

# How clients choose procurement strategies and organizational control systems in the Swedish housing sector

Swedish  
housing sector

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## Abstract

**Purpose** – This paper aims to examine how different contextual contingency factors and organizational goals influence construction clients' decision-making when procuring contractors in the housing sector. More specifically, it investigates how clients' choice of procurement strategies and organizational control systems is contingent upon various contextual factors and organizational goals.

**Design/methodology/approach** – It is based on an explorative interview study of clients and contractors in the Swedish housing sector underpinned by a review of organizational control literature.

**Findings** – The client's knowledge and resources, as well as project complexity and uncertainty, are the most important contextual contingency factors, while property management and sustainable development are the most important organizational goals that housing clients consider when designing procurement strategies.

**Research limitations/implications** – The paper contributes to the understanding of how construction clients choose procurement strategies, by providing new insights into effects of the mentioned contextual contingency factors and organizational goals on clients' choice of control systems through their procurement strategies.

**Practical implications** – Property owners who continuously procure housing projects with sustainability requirements and high degrees of complexity and uncertainty should develop knowledge and resources related to their client role, to enable the design and implementation of appropriate procurement strategies.

**Originality/value** – Novel aspects of the paper are the demonstration of the value of a holistic approach, considering both contextual contingency factors and organizational goals, when selecting control systems and explicit discussion of how the client's knowledge and resources influence possibilities to implement different control systems.

**Keywords** Construction procurement, Organizational control, Housing sector, Client

**Paper type** Research paper

## Introduction

Vast literature on organizational control addresses how a principal (e.g. client) directs and controls a subordinate agent (e.g. contractor) who performs work (Aulakh and Gencturk,

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2000; Järvenpää *et al.*, 2024). Organizations need effective control to achieve their goals (Kreutzer *et al.*, 2016; Yang *et al.*, 2022), and managers play key roles in “the design and use of control” (Cardinal *et al.*, 2017, p. 560). When deciding on the best type of control system to implement, managers should consider the context, because “particular control systems will be more or less effective in particular contexts” (Sitkin *et al.*, 2020, p. 351). The effectiveness of different control systems is contingent on factors characterizing the context in which the controls are applied (Chen *et al.*, 2009; Kreutzer *et al.*, 2016), such as characteristics of the task (Kirsch, 1996; Cardinal *et al.*, 2017; Chown, 2020). Hence, contextual contingency factors are critical to investigate (Yang *et al.*, 2022).

However, there has been little research on contextual contingency factors that influence choices of control systems according to a meta-study of 108 quantitative studies on organizational control (Sihag and Rijdsdijk, 2019), and such research is particularly sparse in project settings according to Lin *et al.* (2019). In addition, the optimal control system depends on organizational goals (Kivilä *et al.*, 2017; Lin *et al.*, 2019; Lou *et al.*, 2022). As such, different control systems are appropriate for achieving different organizational goals, because “controls create incentives and disincentives for organizational members to behave in a manner consistent with firm goals” (Turner and Makhija, 2006, p. 198). This dependence between choice of control systems to fit organizational goals has received less attention than the traditional notion that contextual contingency factors (e.g. task characteristics) are the main determinants influencing the managerial selection of control systems. However, it has become increasingly relevant in construction settings recently, because “companies and researchers have become increasingly concerned with sustainability as a project goal” in addition to the iron triangle (Kivilä *et al.*, 2017, p. 1168). Although “the context-specific use of different control configurations is a well-accepted phenomenon in management control research” (Kivilä *et al.*, 2017, p. 1169), there is a lack of knowledge of the multidimensional impacts of contextual contingency factors and organizational goals on “how control mechanisms come to exist and operate in organizations” (Chown, 2020, p. 5). Hence, more research on effects of these factors and goals on choices of control systems is required to provide managers more comprehensive assistance.

In interorganizational principal-agent relationships, organizational control is executed through the principal’s procurement and contracting strategies. Thus, previous authors have also observed that clients’ procurement and contracting strategies may promote some control systems more than others (Eriksson and Laan, 2007; Kivilä *et al.*, 2017; Granheimer *et al.*, 2024). However, despite ample recent research on construction procurement (e.g. Asaad and El-Sayegh, 2021; Atkinson *et al.*, 2023; Sheamar *et al.*, 2023), the influence of various contextual contingency factors and organizational goals on clients’ choices of control systems when procuring contractors are yet unexplored. To address this knowledge gap, the purpose of this paper is to study how different contextual contingency factors and organizational goals influence construction clients’ decision making when procuring contractors in the housing sector. More specifically, the paper investigates how clients’ choice of procurement strategies and organizational control systems is contingent upon various contextual factors and organizational goals.

### **Theoretical framework – organizational control and procurement**

Organizational control can be defined as the procedures, routines and structures (formal and informal) principals use to coordinate and direct agents toward specific organizational goals (Sitkin *et al.*, 2020). Overall, control systems are implemented by principals specifying and describing tasks and goals, then monitoring and measuring goal achievement according to the specifications and finally rewarding the agent’s performance (Sitkin *et al.*, 2020). The

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most influential control framework, initially developed by Ouchi (1979) and discussed below, includes three main types of control systems: output, process and social (Cardinal *et al.*, 2017, Sihag and Rijdsdijk, 2019; Yang *et al.*, 2022).

### *Three main types of control systems*

Output control involves explicitly specifying performance requirements, subsequent control of the agent's efforts to meet them and rewarding of the agent accordingly (Eisenhardt, 1985; Das and Teng, 2001). In alignment with the "invisible hand of the market" concept (Anderson and Oliver, 1987), the principal directs the agent toward the fulfillment of predetermined and clearly formulated goals (Joslin and Muller, 2016). However, it gives the agent freedom and flexibility to choose how the work should be executed to achieve the performance goals (Aulakh and Gencturk, 2000; Kreutzer *et al.*, 2015; Sihag and Rijdsdijk, 2019). Responsibilities (and risks) are delegated from the principal to the agent in formal contracts based on functional specifications (Aulakh *et al.*, 1996; Lin *et al.*, 2019), prescribing desired performance goals rather than the processes for achieving them (Lou *et al.*, 2022).

