Relational quality in public–private partnerships: A Qualitative Comparative Analysis (QCA) on 25 PPP projects in the Netherlands and Flanders.

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ABSTRACT

Public–private partnerships (PPPs) are often equated with their contractual form, but the relational elements of these partnerships may also have an important effect on PPP performance. This study aims to deepen our knowledge on relational quality and tries to uncover what conditions influence good relationships in PPPs. Based on a qualitative comparative analysis (QCA) of 25 PPP projects in the Netherlands and Flanders, three different combinations of conditions are related to high relational quality in these projects. First, several projects with high relational quality display a combination of a 'fair' risk allocation and an experienced private partner. The two other combinations – the use of network management strategies combined with experience on the one hand and the use of network management strategies paired with a 'fair' risk allocation on the other hand - show that it is important to search for a balance between good starting conditions and the active nurturing of the relationship during the project.

4.1. INTRODUCTION

The last two decades have seen a growing trend towards the use of public–private partnerships (PPPs) to realize public infrastructure. Traditionally many of these PPPs are based on elaborate contracts, prescribing the allocation of risks and responsibilities, performance indicators, and opportunities to apply sanctions if performance falls short (Solheim-Kile & Wald, 2019). Often PPPs are equated with their contractual form, even though PPPs embody more than contractual relationships between public and private partners. PPPs are also partnerships, in which relational aspects are equally important. Relational aspects, such as trust, communication, commitment, and respect can be critical success factors in the collaborative processes in PPPs (Bult & Van Engen, 2015). They offer a way to deal with uncertainty and dynamics in the project. A good relationship between partners helps them to deal with issues that the contract cannot cover. This is slowly, but increasingly, recognized in PPP research (see for example Weihe, 2009; Warsen et al., 2018).

At the moment, research into relational quality in PPPs (and closely related topics such as trust and relational governance) is still lacking behind compared to research on other topics, like PPP performance, risk, and drivers of PPP (e.g. Wang et al., 2018). Nevertheless, several studies have already indicated the importance of the topic. In their review of Dutch and Flemish PhD dissertations, Hueskes et al. (2019) conclude that the importance of soft aspects in these collaborations is particularly emphasized in these studies. Most prominently is the role of trust, which seems to have a strong positive effect on the collaboration and performance of PPPs (e.g. Smyth & Edkins, 2007; Klijn et al., 2010; Warsen et al., 2018). Previous studies on this topic show not only that relational quality is important for public–private partnerships, but also that it may function as complement to the standardized contracts in PPPs (Poppo & Zenger, 2002; Warsen et al., 2019). Simultaneously, research indicates that, in practice, PPPs are often still treated predominantly as a contractual relationship (e.g. Reeves, 2008). Although these first studies on relational quality inform us about the importance of the concept, they tell us little about what conditions influence the quality of relationships between public and private partners in PPPs. Therefore, this will be the focus of our study. The central research question we aim to answer in this article is: *"Under which combinations of conditions display public–private partnerships high-quality relationships between public and private actors?*

With this study, I aim to contribute to the still limited body of literature on relational quality in PPPs. In search for conditions that might play an important role in building high-quality relationships, this paper builds on literature regarding relationality, relational governance, and relational contracting. These streams of literature acknowledge the importance of relational aspects in inter-organizational collaboration and

focus on the use of these 'soft' aspects in the governance of networks, partnerships, and contractual agreements. In earlier studies akin to relational quality, trust is often adopted as the core concept. However, in this study, trust is not the only relational element. Instead, in this paper relational quality is considered a broader concept, which consists of more than mere trust. Besides trust, also openness and communication are important elements in high-quality relationships. Therefore, this paper presents relational quality as a multi-dimensional construct. Besides the multi-dimensional nature of relational quality, this study also takes into account the unique characteristics of PPPs. As this study is focused on relational quality in the context of public - private partnerships, it is important to recognize the dynamics in PPPs and bear in mind the importance of its key aspects, such as risk allocation and the long duration of the partnership. Therefore, I include risk allocation as a condition that might influence good relationships. Related to the duration of the project, this paper studies relational quality in the realization phase of the project, but it includes conditions from previous phases as they might affect relational quality in later project phases. Besides its theoretical contribution regarding relational quality in PPPs, this study aims to make another contribution which lies in the use of QCA methodology. By making use of a Qualitative Comparative Analysis, my aim is to go beyond identifying single variables that correlate with relational quality. Instead, this study aims to identify combinations of conditions present in PPP projects with high-quality relationships between project partners. So, it is about understanding how these conditions work together rather than in isolation. The analysis is performed using survey and interview data on 25 PPP projects in the Netherlands and Belgium.

The next section of this paper first provides a brief introduction of PPPs. Then, the importance of relationality is explained, and various antecedents of relational quality are discussed. Section three of this paper focuses on the research method and the data used in this study. In the fourth part the main results of the QCA are reported. Conclusions and reflections on the outcomes of the analysis are provided in the final part of this paper.

4.2. RELATIONAL QUALITY IN PPPS

This section starts with introducing PPPs. Next, I elaborate on relational quality and the importance of good relationships in long-term contractual exchanges, such as PPPs. In the third section, the focus is on how good relationships could be build and how different conditions can be combined.

4.2.1. On public–private partnerships

By now, PPPs are a popular and often used concept in both academia and practice. This is partly because PPPs can be considered many things, ranging from a form of governance to a public policy delivery tool to a language game involving multiple grammars (Hodge et al., 2010). In this study, PPPs are considered long-term projects in which public and private actors collaborate to realize public infrastructure (see also Van Ham & Koppenjan, 2002; Hodge et al., 2010). This may concern transport infrastructure, such as roads and waterways, or social infrastructure, like schools, hospitals or prisons. With this focus, I follow the work of Hodge and Greve (2007) on PPPs as long-term infrastructure contracts (also referred to LTICs) in which PPP projects are considered a form of long-term contractual exchange. In this form of PPPs, the public partner usually determines the goal and outputs of the project, while the private contractor becomes responsible for a range of activities, like the design, finance, construction, operation, and maintenance of the project. Therefore, these PPPs are also referred to as DBFM(O) projects, wherein the letters refer to the activities assigned to the private partner.

