophy, vendors feel they do not get maximum freedom in their solution space. Often there are too many specifications and regulations which create so many boundary conditions that deviating from a directive is hard to establish. Sometimes it is just like the traditional "RAW" method. Also clients think that solution space is often limited and that they do not offer enough freedom to the vendors.

"There several things that play a role here. First of all, writing project specifications without navigating the vendor to a certain solution is a difficult thing to do. Secondly, there are many, many regulations which narrow down solution space of the vendor. - BV1l

"Maximum freedom is an exaggeration, most tenders have many specifications from the client, already converging to a certain solution." - BV2l

"Disagree. It should be. But is not. If you really want to give maximum freedom, why not let go of the budget?" - BV3l

"No often not. You are often strongly limited in solution space freedom because the design of the project is already in an advanced stage of development" – BV4l

"Agree. You do get solution space." – BV5l

"Ideally, yes, but this is not always the case in all projects. In general, vendors are not offered enough solution space. Especially in larger organizations." – BV6l

"Agree. We implement the BV philosophy for 100%" – BV7l

- m) Vendors feel they are offered enough time to construct a bid. If they are given 6 weeks, they fill up 6 weeks, if they are given 12 weeks, they fill up 12 weeks and give a lot more detailing. They feel the procedure can be shorter, because the more time they are offered, they will use it and come up with unnecessary details. There are deviations however, one vendor thought they needed more time. Clients also consider that vendors get enough time to compose their bid.

"Put a few wise men in a room for 3 weeks, and they will come up with the right solution." - BV1

"Tenders can be executed in a smaller timespan." – BV2

"Disagree. A week is enough to get a general overview of the project. But when entering the pre-award phase, one has to have done enough research to develop the plan. So you need the time to develop the bid. But clients sometimes forget that preparing a bid costs a lot of money." – BV3m

"Strongly agree. The shorter, the more real expertise will show up." – BV4m

"I get enough time for the development of my bid. I think the time is correct. Of course, after two weeks I will know the biggest part of the bid, but the real fathoming of the project, that happens in the week after that." – BV5m

"Agree." – BV6m

"Agree." – BV7m

- n) Vendors have insight in the procedure used by the client to assess bids, but do not always feel they truly understand how objectivity is guaranteed and what expertise is available. What 'goggles' do clients wear when assessing bids? Vendors also 'scan' the client's tender team to see what type of assessors there are and adjust their final bid to suit the 'needs' of the client. Client feel they are given enough tools within the BVP procedure to objectively assess a bid.

"He should be able to assess your bid correctly. You do not know however, how the client interprets your bid. - BV1n

"Some vendors are really skeptical about the capability of the client to assess bids objectively. I like to believe that, maybe a bit naively, clients are capable of doing it." - BV2n

"Agree." – BV3n

"The client can partially objectively assess the bids. It remains personal, does your bid appeal to the client? You have to sell your ideas. How do they measure ambition and commitment? You don't know. But that is part of the game, you have to earn the award. The core of our solution is fixed, but we also take a look at the assessment team of the client and evaluate our documents, are we implementing risk or chance #8 or #9, to fit their personal preference." – BV4n

"Strongly agree. They can do that." – BV5n

"Agree." – BV6n

"Agree." – BV7n

- o) Vendors do not feel that interviewing more than 2 or 3 key personnel by the client will yield more insight in the vendors' expertise, however, the team surrounding the key personnel is also considered important by vendor as they are responsible for many small decision which accumulated will determine the performance of a project. Clients also think that interviewing 2 or 3 key personnel is enough and think that judging ones expertise could also be done with interviewing only the project manager.

"More interviews will not result in a better assessments, but what does have to be taken into account is not only the two or three key personnel, but also the 'box' of people working alongside these persons who are also working on the project. You show the expertise of 2 or 43 people, not the whole organization." - BV1o

"Agree." - BV2o

"Agree." - BV3o

"Strongly agree." – BV4o

"Strongly agree." – BV5o

"I strongly agree, I find 2 or 3 a lot." – BV6o

"Together with the bids of the vendors (Risk assessment, value added and QPI), this is possible." – BV7o

- p) Questions asked during interview are considered relevant by vendor and client.

"There are always good and bad questions during an interview." - BV1p

"De questions asked during interviews in which I have been involved in were relevant to the project." - BV2p

"Agree." – BV3p

"Strongly agree" – BV4p

"Agree." – BV5p

"Agree." – BV6p

"Agree." – BV7p

- q) There are diverse opinions among vendors about the size of the tender documents (Dominant information). Some perceive they are not offered enough space to show their expertise while others think it gives them the opportunity to distinguish themselves. The more familiar vendors are with the procedure, the more they see dominant information is what matters and agree with the limited amount of space. Clients perceive the limited size of the tender documents as pleasant.

