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PPP in public schools as means for value creation for user and owner

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Abstract

The use of public-private partnership (PPP) as an execution model has increased over the last two decades in both Europe and Norway. The purpose of this paper is to assess if and to what extent PPPs contribute to value creation for user and owner in Norwegian public schools.

Two public school projects were chosen for a case study. A literature study established a theoretical framework for PPP and value creation. Documentation studies and semi-structured in-depth interviews with key personnel were conducted. The projects were completed in 2008 and 2014, providing data from both operational and early design phase.

Previous research argues that PPPs provide incentives for the contractors to deliver the project product at agreed time, cost and quality. However, little research has been found concerning PPPs contribution to value creation for user and owner. The analysis documented in this paper shows that PPP to some extent compels the contractors to actually consider the life cycle of the project. This execution model equally incentivises project owners to focus on output-based specifications, thereby realising the building's use. The payment linked to the performance, availability and service indicates commitment for the contractors to deliver. Finally, inadequate contract specifications are found to generate potential conflicts at the end of the contract. In sum, this indicates that PPP is suited for public schools in Norway.

This research highlights how PPP contribute to value creation in public schools in a Norwegian context.

Keywords: public-private partnership, public schools, value creation, user, owner

1. Introduction

The use of public-private partnership (PPP) as an execution model in Norwegian public schools has increased over the last decade. According to Solheim-Kile et al. (2014) PPP type projects have existed at least since the 17th century. Broadbent & Laughlin (2003) argues that contemporary PPP is a product of the "New Public Management" wave that took place globally in the 1980s. PPPs occurred in their modern form in Norway at the end of the 90s (Eriksen et al., 2007). The Norwegian Parliament started a process ending in an approval of three PPP road projects in 2001. Within the school sector, the first example was Breimyra middle school (1998) where a private party built and leases it entirely to Bergen municipality (Sanden & Corneliussen, 2015).

An overview of the current situation in the education sector (RIF, 2015) established an understanding of public school requirements. The study provided an insight of a building stock characterized by maintenance backlog and unhealthy indoor air quality, forcing schools to shut down. Norway's financial situation as such, should contribute

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sufficient resources avoiding described scenarios – this does not, however, seem to occur. Norwegian municipalities' responsibilities include services, operation and maintenance of public elementary schools (Norwegian government, 2014). Several measures for improving the situation have been conducted, among these PPPs. During the literature study leading up to the present paper, however little research was found concerning PPPs contribution to value creation for user and owner of public schools. In order to fill part of this knowledge gap, this paper examines how and to what extent PPP contributes to value creation for the client and users of public schools.

The literature review revealed that PPP is an umbrella term for several different approaches. According to Clerk et al. (2012), establishing a simple definition is difficult. He argues that there have been several attempts to define a PPP (Wettenhall, 2010; Hodge & Greve, 2007 and Van Ham & Koppenjan, 2001), but no consensus has been established. PPP means different things in different countries and cannot simply be copied, due to differences in framework like culture and policies (Sillars & Kangari, 2004). Thereby this paper seeks to identify the version of PPP used in public schools in Norway, and research the benefits and challenges referred to in the literature.

Additionally, the literature review examined the concepts of value and value creation within the context of PPPs. Several authors discuss these concepts within this context. However, as was the case with PPP no final understanding emerged. In light of the analysis of Kelly et al. (2015), this is not surprising, given that no fundamental laws of value exist in the same way as there are fundamental laws of physics. Spencer et al. (2002) underline this by stating that not only is value rarely properly defined, it is also exceptionally difficult to measure.

The undertaking of this paper is value creation within the public school sector in Norway for both owner and user. The main questions we address are:

- *What characterizes the use of PPPs within the public school sector in Norway?*
- *To what extent do the use of PPPs promote value creation for both owner and user of these projects?*

2. Research methodology

The research was carried out according to a qualitative approach, involving two document studies and eight semi-structured in-depth interviews from two case studies. The inherent complexity characterized by PPP projects limits the potential understanding using solely quantitative methods as outlined in Flyvbjerg (2006). First, the literature study was conducted focusing on providing theoretical background on PPP, value and public schools. When searching for relevant literature, the stated keywords *PPP; public schools; value creation; user; owner* respectively composed the foundation of the review.

Two elementary public school projects were chosen for case studies, providing data from both early design and operational phase. The building in case A was completed in 2008, as one of the first in public school sector using the modern form of PPP (Berg & Edvardsen, 2009). The building in case B was completed in 2014, ensuring data about PPP processes in early phase and implementation. The document studies provided an overview of the processes, and thereby an understanding of the effects for owner and users.

