



# Achieving satisfaction when implementing PPP transportation infrastructure projects: a qualitative comparative analysis of the A15 highway DBFM project

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## Abstract

This article investigates how managers in public-private partnership (PPP) projects respond to social or physical events during the implementation of their projects, and which of their responses produce satisfactory outcomes. Multi-value Qualitative Comparative Analysis (mvQCA) was used to examine the events that took place during a large Dutch Design, Build, Finance and Maintain (DBFM) transportation infrastructure project. The analysis found that most events were social in nature. Private managers' responses to these events were internally-oriented and resulted in dissatisfactory outcomes. In contrast, externally-oriented managerial responses were associated with satisfactory outcomes. The article concludes that both public and private managers need to invest sufficiently in stakeholder management resources and capabilities when implementing projects. Although the intention of DBFM contracts is to lower the burden on the government, public managers still play an important role as intermediaries between the contractor and the local stakeholders and this role should not be underestimated.

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## 1. Introduction

Over the last few decades, public-private partnerships (PPPs) have received increasing attention because they are thought to have many benefits (Bovaird, 2004). This is particularly the case with transportation infrastructure development (Kwak et al., 2009). Involving the private sector in infrastructure development is expected to have longer-term benefits, such as “value-for-money” (Grimsey and Lewis, 2004; Kwak et al., 2009), and shorter-term benefits, such as a reduction in cost and time taken to deliver infrastructure services, higher quality service delivery, lower administrative costs, and the transfer of risks to the private sector (Flyvbjerg et al., 2003; Hodge and Greve, 2007; Kwak et al., 2009; Little, 2011). In the Netherlands, Design, Build, Finance and Maintain (DBFM) contracts are often advocated (Commissie Private

Financiering van Infrastructuur, 2008; Eversdijk and Korsten, 2009). These contracts resemble the U.K. Private Finance Initiative (PFI) projects (Klijn et al., 2007). A DBFM contract is a specific type of PPP where the private partner is integrally responsible for designing, building, financing and maintaining the infrastructure (Lenferink et al., 2013a). However, only few DBFM contracts have been implemented thus far (Klijn, 2009) and research into them is scarce (Lenferink et al., 2013a).

Research into PPPs has mainly focused on the extent to which benefits are realized (research into the performance of PPPs) and how such benefits can be increased. Studies on increasing these benefits often examine pre-contract issues (Weihe, 2008), such as tendering, procurement, risk allocation, and the financing of PPPs (Kwak et al., 2009). However, relatively little research has been carried out on the impact of the events that take place during the implementation phase of an infrastructure PPP (i.e. while it is being constructed and delivered (Jones and Noble, 2008)) on project outcomes (Jones and Noble, 2008; Mistarihi et al., 2013; Weihe, 2008). During

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the implementation phase, managers are faced with a variety of challenges and delivery difficulties. These challenges and difficulties often come to managers as events, stemming from the project's socio-physical context (Love et al., 2002). How managers in a PPP respond to these events during project implementation is an important part of successful infrastructure development (Love et al., 2002). For instance, an inappropriate response to an event may result in decreased shorter-term benefits such as delivery delays, lower delivery quality (leading to reputational damage or unsatisfied stakeholders), or poor relations between the public and private partners. Research, however, does not clearly specify which managerial approaches are the most beneficial for realizing satisfactory outcomes in PPP projects (Edelenbos and Klijn, 2009). The present study therefore aims to examine which managerial responses to events produce satisfactory outcomes during project implementation (cf. Verweij and Gerrits, 2014). The research question for the study is: *how do managers in the implementation phase respond to events occurring in the context of PPP transportation infrastructure projects, and which management responses produce satisfactory outcomes?*

This article is structured as follows. Section 2 describes transportation infrastructure project implementation, its implications for the research approach, and the applied research approach of multi-value Qualitative Comparative Analysis (mvQCA). Section 3 sets the empirical scene by introducing the Dutch A15 highway DBFM project, and the data collected about it. The data are analyzed in Section 4 using mvQCA. MvQCA has recently been suggested as a valuable method for evaluating transportation infrastructure projects (Verweij and Gerrits, 2013), though empirical applications are lacking. Sections 5 and 6 comprise the discussion and conclusions respectively.