In process control, the principal first specifies the work processes that the agent must perform then monitors the execution (Bello and Gilliland, 1997; Aulakh and Gencturk, 2000; Joslin and Muller, 2016). The principal produces comprehensive and detailed specifications not only of the task to be performed, but also how the agent is to perform it (Sitkin *et al.*, 2020). Thus, a characteristic feature is a "visible hand of management," including detailed guidance provided by formal instructions and regulations (Aulakh *et al.*, 1996; Lin *et al.*, 2019). It requires an actively involved principal who takes over risks and responsibilities from the agent (Aulakh *et al.*, 1996). When selecting an agent, the principal evaluates inputs (e.g. different types of resources and abilities) that will affect the agents' abilities to perform the specified procedures (Anderson and Oliver, 1987). Process control also involves a reward system that covers the agent's costs, based on time worked and input costs (Eriksson and Laan, 2007).

Characteristic features of social control are "a handshake" and social interaction between the principal and agent that develops trust and shared norms (Ouchi, 1979; Kirsch *et al.*, 2010; Sitkin *et al.*, 2020). In contrast to arm's length output control, social control involves collaboration between the principal and agent. By creating a common organizational culture – a clan (Ouchi, 1979) – principals can direct agents' behavior and orient them towards mutual goals (Sitkin *et al.*, 2020). When using social control, "trading parties are restrained from opportunistically pursuing their self-interests through a socialization process that leads to shared values" (Bello and Gilliland, 1997, p. 28). Social control involves collaborative activities, such as formulation of joint objectives, social meetings and colocation (Das and Teng, 1998; Stouthuysen *et al.*, 2012). It also involves selecting an agent with goals and values that overlap with those of the principal (Kirsch *et al.*, 2010; Sihag and Rijdsdijk, 2019), and may involve a reward system based on the principal and agent sharing profits (Das and Teng, 1998).

### *Construction procurement and organizational control*

In interorganizational principal-agent relationships, the principal's procurement and contracting strategies (e.g. degree of specification in tendering documents, supplier selection procedures and reward systems) are important means of executing organizational control (Stouthuysen *et al.*, 2012; Lou *et al.*, 2022). Previous research has distinguished four main components of procurement strategies in construction contexts (Eriksson, 2017):

- (1) Selection of delivery system and type of contract, such as design-bid-build (DBB), design-build (DB) and early contractor involvement (ECI), including the degree of detail and prescription of specific technical solutions and components in the tendering documents (e.g. Eriksson and Laan, 2007).

- (2) Selection of reward system, including cost reimbursement and fixed price, but also any economic incentives, bonuses and penalties (e.g. [Kivilä et al., 2017](#)).
- (3) Supplier selection, including prequalification and bid evaluation based on lowest price or multiple criteria (e.g. [Asaad and El-Sayegh, 2021](#); [Abdullah and Alshibani, 2022](#)).
- (4) Selection of collaboration model, including collaborative activities, such as joint objectives, workshops, partnering facilitator and joint project office (e.g. [Tawalare and Laishram, 2020](#); [Lou et al., 2022](#); [Sheamar et al., 2023](#)).

The vast organizational control literature indicates that construction clients' procurement strategies are related to the control systems in the following ways ([Eriksson and Laan, 2007](#); [Granheimer et al., 2024](#)):

- *Output control involves*: a delivery system based on functional specifications in turnkey or DB contracts, reward system based on fixed price and selection of the supplier offering the lowest price in an open tender evaluation process.
- *Process control involves*: a delivery system based on detailed specifications in tendering documents in DBB contracts, reward system based on cost reimbursement and selection of suppliers through a prequalification and bid evaluation process including assessment of their competencies and resources based on multiple criteria.
- *Social control involves*: ECI based on a two-phase contract, reward system based on cost reimbursement and bonus opportunities/profit sharing, supplier selection through prequalification and bid evaluation based on soft parameters that evaluate the contractor's ability to collaborate and a collaboration model including collaborative activities (e.g. formulation of joint objectives, colocation in joint project office and appointment of partnering facilitator).

#### *Contextual contingency factors influencing choice of control system*

Classical control research mostly emphasizes two main contextual contingency factors linked to task characteristics: the measurability of the agent's performance and the principal's knowledge of the task (i.e. the transformation process) to be performed ([Ouchi, 1979](#)). More, recently, some researchers have discussed two additional relevant factors: task complexity ([Stouthuysen et al., 2012](#); [Sihag and Rijdsdijk, 2019](#)) and uncertainty ([Kreutzer et al., 2016](#); [Lin et al., 2019](#); [Yang et al., 2022](#)). These four contextual contingency factors are summarized in [Table 1](#) and discussed below.

Contextual contingency factors	High	Low
Performance measurability	Output control	Process control social control
Client's knowledge of the task	Process control social control	Output control
Complexity of the task	Process control social control	Output control
Task uncertainty	Social control	Output control process control

**Source:** Author's own work

**Table 1.** Contextual contingency factors' influence on choice of control system

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Performance measurability refers to the ability to set goals (Ouchi, 1979) and measure goal achievement (i.e. performance) objectively and accurately (Das and Teng, 2001). If this measurability is high, output control is appropriate (Ouchi, 1979; Eisenhardt, 1989; Chown, 2020). However, if the agent's performance is unreliable and unobservable, measurability is low and output control impossible (Ouchi, 1979).