Semi-structured in-depth interviews with key personnel such as owner, user, and supplier respectively, were carried out. A main concern in the interviews was to find discrepancies from what was found in the document studies. The research was thus designed in order to include different sources of data, thereby strengthening the analysis as described in Yin (2009). In retrospect, more interviews with key personnel would validate the information better or even reveal new aspects of interests.

3. Background theory

3.1 Characteristics of PPP (in the Norwegian schools)

The term PPP gained attention when it was adopted under the British Labour government (Solheim-Kile et al. 2004). In the UK, PPP projects were first launched as PFI (Private Finance Initiative) in 1992 (Bing et al., 2004). The UK government appeared to view them primarily as a way of getting infrastructure costs off the public balance sheet, keeping investment levels up, cutting public spending and avoiding the constraints of public sector borrowing limits. According to Solheim-Kile et al. (2014) some regard PFIs as one type of PPP (HM Treasury,

2012), others see them as identical (OECD, 2008). The main differences between PPP and PFI are more public involvement in PPPs, often sharing of capital investment, and focus on collaboration (Van Ham & Koppenjan, 2001). KPMG (2003, p. 9) defines Norwegian PPP as: “A public service developed and/or operated by private (or together with public) where risk is divided between private and public sectors.”

Variants of PPP tend to use different models of the Design, Build, Finance and Operate (Gimsey & Lewis, 2004). Torp (2004) identify three different forms of PPP within the Norwegian context. The models differ with respect to the degree of private involvement: 1. Design and construction, 2. Design, construction and operate and 3. Operate. This paper will focus on the PPP form where the private actor develop, own and operate the building for a fixed time. In the international literature, the form is basically described as BOT-models (Build-Own-Transfer).

BOT-models typically contain contracts where the private sector takes primary responsibility for funding (financing), designing, building and operating the project (Gimsey & Lewis, 2004). Control and formal ownership of the project is then transferred back to the public sector after a fixed time. The payment starts when the service is up and running (Davies & Eustice, 2005). According to Hartmann & Honerud (2014), the participants in Norwegian tendering receive two alternatives for transferring:

- A lease of 25 years in which the building after the contract period accrues gratuitously to the municipality.
- A lease of 25 years in which the municipality granted the right, but not the obligation, to acquire the leased object to a predefined compensation, often set to PPP company's project cost. The municipality can choose to extend the lease by 10-15 years and then acquire the leased object to 50% of project cost.

3.1.1 PPP vs traditional procurement

KPMG (2003) argues for the main differences between PPP and the traditional model, including development and operating, summarized in table 1:

Table 1.

PPP	Traditional
The private sector receives overall responsibility for delivering the service.	The private sector is a subcontractor of clearly specified individual tasks.
The private sector may receive the responsibility to bear the risk of cost overruns and gain rewards	Both financial loss and savings accrues to the public.
The government must identify what is the buildings purpose.	The public focuses on how it should be delivered.
The private sector may receive the responsibility to finance development or development of the service	Financing for construction granted by public budgets.
Payment and financing are distributed over the entire contract period or life cycle of the project.	Expenses incurred in the development and construction phase.
Costs of construction, operation and maintenance are closely interwoven.	Investment and operating costs seen largely separately.

3.2 Value and value creation

According to Spencer et al. (2002), construction projects are about creation of value. Kelly et al. (2015) maintain that the debate in the literature is reasonably consistent in its approach to the different perspectives of value. The consistency allows a reasonably robust understanding of the perspective as: Intrinsic value, extrinsic value, instrumental value, contributory value

Zimmerman (2008) argues for a rough understanding of intrinsic value. He implies that an object obtains intrinsic value as a value that something has “in itself”, “for its own sake”, “as such” or “in its own right”. According to Kelly et al. (2015) the object’s intrinsic value is judged based upon the totality of the predetermined facets, leading them to the conclusion that intrinsic value can be anticipated before an object is chosen or a design commenced. Therefore, it can be argued that the right facets needed for a building are possible to derive before construction. Extrinsic value does not come into play until the object exists (Kelly et al. 2015). Wagner (1999) states that the pleasure derived from the object itself defines extrinsic value. Audi (1999) introduced the concept of contributory value where the setting enhances the value of the object. Kelly et al. (2015) claims that instrumental value comes from the object or service by which the intrinsic value facets are satisfied. They state an example: If a sensation of speed is a facet of intrinsic value, then a sports car, speed boat and roller coaster has instrumental

value. Kelly et al. (2015) concludes that this is important as it confirms that intrinsic value can be anticipated in the absence of the means by which intrinsic value is delivered. The facets of intrinsic value can be explicitly stated as a specification of requirements delivered by that which gives instrumental value, which could be through a wide range of options.