## 2. Researching complex PPP transportation infrastructure projects

### 2.1. Properties of complexity in PPP infrastructure project management

Infrastructure projects are implemented in a socio-physical context where events occur (Gerrits, 2008, 2012; Van Gils et al., 2009). While these events are external to the project's management (Söderholm, 2008), they can influence it, since projects are open systems (Engwall, 2003). Although "during implementation, projects are supposed [to] be as closed as possible and concentrated on execution according to plans" (Söderholm, 2008:83), events occur in the implementation of the project that require managers to respond to them. The events can have a physical basis, such as changing ground or weather conditions, or be rooted in a social issue, such as objecting stakeholders (e.g. Assaf and Al-Hejji, 2006; El-Gohary et al., 2006; Odeh and Battaineh, 2002). This article's focus on events that are experienced by managers in PPP projects during the implementation necessitates a grounded approach to identifying these events since they are experienced by the managers, not by a theory proposed by an evaluator.

Managers respond (i.e. adapt) to events to make them manageable (Van Gils et al., 2009). Literature on the management of PPP projects distinguishes between project management and process management (Edelenbos and Klijn, 2009; Edelenbos and Teisman, 2008). A central difference between them is their openness towards the environment. The first focuses on the internal organization of the project, while the latter emphasizes the project's interaction with the societal environment. The first adheres to the idea of projects as closed systems and the second to projects as "contextually-embedded open systems" (Engwall, 2003:790). Although research shows that managerial activities are crucial for successful PPPs (Klijn et al., 2008), Edelenbos and Klijn state that the literature is "ambivalent about what style is most beneficial for realizing outcome of complex decision-making processes, in particular public-private partnerships. (...). There has not been much attention paid to this issue, and empirical results are mostly absent" (2009:321). They conducted a survey on this topic and found that the externally-oriented style of management is positively correlated with good outcomes, while the internally-oriented style is not. Although this is a valuable finding, variable-oriented studies such as this do not explain *how* good outcomes are actually produced, in contrast to case-based research (cf. Verweij and Gerrits, 2013; Klijn et al., 2008). Klijn and colleagues speculate that managers actually "choose their managerial strategy according to the logic of the situation" but they acknowledge that "this is a theory that should be addressed through further research that focusses more on individual choices made by managers" (2008:271).

This article responds to this call and examines how managers respond to events in their day-to-day actions (cf. Cicmil et al., 2006; Smits, 2013; Van Marrewijk et al., 2008). Again, a grounded approach applies. The response chosen by a manager and the complex processes leading to it (see Gerrits, 2012 chapter 4) are driven by the manager's interpretation of the event and his assessment of how it is best dealt with. His interpretation, assessment and consequent action(s) may be rationally bounded, but they are his, and they produce real outcomes (cf. Gerrits, 2012). It follows that management responses and outcomes can only be understood by taking the manager's view as the point of departure.

While a transportation infrastructure project is being implemented, the management often faces multiple and different events. In a DBFM contract, where the private partner bears the responsibility for project implementation, private managers mainly respond to these events, although the public partner may also be involved. Since responses to events can differ, it is possible to find many different examples of 'management responses to events' in a single project. Each example forms a separate case, and each case is configurational (Byrne, 2005), which means that the event and the management response(s) combine to produce an outcome (cf. Van Gils et al., 2009).

The cases may be independent or intertwined with one another. For instance, cases may be linked to each other because of related events (e.g. a single stakeholder objects to different parts of the project for the same reason) or the involvement of the same individual/s. Additionally, these cases are also related because ultimately, they are managed by the

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