Knowledge of the task is crucial for the principal's ability to describe the required work in advance to the agent (Ouchi, 1979; Eisenhardt, 1985). To exercise active process control, the client needs high understanding of the task, including the production process involved, which is not necessary in output control (Kirsch, 1996; Turner and Makhija, 2006; Kreutzer *et al.*, 2015; Ouchi, 1979) argues that clients will only implement social control when both knowledge of the task and performance measurability are low. However, later research has emphasized that even social control requires knowledge of the task (Turner and Makhija, 2006). Furthermore, some studies have shown that social control and process control can be advantageously combined by a competent and active client with extensive knowledge of the task, as suppliers may perceive process control as fairer when coupled with interaction and mutually shared norms (Das and Teng, 2001; Chen *et al.*, 2009).

A related, but frequently neglected aspect, is the client's resources to execute control. Sitkin *et al.* (2020, p. 355) criticize "control theorists' implicit assumption that managers possess sufficient resources to implement whatever controls they seek to apply." In practice, knowledge is not enough, clients must also have sufficient resources to use it. As output control is imposed at arm's length, as the principal hands responsibility to the agent, it is the most resource-efficient type of control (Kreutzer *et al.*, 2015; Sihag and Rijsdijk, 2019). In process control, the principal first specifies how the agent is to perform the work then actively monitors the agent's execution, so this type of control is very resource-intensive (Aulakh and Gencturk, 2000; Joslin and Muller, 2016). Social control is also resource-intensive, as it is exercised through participation and involvement in joint collaborative activities (Stouthuysen *et al.*, 2012; Sihag and Rijsdijk, 2019).

Task complexity can be divided into technical complexity (the diversity and interdependence of requested tasks and technologies) and organizational complexity (the diversity and interdependencies of actors involved) (Nguyen *et al.*, 2019). There are somewhat conflicting indications of the effects of complexity on the suitability of different control systems. Eisenhardt (1989) argues that process control is more appropriate than output control if complexity is high, because the agent may have to accept too much risk if output control is imposed. However, process control works poorly in such cases according to Turner and Makhija (2006), and the meta-study by Sihag and Rijsdijk (2019). These conflicting results may be due to effects of task complexity on the client's knowledge of the task, as increases in complexity raise the difficulty of understanding and describing tasks in detail (Kirsch, 1996; Turner and Makhija, 2006). However, it is important to distinguish the two factors because some clients may have sufficient knowledge to describe appropriate processes despite high complexity. Furthermore, Turner and Makhija (2006) argue that social control works well when complexity is high, if the client's knowledge is also high. Finally, a study of 252 interorganizational relationships in various service sectors indicated that both process control and social control work better than output control in high complexity cases (Stouthuysen *et al.*, 2012).

Uncertainty reduces abilities to plan and predetermine tasks, and raises risks (Eisenhardt, 1989), which may be a particularly relevant contextual contingency factor in project settings (Lin *et al.*, 2019). In cases with high uncertainty and unexpected changes, it is difficult for the actors to predict outcomes, so predetermined contracts are incomplete (Bello and Gilliland, 1997). When uncertainty is high it is costlier to allocate more

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responsibility and risk to the agent, so output control is less efficient than process control (Celly and Frazier, 1996; Eisenhardt, 1989; Stouthuysen *et al.*, 2012). However, to exercise process control the client must be able to specify the task, which is difficult when uncertainty is high (Ouchi, 1979; Eisenhardt, 1985; Yang *et al.*, 2022) argue that a combination of outcome and process control works well under low uncertainty, because process control elements can specify the procedures for the agent to achieve goals rewarded by the output control elements. When uncertainty is high, it is difficult to specify in advance what the client wants and evaluate results (Maqsoom *et al.*, 2020; Ikuabe *et al.*, 2020; Sheamar *et al.*, 2023). Informal social control then provides the flexibility to jointly manage unexpected disruptions and unavoidable contractual uncertainties that arise in interorganizational relationships (Das and Teng, 2001; Lou *et al.*, 2022).

#### *Organizational goals influencing choice of control system*

Organizational control is goal-oriented and thus essentially applied to achieve organizational goals (Cardinal *et al.*, 2017; Sitkin *et al.*, 2020). Hence, some scholars argue that the choice of control system should be influenced by the type of organizational goal being pursued, such as knowledge integration (Turner and Makhija, 2006; Lin *et al.*, 2019), sustainable development (Kivilä *et al.*, 2017) or innovation (Lou *et al.*, 2022; Järvenpää *et al.*, 2024). From this perspective:

[...] different control modes have been considered useful for different types of objectives, implying that the achievement of immediate project objectives and longer-term value goals are not necessarily controlled with the same control modes (Kivilä *et al.*, 2017, p. 1169).

This argument is supported by findings that process control is more suitable than output control for meeting long-term performance goals, such as innovation and learning, whereas the opposite is true for short-term performance goals related to efficiency and productivity (Sihag and Rijdsdijk, 2019). However, social control is reportedly highly suitable for meeting both long-term and short-term performance goals (Ibid.)

#### **Research method**

Empirical data for this study were obtained by qualitative methodology, which typically entails “exploring and understanding participant perspectives and meanings about social and/or human problems” (Tembo and Akintola, 2022, p. 352). For this purpose, representatives of public and private clients and contractors, were interviewed in efforts to capture dyadic principal-agent perspectives on procurement strategies and control systems in the Swedish housing sector.

#### *Sampling: selecting organizations and respondents*

Purposive theoretical sampling was applied to identify client and contractor organizations representing various types of actors in the heterogeneous Swedish housing sector. The sampling strategy involved selection of maximum variation cases that are very different on one or a few dimension(s) (Flyvbjerg, 2006). We recognized the importance of including both public and private clients acting as housing developers, as well as medium and large client organizations in both small and large cities, as their procurement procedures, organizational goals and resources may vary. It was also essential to include both large national and international contractor companies, as well as more regional medium-sized companies that work for both public and private housing developers, to capture their experiences of different procurement strategies and control systems in settings ranging from small, simple projects to large, complex projects across Sweden. Although some of the organizations categorized as medium-sized are rather small in an international context, no really small

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organizations with only one or a few employees were included in the sample. Because organizational size affects access to resources (Eriksson *et al.*, 2017), really small organizations were excluded to avoid inexperienced client and contractors with limited knowledge and resources. Furthermore, consultants were excluded from the study because they are procured separately from the contractors. In fact, consultants may be procured by either clients or contractors. Hence, investigating procurement of consultants would render a completely different study and is thus outside the scope of this paper. As such, this explorative interview study included three main types of actors (public client, private client and contractor) and a suitable sample size was deemed to be approximately three to five organizations of each main type of actor.