"It must be concise. Maybe a bit too concise." - BV1q

"Vendors struggle with the limited space the dominant information documents provide in the beginning, but it forces the vendor to be dominant and cut the nonsense." - BV2q

"It is a challenge sometimes, but I agree that it is possible. Though sometimes I would like to show a bit more of our capabilities." – BV3q

"Strongly agree. Less is more. It is way harder to write down something concise" - BV4q

"Agree, every sentence must pop." – BV5q

"Agree." – BV6q

"Yes." – BV7q

- r) The familiarity with the BVP procedure influences one's opinion about the set-up of the interviews. Vendors with a lot of experience feel comfortable with the set-up. Some vendors feel that they are not always objective. No feedback, no clarification, no dialogue. The form (committee, standard questions, no dialogue) overpowers the content and interviews can therefore be perceived as distant and impersonal. Vendors feel it is not only about the answers, but also

personality plays a large role in assessing the interviews. There are exceptions, one interviewee said that the interviews with a process managers (No specific project knowledge) increased objectivity. Others wanted specialists who are able value their answer. Client also have diversified opinions about the correct procedure on how to conduct the interviews. At different organizations, the procedure differs. Some choose a process manager, some a specialist, some a hybrid form with two interviewers (process and content specialist). Also, some client give a lot of room during the interview for questions by the assessing committee while some don't. There is no consensus on the ideal form.

"The procedure overpowers the content." - BV1r

"I believe that in general the interviews are performed as objective as possible. Different clients deal differently with the interviews." - BV2r

"If the procedure is implemented correctly, it is possible" – BV3r

"Disagree, emotions and personality play a role in the interviews." – BV4r

"Agree. I am fully convinced that they are performed at the utmost objectivity. I have faith in that." – BV5r

"I you choose for a certain solution for a project (interview methodology), than you have to do apply that for every vendor. I will always try to make the vendor feel comfortable during interview and try to create a setting where it doesn't feel like an exam." – BV6r

"As much as possible. We cannot deny that it is somewhat subjective. But formulating the questions as objective as possible by asking for metrics, we try to do it as good as possible. It is the least least objective way of interviewing." – BV7r

- s) Vendors feel that COs only focus on the process and do not influence the assessment.

"Agree" – BV1s

"I Agree" – BV2s

"Agree. The tenders I have been in, they did a good job." – BV3s

"Disagree." – BV4s

"Agree." – BV5s

"Agree." – BV6s

"Agree. If this was not the case, this would be very wrong." – BV7s

- t) Vendors generally cannot perform better at a future tender with the bid evaluation. Bid evaluations are also inconsistent. Sometimes only the own scores of vendors are shown, sometimes they are compared to the other competitors. Some vendors put a lot of effort in obtaining the exact details why they weren't awarded the project. Clients feel that vendors are able to perform better at future tenders with the bid evaluations they hand out.

"Disagree. Dependent on the client you get more or detailed or less detailed bid reviews. Different clients deal with the bid reviews differently. One must also be critical on oneself. Don't solely rely

on the client to 'educate' the vendor, but be critical on your own performances, don't stop thinking" - BV1t

"There is still a lot of room for improvement in the bid evaluation documents." - BV2t

"We always engage in a dialogue after receiving the evaluation to get clarifications. Disagree" – BV3t

"Disagree, it is dependent on the client. Mostly useless. A client will never be fully transparent." – BV4t

"We want to know the real reason why we lost a tender. We show up with a serious team of experts at the client's doorstep. I do not accept an inadequate review." – BV5t

"Agree." – BV6t

"First of all, a very extensive document is returned to the vendor. We hire an expert to really boost the quality and clarity of our bid review documents."

- u) Bid evaluations of bid assessments come in time in the eyes of vendors. One client considers this not to be true and believes they can come faster.

"Agree." – BV1u

"Agree." – BV2u

"Agree." – BV3u

"Agree." – BV4u

"Agree." – BV5u

"Disagree" – BV6u

"I think the vendor disagree with this, but I think we do our utmost best to deliver the documents on time." – BV7u

- v) There is a strong desire at vendors for a dialogue after a tender. A notion has to be made on the moment this dialogue has to take place. The situation has occurred that after a tender the party who got awarded the project ended up in a legal conflict because of the dialogue. This was due to the fact that the losing vendor got hold of information that the winning party had undergone a procedural error in the tender. The result was a rollback of the decision and awarding the project to the accuser. In the dialogue, vendors want to speak to the specialists, not the purchasing personnel. Clients have less interest in dialogue, they just continue their project with the winning vendor generally don't feel the need to look back.

"There is always a need for a more comprehensive dialogue. This need does differ from vendor to vendor." - BV1v

"A need for a more comprehensive dialogue is an often heard statement from vendors." - BV2v

"I feel the need to engage in a dialogue after a tender." – BV3v

"Strongly disagree. This can lead to a situation where a vendor goes into discussion about the bids with the client and can possibly legally give problems. This has happened." – BV4v

"Strongly agree." – BV5v

"From the vendors perspective, yes. Client, no. They just want to continue their business. Clients are often unaware of the reality and don't feel the need to engage in this learning experience" – BV6v

"That need does not come from our side, but from the vendors. And we take that seriously." – BV7v

- w) It is clear to vendors on a general level why they get awarded certain grades, but there is a sense that they do not get all the details or reasons behind the assessment.

"I have been in situations that I strongly got the idea that a client didn't want us and thus didn't understand his arguments. In that situation, you will never get all the details. But on a general level, I can follow the line of reasoning of the client." - BV1w

"You have the evaluation forms, there is a large variety in the quality of them." – BV2w

"It is not always clear." – BV3w

"Disagree" – BV4w

"Agree. In general, yes." – BV5w

"Agree." – BV6w

"Yes." – BV7w

- x) Vendors and clients consider it is clear who to contact if they have questions about the bid evaluation.

