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The client's essential stakeholder collaboration activities at the front-end phase of a hospital construction project

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Abstract

Purpose – The research problem in this study is how a client (as a project owner) should organise early stakeholder involvement and integration in the front-end phase of a project. This study aims to create normative managerial statements as propositions from the client's perspective and to combine them into a set of activities enabling efficient organisation in the front-end phase of a hospital construction project.

Design/methodology/approach – Action design research (ADR) was carried out in a large hospital construction project where the first author acted as an "involved researcher" and the other authors acted as "outside researchers".

Findings – The authors created seven normative managerial propositions that were verified by the case project stakeholders and developed a managerial framework describing the client's essential stakeholder involvement and integration activities in the front-end phase of a hospital construction project based on these propositions. The authors have also depicted the subphases of the front-end phase: value definition phase in the client permanent organisation, value proposition phase in the client Programme Management Office (PMO) and finally development phase in the alliance organisation ending on the final investment decision.

Practical implications – The collaborative contract delivery model enables the early involvement and integration of stakeholders. It has been somewhat surprising to note the extent to which collaborative contracts change the client role in the project front-end. The results offer practical activities for how clients can manage front-end activities in collaborative contracts.

Originality/value – The case project offered a platform to analyse how the collaborative contract delivery model changes the emphasis of activities in the front-end of a project. One of the key benefits of collaborative contracts is that development, design and delivery occur partially in parallel, thereby enabling contributions from production to be included in the design and development. The benefit of having a real-life case under study provides the possibility to triangulate and analyse rich data, however limited by the qualitative case method.

Keywords Hospital construction project, Change project, Early involvement, Integration, Client, Stakeholder, Front-end

Paper type Research paper

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Introduction

The development of healthcare often consists of large public projects with multiple stakeholders and organisational, leadership and management issues; they are usually long-term and represent major investments in and changes to established welfare systems, which have a significant impact (Fréchette *et al.*, 2020; Glouberman and Mintzberg, 2001; Snowden and Boone, 2007). As a result, both the setting of strategic goals and the success of the ensuing healthcare projects are crucial. Hospital projects, which demonstrate duality as both a construction project and an organisational change project, require a combination of a large number of different skills, knowledge, stakeholders, resources and project perspectives. Therefore, hospital construction projects are labelled as complex projects and quite often also include a parallel organisational change process in the healthcare organisation and its processes (Fréchette *et al.*, 2020; Gordon and Pollack, 2018).

Traditionally, the emergence of a project network between organisations is considered to begin in the project planning phase (Hellgren and Stjernberg, 1995). However, recent studies have shown that this network begins to emerge in the early stages of the project – in the so-called "front-end" (Artto *et al.*, 2016; Morris, 2013). According to several studies (Olsson, 2008; Morris, 2013; Artto *et al.*, 2016; Hietajärvi *et al.*, 2017b), complexity increases the importance of the project front-end; stakeholders must cooperate not only in the beginning but also during the implementation of the entire project (e.g. Olander and Landin, 2005; Watt *et al.*, 2010; Aaltonen and Kujala, 2010; Wikström *et al.*, 2010). Meeting the requirement of a successful collaboration and managing the integration at the front-end, where uncertainty is high and information is scarce, places demand on the project participants at both the individual and organisational levels. Although we are aware of the kind of challenges that may be present in the front-end phase of large projects (see, e.g. Flyvbjerg, 2017), our research is limited to examining front-end collaboration in hospital projects from a practical perspective while accounting for the multi-stakeholder nature of hospital projects, whereby the diversity of stakeholders makes collaboration at the front-end fundamental (Tampio *et al.*, 2022a).

The client (as project owner) has a decisive role when defining the contract delivery model and project delivery methods when organising a hospital construction project. Recent research has highlighted the benefits of collaborative contract delivery models (e.g. integrated project delivery; IPD, project partnering and project alliancing; PA) in driving collaboration in the front-end and enabling effective stakeholder integration (Mitropoulos and Howell, 2002; Hietajärvi *et al.*, 2017a). Change in the contract model results in changes in the logic of the client's operations compared to traditional models. The client has a significant role and responsibility in creating good conditions for early involvement and integration through the planning and setting of the front-end phase of the project. The client handles eliciting, analysing and interpreting the requirements and objectives, as well as translating these aspects into value-creation activities for project stakeholders (Belout and Gauvreau, 2004; Ackermann and Eden, 2011; Bunn *et al.*, 2002; Cova and Salle, 2005).

One of the benefits of collaborative contract models is that the development phase enables the contribution from production can be included in the design and development (Aapaoja and Haapasalo, 2014; Hietajärvi *et al.*, 2017a). Early involvement as a concept is rooted in a systematic approach to identifying, analysing and classifying the critical stakeholders of a project and involving them in the front-end, thus enabling stakeholder contributions to value creation (Lehto *et al.*, 2011; Aapaoja and Haapasalo, 2014; Halttula *et al.*, 2017; Tampio *et al.*, 2022a). The main purpose is to enable the forming and balancing of the project requirements and objectives of key stakeholders, which should be as coherent and realistic as possible, consider what is best for the project ideology (Hietajärvi *et al.*, 2017a; Aapaoja and Haapasalo, 2014) and not forget the drivers of revenue logic (Lahdenperä, 2012). Based on previous research, it is critical to achieve both strategic and project level success (e.g. Aapaoja and Haapasalo, 2014; Matinheikki *et al.*, 2016; Flyvbjerg, 2017; Hietajärvi *et al.*, 2017a;

Williams *et al.*, 2019). According to Baker *et al.* (1988) project is generally judged successful, when it meets the main purpose and technical performance specifications. In addition, success requires a high level of satisfaction concerning the project outcome from key stakeholders and key users or clients of the project outcome (Shenhar and Dvir, 2007). Although project efficiency metrics, i.e. schedule and budget performance, alone are considered insufficient as measures of project success, they are still important components of the project success. Quality is intertwined with issues of technical performance, specifications and achievement of functional objectives and it is achievement against these criteria that will be most subject to variation in perception by multiple project stakeholders. The operational performance of the project, i.e. ROI and ROE, are also essential yet often forgotten measures of project success (Müller and Turner, 2007). A project can also prepare the participating organisations for the future through new technology, competence and capability development during the project, being also indicators of long-term project success. Thus, project success is a complex issue and subject to many stakeholder perspectives and variables over project lifecycle. In this way, value creation is reflected as a goal-oriented approach among stakeholders (e.g. Aaltonen *et al.*, 2015; Edkins *et al.*, 2013; Morris, 2013; Williams and Samset, 2010).

The cost and schedule overruns and incompatibility in quality and features with traditional contract models has led to increasing amount collaborative contract especially in large and public hospital construction projects (cf. Lahdenperä, 2012; De Marco *et al.*, 2012; Kim *et al.*, 2018; Love *et al.*, 2012). This transformation changes the logic how to run these projects. However, there is very little previous literature on the client's role and responsibilities in collaborative-contracted hospital construction projects (cf. Aubry and Lavoie-Tremblay, 2018; Larsen *et al.*, 2020). In particular, the client's role in complex projects has evolved to promote integration, coordination and innovation through stakeholder engagement, especially in the front-end phase where the client is the key actor (Tampio *et al.*, 2022a). The client should be responsible for configuring the organisation of the system and coordinating several parties in the different phases of the project (Denicol *et al.*, 2021). Thus, better understanding the client's role is essential to better understanding the management and success of collaborative projects. Against this backdrop, this study aims to describe normative managerial statements as propositions from the client's perspective and to combine them into a set of activities that enable the efficient organisation of early stakeholder involvement and integration in the front-end phase of a hospital construction project. To this end, we will address the following research question:

RQ. How can the client's management activities promote early stakeholder involvement and integration in the front-end phase of a collaborative hospital construction project?