The facets can be argued to be characterized by subjectivity. Liker (2012) defines value in the context of Lean Construction as: “What does the client want from the process?” By client Liker includes an external (owner) and an internal (next phase of production). Thereby, value is defined by customers’ needs, emphasizing a challenge of the value concept: Subjectivity. Value as a concept accordingly needs to be viewed in the context of which the definition occurred (Kelly et al. 2015).

The literature thus seems to be reasonably coherent in that it is possible to specify buildings valuable properties (facets). These facets are influenced by subjectivity, and an interpretation of the owner and users are necessary. Thereby, a building is valuable when it possesses the facets derived by the owner and users. Kelly et al. (2015) argues that whilst there are a number of varied value systems relevant for projects, at a high enough level, the basic facets of each value system are the same: time, cost and quality subdivided into capital cost and operation cost, time, esteem, flexibility, comfort, community, environment and exchange (financial return).

3.2.1 Value creation

As stated earlier, all constructions are about creation of new value (Spencer et al., 2002). Hjelmbrække & Klakegg (2013) refers to Bowman & Ambrosini (2010) when presenting a common ground for understanding value: Value creation is the result of human activity – this is the only source of new value. In relation to organisations activity represents the core business. The human represents the users of the building.

The implications as discussed by Spencer et al. (2002) is coherent with Bowman & Ambrosini (2010). To achieve value creation the building needs to comprehend the users wanted facets, so the users can utilise it to reach goals. This creation of new value is two-dimensional, beginning with the actual design and construction of the asset itself. It results in the production of an asset that is exploited as a medium for an organisation to create its own value (Spencer, Winch & Council, 2002).

To ensure that the asset provide value for owner and users Hjelmbrække & Klakegg (2013) suggest the use of value propositions. They conclude that if the propositions from each side are compatible/in harmony – this will create maximum value. Hjelmbrække et al. (2014) argues that the concept of a value propositions constitutes a key to creating the possible and relevant value for money. Value for money is fundamental both to supplier and to the project owner.

Common for the discussion is the focus on the use of the asset. Organisations often have established a strategy with the purpose of explaining how their vision is going to be fulfilled (Hjelmbrække & Klakegg, 2013). Literature shows that the users play an important role in these strategies. An approach to value creation can therefore be argued as follows: A building contribute to value creation by providing the best possible usability situation for the core business over time, in addition to meeting the demands of the owners, the property managers and the society (STM 28:2012). Notably, a construction project contributes to value creation by providing the needed facets over time. The facets needs to be described by the owner and users, and understood by the supplier.

3.3 Client and user

The municipality of which the school belongs represents the client. The head master and teachers provide the core business. They deliver science of education, making them the users of the building. Additionally, the personnel providing the services represent the users. Students at the school represent end users. Parents and different activity groups who use the facilities could be included as end users. The requirements provided by the school mainly consist of an optimal usability in the context of educational work.

4. Potential of value creation

Based on the theory, arguments for PPPs contribution to value creation are put forward. The literature discusses incentives of which PPP-models commits. The incentives discussed in this section provide a framework indicating what contribute to value creation. The framework act as a reference for findings and discussions that lead to the conclusion.