When selecting client respondents, we sought representatives of the selected organizations who had extensive knowledge and experience of diverse procurement strategies and control systems, including designing and implementing procurement strategies, evaluating tenders and governing projects and contracts. The contractor respondents had extensive knowledge and experience of tender preparations (including cost estimations), planning and management of various housing projects. Most respondents also had experience of working in management positions, and hence knowledge of both operational and strategic aspects of housing projects' procurement and control.

#### *Data collection*

As summarized in Table 2, 12 interviews were conducted during the period November 2022–March 2023: five, three and four with representatives of public clients, private clients and construction contractors, respectively. The interviews were conducted either in-real-life (IRL) at the respondents' workplaces or remotely via Zoom or Teams. The durations of the interviews (excluding introduction) varied between 65 and 90 min, totaling 15 h and 40 min.

The sample size was only approximately predetermined (i.e. three to five organizations of each main type of actor), and tentative analysis indicated when data saturation was obtained (Onwuegbuzie and Leech, 2007). When the empirical material from 12 interviews had been analyzed in a first step, a pattern emerged and data saturation was perceived. This perception indicated that more data from additional interviews would provide diminishing returns and would probably not provide substantial additional empirical insights. Hence, 12 respondents were deemed sufficient for the purposes of this explorative study.

The interviews were open, explorative and focused on how clients design their procurement strategies and why they choose to use a certain strategy. Accordingly, client respondents were asked about which procurement strategies their organization use, and which factors influence their choice of procurement strategy. Contractor respondents were asked about which procurement strategies their clients use and how they work in different circumstances, that is, which factors influence how well different procurement strategies work. The broad and open questions provided abundant opportunities for the researcher to ask more detailed follow-up questions to pursue deeper discussion of relevant issues. All interviews were recorded to facilitate analysis and enable exact quotations when presenting the empirical material.

#### *Data analysis*

The empirical data were subjected to an explorative thematic analysis procedure inspired by Braun and Clarke (2006) and Eriksson *et al.* (2017). The first step involved open coding by highlighting relevant quotes while listening to the recordings and reading the field notes from each interview. A long list of initial codes was identified, related to the two aggregate dimensions of contextual contingency factors and organizational goals affecting the choice of control systems.

Respondent no.	Actor	Respondent's role	Length [min]	Type of interview
R1	Public client Medium-sized, small city	CEO, contract manager	90	Zoom
R2	Construction contractor Medium-sized regional	Regional manager, Contract manager	85	IRL
R3	Public client Medium-sized, small city	CEO, contract manager	80	Teams
R4	Construction contractor Large international	Operative manager, Contract manager	75	Teams
R5	Construction contractor Medium-sized, regional	Calculation manager, procurement manager	85	IRL
R6	Private client Large-sized, large city	Division manager, Contract manager	75	IRL
R7	Public client Large-sized, large city	Project manager, Contract manager	80	IRL
R8	Private client Large-sized, large city	Product development manager, contract manager	80	IRL
R9	Public client Large-sized, large city	Project manager	65	Zoom
R10	Public client Medium-sized, large city	Procurement manager	70	Zoom
R11	Private client Medium-sized, large city	Product development manager, contract manager	90	IRL
R12	Construction contractor Large, international	Regional manager, Contract manager	65	Zoom

**Table 2.**  
Interviews and  
respondents

**Source:** Author's own work

The second step involved a search for links among the first-order codes, and grouping them together into second-level categories (Braun and Clarke, 2006; Eriksson *et al.*, 2017). A core aspect of the two first steps was to allow concepts and relationships to emerge from the data, rather than being restricted by a detailed theoretical framework.

The third step involved looking for similar concepts and relationships among the second-level categories, sorting them into groups associated with illuminating and broader third-level themes. In this step, previous literature was revisited to develop the overarching themes, which can enhance the analysis by sensitizing it to more subtle features in the data (Braun and Clarke, 2006) and enhancing the results' generalizability by comparing them to theory (Tembo and Akintola, 2022).

The analysis identified five themes (client's knowledge and resources, project complexity, project uncertainty, property management and sustainable development), each describing a different aspect of the underlying motivation for the clients' choice of control systems. These five learning themes form the overarching frame of the empirical findings presented in the next section. See Table 3 below for additional details on codes and themes.

### Empirical findings

In the interviews, the respondents discussed how three types of contextual contingency factors (the client's knowledge and resources, project complexity and task uncertainty) and two types of organizational goals (property management and sustainable development)



Initial first-order codes	Final codes: second-level categories	Third-level themes	Aggregate dimensions
Knowledge to specify product Knowledge to discuss technical solutions with contractor Knowledge of accounting and financial management Knowledge of public procurement	Client's knowledge	Client's knowledge and resources	Contextual contingency factors
Resources to get involved in contractor's procurement Resources for financial management to continuously monitor costs	Client's resources		
Complex product to specify Complex and risky project to perform Developing new prefabrication applications	Technical complexity	Project complexity	
Complex project organization with many actors and roles Uncertainty in existing building during refurbishment Uncertain ground conditions Uncertain product specification	Organizational complexity Uncertain conditions	Project uncertainty	
Energy consumption of the building Variety of components and materials Quality of the building	Uncertain end product Operation of property	Property management	Organizational goals
Environmental requirements of end product Environmental requirements of production process	Maintenance of property Environmental requirements	Sustainable development	

**Source:** Author's own work

**Table 3.**  
Codes and themes in empirical analysis

influence clients' choice of procurement strategies. They indicated that the factors have varying effects on specific components of procurement strategies (selection of delivery system, reward system, tender evaluation criteria and collaboration model), as discussed below.