Our research approach is qualitative and follows action design research (ADR; Sein *et al.*, 2011). We chose ADR to gain more in-depth knowledge on the research phenomenon from inside the process – a researcher in action. In our study, we focus on a large hospital construction project and especially on the client's role, responsibilities and activities in the front-end phase. Not all hospitals are built in a collaborative-contracted manner, but we aim to examine especially how the move towards collaborative-contract has impacted our case selection. We focus on a collaborative construction project, excluding the healthcare and organisational change processes deemed non-essential to the construction project. In our ADR, we first inductively generate seven managerial propositions, which we then validate together with the project's key stakeholders in two different workshops. Finally, we converge the propositions into a model and describe the clients' activities, roles and responsibilities that enable early stakeholder involvement and integration in the front-end phase of a hospital construction project.

Literature background

The front-end phase and decision-making in projects

The front-end phase lays the foundation for successful projects (Williams *et al.*, 2019) and it is considered a strategic pre-project stage (Aaltonen *et al.*, 2015; Edkins *et al.*, 2013; Morris, 2013; Williams and Samset, 2010). The front-end starts when the project idea is presented and ends with the final decision to finance the project (Samset and Volden, 2016). The front-end phase of a project is the stage at which the strategic success or failure of a project will be defined (Edkins *et al.*, 2013; Flyvbjerg, 2017; Miller and Hobbs, 2005; Samset and Volden, 2016; Williams *et al.*, 2019). Several critical decisions are determined in the front-end, in which the client develops the project definition and outlines the commercial contract model, setting the foundation for value creation (Artto *et al.*, 2016; Davies, 2004). The importance of the front-end phase is also recognised to the success of the project in relation to (Artto *et al.*, 2016; Davies, 2004) and co-creation with stakeholders (e.g. Aaltonen *et al.*, 2015; Aapaoja and Haapasalo, 2014; Matinheikki *et al.*, 2016). The output of the front-end phase is a conceptual plan of the respective project (Olsson and Samset, 2006), in which the goals and project definition are the most important elements that create value (Morris, 2013; Edkins *et al.*, 2013).

As public projects, hospital projects are financed by taxpayers and they control society's resources, so the importance of successful projects is emphasised both as a tool for desired development and in terms of monetary value (Samset and Volden, 2016). The success of these projects has also significant implications into the operative costs for the entire health care processes in the future (Tampio *et al.*, 2022b).

The project strategy is formulated in the front-end phase. Long-term success is considered in terms of the strategic performance of a project, whether the project is relevant to its users or sustainable throughout its lifecycle (Miller and Hobbs, 2005; Samset and Christensen, 2017). Choosing the right concept is said to produce strategic success in large public projects (Klakegg and Haavaldsen, 2011; Samset and Christensen, 2017). Therefore, several concepts for a defined need should be developed in the front-end to ensure that all key solutions are considered (Samset and Christensen, 2017). This emphasises the importance of evaluations in the front-end and the development of sound concepts that meet the identified needs. The relationship between superior goals and project development is seen as a challenge to project strategies, one which needs to be addressed properly for projects to succeed. Therefore, the front-end phase of a hospital construction project – where the most critical decisions are made (Elf *et al.*, 2015) – is both important and challenging (Elf and Malmqvist, 2009; Elf *et al.*, 2012, 2015).

The front-end phase has several features, including a high level of uncertainty, a low level of information and recognition of stakeholders and knowledge of their interests and preferences (Williams *et al.*, 2019). Depending on the dynamics and positions of the stakeholders, stakeholder management and engagement are important ways for project managers to address stakeholder issues in the front-end (Aaltonen *et al.*, 2015) and in general (Olander and Landin, 2005; Savage *et al.*, 1991). Decisions in the front-end phase must be made in complex and sometimes turbulent environments (Williams and Samset, 2010). For example, in public projects, decisions are made on behalf of society and must ensure long-term, favourable project results, both financially and in terms of development; they must provide value for resource input and promote the desired development (Samset and Volden, 2016). Public projects face many challenges that must be overcome to enable long-term success, such as a lack of design expertise, hidden objectives during design, underestimation of costs and overestimation of benefits, unrealistic and contradictory assumptions and a lack of essential design information and appropriate contractual arrangements. Many of these problems can be interpreted as shortcomings in the analytical or policy processes that precede the final decision to proceed. For this reason, the importance of the decision-making phase in the front-end must be recognised as a means of strengthening project management (Samset and Volden, 2016).

Early stakeholder involvement and integration in the front-end phase

The previous section clarifies that the front-end phase of a hospital project - where critical strategical decisions are made - is critical to long-term project success and that stakeholders play a crucial role in enabling the success of the front-end phase. Early stakeholder involvement lasts throughout the front-end phase, and together with integration, it has been identified as one of the most promising solutions to the typical problems of construction projects (Aapaoja and Haapasalo, 2014; Lahdenperä, 2012). Handfield *et al.* (1999) emphasised that the more complex a project, the earlier the key stakeholders should be integrated. Accordingly, it is crucial to involve key stakeholders in concept development in the front-end phase of a project (Aapaoja and Haapasalo, 2014). One of the key success factors in hospital construction projects is user involvement, which is a process that lasts throughout the front-end (Henriksen *et al.*, 2006; Olsson *et al.*, 2010), in addition to design and implementation, especially due to user communication and transparency (Elf *et al.*, 2012; Eriksson *et al.*, 2012, 2015; Olsson *et al.*, 2010; Tzortzopoulos *et al.*, 2006). Several studies have shown the importance of early user involvement in healthcare process design - aligned to enable new way of working - so that designers understand how services and activities are performed, and its impact on hospital design. Furthermore, participatory approaches in early design, when changes are more feasible, can assist designers in capturing real needs of end-users. (Jensen, 2011; Kujala, 2003)

In the construction industry, traditional contract models (e.g. design-bid-build and design-build) have mainly been based on chains of bilateral contracts and the low-bid syndrome has led to the fragmentation of the project supply chain, where the project stakeholders seek to optimise their own interests only and try to transfer risks to others (Lahdenperä, 2012). This leads to polarity of relationships between the stakeholders, causing lack of motivation and drive or even stakeholders' disintegration and discouraging working innovatively and pursuing only their own goals and self-interest. Hospital projects with traditional contract models worldwide often show a tendency to exceed their estimated cost, miss their deadline, endure quality problems and yield benefit shortfalls (De Marco *et al.*, 2012; Kim *et al.*, 2018; Love *et al.*, 2012). Therefore, the development of collaborative methods is required (Davies *et al.*, 2007; Brady *et al.*, 2005). Several collaborative contract models, such as PA, IPD and project partnering, have been created to improve integration through the early involvement of stakeholders in transparent financials, shared risks and rewards, joint decision-making and agreement. In collaborative contracts, the risk and responsibility are shared with project partners (members of the collaborative contract), including the client, and the risk and responsibility must be managed collaboratively. (Chen *et al.*, 2012; Lahdenperä, 2012; Rutten *et al.*, 2009) Some researchers also mention collaborative approaches as integral to improving the long-term productivity of the entire construction industry with innovations (Hietajärvi *et al.*, 2017c).