Table 2. Potential of value creation

Early design phase and implementation	
Long-term commitment	A distinctive feature of the PPP approach pointed out by the literature is the long-term commitment (Leiringer 2006). According to Leiringer (2006), Spackman (2002) argues that most public sector clients would claim trying to accomplish this on all their projects, but the means for doing so is many times considered to be greater within the commercial environment of a PPP contract than through public sector exhortation. In traditional models in Norway, the supplier's guaranty for the building expires after five years (Bustadoppføringsloven). A model that holds the supplier accountable for five years do not provide the same incentives as a model that holds one supplier accountable for 20–40 years. A private actor who is responsible for the finance, design, building and operation of the building suggest an actually whole-of-life cycle approach for the project. The fact that PPP models in theoretically have greater means to long-term commitment seems reasonable.
Collaborative working	According to the literature, the PPP-model incentives co-operative relationships (Difi, 2014 and Leiringer, 2006). The partnership should facilitate collaborative efforts between the parties (Leiringer, 2006), provided the contract period.
Tender documentation	The literature underlines the importance of understanding, communicating and interpreting the actual needs of the owner and the users. A crucial mean ensuring a common ground is tender documentation. Traditional procurement models are often based on detailed input specifications concerning how an asset is to be constructed (Solheim-Kile et al. 2014). This is contrary to PPP-models, which according to the literature focus on output specifications. According to Leiringer (2006), this is by no means unique to PPP projects, but he argues that it is fair to state that it is used to a higher degree than on traditionally procured methods. The fact that the supplier owns the building theoretical ensures quality. This provides incentive for the public sector to specify what sort of services is to be delivered (EC, 2004). Output specifications incentivise the public sector to describe what sort of functions they want out of the project from the beginning (Davies & Eustice, 2005). Focus on the function may lead to more involvement of the users ensuring the right solution.
Operation phase	
Operation and maintenance	Payment in the PPPs are linked to performance, availability and service outcomes over the contract period (Solheim-Kile et al. 2014). According to Solheim-Kile et al. (2014), in most of the Norwegian PPP projects the private actor receives revenue through this annuity-based payment scheme. It is argued that this payment mechanism establishes incentives for the contractor to deliver the services required in the manner that provides value for money (HM Treasury, 2004). Further, Robinson & Scott (2009) points out that the key requirement for the public sector is the continuity of a high quality service, and that the PPP model should provide adequate incentives. The specifications in the contracts compel the private actor to operate the construction optimally. If nonconformity occurs payment can be withheld. Areas which are not available are not rewarded. This theoretically ensures the users a school that is functional and adjusted for education over time.

5. Findings and discussion

5.1 Whole-of-life cycle focus

Findings indicates that the PPP model provide incentives to long-term focus. The private actor expresses that the incentives provided ensures that it is profitable to do measurements like life-cycle calculations. The case study showed examples of different assessment and choices on technical solutions based on the life-cycle cost. Already in the early design phase, the private part involved the actors who manage the operation and maintenance of the construction. The involvement ensured solutions adapted to the operation phase. According to Leiringer (2006), little, if any empirical research has been conducted that supports this line of reasoning. However, it seems like one of the reasons is contractors opting out. The contractors sell their shares in the Project Company long before the contract is due to terminate. This has also occurred in our case. The private actor sold their SPV (Single purpose vehicle) to an investor seeking a safe long-term financial return. Nevertheless, in practise this arrangement does not change the operating phase seen from the owner or user perspective. It is still the same private part who is responsible. Therefore it seems like the findings confirm that PPP contribute to a long-term commitment.

5.2 Collaborative working

The study of case B indicated collaborative working. The private sector and the public sector expressed a remarkable low level of conflict during the project process. However, as Leiringer (2006) points out it is of significant importance in which the contracts are written in PPPs. Case A had a higher level of specification which led to more discussion during the project process. Interviewees underlined that the PPP-model provide incentives for the public sector to grant the private part trust in delivering facets like quality and time. In case B, the contractor received trust from the public sector. Findings indicates this as one of the reasons of the low level of conflict. Nevertheless, the public sector expressed the importance of a professional contractor. Similar conflict levels had been achieved in other projects. This argues that collaborative working depends on many factors, one being the need of a professional contractor.

5.3 Specifications of needs – tender process

Findings from case B show focus on output specifications. The case study show that the PPP-model generates a “new” role for the owner. From the traditional role as building owner, the owner now must look at the project with a user perspective. The case study shows that this role demands focus on usability, ensuring the owner to establish “what is the purpose of the building”. One interviewee pointed out that they conducted special measures before producing the tender documents. This to ensure early focus on assessing the services and functions of the building.

Interviews indicate consensus about the level of specification needed in the tender documentation. They concur with the findings presented by Solheim-Kile et al. (2014): Dialogue along with lesser-detailed specification could encourage innovation in management, construction principles and technical solutions. However, Leiringer (2006) stresses that there is not likely to be any innovation unless there is a common ground with the meaning of the term and create an environment that encourages it. Case B had a very low level of detail in the specifications. Several interviewees pointed out that a low level is important, but not as low as in the project. Case A had a high level of specification. Interview showed that in retro perspective, a lower level would have been preferred. The case study shows some degree of innovation in form of detailed solutions in the building. However, a school building can be argued to provide a consistent range of use, thereby reducing the potential and need for innovation

We argued for a higher level of user involvement. Either case study or interview indicates this. Findings show that the degree of involvement contemporary is decided independently by which procurement model is being used. Interesting enough did the study of the project process for case A show user involvement. The result of the involvement provided solutions benefitting the users at a high degree. The pilot project process cannot be said to represent the contemporary processes in that municipality. Still it indicates benefits occurring with user involvement early in the project’s life.