#### *Client's knowledge and resources*

Throughout the interviews, aspects related to the client's knowledge and resources were the most commonly discussed contextual contingency factors influencing the selection of delivery and rewards systems, as well as the supplier selection, as discussed below. Several respondents noted that the selection of delivery system is heavily influenced by the client's knowledge; the more the client wants to specify and control the design, the more knowledge is required. Thus, a public client noted that clients need more knowledge to handle DBB contracts than DB contracts:

If you have a DBB contract, you must know what you're procuring, you must understand it. If it's a DB contract, it will be the contractor who takes on a different responsibility [R3].

However, some respondents emphasized that highly specified DB contracts also require a great deal of client knowledge, such as DBB contracts. Their comments showed that highly specified DB contracts are very common and popular with experienced clients in the Swedish housing sector, as highlighted by a contractor: "If you're knowledgeable as a client, [you will often choose] highly specified DB contracts, then you know what you're getting" [R4]. Furthermore, according to many respondents a lack of client competence in the procurement of DBB contracts (or highly specified DB contracts) leads to deficiencies and inconsistencies in tendering documents. The winning tenders then often involve very simple solutions with suboptimal quality, which can be disadvantageous for both parties, due to associated financial costs. A contractor says:

If you [the client] have relied on the wrong skills and there are big changes in the projects, it costs more money and takes longer time. It's disadvantageous for the client who has to pay for it, but it's also disadvantageous of the contractor, it won't be win-win, but lose-lose [R4].

Some respondents stressed that clients also need sufficient knowledge when implementing collaborative two-phase ECI contracts, because they must be able to discuss technical solutions with the contractor. A public client said:

In a partnering project, the client must have construction skills to be able to participate and understand to be able to have control. Our role is to know our properties and contribute that expertise to the projects [R3].

Similarly, a contractor who is often engaged in ECI contract-based projects noted that this:

[...] requires more commitment and knowledge from the client, it's not completely straightforward [...]. If you're new or unsure, it may feel scary to do, because you don't know what you're involved in and decide, when you don't know the things [R<sup>2</sup>].

Regarding the selection of reward system, several respondents emphasized that clients need more knowledge and resources to engage in cost reimbursement than fixed price arrangements, partly due to the need for strong financial management: "Financial follow-up is more challenging and time-consuming than in a fixed price [arrangement]" [R10]. The client must have competence and clear procedures to continuously monitor the costs to avoid deviation from the agreed budget. A public client described this need as follows, "cost reimbursement requires quite a lot from the project organization, to have really good financial follow-ups," and noted that his/her organization had developed the skills to handle cost reimbursement over time: "We've felt increasingly confident, we would not have chosen pure cost reimbursement in our first project" [R1]. Several respondents also mentioned that cost reimbursement requires the client's involvement in the contractor's procurement of subcontractors and material suppliers. A public client vividly described this as follows:

Then the project manager is involved and makes joint decisions, we don't set the contractors completely free. In the case of cost reimbursement, they work with our wallet, which is open to them, so we have to know what they're doing. Then we're involved in a completely different way in their procurement processes and selection of subcontractors to ensure that we get the best [R9].

However, some clients do not use cost reimbursement, because it is so resource-intensive, as explained by a private client:

I'm not a friend of cost reimbursement. The client must be organizationally equipped for that, because it's a completely different procedure for the client. You have to take part in all procurements and study bid documents, so I would have to increase my resources [R6].

The client's knowledge can also be linked to supplier selection and tender evaluation, because it is easier to evaluate price than soft parameters. A public client who focuses on the lowest price when procuring DB contracts said that the lowest price is usually their main criterion "It's a fairly simple evaluation. If the contractor meets the prequalification requirements, you look at the price" [R9]. Similarly, a contractor stated that price-focused evaluations require less knowledge and experience on the part of the client:

It's easy, you get a number of tender quotes, then evaluate them and look at the bottom line, then you have the answer who is the best [. . .]. But you have no idea if it's the right price or not, you just know it's the best of these [R<sup>2</sup>].

The public clients emphasized that relevant legislation, particularly the public procurement act (PPA), do not restrict them from using soft parameters, but that requires greater competence: "You do not have to be so afraid to procure based on soft parameters, as long as you are clear about how you will evaluate them" [R1]. The contractors felt that PPA hinders, or at least complicates, long-term collaboration:

[. . .] collaboration for a public client is a bit more complicated than for private clients, it's difficult to make it as transparent as possible. We've had contracts that have been cancelled because it isn't easy to make [bid evaluation] transparent and uniform [R5].

The public clients also stated that they had developed their competence to improve their collaborative procurements over time, making them more legally appropriate. One client described this learning process as follows:

Looking back at our first partnering procurement 10 years ago, it was completely useless, it really wasn't good from a PPA perspective. It's taken time to get good at it [R1].

To promote learning, the client stressed the importance of internal organizational capacities to learn across projects continuously, instead of relying on external procurement consultants.

### *Project complexity*

The interviews clearly revealed that in addition to the delivery system and supplier selection, complexity also influences the collaboration model's design, as discussed below. Several respondents emphasized that the selection of delivery system is influenced by the technical complexity. Simple projects that are easy to define and describe in the client's tender documents can be carried out as DBB contracts: "the simpler the project is, the more easily defined, then it's a DBB contract" [R4]. This is also connected to knowledge: the higher the complexity, the more knowledge the client needs to define the project in tender documents. Furthermore, several respondents expressed belief that increases in complexity increase needs for collaboration, especially in early stages. Accordingly, a contractor argued that a collaborative ECI strategy is not justified in low complexity projects: "if you want to build something very simple, perhaps collaborative contracting isn't the right way to go" [R5]. Similarly, a public client believed that simple projects can be carried out as DBB contracts instead of collaborative two-phase ECI contracts: "If it's a slightly simpler project, you can produce the documents yourself; you might not want to spend the time it takes to do everything together" [R3].