"Agree" – BV1x

"Agree" – BV2x

"Yes, agree." – BV3x

"Agree" – BV4x

"Yes, agree." – BV5x

"Agree." – BV6x

"Agree." – BV7x

- y) After the tender, vendors like to know:

1. Did our visions aligned?
2. Did they answer the questions the client had?
3. Why wasn't it dominant enough?
4. Was their solution according to the client's specifications?
5. Performances compared to other vendors, did I deviate a lot from other vendors?
6. Were my risks SMART, why not?
7. Clear arguments why certain grades were awarded
8. How was objectivity safeguarded? Who assessed the assessor?

9. What risks did I miss?
10. How do they measure “Ambitie en commitment”?
11. Did I understand the BVP procedure? Was I the expert but couldn't I formulate I correctly?

z) Vendors perception on the client is that:

1. Vendors feel that the procedure is stronger than the content. They would like to see and speak more specialists (also during interviews) who have specific project knowledge. The process prevails.
2. Clients say they want maximum freedom in the solution space by minimizing scope specifications, but in reality, they already know what they want
3. The more technical, project specific knowledge is available at a client, the less solution space vendors have.
4. Involve vendors, or the market, in making scope specifications for the project to better align visions and create a sense of shared goals and project understanding.
5. Clients sometimes misses an affinity with construction.
6. Vendors desires that there are also specialists at the client's side with expertise who can value the bid
7. Vendors feel that non-professional clients need to be educated or consult external advice in order to ensure the vendor that the BVP method is implemented correctly.

aa) The clients perception on the vendor is that:

1. Vendor should be familiar with the BVP procedure and advice the consulting services of a BV expert

9.2.3 Evaluation documents

The cases for this research are bid evaluation documents of bids from several clients. The documents are from 6 different clients and give a good overview of the diversity and fluctuations in bid evaluation quality and extensiveness. Below, an analysis of these documents is shown.

- The overall length of the documents varies from 1 to 7 pages.
- The language use is clear, but non-technical in nature.
- All are different in setup. Some start with the mentioning of the project is awarded or not, some give a more elaborate explanation on the grades that have been awarded, one evaluation only shows a table with the awarded scores.
- Some show an extensive explanation on why the grades have been awarded, while other vary from concisely explaining to only giving a reference they can approach whenever the vendor wants to more insight in why they didn't get the project awarded.
- Some of the criteria used in assessing the tender documents is no clear to the reader. There is a large variance in the clarity these criteria are listed.

9.2.4 Interview data

Questions	1	2	3	4	5	6	7	8	9
a	A	SA	A	SA		SA		A	A
b	A	D	SA	SA		SA		D	A
c	A	D	A	A		A		A	A
d	SA	SA	A	A		A		A	A
e	D	D	SD	D		D		D	A
f	SD	D	SD	D		SD		SD	A
g	A	A	A	A		SA		A	A
h	A	D	A	A		SA		A	A
i	SD	SD	D	D		D		D	A
j	A	D	A	A		SA		A	A
k		D	D	A		SA		A	A
l	D	D	D	D		SA		D	A
m	SA	A	D	A		A		A	SA
n	A	A	A	D		SA		A	A
o	D	A	A	SA		SA		SA	A
p	A	A	A	SA		SA		A	A
q	D	A	D	SA		SA		A	A
r	SD	A	A	D		SA		A	A
s	A	A	A	D		A		A	A
t	D	D	A	D		SA		A	A
u	A	A	A	A		A		D	A
v	SA	A	SA	SD		SA		D	A
w	A	D	D	D		A		A	A
x	A	A	A	A		A		A	A

Table 3 Interview data

9.3 Appendix C – Underpinning of selection phase indicators

This section will provide the underpinning for the choice of the 5 most important selection phase effectiveness performance indicators. As done in the main part of this research, combining Table 2 with the results from the interviews and discussions with experts (§2.8.2) resulted in the following list of important indicators of BVP vendor selection process performance:

- a) Client-vendor understanding
- b) Suitability of solution
- c) Client satisfaction
- d) Vendor’s learning experience
- e) Objectivity safeguarding
- f) Agreement adherence
- g) Vision alignment
- h) Schedule control
- i) Transparency

Measuring all of the indicators for the BVP selection process would unnecessarily complicated. A simpler measurement system would be to make a selection of only the most dominant indicators, being a) through e).

A) Client-vendor understanding

This indicator was selected because client-vendor understanding plays an important role in BVP tenders and vendor selection. This stems from the interviews. Vendors do not always understand the clients, for instance, vendors want to know after losing a tender if their visions aligned (§9.2.1). Also, the alignment of values of both vendor and client in a supply chain adds to the effectiveness of the supplier-buyer relation (Paarlberg & Perry, 2007). The better the vendor understands the client’s problem, the better the vendor will be able to interpret the client’s needs and come up with appropriate solutions. If a vendor is chosen who might have misinterpreted the client’s needs, then during the pre-award phase the client might be disappointed with the design, technical specifications, allocated functions, etc., when the detailing of the design is made. More on client-vendor understanding in §3.2.2.