When introduced, PPPs came with great promises. The use of private expertise, private funding, and risk-sharing between project partners should lead to reduced pressure on public sector budgets and limited (long-term) risks from infrastructural projects for governments (Van Ham & Koppenjan, 2002; Hodge et al., 2010). Moreover, the involvement of private actors in various stages of the projects should lead to minimized life-cycle costs (Parker & Hartley, 2003; Hodge et al., 2010). Strict contract management should ensure better on-time and on-budget delivery and a more efficient public service delivery (Hodge et al., 2010: 87). Studies into PPP performance and experiences from practice show that PPPs are not always able to live up to these promises. Nevertheless, contracts are still leading. Based on transaction cost theory, contracts are designed to lower transaction costs that arise from seeking out contractors, negotiating, arranging and enforcing agreements. Clear enforceable contracts aim also to prevent opportunistic behaviour in which partners try to exploit the situation to their own advantage (Parker & Hartley, 2003).

4.2.2. On the importance of relational quality in long-term contractual exchanges

Despite the importance of contracts, it is long known that contracts in general are incomplete. The complexity of the exchange and long-term nature of the partnership make it impossible to cover all potential circumstances and future developments in a contract (Davis, 2007). As response to incomplete contracting a growing body of literature emphasizes the importance of relational aspects and the processes of social exchange within long-term exchanges (Davis, 2007). Already in 1990, Hill called for

more research on the nature and effects of long-term cooperative relationships between economic actors, since every exchange includes some relational elements (Zaheer & Venkatraman, 1995). By now, the attention for relational aspects in exchanges can be found in many disciplines ranging from marketing to public administration. Relational marketing (McLaughlin et al., 2009), relational contracting (MacNeil, 1980; Davis, 2007) and relational (or relation-based) governance (e.g. Lee & Cavusgil, 2006) are only a few examples in which relational quality takes center stage, backed by theories like social exchange theory and relational capital theory.

The interest in relational aspects of exchanges and collaborations has led to proliferation of terms to refer to the 'soft' side of an exchange or cooperation, such as 'relational aspects', 'relationality' or 'relational quality'. In this paper, I use the term 'relational quality' as it is about the quality of the socially embedded, personal relationships between actors in an exchange. This refers to the condition of the relationship between actors (i.e. the degree to which something is in a good or bad state). Regardless of the variety in terminology, scholars seem to agree on the importance of good relationships between actors in an exchange. Several studies have shown that high-quality relationships seem to have positive effects on the performance of partnerships and alliances (Lee & Cavusgil, 2006; Davis, 2007; Zheng et al., 2008; Warsen et al., 2018). Trust, for example, mitigates opportunistic behaviour, leads to more communication and facilitates information sharing, which helps partners to coordinate their work, find solutions for problems, and better execute their tasks (e.g. Ring & van de Ven, 1992; Nooteboom, 2002; van Ham & Koppenjan, 2002; Edelenbos & Klijn, 2007). Thus, trust has a positive effect on performance (e.g. Warsen et al., 2018). With regard to the uncertainty and complexity inextricably linked to long-term complex exchanges, such as PPPs, high-quality relationships allow actors to adopt a more flexible attitude and search for a best-for-project solution in collaboration. After all, high-quality relationships characterized by trust, respect, and relational norms give actors no cause for fear of opportunistic behaviour. Openly sharing information can be considered a sign of showing good intentions. It is also a sign of trust, showing that actors trust one another with the given information and expecting that the partner will not use this information for its own gain (see Klijn et al., 2010). This way, high relational quality reduces the need for detailed agreements and enforcement mechanisms in exchanges, and therefore decreases transaction costs (Zaheer & Venkatraman, 1995). Given the positive effect of good relationships on performance, relational elements are often used as a coordination mechanism to govern to exchange between partners (Lee & Cavusgil, 2006). This is often labeled as relational governance. Research has shown that relational governance can be used in contractual exchanges (e.g. Poppo & Zenger, 2002). It even complements the use of contracts. Contracts can promote the formation of long-term, trusting relations (Poppo & Zenger, 2002) whereas relational

intentions may frame whether a contract is interpreted as a written sign of distrust or commitment (Zheng et al., 2008).

4.2.3. Furthering the debate on relational quality

So, relational quality, and in particular specific relational aspects like trust, are strongly correlated with performance. This makes relational quality an important concept to study. However, if we intend to deepen our knowledge about the concept and further the debate about its applicability, it is imperative that we look at how the concept is interpreted and used.

At this moment, there seems to be two opposing viewpoints visible with regard to the interpretation of relational quality. First, relational quality is interpreted as a one-dimensional concept. Frequently, the relational component in an exchange is largely represented by trust (MacNeil, 1980). This would mean that the quality of the relationship between partners is determined by the degree of trust between them. Trust also stands out as the core concept in several bodies of literature, including theories about collaborative governance (Ansell & Gash, 2008), alliances (Kale, 2000; Lee & Cavusgil, 2006), and relational contracting (MacNeil, 1980; Poppo & Zenger, 2002). However, several studies suggest that high-quality relationships in long-term exchanges are made of more than just trust, and that long-term relationships without trust are possible, as long as partners are committed to long-term interaction (e.g. Cook et al., 2005). Trust might be not imperative and a one-dimensional image of relational quality – using only trust – could run the risk of overlooking important other aspects of the concept. In contrast to this first viewpoint, the second viewpoint regarding the interpretation of relational quality considers it a multi-dimensional construct. It points out other relevant relational aspects like respect, commitment, shared values, and mutual interest (Davis, 2007). Scholars emphasize the importance of relational norms such as flexibility, solidarity and two-way, reciprocal communication to prevent conflicts and exchange knowledge (MacNeil, 1980; Zaheer & Venkatraman, 1995; Kale, 2000; Hunt & Arnett, 2004). This second viewpoint does not exclude trust as an important dimension, but it prevents a unilateral focus. There is however a considerable risk of creating a very broad concept that includes too many dimensions, making the concept too broad and unusable.