Several respondents noted that increased complexity influences supplier selection in two ways. First, it justifies more challenging prequalification requirements, so the client can weed out unsuitable bidders with insufficient capabilities. A public client stated:

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If it's a large, complicated project with high risks, we do not want a small unknown company. We would rather work with someone who we think can handle it better [R9].

Second, increased complexity justifies the use of multiple bid evaluation criteria. A contractor argued that a strong focus on the lowest price is mainly suitable for "simple projects that are easy to define. The more complex and more uncertain, the greater the risks [...] because it always becomes more expensive and takes longer" [R4]. A public client expressed similar reasoning regarding products' complexity: "if it's a very complicated product, i.e. building, you would rather use other evaluation parameters [...] because then the contractors add a lot of risk mark-ups to their quotes" [R9].

Many respondents discussed how organizational complexity increases needs for collaboration in large projects with numerous participating actors, roles and individuals. Few discussed the design of the formal collaboration model in relation to complexity. However, a contractor highlighted the importance of colocation in joint project offices for collaboration, especially in large and complex projects because it promotes social interaction:

Meeting is the important thing [...]. If it's a large, complex project that lasts for several years it's a great solution. The coffee table talk, you can't stress enough the value of it, to make people feel comfortable together, interact and perform [R4].

### *Project uncertainty*

The interviews showed that the degree of uncertainty mainly influences the selection of delivery and reward systems. Some respondents observed that uncertainty affects the selection of delivery system by creating needs for flexibility and joint problem-solving to deal with unforeseen challenges. For example, a public client talked about a large refurbishment project with high uncertainty as follows: "We don't know what's in the buildings. What will it be like when we start digging? We don't know that when we do the procurement" [R3]. The client thus noted that uncertainty strengthens the need for collaborative ECI strategies to bring in many skills and experiences to solve unforeseen problems and challenges together. Also, some respondents emphasized how uncertainty around the end product affects the choice of delivery system. Generally, highly specified DB and DBB contracts are possible when uncertainty about the end product is low, whereas ECI contracts are more suitable when such uncertainty is high. This line of argument was highlighted by a contractor, as follows: "If the end product is too well defined, there's less reason to enter into a collaborative ECI contract" [R5].

Several respondents discussed how the selection of reward system is influenced by the degree of uncertainty. Generally, fixed price arrangements are most suitable when uncertainty is low, but cost reimbursement is needed when uncertainty is high. For example, a public client commented that: "If you're sure of what you're going to build and have good tendering documents, without many ambiguities, a fixed price is quite good" [R9]. In housing projects, refurbishment is associated with much greater uncertainty than new construction, which makes cost reimbursement more appropriate. A contractor said:

In refurbishment of properties there may be all sorts of uncertainties; you don't know the strength, you don't know the structure's quality, you don't know how much asbestos there is, you don't know what will happen when you start tearing down the walls. Then you can have some form of cost reimbursement [R4].

Uncertainty influences the selection of reward system mainly for two reasons. First, it affects the possibilities to calculate a bid price that provides foundations for fixed price

compensation. According to several respondents, a fixed price is most suitable if uncertainty is low, as it helps the contractor to calculate a bid price without excessive risk premiums. A contractor pointed out:

The less you know, the more you raise risk [...] As soon as more risks are involved, you [the client] have risks of having to pay for risks that don't materialize [R12].

Second, uncertainty increases probabilities of major changes that cause the fixed price to increase significantly during the project's course. A private client described how uncertainty regarding ground conditions and the existing building affects change orders in fixed price contracts:

In a pure new production, they [change order discussions] are quite manageable in most cases. But if the foundations and ground present unexpected challenges, or there's some refurbishment [...] there will be higher chances of change order claims [R6].

### *Property management goals*

The interviews clearly showed that organizational goals and requirements related to property management and life-cycle costs influence the selection of delivery system by prompting both public and private clients to produce more detailed designs. Clients like to control the technical solutions that affect their property management in terms of operating costs, especially energy aspects, in the design work. A public client said:

We're building for our own property management and at this point we know quite well how we want things to work to suit our business" [R9]. Similarly, a contractor emphasized that: "Public clients usually have more detailed specifications, because they have a property stock to operate [R5].

Clients desire low variety in components and materials, even preferring specific brands, to obtain a homogeneous property stock that is easy to operate and maintain. However, a public client pointed out that the PPA hinders such detailed control of materials:

We follow the law on public procurement, so we can't really control brands, because then we would not be treating suppliers equally. We're talking about [controlling] functions, not brands [R10].

The interviews also showed that the private clients were keen to control the construction and design process to facilitate property management: "It's quite strict control to make it easy to manage our properties" [R6]. Even a representative of a private client organization that sells housing products rather than managing properties stated that they specified solutions and materials in their design documents:

As this building will stand here for several hundred years it's important that we make the right choice from a quality perspective, operational perspective and property management perspective [R11].

A private client defended the need to control design and quality, and concluded that pure turnkey contracts with functional specifications: "is not a path we'll ever walk, we want more control than that, as we'll own and manage the properties" [R6]. Another private client argued that control over many requirements and needs related to property management are lost in pure turnkey contracts: "We have four turnkey projects[...] but they're exceptions, I don't think they'll be repeated very often. We don't really get what we thought we'd get" [R8].