According to Ballard (2008), IPD and PA contracts are business models based specifically on early stakeholder involvement and integration and are typically applied in complex projects. Contractors, customers, and other stakeholders work together as an integrated, collaborative team. In the collaborative project contracts, like PA and IPD models, phases are divided into development phase and implementation phase. In these contract models, key stakeholders like contractors are typically selected already for the development phase, because contractors can for example contribute to the planning from the constructability and feasibility points of view (Annunen and Haapasalo, 2022). The final implementation and finance decision (by the client) takes place after the development phase, when final design has been created and found feasible by the client. As such, early stakeholder involvement and integration have been highlighted as key objectives of the IPD approach (Aapaoja *et al.*, 2013; Baiden *et al.*, 2006; Lahdenperä, 2012). As a whole, early involvement enables various benefits, such as key stakeholder competence and contribution of project plans, knowledge of

end-user processes, avoiding design and construction waste (designing wrong constructs or services, inadequate communication and documentation, design defects, poor constructability, etc.) and improved construction productivity, thus allowing the creation of innovative solutions and resulting in pre-planned actions that are synchronised and performed in later stages (Dowlatshahi, 1998; van Valkenburg *et al.*, 2008; Halttula *et al.*, 2017).

Conclusions from the literature background

The purpose of the previous section is to provide an understanding of what early stakeholder involvement and integration mean in the front-end phase of complex collaborative-contracted construction projects, specifically how they play important roles in enabling project success. Traditional commercial contract models do not drive early involvement progressing step by step; while integration has been possible, there has been little motivation for it. In an ideal collaborative delivery model, key stakeholders are identified, analysed, involved and then integrated early in the front-end phase; otherwise, for example, in a hospital construction project, both the number of stakeholders and the level of uncertainty are high and information is scarce, which makes it challenging to manage integration. Therefore, the relationship between early involvement and integration is, in practice, ambidextrous. However, a detailed understanding of how early stakeholder involvement and integration are executed – and the essential actor roles, responsibilities and activities – is much more limited in general and specifically in hospital construction projects (aside from the vast understanding of end-user integration).

Research methods

This paper follows the methodological principles of ADR applied in a case study setting, which are iterative in nature and aim to improve the overall effectiveness of project planning. We selected ADR because of its high practical relevance and the possibility of gaining in-depth knowledge about the research phenomenon. (Sein *et al.*, 2011) Our ADR approach aims to develop prescriptive means (i.e. normative managerial propositions in this study) to better understand and solve the identified problem of early stakeholder involvement and integration in hospital construction projects together with practitioners. With this in mind, the case of a hospital construction project is used to develop theoretical propositions (cf. Lehtinen *et al.*, 2019; Lehtinen and Aaltonen, 2020). The propositions are developed by analysing and interpreting the client's management activities to enhance collaboration in the front-end of the project. We built the propositions inductively based on the narratives (cf. Ahola *et al.*, 2020) which have been built on the first author's experiences in the case project and analysis of the project documents, meeting minutes from various decision-making bodies and public information available on the project. Our approach focuses on the development and validation of prescriptive knowledge (similar to design science (cf. Kuechler and Vaishnavi, 2008)). We apply ADR as our methodology and emphasise the role of one author as a part of research phenomena (Sein *et al.*, 2011), enabling profound access of object of the research.

We then intervened in the empirical context to *evaluate and verify the propositions* together with the case project stakeholders, responding to real challenges in the case project's organisational setting. The first author, as part of the studied phenomenon (having been working in the Programme Management Office (PMO) since the beginning of the renovation programme), enabled fundamental access to understand the root causes and issues within the research context and phenomena, thereby helping to draw sound conclusions (cf. Sein *et al.*, 2011). The first author had a critical management responsibility in the case project and functioned as an "involved researcher", enabling a profound understanding of the project

progress, for example, in relation to decision-making and documentation. The other authors functioned as "outside researchers" to ensure the objectivity of the analysis and results (see, e.g. Walsham, 2006). In addition, members of the case study project organisation (see Table 1) participated in the development of the research through two workshops, in which they evaluated, developed and verified the study findings.

Case context

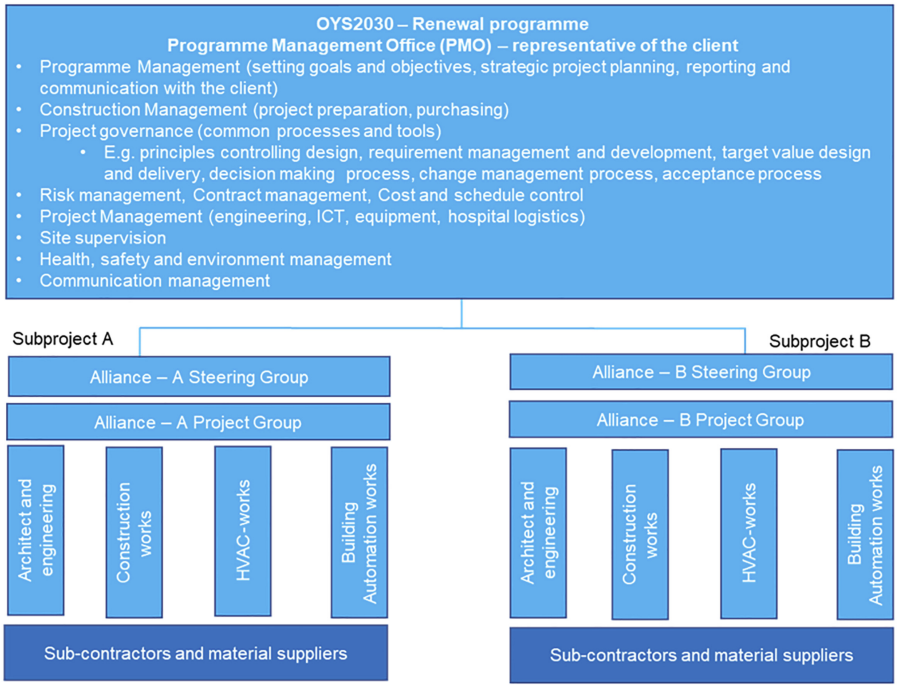
The Northern Ostrobothnia Hospital District (NOHD) is a consortium owned by 29 municipalities in Finland. In 2012, the NOHD launched an extensive and long-term Oulu university hospital (OYS) renovation programme, called The Future Hospital OYS 2030, in the city of Oulu (Figure 1). In addition to construction subprojects (Alliance A and Alliance B), the renovation programme consists of healthcare process renewal in the background; however, in our study, the unit of analysis is the project and, more specifically, its two alliance construction subprojects. In the programme's front-end phase, the client set the main goals of the programme: to improve the hospital's cost-effectiveness, productivity and quality of healthcare by replacing old properties with a new university hospital and, in addition to the construction, to reform the operating models and organisational structures of the new hospital. However, our analysis takes a rather narrow view of the overall hospital operation restructuring programme, focusing on the hospital construction project rather than the underlying reform of the healthcare process; in other words, we are analysing the project that provides the facilities for the healthcare process. Hospital construction project contains planning, design, development and construction of the hospital. In the analysis, we particularly focus on the front-end phase of the hospital construction project.

The operational environment of the healthcare process in the NOHD can be characterised by a broad and varied range of separate stakeholders (organisations, groups and individuals) and multifunctional and multidisciplinary actors from both the *national* and *local* levels with an interest in and the potential to influence the project, who are obliged to work together in various ways to fulfil their duties and responsibilities to the taxpayers and to provide cure- and care-related services to patients. The former is typical of public healthcare environments.