A certain balance is therefore needed. On the one hand, important dimensions of relational quality need to be included in the concept. At the same time, it must be prevented that the concept becomes meaningless due to the inclusion of too many dimensions. Therefore, a well-considered choice must be made regarding the inclusion of relational elements as dimensions of relational quality. In this paper, relational quality is studied as a multi-dimensional construct. Inspired by Poppo and Zenger's

work (2002), I consider high-quality relationships as socially-embedded inter-personal relationships characterized by mutual trust, openness, and communication.

4.2.4. Relational quality in PPP-literature

When we make the move from relational quality in contractual exchanges in general to relational quality in the specific context of PPPs, the first thing that stands out is that the attention for relational quality in PPP research has traditionally been rather limited. In her PhD thesis, Gudrid Weihe emphasizes the lack of research into the nature of cooperation and emphasizes the importance of relational elements in PPPs (2009). High-quality relationships can be particularly important, given the long-term nature of the PPPs. With contracts lasting for more than twenty years, good relationships help partners to solve problems or deal with unexpected circumstances that arise over the years. Since 2009, slowly but steadily the scholarly attention for the topic is increasing (e.g. Smyth & Edkins, 2007; Reeves, 2008; Hueskes et al., 2019). Results of these studies are mixed. In his research, Reeves (2008) shows that there are hardly any high-quality relationships in PPP projects. Contractual elements of the exchange predominate. Simultaneously, other studies provide evidence that relational aspects are important in successful PPPs (e.g. Hueskes et al., 2019; Warsen et al., 2019). The importance of trust is particularly highlighted (for example in Edelenbos & Klijn, 2007; Warsen et al., 2018), although a few studies also emphasize the importance of other dimensions, including commitment, respect, and communication (e.g. Alam et al., 2014).

4.2.5. On building high-quality relationships in PPPs

Whereas the previous section shows that high-quality relationships are important, the questions remains how these relationships can be realized within PPP projects. Building good relationships in PPPs might pose a challenge, as public and private partners might have very different ideas, values, and interests (see for example the work of Jacobs, 1992). To build high-quality relationships despite these differences, I discuss four important antecedents of relational governance, which will be tested later on in this paper. These four antecedents are either frequently mentioned in earlier research focusing on relational quality or specific relational aspects or they are selected based on their importance in the PPP-context.

Risk allocation

A first antecedent, which is particularly important in PPPs, has to do with the allocation of risks. In PPPs both partners bear responsibility for certain aspects of the project, but the way the risks are allocated has an impact on the relationship between partners. The central idea regarding risk allocation in PPPs states that risks should be

allocated to the partner who is best able to carry and mitigate these risks. For example, private partners are better equipped to deal with risks associated with the design and construction of the project (Akintoye et al., 2008). However, in many contract-based PPP projects, risk allocation goes awry as the vast majority of the risks is transferred from the public agency to the private contractor. A balanced, or fair, risk allocation in which both public and private partners carry their share of the risks, might help to align goals and build trust (Solheim-Kile & Wald, 2019). Taking on some risk might be considered as a sign of commitment and indicates the willingness to invest in the project. When, in contrast, all risks are allocated to only one of the partners in the project, this might put pressure on the relationship between partners. The partner who is responsible for all the risks may feel disadvantaged. It increases that chances for 'free-riding' behaviour from the partner who carries no risks, which might result in distrust.

Experience

Second, the experience of project partners seems to be important in building high-quality relationships. Earlier studies on trust, an important dimension of relational quality, have shown that experience is an important antecedent and is strongly correlated to competence-based trust (e.g. Edelenbos & Klijn, 2007). This indicates that actors are inclined to trust their contract partner when the partner is highly experienced, either with a specific type of collaborations, such as PPPs, or with the technical skills necessary to execute a certain task, like the construction of highways or the build of sluices. Experience may play a role in selecting partners prior to the actual collaboration, as public agencies tend to hire contractors who are more familiar with agency rules, policies, and have the technical and managerial capacity (Lee & Kingsley, 2009). Therefore, experience is included in this study as one of the main conditions. The expectation is that high (perceived) experience is a sufficient condition for high levels of trust in PPP projects.

Frequent communication in the tender phase

Communication is another condition that might influence high-quality relationships as frequent interactions lead to common understanding between partners (Bult & Van Engen, 2015). By communicating partners get to know each other, they can exchange ideas, and elaborate on their visions. Through dialogue partners may identify opportunities for mutual gain (Ansell & Gash, 2008). Interactions between partners help to understand one another. When actors communicate openly about their intentions and share information, trust will develop. Without interaction, trust will easily diminish (Nooteboom, 2002). Given the reciprocal relation between trust and communication, and the inclusion of communication as a dimension of relational quality,

it is important to create a clear separation between this antecedent and relational quality as an outcome. Therefore, this antecedent focuses on communication in the tender phase, while relational quality will be measured at a later stage, namely the realization phase.