B) Suitability of solution

This indicator was selected for obvious reasons. Does the presented solution fit the purpose of the client’s needs? In other words, has the selection phase come up with the right vendor to execute the project? This directly describes the effectiveness. Literature on effective processes also refer to completeness of the solution (did it really meet all the client’s demands?) as an important indicator (Kesel, 2007). This is supported by the theories on fitness for purpose (Do I have the right solution?) (van Gunsteren, 2013).

C) Client satisfaction

Another aspect of client-vendor relationships is the client's satisfaction. The client has a need and addresses the market to fulfil this need. Client satisfaction is an indicator that describes to what extent the needs have been met. In other words, does the vendor deliver the performances demanded by the client? Vendor performance plays an important role in client satisfaction (Yasamis, et al., 2002). As also can be seen in §2.8.2, vendors would like to have more insight in the satisfaction level of the client. This can be seen from answers given by vendors to the question "What do you miss the most in the BVP evaluation process?"; which were: "Did we answer the questions the client had?", "Was our solution according to the specifications?" and "Did I show ambition and commitment?". Also, as written in the literature on effective processes, client satisfaction is an important indicator (De Wit, 1988) (Collins & Baccharini, 2004) (Shenhar, et al., 1997).

D) Vendor's learning experience

This indicator was included in the list of most important indicators for selection phase effectiveness because it was a recurring theme in supply chain management literature and the discussion with experts. Educating the market and supplier development is an important step in supply chain management (Modi & Mabert, 2006) (Osiro, et al., 2014), especially in markets where there is a shift from push to pull (Santema, 2011). A client does not only want the right supplier now, but also in the future. Ensuring the capabilities of the supplier meet up with the future demands of the client is therefore an important indicator of process effectiveness (Monczka, et al., 1993). Has the client given the vendor enough experience and knowledge to perform better in the future? Current BVP practices show fluctuating and sometimes insufficient supplier evaluations and development (§9.2.1).

E) Objectivity safeguarding

Objectivity safeguarding is an indicator included in the list of indicators that describe the process effectiveness of the selection phase. An objective, non-biased, open environment where every competitor has a fair chance of winning the tender will result in finding the real expert. As soon as objectivity is compromised, the selection phase process loses effectiveness and the client might end up preferring the 'wrong' expert due to a (perhaps unintended) bias. Literature (Kesel, 2007) (Pillai, et al., 2002) also suggest that transparency and objectivity are indicators of an efficient process. As a result from the interviews (§2.8) it also came forward that vendors would to know how the client safeguarded objectivity and guarantees a level playing field.

Excluded factors

Below, for each of the excluded performance indicators, a brief explanation will be given on the reason why they are not included in the list of indicators.

Indicator f) was chosen to be included in the list because it was mentioned during the discussion with several experts. Agreement adherence entails the ability of the vendor to stick to agreements made during the selection and pre-award phase. It happened that the vendor's key employees who were interviewed and were envisioned by the client to carry out the project suddenly change before or during the project. The new project managers might have a different view on the project than was agreed upon between the client and the preceding project manager. However, f) has not been included in the list of most important indicators because it was not mentioned by all interviewees as a main 'problem' or factor they consider when handling with vendor selection and is not a main source

of worries for clients and/or vendors. A bigger problem is the keeping of agreements and adherence to the BVP method during the execution phase. In which now, vendors tend to deviate and create a parallel working methodology where on the one hand they follow the BVP methodology and commit to the weekly risk reports, but on the other hand simultaneously continue working with their older, deep-rooted methods because they feel uncertain about the 'new' way of working.

Indicator g) has been included in the list because it was mentioned during interviews (§9.2.1 y1)) and was seen in literature (Table 2 – Perspectives on process performance). Vision alignment entails the capability of all the parties involved to align their perceptions of the client's problem definition. Perceptions on the project goals play an important role in client-vendor relationships. This indicator however is not dealt with as a separate but can be classified as a part of a), client-vendor understanding.

Indicator h), schedule control, has been included in the list of indicators because the client should give the vendor maximum clarity and time to enable him to construct his solution properly. Also Table 2 – Perspectives on process performance shows literature which recurrently mentions planning (control) as indicator of an effective process. The interviews (§9.2.1) however show that (transparency and scale of the) planning is often not an issue in BVP tenders and is therefore not incorporated in the list of most important indicators.

Indicator i), transparency, is included in the list because the BVP method itself is based on availability of information. Creating an environment where certain vendors have more information or where information is held back by the client, creates a situation where vendor and client cannot perform optimally and misperceptions can occur. This indicator is however not incorporated in the list because it can be classified as a sub-indicator of e) objectivity safeguarding.