Organisation	Position in the permanent organisation	Position/role of the informant in the case project
NOHD/Oulu University Hospital	Director of Hospital District	NOHD/Oulu University Hospital steering group
NOHD/Oulu University Hospital	Communication Manager	NOHD/Oulu University Hospital steering group
NOHD/Oulu University Hospital	Chief Nursing Executive	NOHD/Oulu University Hospital steering group
NOHD/Oulu University Hospital	Chief Nursing Officer	NOHD/Oulu University Hospital steering group
NOHD/Oulu University Hospital steering group	Chief Development Physician	A member of NOHD/Oulu University steering and alliance steering group
Architect company A	CEO	A member of alliance steering group
Architect company B	CEO	A member of alliance steering group
Architect company C	CEO	A member of alliance steering group
Project Management Company A	Business Unit Manager	A member of alliance steering group
Construction Company A	Business Unit Manager	A member of alliance steering group
Construction Company B	Business Unit Manager	A member of alliance steering group
Building Automation Company	Business Unit Manager	A member of alliance steering group
Building Service Company	Business Unit Manager	A member of alliance steering group
Engineering Company	Deputy CEO	A member of alliance steering group
Project Management Company A	Construction Manager	Engineering manager
Construction Company A	Development Manager	Alliance Project Manager
Construction Company B	Project Manager	Alliance Project Manager

Source(s): Author's own creation

Table 1. Respondents in the validation workshops of the study



Source(s): Author's own creation

Figure 1. The formal relationship between the management system and the individual alliance projects in the OYS 2030 programme

A collaborative contract model (PA) was chosen for the construction subprojects due to the *complexity* and *uncertainty* of the OYS 2030 programme (Figure 1) and to enhance early integration and end-user involvement. Capital expenditures for all subprojects in the OYS 2030 programme will total more than EUR 900 million. The new hospital site is over 170,000 square metres in size and meets exceedingly high quality standards.

A collaborative contract model has two separate phases: development and implementation. During the development phase of the subprojects, which is related to the front-end phase in this research, more than 200 end users, as well as several architects and engineers, were involved in defining the requirements for the facilities, equipment and systems of the new hospital. The goal of each subproject's development phase was to set a target cost for each subproject, to thoroughly assess the most significant risks and opportunities and to ensure that stakeholders were committed to achieving all the goals set by the client. The project implementation plan was prepared together with the client and the contractual partners (Figure 1) of the subprojects. Figure 2 illustrates the most important events related to the case projects of the OYS 2030 programme.

During the implementation phase, more than 600 people worked on the site and in the project office at the same time. The PMO managed the programme on behalf of the client's permanent organisation. Each subproject alliance was responsible for the project and for performing all operations for which internal expertise and resources were available, with the PMO directing and managing integration between the projects and their resources. Significant efforts were put into creating common rules, processes, tools and working methods in the PMO and to figuring out how to report and share information between different stakeholders – that is, managing communications both at the construction project level and at the operational level where change was underway.

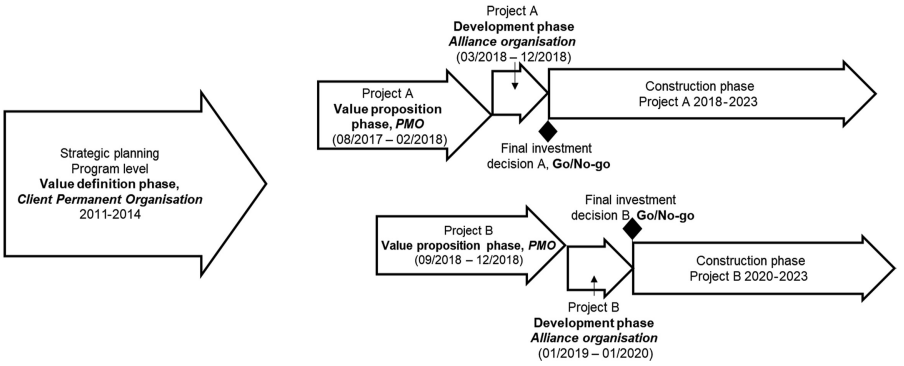


Figure 2.
The OYS 2030 programme timeline, including separate project phases and main events

Source(s): Author's own creation

The front-end phase begins when the initial idea is created, it generates information, strengthens the views and opinions of stakeholders and ends when making the final decision on whether to fund the project (see Samset and Volden, 2016). Client is responsible to strive for a rational choice of concept in dialogue and sometimes also in opposition with other stakeholders. This phase can take years in large public investment projects, before the actual implementation.

Research design: ADR approach

Our ADR approach is comprised of four steps (Figure 3) in line with those presented in Sein *et al.* (2011):

(1) *Problem formulation:* Complex hospital construction projects require several types of preparation, planning and involvement in the front-end phase and especially from the

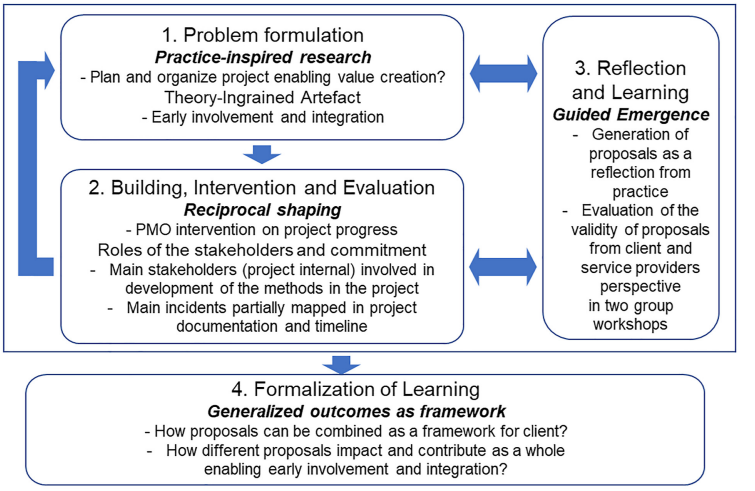


Figure 3.
ADR process steps in our research

Source(s): Adapted from Sein *et al.* (2011)
Author's own creation

client. The previous literature outlined early stakeholder involvement and integration as success factors in a project's front-end phase. The conceptual background presented in our literature review guided us to investigate the research phenomenon primarily inductively through the ADR approach, while simultaneously acknowledging the main ideas related to early stakeholder involvement and integration from previous research.

(2) *Building, intervention and evaluation:* The client plays a critical role in defining the cornerstones of project success. The main activities emerged during the planning and development steps of the hospital construction project. The main stakeholders (see Figure 1) involved in the collaborative contract were integrated into the front-end phase to resolve upcoming project challenges and to enable the optimum final value.

(3) *Reflection and learning:* First, we developed an understanding of the case project based on incidents depicted by our involved researcher overseeing the practical work. We also utilised project documentation (project plans, reports, contracts and minutes of meetings) to develop a profound background understanding. An inductive and qualitative analysis consisting of several iterative steps was then followed. A general description and timeline of the main events was produced (see Figure 2) based on project documentation. Next, we analysed, interpreted and identified empirical activities and discussed general themes for the main managerial activities. Then, through iterative development and discussions, we described seven narratives corresponding to how project decision-making situations related to early stakeholder involvement and integration in the front-end phase of the project. Finally, the narratives were synthesised into normative managerial propositions with a judgemental approach, i.e. the evaluation relies more on a management personnel's assessment of importance and reflection on earlier research. Project documentation was used to triangulate information and to draw a more objective understanding of the phenomenon. The method of analysis was qualitative content analysis (Duriau *et al.*, 2007). The resulting propositions describe the essential early stakeholder involvement and integration activities that clients must consider in the early front-end phase of hospital construction projects.

Second, after describing the propositions, they were validated in two separate group workshops using the same method (to avoid bias related to the involved researcher). In the first workshop, five members from the client organisation (NOHD, Table 1; not members of the PMO) participated. In the second workshop, 12 members from eight different service providers participated (Table 1). In each workshop, the authors explained the propositions to the participants and then discussed them in greater depth. During the discussion, the authors asked the participants about the meaning of each proposal, and the participants reflected on them from a practical perspective.