Network management

Finally, high-quality relationships between project partners need not only be build, but they also need to be maintained throughout the process. Institutional and cultural differences create unfavourable conditions for collaboration and trust. To realize trust, process management plays an important role (Klijn & Koppenjan, 2016[a]). Process rules should limit the potential for opportunistic behaviour and at the same time lead to more flexibility (Van Ham & Koppenjan, 2002). Process rules can be found in the literature on network management. PPPs are a form of networks, in the sense that they form fairly stable patterns of social relationships between different actors who come together and jointly work on public decision making or public service delivery (see Klijn & Koppenjan, 2016[a]). Various network management strategies can be employed in an attempt to maintain socially embedded relationships between these partners. These include process rules about access to the network, but also network management strategies to explore content and to connect actors. These different network management strategies attempt to facilitate interactions between actors, with the aim to coordinate activities, clarify goals, find shared solutions for issues, align interests and so on (Klijn et al., 2010). These management activities may bring partners closer together and maintain or enforce the social relationships between project partners.

Given the fact that these four conditions have different effects in different stages of the process, they might substitute or complement each other in the realization of high-quality relationships. Relationships need to be built in the first place and some conditions particularly play a role at the start of the relationship. Experience of actors is important in the process of selecting a contractor and the risk allocation is also agreed upon during the tender phase of PPP projects. Communication can be used to build and maintain a relationship, while network management strategies also function during the relationship to enforce that the partnership between public and private partners. Moreover, conditions might be able to affect each other. Highly experienced partners might communicate differently than actors without a lot of experience, as they already know how things work. The way risks are allocated might have an impact on communication; to manage shared risks require more interaction than when all risks are assigned to only one actor. This way several antecedents of high relational quality in PPP might affect each other. It is therefore relevant to study which combinations of conditions are present in PPP projects that display high relational quality.

4.3. METHODOLOGY

The method section of this paper starts with addressing the empirical setting of our study. Next, it provides a short introduction of the set-theoretic method of Qualitative Comparative Analysis. Finally, it turns to the operationalization and the calibration of the conditions and the outcome of this study.

4.3.1. Public–private partnerships in the Netherlands and Flanders

To study high-quality relationships in PPPs, I studied 25 PPP projects in the Netherlands and Flanders (Belgium). These partnerships are DBM and DBFM(O) projects, in which the responsibility for the design (D), build (B), and maintenance (M) was assigned to the private partner. In most projects the private partner was also responsible for the financing of the project (F) and the operationalization (O). The case selection covers both transport infrastructure (highways and sluices) as well as social infrastructure (court houses, swimming pools, and government buildings). The majority of the projects has been tendered by national governments or their executive agencies, due to the sheer size of the projects. Table 4.1 below gives an overview of the characteristics of the selected PPP projects.

Country	Type of PPP project	Level
Netherlands (13)	Transport infrastructure (7)	All national level
	Social infrastructure (6)	National (3) and local (3) level
Belgium (12)	Transport infrastructure (7)	All national level
	Social infrastructure (6)	National (2) and local (4) level

Table 4.1 Characteristics of selected PPP projects[6]

The data on these projects was collected between March 2016 and September 2017. Two to four professionals were interviewed for each project, including at least one public and one private professional. The respondents played a central role in the project teams as for example contract manager, tender manager, or project director. 71 interviews were held with in total 74 professionals. Moreover, prior to the interview 72 out of the 74 respondents filled out a short survey on the project. Both the survey and the interview data are used in the QCA.

4.3.2. On QCA

As a set-theoretic method, in QCA all conditions and the outcome are considered to be sets. Cases are scored on their membership in each set. Full members score (1), while

6 The numbers between brackets refer to the number of cases that display these characteristics.

a non-members score (0). For example, in the set of EU countries, France as a member scores (1), while Nigeria scores (0). In this paper, fuzzy set QCA (fsQCA) is used, which allows for different degrees of membership in a set. Scores below the cross-over point (< 0.5) indicate that cases are more out than in the set, while cases with a membership score above the cross-over point (> 0.5) are more in than out the set. As fsQCA allows for a more nuanced distinction between cases, it is preferable over crisp set QCA (Schneider & Wagemann, 2012). QCA identifies combinations of conditions that are either necessary or sufficient for the outcome. A necessary condition indicates that the outcome cannot be present without that condition being present. In contrast, but the outcome may occur without the presence of a sufficient condition. However, when a sufficient condition is present, the outcome is present as well (Schneider & Wagemann, 2012). Three important assumptions underlie the QCA method. First, the idea of conjunctural causation implies that the effect of a condition unfolds only in combination with other conditions (Schneider & Wagemann, 2012: 78). So, combinations of conditions explain the outcome rather than single conditions. Second, QCA builds on the idea that there are multiple combinations of conditions possible to explain the outcome. There are different paths leading to the proverbial Rome. Finally, QCA accepts the idea of asymmetrical causations. This suggests that different conditions play a role in the outcome and the negation of the outcome. The set of conditions leading towards the outcome can be different from those leading to the non-outcome (Ragin, 2008).

4.3.3. The calibration process

To determine the extent the cases are members of the outcome and four conditions, the calibration process takes place. Each case will get a membership score between 0 and 1 for the outcome and each of the conditions. In this section the calibration process and underlying arguments in assigning the membership scores are described. As is custom in QCA, this process entails a going back and forth between data and theory.

Relational quality

The outcome in our analysis is relational quality. In this paper we measure relational quality during the realization phase of the project. As emphasized in the theoretical section of this paper, relational quality is a multi-dimensional construct. The collected data allows us to combine three dimensions to build the construct of relational quality: trust, openness, and communication. First, all cases are scored on each of these dimensions after which a final score for relational quality is determined.