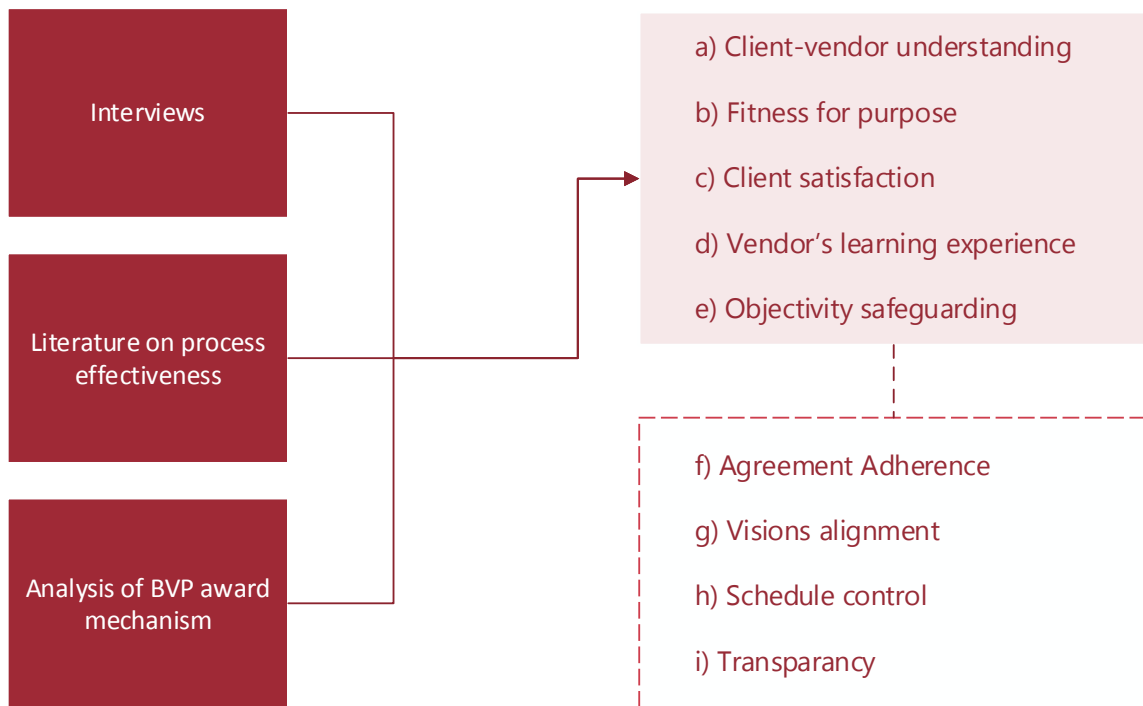


Figure 32 BVP selection phase performance indicators

9.4 Appendix D – Interview questions vendor and client

[Company Name]

[Company Address]

[City, ST ZIP Code]

Version: Vendor

Interviewee:

Company:

Date

a) Ik heb volledig zicht op de planning van de beoordelingsfase

Sterk oneens Oneens Eens Sterk eens

b) Het is mij duidelijk hoe mijn inschrijving wordt beoordeeld

Sterk oneens Oneens Eens Sterk eens

c) De BVP procedure stelt mij in staat eventuele onduidelijkheden in de inschrijving weg te nemen

Sterk oneens Oneens Eens Sterk eens

d) Het aanspreekpunt bij onduidelijkheden in de uitvraag wordt duidelijk gecommuniceerd

Sterk oneens Oneens Eens Sterk eens

e) De nota inlichtingen nemen alle onduidelijkheden in de uitvraag weg

Sterk oneens Oneens Eens Sterk eens

f) Ik heb geen behoefte aan een dialoog over het project met de opdrachtgever voordat ik aan mijn inschrijving begin

Sterk oneens Oneens Eens Sterk eens

g) Ik begrijp de projectdoelstellingen van de opdrachtgever volledig

Sterk oneens Oneens Eens Sterk eens

h) De doelstellingen van de opdrachtgever zijn uitgebreid en duidelijk genoeg om een passende oplossing te vinden

Sterk oneens Oneens Eens Sterk eens

i) Er staan nooit onduidelijkheden in de uitvraag

Sterk oneens Oneens Eens Sterk eens

j) Het is mij duidelijk wat in de uitvraag de randvoorwaarden zijn

Sterk oneens Oneens Eens Sterk eens

k) Het is mij duidelijk welke aannames er door de opdrachtgever zijn gemaakt en waar mijn eigen inschatting van belang is

Sterk oneens Oneens Eens Sterk eens

l) Bij de uitvraag krijg ik maximale vrijheid in de aanbodscoope

Sterk oneens Oneens Eens Sterk eens

m) Ik krijg voldoende tijd om een inschrijving te maken

Sterk oneens Oneens Eens Sterk eens

n) De opdrachtgever kan mijn inschrijving objectief beoordelen

Sterk oneens Oneens Eens Sterk eens

o) Interviews met 2 of 3 sleutelfiguren is genoeg om mijn expertise te laten zien

Sterk oneens Oneens Eens Sterk eens

p) De gestelde vragen tijdens het interview zijn relevant voor het project

Sterk oneens Oneens Eens Sterk eens

q) De beperkte grootte van de dominante informatie documenten bieden mij genoeg ruimte om mijn expertise te tonen

Sterk oneens Oneens Eens Sterk eens

r) De methode die gebruikt wordt voor het afnemen van de interviews is geheel objectief

Sterk oneens Oneens Eens Sterk eens

s) De contracting officer heeft geen invloed op beoordelaars

Sterk oneens Oneens Eens Sterk eens

t) Met de verkregen evaluatie ben ik in staat de volgende aanbesteding beter te presteren