Our "involved researcher" enabled us to gain profound knowledge from the organisation for constructing the narratives and respective propositions. The profound knowledge dealt especially with questions related to "what issues have been critical for the client in the front-end" and "whether these issues have worked in practice or not". The "outside researcher" role has been challenging the events and their relevance to avoid bias in creation of the narratives and propositions (i.e. devil's advocate). The propositions were validated in two separate workshops. The involved researcher, even though having first-hand knowledge of the project, has only facilitated the evaluations, not participated in the evaluation process. The validation of the propositions was also carried out by the involved researcher, including processes, participants and peer validation, to check and demonstrate the truthfulness of our results.

(4) *Formalisation of learning:* While steps 1–3 are iterative, step 4 is more on the research side. In this step, we organised and formalised the learning from the whole ADR process into a framework explaining the client's essential early stakeholder involvement and integration activities in the front-end phase of hospital construction projects.

Results of early stakeholder involvement and integration in the case hospital construction project

Generating propositions regarding Client's early stakeholder involvement and integration activities

In the following sections, we describe the narratives related to how project documentation (project plan, reports, contracts, minutes of meetings) and how PMO have been involved in the challenges, incidents and decision-making situations in terms of early stakeholder involvement and integration in the front-end phase of the project. We then synthesise the narratives into seven normative managerial propositions.

Strategic planning phase: front-end phase of the project

Project objectives and value definition. The vision of our case project (OYS 2030) is as follows:

> A hospital where operations are patient-oriented, professionally high-quality, flexible, well-managed, productive and add value to their owners. The hospital is a desired job, and the owners see it as a productive investment. The hospital of the future will be a functional, renovated property with good equipment and will also meet the needs of teaching and research.

In the case of OYS 2030, the strategic planning process (i.e. the front-end phase) started before the project-specific characteristics, precise objectives and scope were defined and the decision to start the project was confirmed by the NOHD board. Strategic planning continues until the support of the activities and processes for the project implementation decision has been verified.

At the beginning of the OYS 2030 programme, it was not specifically clear how many subprojects would take place throughout the entire programme. When the first subproject of the OYS 2030 programme was in the definition phase, the NOHD decided that the collaborative delivery method would be introduced and that, initially, there would be a separate preparatory phase during the project front-end—the definition and formation of an alliance—before the start of the normal development and implementation phase.

The preparatory phase itself includes two subphases: the definition phase and the procurement phase. In the definition phase, the client representative (PMO) verifies that the objectives and boundary conditions set by the client for the project are correct and that they have received higher-level approval from the client organisation. As the project progresses, the PMO defines the requirements and needs of service providers with the capability to achieve the project objectives with the resources to be procured. At this stage, selection criteria will also be defined for the selection of service providers. During the development phase, the PMO – together with the selected service providers and end users – sets the requirements for facilities, equipment and ICT, and the service providers innovate and develop solutions according to budgetary limits.

Due to the complex operating environment of the hospital, the structural and economic boundary conditions prevailing at both the national and regional levels must be adapted when setting the main objectives of the hospital construction project. These objectives must tolerate the rapid development of science and technology in the health sector as well as the epidemiological and demographic impacts on the achievement of the project's objectives. It is therefore important to identify and process the additional or conflicting emerging

requirements, needs and constraints mentioned above in the front-end stage when setting the final specifications for the project. Based on the above, we forward the first managerial proposition:

Proposition 1. The client must set the main guiding goals for the project within the given boundaries by responding to and integrating the needs of the end users and collaborating with all stakeholders in the front-end phase of the project. The main values of the project should be respected, but during the project lifecycle, the details can be amended when more information becomes available. Target value design (TVD) is but one tool that can be utilised in adjusting the deliverables, needs and budget of the project.

Stakeholder identification and management. The case context description (in the Research Methods section) presents a diverse and extensive range of stakeholders, from the client organisation—especially from the process structure of healthcare—and from a political (both national and local) standpoint. The turbulence caused by ongoing national social and healthcare reform has affected both decision-making and changes in the content of the programme due to new "political" stakeholders who should have been recognised earlier. More specifically, during the programme, and especially during the subprojects' development phases, many stakeholders will have been identified who should have been involved—primarily end users and some public authorities—at an earlier stage and whose input could have influenced both the setting of requirements and the comparison and selection of implementation solutions. One of the reasons for choosing the collaborative delivery method in this study was that all the critical stakeholders could be involved and integrated in the development and implementation phases of the subprojects as early as possible.

OYS 2030 has both strategic objectives with broad long-term and socio-economic implications and tactical-level objectives and expected results for the subprojects, so it is even more crucial that conflicting needs and requirements are analysed thoroughly, for example, through stakeholder identification and landscape analysis. To improve early involvement and integration, which would also create better added value, we propose the following:

Proposition 2. In the front-end phase of the project, it is the client's responsibility to identify the key stakeholders (including those in the future) who are affected by the project's objectives, who may promote or oppose the achievement of the objectives, and whose contribution will be required in the project. A longitudinal view of stakeholder landscape analysis can offer opportunities to analyse issues both in the front-end phase of the project and throughout the entire project lifecycle.

Project organisation and governance. The client's PMO was responsible for the operational management of subprojects and defined the project implementation models and the project management tools and methods, with administrative rules and decisions from the council and the board.

The project management team exercises the highest decision-making authority on the subprojects, chaired by a representative of the client. The project manager (PM) is responsible for the operational management of the project and the preparation of decisions; the PM also serves as the chairman of the project team in the operational working group. Both groups have representatives from all service provider companies, and decisions at meetings must always be unanimous. In some cases, uncertainty exists about whether the authority to make decisions on behalf of the client has caused disruptions or delays. The functional design of the hospital takes place simultaneously with the technical design and construction of the hospital. Meanwhile, a representative of the client leads the operational design and, together with the hospital designers, coordinates the various speciality design teams, which are made

up of end users. User groups plan their own operations and, at the same time, define and set requirements for new operating models for facilities, equipment and systems. The hospital officials responsible for the chairs of the user group teams and the operational activities form a group that approves both the new functions and the requirements set by the end users under their official responsibility. Unclear decision-making rights may cause confusion during the requirement definition stage, as well as both delays and pressure to stay within budget. Based on the above, we forward the following:

Proposition 3. The client must thoroughly define the implementation strategy and preliminarily define and follow the project management structures (e.g. PMO), including decision-making procedures, so that the client's role is clear and they have sufficient power to make decisions in the front-end phase of the project. More detailed project-level administrative structures are negotiated and agreed upon. The management model of the entire project must be transparent and communicated from the procurement stage onwards.

Required competences. During the front-end phase of the programme, different implementation methods were studied and compared, and it was decided to implement the construction subprojects (Alliance A and Alliance B) using a collaborative delivery method (IPD), where all the knowledge and resources necessary for project implementation were acquired in one procurement. One of the key features and benefits of IPD is the enhancement of early integration and end-user involvement, which is key to defining end-user requirements and needs (i.e. defining value). In the definition phase, it was determined what kind of expertise, knowledge, special skills and resources were needed to achieve the project objectives. It was first decided to acquire a team of hospital design experts, consisting of all the necessary experts that hospital planning could require. Later, the team of experts will be integrated with a pair of construction and building services providers (to be acquired).

As described in earlier sections, a variety of skills, knowledge and expertise in both project management and change management, as well as specific technical skills, are required at various times during the project. Rapid changes in healthcare technology and medical developments also presented challenges during the project. Projects can be planned in many ways, but regardless of the implementation model, it is important that the client carefully and extensively defines all the necessary skills to be acquired, while considering the resources and opportunities to participate in project planning, implementation and management. In addition to identifying the need for expertise, it is good to determine whether expertise is available, where it is needed and when it is needed. Based on the above, we forward the following:

Proposition 4. In the front-end phase of the project, it is the client's responsibility to ensure that the specific competence requirements are described clearly so that they can be acquired early to create a suitable foundation for early stakeholder involvement and integration. This foundation further enables service providers to contribute effectively to the project during the front-end phase.