First, each case is assigned a membership score on trust based on five survey questions with 10-point answering scale. These survey questions jointly form a well-tested

and previously used scale (e.g. Klijn et al., 2010). For each respondent, the scores are added. Then the score of the respondent who has the lowest combined score is selected. This is based on the theoretical assumption that trust should mutual, and the methodological risk that respondents might be reluctant to give low scores as trust can be a sensible topic. This average score is transformed into a set membership score of 0, 0.33, 0.67 or 1 using the thresholds of 25.25, 30.5 and 40. Finally, the scores are corrected for qualitative data stemming from the interviews. Then, the frequency of communication in the realization phase is scored using survey data, which is transferred to set-membership scores per respondent (see Table 4.2 below). To create a set-membership score for each project, the following procedure is followed:

- If membership scores of all respondents are the same → assign that score to the case;
- If different scores between members → select only respondents involved in the realization phase as they are best capable to determine the frequency of communication in this period;
- If remaining membership scores are the same or on the same side of the cross-over point → assign (average) score to case;
- If remaining scores differ across the cross-over point → use additional qualitative information to make decision.

Frequency of communication	Set-membership score
Less than once a month	0
Once a month	0.33
Once every two weeks	0.67
At least once a week	1

Table 4.2 Set-membership score on frequent communication

Finally, in the calibration of openness four survey questions with answering scales from 1-10 are used. The scores for these four items are added per respondent. Based on the same principles I used when calibrating trust, the score of the lowest scoring respondent is selected for each case. These scores are converted to set-membership scores using the thresholds 20, 27.5, and 31.5.

With set-membership scores for each of the three dimensions, the final membership score for each case in the set 'high relational quality' can be determined. The more dimensions the case is a member of, the higher the set-membership score for that case (see Table 4.3):

Case is set-member in…	Set-membership score in the outcome (high relational quality)
0 out of 3 dimensions	0
1 out of 3 dimensions	0.33
2 out of 3 dimensions	0.67
3 out of 3 dimensions	1

Table 4.3 Determining the set-membership score of the cases in the outcome

Network management

The set-membership score on network management is based on five survey questions with a 5-point Lickert scale referring to different network management activities. First, a project score for each survey item is determined. If all respondents fully agree, the project gets a membership score of 1. If all respondents either partially or fully agree, a score of 0.67 is assigned. If the respondents give mixed scores, the project is scored a 0.33. Finally, if all respondents (partially) disagree, the project gets a membership score of 0. The final membership score on network management is determined using the following scheme: the more items are present, the higher the score (Table 4.4). After all, the use of more network management strategies suggests a stronger use of network management.

Score on separate items:	Set-membership score in network management
Two or less indicators score above the cross-over point	0
Three indicators score above the cross-over point	0.33
Four indicators score above the cross-over point	0.67
All five indicators score above the cross-over point	1

Table 4.4 Determining the set-membership score of cases in the in the condition 'network management'

Frequent communication in the tender phase

This condition is calibrated in a similar fashion to frequent communication in the realization phase, one of the dimensions constructing the outcome. This includes determining a set-membership score per respondent using Table 4.2, followed by selecting respondents who have been active in the tender phase in case of non-matching membership scores, and eventually using qualitative data to make a final decision in the membership score per project. To keep a clear distinction between this condition and the outcome, the focus here is on communication in the tender phase. The tender phase is clearly different from the realization phase due to the involvement of multiple potential contractors and the involvement of different professionals of whom most will leave the project after the project has been awarded to one of the consortia.

Experience

In this study, public partners were asked to assess the experience of their private counterpart at the start of the project on a scale from 1-10. So, experience here is explicitly about the experience of the private partner. When several public professionals assessed their partners' experience for the same project, the average score was used. Scores were then transformed into set-membership scores of 0, 0.33, 0.67, or 1 based on the thresholds of 3.99, 5.99 and 7.99. Based on the qualitative interview data of both public and private professionals and information on the website of private partners checking their earlier experiences with PPP, the set-membership scores could be adjusted.

Fair risk allocation

The last condition, risk allocation, is calibrated using qualitative interview data. The assumption in PPP literature regarding risk is that risks should be assigned to the partner who is best able to control and carry those risks, thus a distribution in risks between both partners is expected. Therefore, if risks are divided between both partners a score > 0.5 is assigned to a case. If the private partner carries all the risks, the set-membership score of a project will be below 0.5. However, in practice the majority of the risks is usually transferred to the private partner. Therefore, the more risks, and the more substantial the risks, that remain with the public partner, the higher the membership score in the set 'fair risk allocation'.

4.4. RESULTS

In this section, the results of the analysis of necessity and sufficiency are presented. The enhanced standard analysis is applied. All analysis have been done in R, using the packages QCA and SetMethods (Dusa, 2007; Medzihorsky et al., 2016). First, to determine whether there are any necessary conditions for high-quality relationships in PPPs, the analysis of necessity is performed. The consistency benchmark for necessity is set to 0.9 in line with Ragin (2000). The analysis (see Table 4.5) shows that no single condition is a necessary condition, neither in its absence nor in its presence.

Condition	Consistency
Network management (NM)	0.756
Frequent communication tender phase (FC)	0.642
Experience of private partner (EXP)	0.733
Fair risk allocation (RA)	0.600
Absence of network management (~NM)	0.399
Absence of frequent communication tender phase (~FC)	0.570
Absence of experience of private partner (~EXP)	0.487
Absence of fair risk allocation (~RA)	0.576

Table 4.5 Analysis of necessity for the outcome 'high relational quality'

Next, the analysis of sufficiency shows which combinations of conditions are sufficient for high relational quality in public–private partnerships. First, a truth table is constructed, which displays all possible combinations of conditions. Each case is assigned to one truth table row (see Table 4.6). To determine which truth table rows to include in the analysis, a consistency threshold of 0.825, well above the required minimum of 0.75 (Schneider & Wagemann, 2012)[7]. Moreover, this threshold coincides with a gap in the data (see Vis, 2009). Given the limited number of cases, all truth table rows above the threshold to which at least one empirical case can be assigned are included in the analysis.