Sterk oneens Oneens Eens Sterk eens

u) De evaluatie komt tijdig genoeg na het moment van inleveren van de documenten

Sterk oneens Oneens Eens Sterk eens

v) Ik heb behoefte aan een (uitgebreidere) dialoog na een niet winnende inschrijving

Sterk oneens Oneens Eens Sterk eens

w) In de evaluatie wordt mij volledig duidelijk waarom ik de toebedeelde cijfers heb ontvangen

Sterk oneens Oneens Eens Sterk eens

x) Het is mij duidelijk wie ik moet benaderen als ik meer wil weten over de evaluatie

Sterk oneens Oneens Eens Sterk eens

y) Aan deze elementen hecht ik de meeste waarde in een evaluatie:

z) Dit mis ik het meest aan opdrachtgevers:

[Company Name]

[Company Address]

[City, ST ZIP Code]

Version: Client

Interviewee:

Company:

Date

a) De opdrachtnemer heeft volledig zicht op de planning van de beoordelingsfase

Sterk oneens Oneens Eens Sterk eens

b) Het is de voor opdrachtnemer duidelijk hoe zijn inschrijving wordt beoordeeld

Sterk oneens Oneens Eens Sterk eens

c) De BVP procedure stelt mij in staat eventuele onduidelijkheden in de inschrijving weg te nemen bij opdrachtnemers

Sterk oneens Oneens Eens Sterk eens

d) Het aanspreekpunt bij onduidelijkheden in de uitvraag wordt duidelijk gecommuniceerd

Sterk oneens Oneens Eens Sterk eens

e) De nota inlichtingen nemen alle onduidelijkheden in de uitvraag weg

Sterk oneens Oneens Eens Sterk eens

f) Er is geen behoefte aan een dialoog over het project met mij als opdrachtgever voordat de opdrachtnemer aan zijn inschrijving begint

Sterk oneens Oneens Eens Sterk eens

g) De opdrachtnemer begrijpt mijn projectdoelstellingen volledig

Sterk oneens Oneens Eens Sterk eens

h) De projectdoelstellingen zijn uitgebreid en duidelijk genoeg voor de opdrachtnemer om een passende oplossing te vinden

Sterk oneens Oneens Eens Sterk eens

i) Er staan nooit onduidelijkheden in de uitvraag

Sterk oneens Oneens Eens Sterk eens

j) Het is duidelijk wat in de uitvraag de randvoorwaarden zijn

Sterk oneens Oneens Eens Sterk eens

k) Het is duidelijk welke aannames er door mij gemaakt zijn en waar de eigen inschatting van de opdrachtnemer van belang is

Sterk oneens Oneens Eens Sterk eens

l) Bij de uitvraag krijgt de opdrachtnemer maximale vrijheid in de aanbodscoope

Sterk oneens Oneens Eens Sterk eens

m) De opdrachtnemer krijgt voldoende tijd om een inschrijving te maken

Sterk oneens Oneens Eens Sterk eens

n) Met de geboden procedures ben ik in staat de inschrijvingen geheel objectief te beoordelen

Sterk oneens Oneens Eens Sterk eens

o) Interviews met 2 of 3 sleutelfiguren is genoeg om de expertise van de opdrachtnemer te laten zien

Sterk oneens Oneens Eens Sterk eens

p) De gestelde vragen tijdens het interview zijn relevant voor het project

Sterk oneens Oneens Eens Sterk eens

q) De beperkte grootte van de dominante informatie documenten bieden genoeg ruimte om de expertise van de opdrachtnemer te tonen

Sterk oneens Oneens Eens Sterk eens

r) De methode die gebruikt wordt voor het afnemen van de interviews is geheel objectief

Sterk oneens Oneens Eens Sterk eens

s) De contracting officer / procesbegeleider heeft geen invloed op beoordelaars

- Sterk oneens Oneens Eens Sterk eens

t) Met de verkregen evaluatie is de opdrachtnemer in staat de volgende aanbesteding beter te presteren

- Sterk oneens Oneens Eens Sterk eens

u) De evaluatie komt tijdig genoeg na het moment van inleveren van de documenten

- Sterk oneens Oneens Eens Sterk eens

v) Er is behoefte aan een (uitgebreidere) dialoog na een niet winnende inschrijving

- Sterk oneens Oneens Eens Sterk eens

w) In de evaluatie is het volledig duidelijk met welke criteria de cijfers zijn toegekend

- Sterk oneens Oneens Eens Sterk eens

x) Het is duidelijk wie de opdrachtnemer moet benaderen als hij meer wil weten over de evaluatie

- Sterk oneens Oneens Eens Sterk eens

y) Aan deze elementen hecht de opdrachtnemer de meeste waarde in een evaluatie:

z) Dit mis ik het meest aan opdrachtnemers:

9.5 Appendix E – Prince 2

It is often said that ‘Project management is just common sense’, while this is true, many still get it wrong. It shouldn’t be necessary for new project managers to reinvent the wheel every time. (Bentley, 2010). Prince2 is a project management method and was derived from best practices of information management projects from the United Kingdom’s government. ‘Prince’ is an abbreviation of ‘Projects in Controlled Environments’ and enables managers to get a clear vision on the project life cycle. It advocates that in a project there should be clear roles and responsibilities and divide the project in stages for planning purposes. The process should be product based. The core principles behind Prince2 are shown below in ‘Table 4 Core principles Prince2’.