### *Sustainability goals*

The interviews also clearly showed that organizational goals related to sustainable development and environmental requirements influence the selection of delivery system by

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prompting clients to produce more detailed designs. Some respondents argued that the recently increased focus on sustainability goals will increase their interest in DBB contracts in the future, as an alternative to DB contracts. At least one public client's organization had started to talk about increasing the use of DBB contracts to gain greater control over product development from a sustainability perspective: "Recycling and environmental requirements will probably move us towards more DBB contracts" [R7]. The same respondent also stated that the municipality had increased environmental requirements of both end products and production processes, thus reducing the suitability of turnkey projects based on DB contracts. So, for example, an environmentally cutting-edge project with construction due to start in 2023 would have a DBB contract with detailed design: "We have such high ambitions there that it will be difficult to describe them in a turnkey contract, so we'll provide a complete design" [R7].

### Discussion

The empirical findings show that the client's knowledge and resources, as well as project complexity and uncertainty, are the most important contextual contingency factors, while property management and sustainable development are the most important organizational goals that clients consider when designing their procurement strategies, as discussed below.

#### *Client's knowledge and resources*

The interviews show that the client's knowledge of the task and resources to use the knowledge are key factors that clients consider when choosing a procurement strategy. The level of knowledge and resources influence the choice of delivery system: the more the client wants to control the design through process control, the more knowledge and resources are required. DBB contracts and highly specified DB contracts thus require much more knowledge and resources than pure turnkey contracts based on output control using functional specifications. These arguments are supported by previous findings that output control is the control system that is least resource-intensive and requires the least knowledge of the task (Kirsch, 1996; Stouthuysen *et al.*, 2012; Kreutzer *et al.*, 2015). If the client lacks sufficient knowledge and resources the work may be insufficiently specified in tendering documents, which is the most important factor driving contractor opportunism in construction projects, according to Ikuabe *et al.* (2020).

The findings also indicate that collaboration in ECI contracts based on social control requires abundant knowledge and resources to enable the client to engage in discussions of technical solutions in the design phase. This conflicts with previous notions by Ouchi (1979) that social control will only be implemented when both knowledge of the task is low (hindering process control) and performance is difficult to measure (hindering output control). However, the empirical findings support prior conclusions that even social control requires resources and knowledge of the task (Turner and Makhija, 2006). They also extend previous conclusions that social control and process control can be advantageously combined by a competent client with sufficient resources and extensive knowledge of the task (Das and Teng, 2001; Chen *et al.*, 2009; Stouthuysen *et al.*, 2012). They show that clients must have robust task knowledge and resources to adopt collaborative procurement strategies with synergistic process and social control elements.

The empirical findings also reveal that the client's knowledge and resources strongly affect the selection of reward system. Many respondents pointed out that clients need extensive knowledge and experience to conduct the accounting and financial management associated with cost reimbursement sufficiently well. Clients must also have sufficient resources to engage in collaborative processes (e.g. procurement of sub-contractors) when collaborative contracts

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are based on cost reimbursement. These findings are consistent with arguments that the principal must actively monitor the agent's execution in process control, so this type of control is very resource-intensive (Bello and Gilliland, 1997; Aulakh and Gencturk, 2000; Joslin and Muller, 2016). Accordingly, if the client lacks the knowledge and/or resources required for effective accounting and financial management the fixed price reward system is more suitable.

Some respondents also related client knowledge to tender evaluation, because it is much easier to compare prices than soft parameters. Public clients, especially, need great competence and experience to evaluate soft parameters in accordance with the PPA and avoid high risks of appeals and associated project delays. This finding supports recent arguments that public clients need soft skill training to improve their abilities to use partnering strategies (Tawalare and Laishram, 2020). Collectively, these findings indicate that a client with insufficient resources and task knowledge should recognize the associated limitations in choices of procurement strategy, and focus on output control.

#### *Project complexity*

The empirical findings show that the degree of complexity affects the choice of procurement strategy, especially the delivery system. DBB (or highly specified DB) contracts can be applied in simple projects that are easy to define and describe in tender specifications, while an ECI strategy with a two-phase contract and collaboration between the client and contractor in the early design stages is more appropriate for complex projects. This finding is consistent with a previous conclusion that collaborative procurement strategies (involving partnering or ECI) are most suitable in complex construction projects (Eriksson, 2017).

Some respondents also linked complexity to the choice of reward system and supplier selection, emphasizing that focus on the lowest fixed price is appropriate only in straightforward projects. This is consistent with the claim that output control may lead to excessive risks for agents when complexity is high (Eisenhardt, 1989). A fixed bid price is then more difficult to calculate, and the contractor may get it substantially wrong or add large risk premiums, so cost reimbursement is more suitable. Furthermore, contractors need greater skills and experience to execute complex projects effectively. These findings support recent indications that bid evaluations should be based on soft parameters in complex collaborative projects (Tawalare and Laishram, 2020) and that both process control and social control are superior to output control when complexity is high (Stouthuysen *et al.*, 2012).

#### *Project uncertainty*

The empirical findings show that uncertainty is an important factor to consider when choosing a procurement strategy, especially the delivery and reward systems. Regarding the delivery system, they support prior demonstrations that uncertainty impairs abilities to plan and specify tasks in advance (Eisenhardt, 1989). Thus, if uncertainty is high, it is impossible to provide complete predetermined contracts (Bello and Gilliland, 1997) and neither DBB nor highly specified DB contracts are appropriate. Furthermore, increases in uncertainty raise needs for flexibility and collaboration in the early project stages to bring in many skills and experiences that can be used in joint problem-solving to handle unforeseen challenges and problems. This is supported by previous findings that social control provides the flexibility needed to deal with unexpected disruptions and contractual uncertainties that inevitably arise (Das and Teng, 2001; Maqsoom *et al.*, 2020; Lou *et al.*, 2022). Therefore, collaborative ECI strategies based on two-phase contracts are considered suitable in cases of high uncertainty (Sheamar *et al.*, 2023). If the uncertainty is low, the end product can be largely defined in the tender specifications, so DBB or highly specified DB contracts may be more suitable (Eriksson, 2017).