Initially, eight truth table rows are included for the analysis. However, there are three contradictory truth table rows, which include deviant cases consistency in kind: cases that do display the configuration presented in the truth table row, but not the outcome. This applies to case P20, P22 and P3. Closer study of the cases shows that these cases can be explained based on qualitative in-depth case knowledge. In case P20, early in the realization phase a few events affected some professionals' trust in their counterpart. Over time, extra efforts have been made to improve the relationship. The difference in relational quality during the realization phase has led to mixed scores on dimensions such as trust and openness. Case P22 displayed high levels of trust between project partners but received mixed scores on openness and the frequency of communication. The choice for a multi-dimensional interpretation of relational quality has led to a membership score below 0.5. Finally, case P3 is not considered a project with high relational quality. Qualitative data shows that - although the project

7 Originally, I planned a threshold of 0.8. This would raise questions regarding the inclusion of truth table row 9. A closer study of the cases assigned to this row showed that two out of three cases in this row are deviant cases. Combined with the rather low PRI led to the decision to raise the threshold of 0.825 to make it coincide with a gap in the data and leave truth table row 9 out of the analysis.

partners had a good relationship during the realization of the project - towards the end of the project tensions led to trust issues and reduced openness. The project partners did not manage to maintain a good relationship throughout the project. As people tend to remember their latest, and most negative, experiences best, this might have led to low scores on the outcome for this case. Based on the qualitative explanations of the deviant cases, and the fact that in all three truth table rows at least half or more of the cases is a consistent case, the decision was made to include all eight rows in the following minimization process.

	NM	FC	EXP	RA	OUT	Incl.	PRI	Cases
10	1	0	0	1	1	1.000	1.000	P23
16	1	1	1	1	1	0.979	0.966	P7, P14, P15
12	1	0	1	1	1	0.940	0.894	P10, **P20**
11	1	0	1	0	1	0.929	0.836	P8
14	1	1	0	1	1	0.905	0.809	P11, **P22**
15	1	1	1	0	1	0.879	0.780	**P3**, P9, P25
8	0	1	1	1	1	0.858	0.801	P18
4	0	0	1	1	1	0.847	0.780	P24
9	1	0	0	0	0	0.800	0.579	P12, P13, P17
1	0	0	0	0	0	0.765	0.524	P5, P21
6	0	1	0	1	0	0.688	0.496	P6
7	0	1	1	0	0	0.645	0.388	P2, P4, P16
5	0	1	0	0	0	0.643	0.353	P1, P19
2	0	0	0	1	?	-	-	Logical remainder
3	0	0	1	0	?	-	-	Logical remainder
13	1	1	0	0	?	-	-	Logical remainder

Table 4.6 Truth table for the outcome 'high relational quality'

The minimization process resulted in the conservative solution formula[8]: NM*EXP + NM*RA + EXP*RA (see also Table 4.7). It shows that there are three configurations, or combinations of conditions, that are sufficient for high-quality relationships in PPPs.

8 In this study we present the conservative solution formula. The most parsimonious solution formula, which also includes the logical remainders (rows for which we have no empirical evidence) is exactly the same as the conservative solution formula.

Configurations →	Path 1	Path 2	Path 3
	NM*EXP	**NM*RA**	**EXP*RA**
Consistency	0.902	0.839	0.916
Raw coverage	0.621	0.467	0.489
Unique coverage	0.222	0.067	0.089
Cases	P8, P10, P20, P3, P9, P25, P7, P14, P15	P23, P10, P20, P11, P22, P7, P14, P15	P24, P18, P10, P20, P7, P14, P15
Solution consistency		0.833	
Solution coverage		0.778	

Table 4.7 Conservative solution formula for the outcome high relational quality.

The first combination of conditions present in PPP projects with high relational quality between project partners is the combination of network management and experience. Experience, as a starting condition, may contribute to high-quality relationships, as it may lead to competence-based trust. Experienced professionals know what to expect during the realization of the project, recognize and anticipate on risky situations, and are able to keep their calm during critical moments. Complementary to experience, network management activities can by employed throughout the project to build and maintain a good relationship in the later stages of the project. Case P8 is a typical case in this configuration. The private partner in P8 has gained experience in a similar transport infrastructure DBFM project. In an interview, one of the respondents explains how technical staff collaborates smoothly with their counterparts due to their experience (respondent LW). In the project, partners use network management activities focused on exploring content and connecting (see Klijn et al., 2010). The project partners in P8 aim to maintain a good relationship while managing the project. Together they have made a set of informal process rules on how they interact and deal with issues. These process rules not only structure interaction and information exchange, but they are also aimed to explore various options in terms of content and enhance the alignment of perceptions. Partners are invited to be transparent and express their doubts. These process rules can be considered network management strategies and might contribute to good relationships between partners in this project.

The second combination of conditions in PPP projects with high relational quality is network management combined with a fair risk allocation. Similar to the first path, this seems to be a combination of a starting condition (i.e. allocation of risks) and active management to maintain the relationship during the course of the project. A fair risk allocation, in which both partners carry some of the risks, ensures some form of involvement and commitment to the project. This might decrease the risk of opportunistic behaviour, and thus increase trust. As the allocation of risks is decided upon prior to the realization of the project, this plays a role as a starting condition in

the relationship between project partners. It also implies a more equal relationship between partners. After all, assigning all risks to only one of the partners, relieves the other of its responsibilities. Network management activities can be used during the realization to connect partners and help them align interests. In project P11, a case uniquely covered by this configuration, some risks were allocated to the public partner. This applied in particular with risks related to law and permits, as they were hard to influence or mitigate by the private partners. The private partner was asked to help reduce the risk but did not carry its consequences. With regard to network management, in project P11 significant attention is paid to connecting actors, starting and structuring interaction processes, and aligning perceptions (see Klijn et al., 2010; Klijn & Koppenjan, 2016[a]). These included for example the design of a number of 'golden rules' on how partners should interact with each other: *"These included very obvious things, like 'we look for interaction', 'I do not send emails, but I call you'. 'I do not send you letters unannounced'. Perhaps obvious things, but we have mentioned them anyway"* (respondent MMI).