Development phase of the project

Collaboration tools and methods. Alliances are responsible for the subprojects and the execution of all activities for which internal expertise and resources are available. The PMO directs and manages integration within separate alliances. Significant effort has been put into establishing common rules, processes, tools and working methods in the programme office and into explaining how to report and share up-to-date information between contractual

parties and among external stakeholders. A variety of methods and tools have been recognised in the project as important for governance and integration. As part of the implementation of alliances, we have made highly successful use of methods and tools to improve integration and collaboration, for example, by using TVD for *value engineering*, last planner system (LPS) for *operational process management* and applying the Big Room concept for *leading people*, as well as efficient and common *information sharing* through a common database (Smartsheet).

Managing people has been key to success in project team integration and in achieving the goals of the client and the project stakeholders. However, project management cannot be achieved simply by leading people. Our four-layered integration and collaboration disciplines (*value engineering*, *operative management of the process, leading people and data and information management*) have proven to be valid classifications for tools and methods enabling focus on people. Based on the above, we forward the following:

Proposition 5. The PMO must define the project-specific management methods and tools (i.e. the toolbox) for use in the project during the front-end phase. Appropriate training and support for the use of tools must be provided to ensure that all key stakeholders are committed to the selected tools.

User needs/requirement management. The requirements for infrastructure are likely to change significantly during the lifecycle of hospitals for various reasons. Most changes, such as the master plan, budget, schedule, legislation and organisational changes in the client's permanent organisation, to name a few, have occurred in our case, leading to smaller and larger changes to our subprojects.

The involvement of end users in the definition of requirements has been recognised as important in the project, both for producing project input data and for the commitment of end users. The most significant challenge has been the lack of competence to plan, manage and organise the requirements management process, not to mention balancing the requirements. Mutual understanding through user involvement is challenging to achieve due to the different perspectives of multiple stakeholders, which are not always easy to unite. To support decision-making and ensure the success and value creation of the project, an analytical comparison of the different options and their financial aspects should be guided by appropriate governance and balanced by appropriate systems, processes and tools. User involvement should be a structured and predictable process to avoid reverse decisions and waste of time and money.

To define end-user requirements so that their implementation will satisfy end users and the goals set by the client and the expectations of the service providers for their own economic benefit will be realised, we propose the following:

Proposition 6. The (client) PMO must define the collaborative process, or at least a tool, such as TVD, for managing user requirements. Collaborative project arrangements and the TVD process enable the development of project outcomes that consider user requirements by evaluating design solutions in terms of cost-effectiveness and achievable stakeholder benefits within the framework of a pre-established cost target. The aim is to create a cost-effective alternative that meets the client's project financial boundaries and end-user requirements for facilities, equipment and systems.

Communication strategy. At the project level, it was noted that communication was necessary and continuously required, especially during the development and implementation phases. During the development phase of the subprojects, a joint communication group was formed, with a communication plan drawn up to describe the principles and objectives of the communication, as well as the resources, composition, roles and responsibilities, internal and

external stakeholders and communication channels. The communication channels were, for example, webpages, newsletters on the webpages (with subscription and email delivery), current bulletins published on the project's webpages, social media (Facebook, Twitter, LinkedIn), the hospital staff intranet and national news channels. A communication plan was created in the project, and a common database (Smartsheet) was set up for project participants to share up-to-date information on project status and project guidelines, as well as to share information among service providers on design progress, procurement, construction, budget and schedule, decisions and change requests.

As with many other change projects, it is quite common for the necessity of change to be called into question; therefore, communication and its success play a significant role. The new hospital under construction is not only a construction project; it is also a major change project from a social perspective and a completely new operating environment for the entire hospital staff as well as for hospital patients. Does the new hospital meet the goals set by the client for the project, the expectations of taxpayers and political parties and the requirements of its end users, as well as the cost and schedule targets set for the subprojects? How have we managed to communicate the progress of the programme so that all stakeholders in the programme and subprojects feel that they have received sufficient information and been able to influence the project outcome? We encountered these questions several times during the OYS 2030 programme, and we will continue to do so. In numerous cases, problems due to multiple stakeholders have affected the performance of the subprojects, so to avoid the negative effects of information gaps at both the programme and subproject levels, complete and transparent communication plans are needed, especially during the front-end and development phases of the project. Based on the above, we forward the following:

Proposition 7. The client must lay the groundwork for early stakeholder involvement and integration by defining a communication strategy in the front-end phase of the project that provides guidance on more detailed plans and instructions about whom to contact and where (through what channel/media), how to share and archive information and how to obtain feedback and agree on frequencies to discuss and communicate with stakeholders effectively.

Evaluation of propositions: reflections and learning

All the above propositions were validated in both workshops and confirmed as the most critical issues to enable early stakeholder involvement and integration in the case project (Table 2). Participants were also asked if something crucial was missing. Based on the discussion, however, no other significant issues emerged. Although participants agreed that several other important issues must be considered in large hospital construction projects, neither workshop group was willing to add new propositions related to early stakeholder involvement and integration. Although all the propositions were validated, it was also noted that many propositions cannot be fixed fully in the front-end phase, but they will become more accurate when the project proceeds and more information and details emerge. Therefore, the client PMO should control the planning process, which in an optimal situation leads to enhanced value creation. Both groups acknowledged that leading the planning process does not mean that the client should have all the information and/or resources to accomplish this, but the client should take responsibility for the process. In this way, the basis for client value expectations is created in the early front-end phase of the project.

In the validation of the client group discussion, there was a broad consensus and learning from the past that more effort should have been put into identifying stakeholders and planning a communication strategy in the early front-end phase of the project. The most critical and challenging issues identified by both workshop groups related to defining the project objectives accurately and concretely to meet the needs of the client, key stakeholders

Table 2. Excerpts from the evaluation workshop related to the propositions

Proposition	The client group	The service provider group
Project objectives and value definition (P1)	"A very small number of us were setting those perhaps even tough goals for the program (10–15% improvement in productivity and improvement in treatment effectiveness) and they have not been set based on any analysis or profitability calculation"	"We were familiar with the objectives of the program, but they cannot be achieved through construction work. We thought that the objectives of the project would have been more precisely defined and the initial data for the design had already been further developed. The cost targets for the projects come from the client without further justification"
Stakeholder identification and management (P2)	"Yes, we completely ignored this at the beginning of the program. In this way, the evaluations should have identified more widely and better the stakeholders who are relevant to achieving the objectives of the program"	"Stakeholder identification was limited to us mainly on the traditional axis of the customer, designers and builders. End-users were perceived as one stakeholder, but the assumption was completely wrong. In addition to them, there are strong individuals and entities that have significantly influenced the outcome of the project"
Project organization and governance (including decision making process) (P3)	"The implementation model and management of the projects were not discussed in depth at the beginning of the program, but it was decided to set up a separate project management organization to manage it. Decision-making was assumed to run smoothly in accordance with normal corporate governance rules"	"The procurement documents described the Alliance's initial management system, which was then adapted to the project during the development phase. The role of the customer, the decision-making process and resourcing in the project could have been described in more detail already at the procurement stage"
Required competences (P4)	"At the beginning of the program, the need for hospital design and construction professionals was identified. For the acquisition, a so-called traditional selection criterion without further specification of the skills and abilities required"	"The client had defined the competence needs in the procurement documents, based on which the team was assembled in workshops. Acquisition workshops helped us to better understand what hospital construction all is about and what kind of expertise we should have"
Collaboration tools and methods (P5)	"These were not considered at the beginning of the program. It was thought that service providers have their own tools and methods to lead such a large project. However, the assumption quickly turned out to be wrong and the tools had to be developed together."	"During the development phase, the client submitted that, e.g. TVD and LPS are tools used in projects. They were new to us, but we have used them with varying degrees of success. Normally we use our own tools and procedures"
User needs/requirement management (P6)	"It was thought that end-users would get the best input and requirements for facilities, equipment and systems. Defining the requirements was a whole new thing for us and it has proven difficult, and it takes a lot of staff time. This step should be done even as a preliminary before acquiring service providers"	"Defining end-user requirements has been time-consuming and has required a great deal of compromise when there are so many different user groups, and we did not have the expertise to manage this process. During the development phase we try to match all the endless wishes, needs and requirements of the end-users within the tight budget set by the client"
Communication Strategy (P7)	"This is important when we have the goal of reforming operations. In the beginning, we completely ignored this. Now, as the program progresses, we have been able to improve on this"	"The communication plan is embedded in the communication group. When there are multiple alliances running at the same time, it has been important that communication is effective and transparent at every level"