Principle	Explanation
Continuous business justification	Do not start with a project without a thorough business case and stop when justification of it has disappeared.
Learn from experience	Lessons learned from the past should be implemented at the start of the project.
Defined roles and responsibilities	Everybody involved in the project should know each other’s roles and responsibilities.
Manage by stages	Divide the project into stages and make an accurate planning for the following stages
Manage by exception	Each management section or level has tolerance limits in time, costs, scope, quality, risks and benefits.
Focus on products	There should be a focus on definition and delivery of products.
Tailor to suit the project environment	Make sure that you fit the project in the environment before the start of the project.

Table 4 Core principles Prince2

9.6 Appendix F – Underpinning of the BVP perception model

9.6.1 Tender process and perceptions

It is interesting to see the preparation, transfer and interpretation of data, information and knowledge in BVP tenders. As already known, the BVP award mechanism presumes that the client is not the expert and that the vendor has to come up with solutions. He accomplishes this by minimizing scope and giving maximum freedom to the vendor. This does not entail that there is no knowledge and expertise available at the client's side. Before a tender is put on the market, especially in larger BVP projects by professional organizations and knowledge institutes (E.g. Rijkswaterstaat), there is a large amount of 'frontload' which can affect the decision-making process of a tender. What do we mean with frontload and how does this affect the tender? And what is the preparation, transfer and interpretation of knowledge?

9.6.1.1 Preparation phase

Let us take the example of large road widening project. Here, the professional body 'Rijkswaterstaat' will have to prepare the tender, meaning that political support in regions surrounding the road has to be raised and involving important stakeholders. Also, preliminary studies on e.g. noise profiles, environmental impact and models for future traffic flow have to be conducted. In this particular large infrastructure project, many people are involved and a considerable amount of data and information is produced. Then, following the earlier introduced DIKW model (Rowley, 2007), researchers and employees involved in the preparation of the project will take that data and transform it into useable information. Subsequently, the project management of the client will gather and research that information and with the whole organization involved in the project, create relevant knowledge (Ackoff, 1989). This knowledge about the project is then abstracted into a project description and project goals. Thus there is a lot more information available at the client's side than is shown in the tender's scope. This phase is the knowledge preparation phase.

9.6.1.2 Knowledge transfer arena

After the frontload process where relevant knowledge by the entity, in case of the example of the road widening project this is Rijkswaterstaat, is produced and the project scope is abstracted, the tender is put on the market and the search for the best available expert begins. In this process, the client attempts to transfer the relevant knowledge to the vendor for him to prepare the bid. What in a purely theoretical scenario occurs is that the knowledge of the client does not directly transfer one-on-one into knowledge of the vendor, but instead, becomes new information for the vendor. This entails that knowledge possessed by the client transforms and 'demotes' into information. Subsequently, the vendor again has to see patterns in information to produce useable knowledge in order to prepare his bid. It is clear that this also relates to the processing speed, (according to the Information Measurement Theory) (Kashiwagi, 2010) of the entity, in this case the vendor, to absorb and utilize the available information. Knowledge output (K_i) will enter the knowledge transfer arena and will have a certain information input (I_i) for the vendor. This is then transformed in knowledge of the vendor ($I_i \rightarrow K_i$). In an ideal and completely open, 100% information environment, the knowledge output equals the knowledge input ($K_i = K_o$). In reality, during the process of transforming information into

knowledge, input and output differ. In the process of knowledge preparation towards abstracted projects goals for the BVP tender, information gets lost. In theory, supported by cases in reality, this entails that (1) $K_i \neq K_o$.

9.6.1.3 Knowledge interpretation

After the client transferred knowledge to the vendor according to the process as described above, the vendor will start assembling a team to construct a bid to present to the client. The vendor will take the gained knowledge from the transfer process and will expand this knowledge by doing more research and gathering experience, information and knowledge from the team members involved in the construction of the bid. This is the knowledge interpretation phase. As described above, the knowledge of the vendor will be information to the vendor. He then has to understand (his perception) the scope the client has in mind by finding relation in the information.

9.6.1.4 Perception gap

Now we can also introduce the problem of perception in the same model. As mentioned earlier in §2.2.1 Information \neq knowledge, knowledge has a more personal character than information and especially data (Hey, 2004). With the gained knowledge, the vendor will prepare a bid. But as seen from equation 1, the knowledge is not equal. In the case of not 100% transparency and information sharing, this will lead to a case of difference in perceptions of the same problem! This will then lead to an altered perception of the project problem and finally the solution. Let us take this model back to the real world problem. Unequal perceptions may lead to a problem in the solution space of the vendor. The vendor might think he knows what the client wants, but in reality perceptions on project goals differ, leading to an invalid solution. The vendor might be the best available expert, but because he misinterpreted the wishes of the client, came up with the wrong solution. Now, the client will assess the bid of the vendor and will give the vendor lower points than competitors and finally lose the bid.