The final path displays a combination of experience and risk allocation. These are both conditions determined at the start of the project. Experience, however, might also have an effect during the realization of the project. Showcasing experience during the project might increase trust in each other's competences. In projects with this configuration, both partners carry some risks. An example is case P24, where a respondent explains: *"The risk regarding permits lay with the city [public client], the risk of soil pollution was ours [private contractor]"* (respondent BZ). When both partners bear part of the risks, this calls for more communication and openness, since both partners need to know how the project is evolving in order to mitigate the risks that are allocated to them. A peculiar case in this path is case P18 as respondents indicate that the formal risk allocation in this project is not well-balanced nor fair. Although, the public partner is responsible for some risks, like the risk of soil pollution, respondents believe that still too many risks are assigned to the private partner. However, in the interviews respondents show how they manage and mitigate some of these risks together. A clear example in the project revolves around getting a permit for the build of a tunnel. Formally, the risk was assigned to the private partner, although the public partner had made agreements about it with the local government in an earlier stage. Both partners agreed that it was not reasonable to assign this risk completely to the private partner, resulting in a joint effort to mitigate this risk:

"So, we did very well together. It would have been very easy to say: 'Yes, we fulfilled our duties regarding the permit. We properly submitted it; it is no longer our risk. Dear [public client], it is your problem now.' […] but the public client could have said: 'it is your problem, you solve it.' And eventually, we have said: we have to work together here" (Respondent WM).

4.4.1. Analysing the results

The three paths show different combinations of conditions present in PPP projects with high relational quality (see Table 4.8). In total the three paths jointly cover 12 out of the 14 cases displaying high relational quality. A first thing that stands out is the overlap between the three configurations. Combined the three paths have a coverage of 0.778, but the unique coverage of each path is low, in particular for path 2 and 3. In several cases both experience, a fair risk allocation, and network management activities are present, and thus they can be found in all three paths. Case P14 for example shows how partners search to align interests in case of problems or an impasse (network management). Moreover, the private partners in P14 are experienced, having done similar transport infrastructure PPP projects before. The public partner suggests that the private consortium has much more expertise than the public agency. In terms of risk allocation, both partners agree that risks way heavy on the private partner, but that the public partner takes on a collaborative attitude and helps mitigating these risks. Their high-quality relationship is characterized by openness and transparency. By openly sharing information, partners get the feeling that realizing this project is truly a joint effort. *"We have many informal meetings. We are really transparent. Rijkswaterstaat [the public agency] also has a room here in our building. They use it a lot, walk around in our office. We work together, and this is the first time a have that feeling in a DBFM [type of PPP project]"* (Respondent PS).

	Path 1	Path 2	Path 3
Network Management	✓	✓	
Experience	✓		✓
Risk allocation		✓	✓
Frequent communication in the tender phase			

Table 4.8 Simplified representation of the conservative solution formula

The only condition that is not part of the solution formula is frequent contact in the tender phase. Neither its presence nor its absence can be found in any configuration. The communication in the tender phase apparently does not play a decisive role in the relationships between project partners in the realization phase. The assumption is often that the tender phase is crucial in the relationship between project partners. However, investments made in the early stages of the collaboration do not always last, perhaps due to personnel turnover. Many public and private professionals leave the project after the tender is completed, while other professionals come in and work on the realization of the project. As new professionals come into play, the relationship between partners might change. So, because different teams are involved in the vari-

ous phases of the project, this might explain the limited role of this condition in the solution formula.

As an additional test, a cluster analysis (see Appendix VII) was performed to see if the results hold for projects in both countries and different types of projects. The analysis indicated that differences between projects in the Netherlands and Flanders are limited. Consistency scores for projects in both countries are comparable. Although the Dutch cases are in general somewhat better covered than the Flemish ones, the configurations hold for projects in both countries. The cluster analysis studying potential differences between nationally initiated PPP projects versus local PPP projects shows similar results. Finally, the analysis was done for different types of PPP projects. The results show some differences between transport infrastructure projects and social infrastructure projects. Both in terms of consistency and coverage path two and three social infrastructure projects score lower than transport infrastructure projects (see Table 4.9).

	NM*EXP	NM*RA	EXP*RA
Pooled consistency	0.902	0.839	0.916
Consistency social infra	0.845	0.712	0.712
Consistency transport infra	0.943	0.888	1.000
Pooled coverage	0.621	0.467	0.489
Coverage social infra	0.645	0.293	0.293
Coverage transport infra	0.607	0.572	0.607

Table 4.9 Cluster analysis type of PPP project

This indicates that we are better able to explain relational quality in transport infrastructure projects than social infrastructure projects. Social infrastructure projects might have a different dynamic, as these types of projects often include the 'O' (operate) in their contracts. Moreover, the involvement of users is often greater than in transport infrastructure projects. The differences in coverage scores might indicate that there are alternative conditions that play a role in relational quality, like shared norms and values or personnel turnover, which are not included in this study.

4.5. CONCLUSIONS

This study aims to provide more insight into relational quality in PPPs. To do some justice to the complex and dynamic process of building and maintaining high-quality relationships in PPPs, several conditions were tested to see which combinations are present in PPP projects that display these kinds of high-quality relationships. The answer to our research question, "*Under which combinations of conditions display pub-*

lic–private partnerships high-quality relationships between public and private actors?" shows three possible combinations of conditions in PPPs with high-quality relationships between project partners. The combinations of network management and experience (NM*EXP), and the combination of network management and a fair risk allocation (NM*RA) both consist of a starting condition (measured prior to the realization of the project) and a condition in the construction phase (during the realization of the project), suggesting that building high-quality relationships requires continuous effort throughout the project. The third combination combines high levels of experience with a fair risk allocation (EXP*RA).