Source(s): Author's own creation

and project, which are highly likely to change (both objectives and stakeholders during the project's lifecycle) due to the complexity and uncertainty of hospital construction projects. The problem is not in itself that the goals can change but that the client and other stakeholders have a mutual understanding of this and clear guidance on how to act when goals change (e.g. a change management plan). For this reason, the most critical issues identified as key to early integration were *goal setting*, as described above, *identification of key stakeholders* and *definition of end-user requirements* during the front-end phase of the project and as accurately as possible.

Formalisation of learning

After ADR steps 1–3, we organised the validated propositions into a general solution (i.e. a framework) that describes the pertinent early stakeholder involvement and integration activities that clients must consider in the early front-end phase of hospital construction projects (Figure 4). The contents of Figure 3 have been synthesised based on the seven narratives, their respective crystallised managerial propositions and the discussions and comments of both workshops.

Collaborative contracts change the logic between design and delivery compared to traditional contracts. In the front-end phase of a project, the client itself naturally plays an extremely critical role in controlling and leading the planning process. The possibilities of impacting final value in the front-end are realised through early stakeholder involvement and integration, as highlighted in several studies (see, e.g. Halttula *et al.*, 2017; Aapaoja *et al.*, 2013). Figure 4 illustrates the framework that summarises the client's role and activities in the front-end phase of a hospital construction project for early involvement and stakeholder integration. The front-end consists of value definition, value proposition and development phase (value creation process), where key stakeholders' early involvement and integration is critical.

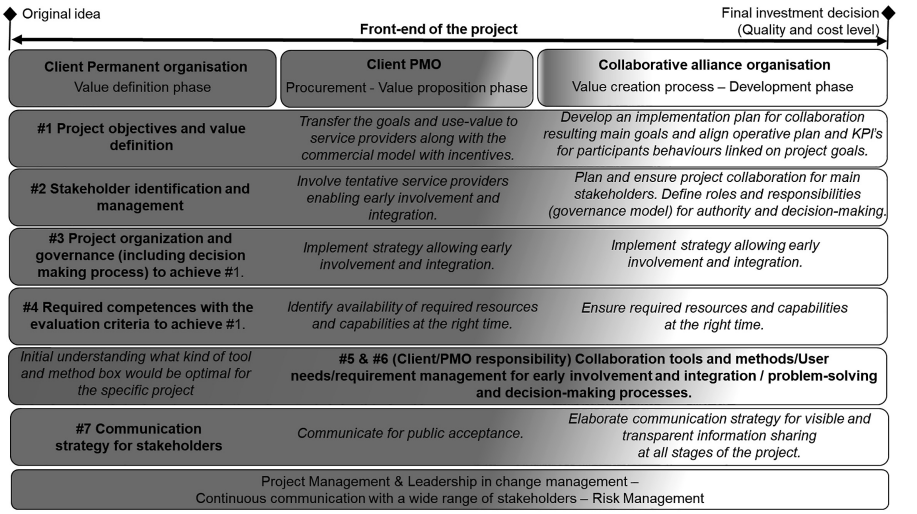


Figure 4.
Elements of client organising early involvement and integration in the front-end phase of a hospital construction project

Note(s): Elements 1, 2, 3, 4, and 7 will be contain main activity in the value definition phase and follow up in the value proposition and development phase, Elements 5 and 6 have initial activity in the value definition phase

Source(s): Author's own creation

In the value definition subphase, the five most critical issues identified (*project objectives and value definition*, *stakeholder identification and management*, *project organisation and governance including decision-making process*, *required competences* and *communication strategy*) are defined as precisely and rationally as possible. In addition to the fact that the main definition of the project is part of this subphase, the criteria for defining value are also part of this subphase. In this subphase, the agency lies in the client's permanent organisation (i.e. before the project organisation's formal setup has begun).

In procurement, service provider candidates must ensure that the client's expectations and needs are understood thoroughly and that they have the necessary skills and resources to achieve the objectives of the project. In this subphase, the agency lies in the client's PMO as part of the project organisation (i.e. the project organisation is being set up, and a temporary organisational body has been separated from the client's permanent organisation for this specific project). In principle, propositions 5 (collaboration tools and methods) and 6 (user needs/requirement management) are in active use in the development phase for the stakeholders and members of the alliance contract, but they must be specified at least roughly in the value proposition subphase. Otherwise, it may be challenging to introduce completely new tools and methods in the development phase. The development phase was considered important to the client's role in defining the tools and methods to be used in the front-end phase of the project, but the practical and ultimate responsibility for the final decisions on their use was left to the project team. The main objective of the framework is to enable the early involvement and integration of the project team and stakeholders, thus creating the conditions for successful valuation and focusing managerial activities on the most critical issues.

According to our findings, by intensifying "*early involvement and integration*" in hospital construction projects, better results can be achieved through a client's process, which includes value definition, proposition and development subphases in the front-end and of the project. A project-specific communication strategy and plan must be defined in the front-end phase of the project to act as an adhesive link between all recognised propositions and more detailed guidelines and definitions. For example, the defined main value of the project must be published at the beginning, but it is also important to communicate continuously with all citizens and project stakeholders. By applying the framework, the client, together with the project team, creates an environment for themselves to succeed in value creation by enabling early stakeholder involvement and integration.

Discussion

Our empirical findings resonate with previous research on early stakeholder involvement and integration in the front-end phase of projects, the aim of which is to create a knowledge pool that can maximise a project's value creation (Hietajärvi *et al.*, 2017a; Aapaoja *et al.*, 2013). Based on our findings, it is nonetheless surprising how much and in what way the front-end phase changes when moving from traditional models towards collaborative contract models. Our findings on front-end depict three subphases: value definition phase in the client permanent organisation, value proposition phase in the client PMO and finally development phase in the alliance organisation ending on the final investment decision (in quality and price). The client, as the ultimate decision-maker, plays a crucial role in these three subphases for early stakeholder involvement and integration. The client is in charge of developing the desired level of transparency and the rewarding scheme for the future project. During the value definition phase, the client (as the permanent organisation before the project organisation has been established) has several essential responsibilities related to defining goals, identifying key stakeholders, defining organisational structures and design, determining resource requirements and generating initial communication strategies, as shown in Figure 4.