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Many respondents noted that the degree of uncertainty strongly influences the choice of reward system. The use of fixed price requires low uncertainty to enable contractors to calculate fair bid prices. High uncertainty results in large risk markups in the contractors' bids and major challenges with change orders when the contractors want to be paid more than the fixed price for carrying out unforeseen work. This is consistent with prior arguments that when uncertainty is high it is too costly to allocate responsibilities and risk to the agent through output control (Celly and Frazier, 1996; Eisenhardt, 1989; Stouthuysen *et al.*, 2012). In cases of high uncertainty, respondents consider cost reimbursement to be much more appropriate, because it promotes flexibility and adaptability as the contractor is paid for the work done (planned or unforeseen).

Some respondents also related uncertainty to the tender evaluation, regarding it as inappropriate to rely only on the lowest price when uncertainty is high because it complicates contractors' bid calculations. High uncertainty also places higher demands on the contractor's competence and ability to collaborate. In very early stages when uncertainty is high, soft parameters are thus considered more important to evaluate than the lowest price. This aligns with previous recognition of the need to select an agent with goals and values that overlap with those of the principal (Kirsch *et al.*, 2010; Sihag and Rijdsdijk, 2019) when collaboration is deemed critical.

#### *Organizational goals – property management and sustainable development*

The empirical findings show that organizational goals related to property management and sustainable development are considered when choosing a procurement strategy (foremost the delivery system), supporting prior recognition that the optimal type of control depends on the organizational goals (Kivilä *et al.*, 2017). It seems logical that developers that own and manage their properties have a long-term perspective on life cycle costs and thus exercise process control by detailed specification in tendering documents. However, the findings indicate that long-term property management considerations may also influence developers who sell their housing projects, as their customers must operate and manage the properties. Thus, to facilitate sales, property management aspects cannot be neglected. Furthermore, the findings show that process control through detailed specifications is considered appropriate and justified from a long-term sustainability perspective, although it may come at the expense of a short-term focus on reductions in production costs through output control. These findings support conclusions that process control and social control are more suitable than output control for meeting long-term performance goals (Sihag and Rijdsdijk, 2019).

### **Conclusions**

By exploring how clients choose procurement strategies when procuring contractors in the Swedish housing sector this paper provides new insights into how both contextual contingency factors (client's knowledge and resources, complexity and uncertainty) and organizational goals (property management and sustainable development) influence clients' choices of control systems. This section summarizes the theoretical contributions and managerial implications of the study, before outlining the limitations and suggestions for future research.

#### *Theoretical contributions*

The study contributes to the literature on construction procurement (Eriksson, 2017; Atkinson *et al.*, 2023) and organizational control (e.g. Sihag and Rijdsdijk, 2019; Sitkin *et al.*, 2020; Yang *et al.*, 2022) by explicitly connecting procurement strategies to the most



influential control framework. More specifically, the main contribution is the novel holistic approach, showing how both contextual contingency factors (e.g. Kirsch, 1996; Cardinal *et al.*, 2017; Chown, 2020) and until recently neglected organizational goals (e.g. Kivilä *et al.*, 2017; Lin *et al.*, 2019; Lou *et al.*, 2022) should be considered when selecting control systems. Furthermore, by connecting contextual contingency factors and organizational goals to the selection of specific components of clients' procurement strategies, the paper contributes deeper and more detailed insight to the discussion (e.g. Eriksson, 2017) on how construction clients can tailor procurement strategies to fit project characteristics, making them fit for purpose.

At a more detailed level, the paper contributes to the literature on project control through explicit discussion of how the client's knowledge and resources influence the possibilities to execute different control systems. As the client's resources have largely been overlooked in prior control literature (Sitkin *et al.*, 2020) this contribution is important. By broadening the scope of the contextual contingency factor "knowledge of the task/transformation process" to include both the knowledge and resources of the client, this paper contributes more holistic understanding of the client's role in executing control, and more specifically clients' possibilities to implement different control systems, which depend on both knowledge and resources. Arguably, addressing the principal's resources is especially important in project contexts because resources are typically scarce at the project level (Eriksson *et al.*, 2017).

#### *Managerial implications*

An important managerial implication is that clients should carefully analyze the contextual contingency factors (i.e. project's degrees of complexity and uncertainty, and the client's knowledge and resources), as well as the organizational goals related to property management and sustainable development, before choosing a procurement strategy. The stronger the organizational goals of property management and sustainable development, the more appropriate collaborative strategies based on process control and social control become. However, these control systems also require higher knowledge and more resources on the part of the client, especially in projects with high complexity and uncertainty. The empirical findings thus indicate that problems are likely to arise if property owners with low knowledge and insufficient resources procure complex projects with high uncertainty and sustainability goals.

Furthermore, the findings identified a lack of resources and knowledge in many client organizations. Increases in resources and development of client competence are thus strategically important for improving procurement and project control, especially to enable the use of process control and social control in complex projects with high uncertainty. Thus, clients who procure housing projects with high degrees of complexity and uncertainty, and long-term organizational goals related to property management and sustainable development, should further develop knowledge and resources related to their client role, so they can design and implement appropriate procurement strategies.

#### *Limitations and further research*

This study is empirically limited to the Swedish housing sector, which may differ somewhat from other construction contexts. The respondents did not mention performance measurability as a contextual contingency factor, possibly because clients in this context do not use output control based on functional specifications in turnkey contracts, primarily for property management reasons. To broaden understanding of how contextual contingency factors and organizational goals influence the choice of control systems, their effects in other empirical contexts (other geographical areas and industrial sectors) also warrant attention.

Another limitation regards the focus on client-contractor relationships. Arguably, there are other important principal-agent relationships (e.g. client-consultant and contractor-subcontractor relationships) in construction contexts, which may entail other combinations of control systems. To develop more knowledge of these relationships, contextual contingency factors and organizational goals related to procurement of these contracts would be relevant to study.

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