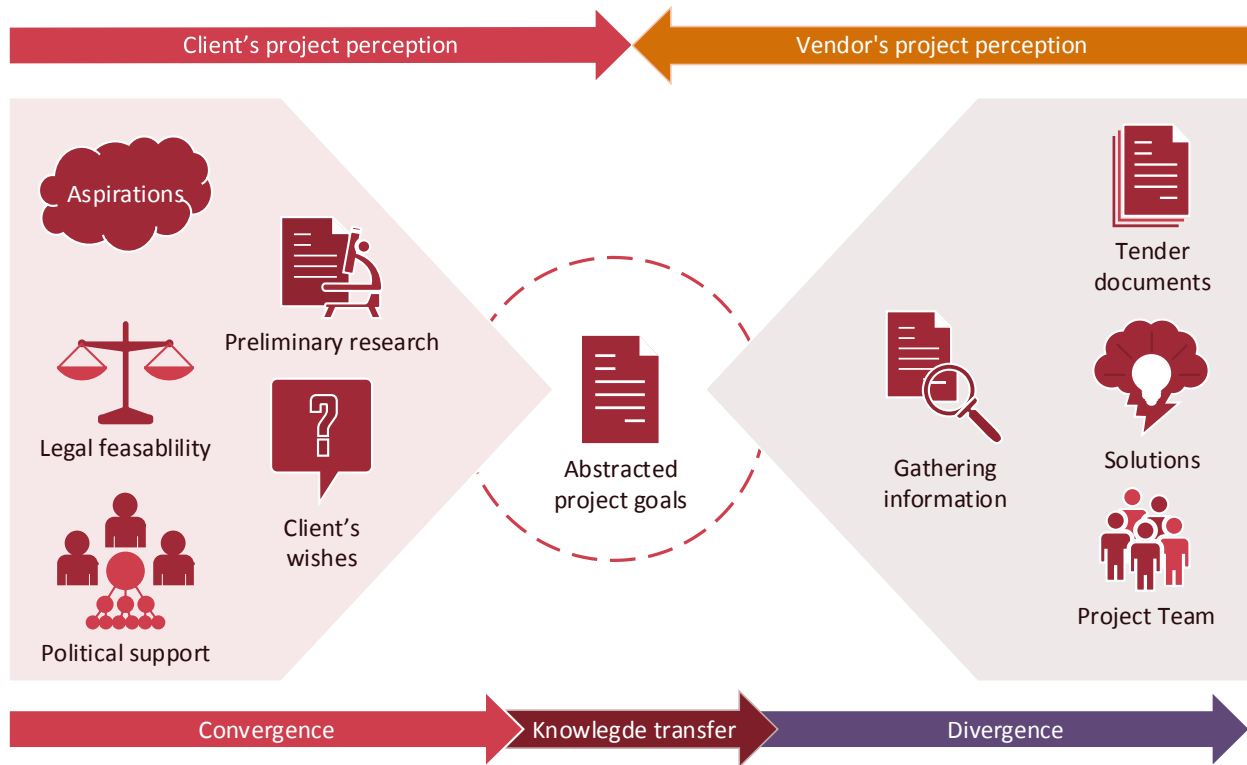


Figure 33 BVP perception model

9.7 Appendix G – Case for validation phase

Below, an example question can be seen which has been posed to experts in order to support the theories on heuristics. Question yourself if you get a document from 2 surgeons concerning a femur fracture (see example below), who describe possible risks during surgery and their mitigations, if you can grade their risk reports. The catch here is that only dominance should be assessed. It is clear that both doctors supplied us with the risks, although it showing different mitigations, but not delivering the dominant information or metrics to support their statements. Both doctors can therefore not be graded higher than a 6. Though the public will respond to this case by grading one doctor higher than the other because of their personal preference. Hence interfering dominancy with expertise (see also §3.2.1). The example below as proposed to experts during the validation is in Dutch.

Tom, de opdrachtgever, heeft een zoon die een bovenbeenbreuk heeft opgelopen. Tom stelt een tenderteam samen met werknemers van Infram om de diensten van een arts in te kopen. Het team nodigt 2 artsen uit: dr. Van der Wal en dr. Hamersma. Beide artsen hebben een goede track-record. Het tenderteam laat beide artsen de belangrijkste risico's schetsen.

Eisen:

- *Behandeling moet niet tot functieverlies been leiden*
- *Zoveel mogelijk pijnvrij behandelen*

Van der Wal: Als er niet behandeld wordt groeien de botdelen niet goed recht tegenover elkaar, waardoor het been minder functioneel is. Als men overgaat tot een operatie is er zekerheid dat de botdelen goed tegen elkaar aan groeien. Tractie is een langdurig proces wat ook nog eens als zeer oncomfortabel door het kind wordt beschouwd. Een operatie on volledige narcose is relatief veilig en de nabehandeling is korter.

Hamersma: Het risico bestaat de botdelen niet tegen elkaar aan groeien en het been minder functionaliteit krijgt. Opereren heeft als risico dat er een bloeding kan optreden en dat stolsels in de bloedvaten ontstaan, die als ze doorschieten naar de longen levensbedreigend zijn. Daarnaast is er meer belasting voor ouders en kind doordat er veel stress optreedt bij het kind rondom een operatie. Tractie wordt vanwege de relatieve veiligheid aanbevolen.