Interestingly, a concrete transition happens after the first subphase as the client transforms from a permanent to a temporary organisation (PMO, as part of the project organisation) and

begins to create a more precise definition of value for procurement purposes. Concurrently, the responsibilities and activities of the client change, as also seen in Figure 4. In this latter subphase, the client's temporary agent (PMO) defines the tools and methods for early stakeholder involvement and integration based on the activities of the first subphase. The purpose here is to transform the value definition into a more concrete value proposition for the project. Our findings elaborate the previous general understanding of why, specifically, early stakeholder involvement and integration must take place; as we described in detail, the client organisation's essential stakeholder integration roles and activities in the early front-end phase of hospital construction projects offer a new, contextual understanding. One of the key findings, compared to earlier studies, is the content of front-end phase, especially the practical implications for the client and other stakeholders. Our findings compile a rather practical setup for stakeholders about what to do and when in the front-end. The content of Figure 4 creates a transparent view for all stakeholders on what needs to be accomplished, by whom and when in the front phase. It is essential to plan and manage this phase, because in some public investment projects, this phase can take years, even a decade, before the actual planning and implementation phase of the project begins.

Our findings expand on previous understanding of the role of the client in (hospital) construction projects. First, they provide an overview and new understanding of the client's role in the front-end phase of a hospital construction project, including detailed responsibilities and activities related to early stakeholder involvement and integration, divided into three phases (Figure 4). In traditional contracts, a client could split the project and work on pieces thereof, outsourcing almost everything, including risk. In collaborative contracts, the risk and responsibility are shared with project partners, including the client, and they must be managed. Through the proposals, we also discovered that the collaboration agreement models require new capabilities and resources (e.g. the role of the PMO in a leadership role to advance the original goals and to coordinate and develop the participants in the promotion of value creation), especially in the front-end phase. This is very similar to studies on inter-organisational network management (see, e.g. Matinheikki *et al.*, 2016).

As far as early stakeholder involvement is concerned, integration has also been identified as one of the most promising solutions to the typical problems of construction projects (e.g. Aapaoja and Haapasalo, 2014; Baiden *et al.*, 2006; Lahdenperä, 2012). Handfield *et al.* (1999) emphasise that the more complex a project, the sooner stakeholders should be involved. However, these statements from earlier research have been quite generic (cf. Aapaoja and Haapasalo, 2014; Lahdenperä, 2012), and one of the most important empirical contributions of our research is that we have been able to depict, thorough our propositions and the essential stakeholder activities in the front-end, why and how early involvement and integration should take place practically. Our study also sheds light on the logic and timing of essential stakeholder activities in the front-end phase for clients.

Therefore, our empirical findings confirm previous understandings of separate value creation phases (see, e.g. Murman and Allen, 2002), while also diving deeper in the form of seven propositions about the client's essential management activities in the value definition, proposition and creation phases. Clearly, a client's responsibility increases when utilising collaborative contracts that share risks instead of avoiding them and enable innovations instead of closing them (e.g. Hietajärvi *et al.*, 2017a; Aapaoja and Haapasalo, 2014; Distanont *et al.*, 2012). Early involvement and integration also offer several benefits, all of which can lead to improved customer satisfaction and more extensive value creation (see, e.g. Dowlatshahi, 1998; van Valkenburg *et al.*, 2008). Stakeholders must be integrated to achieve project objectives, thus enabling innovations and contributions that they are planned for (e.g. Aapaoja and Haapasalo, 2014; Hietajärvi *et al.*, 2017c).

Collaborative project delivery methods can make more effective use of the stakeholder knowledge base (e.g. Mitropoulos and Howell, 2002; Hietajärvi *et al.*, 2017a), and project

results are likely to be better achieved by identifying and involving stakeholders earlier than in traditional project deliveries (Aapaoja and Haapasalo, 2014). One could say that the logic in alliances enables projects to deliver what will truly be needed, not what was wanted years ago. Rather than design-bid-build, this study demonstrated the importance of identifying the required capabilities and allowing them to meet emerging needs that are continuously becoming more exact. The essential stakeholder activities in the front-end phase open the content in terms of who to integrate more closely in the front-end instead of merely stating that it will integrate all tentative stakeholders.

In this study, the client's role is defined in three distinct front-end subphases: the definition, proposition and creation phases. This resonates with Murman and Allen (2002), who state that value creation consists of three phases: value identification, value proposition and value delivery. In the first phase, value identification, the project stakeholders and their values and needs are identified. The value proposition phase combines these and forms collective purposes and objectives for the project. Because of the reality that client and stakeholder views on value are often misunderstood, it is therefore important to have an efficient delivery process that combines diverse needs and goals. The aim of this study is not to replace the characteristics of early involvement and integration in collaborative projects; on the contrary, the issues identified only confirm their significance and that the role of the client is affected at the earliest possible stage.

Conclusion

Earlier research has outlined the importance and benefits of early stakeholder involvement and integration in hospital construction projects, but how is still insufficiently understood generally and in detail. While many studies exist on different methods of collaboration in which the project definition phase (i.e. the front-end phase) and the early involvement of stakeholders have been recognised as important, very little research has considered how the client/user, which is the ultimate key stakeholder in the front-end phase and for the entire project, can influence and improve opportunities for early involvement and integration in the front-end phase of the project. In our case study, we were able to depict and validate seven managerial propositions, five of which (project objectives and value definition, stakeholder identification and management, project organisation and governance including decision-making process, required competences and communication strategy) focused on value definition in the front-end phase. The remaining two propositions (collaboration tools and methods and user needs/requirement management) were issued in the procurement phase, but with benefits delivered later. Our empirical illustration of the hospital construction case increases our understanding of the earlier research on what early stakeholder involvement and integration mean and how the client's essential managerial activities can be planned and managed in the front-end phase of a hospital construction project. Perhaps the content and structure of the entire front-end phase is even more important, especially for the future research – what are durations of these subphases in different projects (value definition phase in the client permanent organisation, value proposition phase in the client PMO, and finally development phase in the alliance organisation ending on the final investment decision) compared to hospital construction and can they be intensified or shortened with better understanding for enhancing the efficiency and value creation of the project.

In our study, it has been rather surprising that how extensive shift is needed from traditional contract models that fragment project planning, design and delivery to collaborative contract models. Traditional contract models have not even enabled early stakeholder involvement, nor have they specifically motivated integration. As a result, many more competences and resources are required from the client organisation, especially in the front-end phase of the project. In the collaborative model, project risk cannot be outsourced

only to suppliers with contracts; it must be managed collaboratively. On the other hand, some view tentative risks as opportunities for innovation. An increased client workload, especially in the front-end, is a small cost if (and when) the collaborative project can deliver a result that finally meets the identified needs, not what was initially requested. In our case study, the depicted managerial propositions were compiled into the client's pertinent stakeholder activities in the front-end phase of a hospital construction project, thus enabling early stakeholder involvement and integration. With this framework, the client and especially the PMO can organise the project front-end more clearly, transparently and efficiently.

Our study is based on one case implemented with an ADR approach; therefore, it naturally needs verification in several similar but also distinct types of hospitals and other large projects. Indeed, one must be careful when generalising the findings to different contexts. Our ADR has unique setup while having one "involved researcher" and others as "outside researchers". It may have created bias on analysis and conclusions, but we have carefully followed similar studies implemented with the same method (REF?) to enhance validity and reliability of our findings. This needs to be kept in mid in the following studies. Our case project has a highly positive development-oriented atmosphere and collaboration with academic institutions, enabling an excellent foundation for research collaboration, thus facilitating achieving valid and reliable results. In the longer run, collaborative projects are relatively new contract models, and our study should be seen as leading the way for comparative studies in the future. Both the subsequent studies and the capability to run collaborative projects will modify our propositions and the client's essential stakeholder activities. Overall, our study is much in line with earlier studies that typically present early involvement and integration at a higher level, whereas ours dives deeper in a practical sense and compiling several individual studies. Future studies ought to focus on a more detailed level to analyse how different stakeholders experience our propositions and the client's essential stakeholder activities. Also, future research should implement a longitudinal analysis of key stakeholders' learning curves during a long front-end phase, which should enable developing the client's essential stakeholder activities framework further.

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