5.3 Operation and maintenance

The present case study confirms this payment scheme, which is based on access and quality measurements. In both cases, the private actor receives a payment stream split in two – investment lease and maintenance/operation lease. According to Robinson & Scott (2009), theoretically a PPP project ought only to accept one payment stream. Solheim-Kile et al. (2014) concurs, and argues that in most of Norwegian PPPs the investment lease is fixed. Therefore it is not possible for the public sector to retain it if the private actor is not able to deliver expected quality. This could weaken the provided incentives. Our findings concurs with both Robinson & Scott (2009) and Solheim-Kile et al.(2014). It seems like the payment mechanism is crucial for the contract to contribute to value creation. Findings from case A show that the contract provides the public sector to retain five percent of the investment lease, as well as the operational lease. The contractor underlined in the interview that this establishes a strong incentive to deliver the services required. They express that a detainment leads to big consequences.

Further findings from the interviewed users indicate that the solution in case A ensures a functional school with expected services delivered. The users describe a situation where they can focus on education, not needing to worry about operational aspects and indoor climate. Reports from the municipality confirm the situation. These

findings indicate contribution to value creation. However, it can be argued that the traditional models could provide the same deliveries. The main difference in our opinion is the incentives provided by the PPP model. The result is a school that potentially provide the best possible usability situation for the core business over time. However, document study shows that in case B the payment mechanism from case A is replaced with a guarantee clausal. This clausal is argued to be sufficient. Based on the argumentation it can be questioned if this payment scheme provides adequate incentives.

An important process in the operation phase is maintenance. Findings from the interviews shows a process including meetings between the users and management technician every second week. This is supplied with three meetings a year between the users, municipality and the property management. The agenda of the meetings is discussions about the maintenance plan. It cannot be argued that these arrangements are exclusive for PPP model. However, the PPP model provides continuity and as argued the payment mechanism ensures the users a functional school building throughout the fixed period.

5.4 End of the contract

Based on the contractual provisions the municipality accrues the building gratuitously, or is granted the right to acquire the object for a predefined compensation. The period is typical 25 years, which raises the question in what condition the building is required. The public sector in case A expressed concerns regarding the lack of specifications in this matter. However, they pointed out that as long as the private part keep delivering service with the same quality throughout the period no conflict would occur. Findings from case B shows that the contractual provision state that the building is required to deliver a functional condition degree one. A functional condition degree one is achieved when the function of the object or building component is intact.

The findings from the interviews indicate that the involved parties expect few conflicts at the acquisition of the building. Since none PPP projects in the education sector have been terminated yet, data confirming this is unavailable. However, based on the interviews this is an element of uncertainty. Standards and regulations are evolving. What a function CD1 implies in 15 years is difficult to derive.

5.5 PPP and schools

Findings in this paper indicates that the PPP model provide the incentives discussed in the literature. It can be argued that one of the reasons is the clearly defined service delivery and easily defined performance measures (OECD, 2008). The interviewees concur with the school sector as suited for PPP. However, Norway's financial situation does not apply for PPPs initial purpose of realising project with limited resources (Lædre, 2009). Nevertheless, in our opinion the PPP model should be considered because of the incentives it provides for the operational phase. We recommend an approach where the municipality obtains a portfolio including PPP contracts and traditional contracts. This could provide an opportunity for benchmarking the operation of the schools. Comparing them allows the municipality to learn and optimize their operation. The process ultimately could provide the users the best possible usability.

6. Conclusion

The literature shows incentives provided by PPP contributing to value creation for owner and users of public schools. Findings show that these incentives to some extent occur in practice. Our case study show focus on output specification and low-level detail in the projects. Little indication on user involvement were found. Indications that the contractor considers whole-of-life cycle were found. The case study provided that the payment mechanism is critical for the incentives. Further the study shows collaborative working and a low level of conflict.

Our main conclusion is that PPP is suited for public schools in Norway. However, the findings of this case study signify the need for further empirical research that allows for comparing case study findings.

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