Based on the results of this study a few important lessons can be drawn. First, when it comes to building high-quality relationships in PPPs, well begun is half done. Results emphasize the importance of starting the realization of the project with confidence. Whether this confidence stems from having an experienced private contractor or from a fair risk allocation is of less importance, as long as project partners have a good feeling about their partnership before they enter the realization phase. Second, network management is an important condition. It is not necessary, as case P18 and P24 show, but in most projects with high relational quality, network management is present. This suggests that maintaining the relationship throughout the project is essential in most projects. Relationships need not only be built; they also need to be carefully nurtured. The continuous attention for relational quality might be particularly important when project partners are faced with uncertainty, unexpected events, or reach an impasse. Their relationship might then give them a solid base for overcoming the challenges they are faced with during the project. So, it is important to pay attention to the relationship between project partners from the start of the partnership. The practical relevance of this study lies in emphasizing the constant attention required to achieve high relational quality in PPPs. Thirdly, frequent communication in the tender phase seems less relevant with regard to relational quality. Projects with and without frequent communication in the tender phase are able to build high-quality relationships during the project. A potential explanation lies in personnel turnover. As new personnel comes in at the start of the construction phase, they might be sparsely affected by the frequency of communication in the phase prior to their involvement. The quality of their relationship should be less dependent on the frequency of earlier communication, as partners will reshape existing relationships and build new relationships as new professionals make their appearance. Personnel turnover thus raises the question to what degree events in the tender phase play a role in determining the relationship in later stages of the project. In practice, this means that project partners need to take into account future developments regarding staff and the consequences of personnel turnover. Shared principles relevant for the quality of the relationship between project partners need to be ensured and transferred to

new staff. Attention for relational quality is not limited to frequent communication in the tender phase but requires constant consideration.

This study also has important theoretical implications. Its contribution is threefold. First, this study adds to the relatively limited body of knowledge on relational quality in the PPP literature. Using QCA, it systematically uncovers which conditions are jointly present in high-quality relationships in PPPs. Its contribution lies in particular in the attention for conjectural causation, as there are different combinations of conditions that explain relational quality rather than a single condition. Thus, this paper informs us on how high-quality relationships might be established in PPPs. The findings confirm the importance of network management and dividing risks in PPPs, showing that it does not merely affect performance, but also influences the quality of the relationship between project partners. Second, this paper contributes to the development of the concept 'relational quality'. Earlier use of the concept was either vague (referring to soft or relational aspects of PPPs), focused solely on the role of trust, or studied mainly the use of relationships in governing the partnership (e.g. relational governance, relational contracting) rather than studying the concept as such. This paper focuses on relational quality as a multi-dimensional concept, including both trust, openness, and communication. It provides an outset on how we can understand, operationalize, and measure the quality of relationships between partners. Finally, this study suggests that different project phases should be taken into account when studying relationships in long-term exchanges such as PPPs. Relationships in PPPs are long and dynamic. The ramifications of events from earlier stages of the project are ambivalent. Sometimes, agreements made in tender phase have an effect on the relationships between partners' years later. On other occasions, they seem not as essential. According to this study, risk allocation and the experience of the private partner prior to the start of the project are shown to influence relational quality in later stages, whereas the frequency of communication in the tender phase does not. Although not all conditions from earlier phases are present in the solution formula, this study seems to indicate that events in the various phases, and the transition between phases might play a role in relational quality in PPP projects.

As with any study, this study also has its limitations. In the first place, our analysis failed to explain two projects with high relational quality (P13 and P21). A closer look into these projects reveals that in these cases most of the four conditions are absent. This could indicate that there are more conditions that might be relevant in explaining and understanding relational quality. Hence, a suggestion for future research would be to also include and test other potential antecedents of relational quality, such as the importance of shared norms and values, shared goals, or personnel turnover. Another issue concerns the dynamics of relationships between project partners in PPPs. Although we included conditions from different phases in the project to study,

respondents were only asked once to give their overall opinion on the quality of the relationship during the realization phase. This was asked towards or just after the end of the realization phase. However, relationships are dynamic, they have ups and downs and change during the course of the project. It is important to take these dynamics into account. Moreover, the realization phase is usually followed by a maintenance phase which can last up to thirty years. The relationships we studied will keep developing. Some might strengthen, while others will weaken over time. This study thus only takes a snapshot of the relationships in PPPs. Further research could include more longitudinal studies, for example using in-depth case studies, focusing on the changing dynamics of relationships and how they impact the performance of the project.

INTERMEZZO 4.

The previous two chapters have further developed the concept of relational quality. Whereas Chapter 3 provided a conceptualization of the concept, Chapter 4 studied a number of conditions that influence the development of high-quality relationships. But, why would it be useful to further develop and study the concept? Is it for public organizations worth investing in these determinants to build high-quality relationships in PPPs? Although one might argue that high-quality relationships are in itself relevant and important, it can also be seen as a means to an end. In particular when high-quality relationships can be used in the governance of PPPs, it might help to further enhance the performance of the partnership. This leads to questions about the effect of high-quality relationships on the performance of PPPs. The remaining chapters of this dissertation address these questions and focus on the relationship between relational quality and the performance of PPPs. The literature review has shown that several scholars see great potential in relational governance mechanisms and value the quality of relationships as an important feature of PPPs (see Parker & Hartley, 2003; Panda, 2016; Smyth & Edkins, 2007). Nevertheless, there are also studies who are more skeptical about the usefulness of relational governance and find no convincing evidence regarding its effect on the performance of PPPs (for an example, see Reeves, 2008). To contribute to the debate on the effect of relational quality and relational governance mechanisms on the performance of PPPs, Chapter 5 presents a quantitative study on this topic.