

# COLLABORATIVE DIALOGUE DURING THE PRE-TENDERING PHASE TO MAXIMIZE PROJECT VALUE GENERATION

Valeria Vecchio<sup>1</sup>, Abbey Dale Abellanosa<sup>2</sup>, Bernadette Konwat<sup>3</sup>, Yu Wei<sup>4</sup>, and Farook Hamzeh<sup>5</sup>

## ABSTRACT

The construction industry has widely adopted traditional project delivery methods, such as design-bid-build, to develop conventional construction projects, where only one main contractor is granted the project contract. Selecting only one main contractor for the project results in the waste of valuable ideas coming from the rest of the bidders who participated in the tendering process but did not win the bid. These ideas, coming from the contractors that lost the bid, are usually not considered during the project execution, even though they could increase the value of a project, shorten the schedule, and reduce costs. As an alternative to solve the current gap of lost creativity and ideas coming from contractors that were not awarded the project contract, this study will explore the workarounds to promote partnership between key stakeholders during the pre-tendering phase by involving multiple contractors instead of a single construction project, to develop innovative ideas that could maximize the value of a construction project. The importance of collaboration and co-creation of value is widely emphasized in lean construction. Experts in the construction industry with a background in collaborative delivery were surveyed and interviewed to understand their opinion on the proposed topic. The experts from both backgrounds concluded that involving multiple contractors instead of just one main contractor is a feasible idea, but it will take effort from all the stakeholders to compromise on this type of agreement. The benefits and constraints of implementing collaborative dialogue are further discussed in the following sections of this study.

## KEYWORDS

Value generation, project definition phase, key stakeholder engagement, procurement strategy

## INTRODUCTION

Traditionally, the construction industry strives to deliver a construction project that complies with a pre-established schedule at the lowest cost possible. Current practices such as Lowest-Cost Procurement and Design-Bid-Build allow the owner to select a single contractor based

---

<sup>1</sup> M.Sc. Student, Department of Civil and Environmental Engineering, University of Alberta, Edmonton, CA, [vvecchio@ualberta.ca](mailto:vvecchio@ualberta.ca), [orcid.org/0000-0002-6244-194X](https://orcid.org/0000-0002-6244-194X)

<sup>2</sup> Ph.D. Student, Department of Civil and Environmental Engineering, University of Alberta, Edmonton, CA, [abellano@ualberta.ca](mailto:abellano@ualberta.ca), [orcid.org/0000-0002-2790-4347](https://orcid.org/0000-0002-2790-4347)

<sup>3</sup> M.Eng. Student, Department of Civil and Environmental Engineering, University of Alberta, Edmonton, CA, [konwat@ualberta.ca](mailto:konwat@ualberta.ca), [orcid.org/0000-0001-9302-2804](https://orcid.org/0000-0001-9302-2804)

<sup>4</sup> M.Sc. Student, Department of Civil and Environmental Engineering, University of Alberta, Edmonton, CA, [ywei4@ualberta.ca](mailto:ywei4@ualberta.ca), [orcid.org/0000-0003-4194-8909](https://orcid.org/0000-0003-4194-8909)

<sup>5</sup> Associate Professor, Department of Civil and Environmental Engineering, University of Alberta, Edmonton, [hamzeh@ualberta.ca](mailto:hamzeh@ualberta.ca), [orcid.org/0000-0002-3986-9534](https://orcid.org/0000-0002-3986-9534)

only on the total cost of the proposal, which leads the client to choose the lowest-cost option out of all the bidders, without considering important aspects such as qualifications, quality, and added value for a project (Nguyen et al., 2018). In addition, the competitive nature of the current procurement methods, where only a single contractor is granted the contract, results in wasted creativity and a lack of innovative ideas from other bidders that could have added significant value to the proposed project, but will not be applied since these contractors were not awarded with the contract.

Recently, the construction industry is leaning towards a more collaborative work strategy (Mosey, 2019), where methodologies such as Design-Build (DB) and Integrated Project Delivery (IPD) are being implemented (Maturana et al., 2004; Tillmann et al., 2017). Procurement strategies like Best Value (BV) and Competitive Dialogue (CD) allow the owner to select a contractor based mainly on proposals that could add value to the project. However, this does not solve the wasted creativity issue that results from choosing only one contractor and not using the innovative ideas coming from other contractors.

As an alternative to resolving the previously mentioned gap, this study proposes the idea of a collaborative dialogue where multiple contractors can be involved in one single project. This would be achievable by combining the BV and CD into a single collaborative procurement. The methodology would follow an initial pre-selection phase that would allow the client to choose the contractor that best aligns with the project they want to develop. After the pre-selection, the owner would have a dialogue with the pre-selected contractors to allow the flow of ideas between stakeholders to improve the current project design and share suggestions that could add more value to the construction before the execution (Wondimu et al., 2018). The several contractors would be compensated just for passing to the dialogue phase, and in case they offer ideas that add value to the project, they would be compensated for them or even hired as consultants for the project, working collaboratively with the awarded contractor. The early contractor involvement (ECI) and flow of ideas between different professionals would open a space for innovation that could lead to cost and time-efficient projects (Nygård et al., 2019; Tillmann et al., 2017). Moreover, advantages and disadvantages of collaborative dialogue are explored through expert interview that is discussed in the results and discussion section.

## LITERATURE REVIEW

The procurement phase in construction is defined as a pre-tendering stage in which roles, risks, and responsibilities are identified and assigned among all construction project stakeholders (Ying et al., 2021). The chosen procurement strategy specifies how the interested parties will collaborate to meet the client's specifications regarding a construction project (Wondimu et al., 2018).

Traditionally, the Lowest-Bid Procurement has been selected as the most popular option to choose the AEC team. In the Lowest-Bid alternative, the client selects the contractor based only on the total cost of the proposal, which leads the client to choose the lowest-cost option out of all the bidders (Nguyen et al., 2018). The procurement method has the benefit of allowing the owner of the project to choose the most economical option out of all the bids, but it overlooks important aspects such as the qualifications of the personnel, and the quality of the product, and might lead to conflict due to misalignment of interests and the lack of a clear definition of what value is for the client and the contractor (Nguyen et al., 2018). The last two effects usually make the project prone to suffering schedule delays and cost overruns project (Wondimu et al., 2018). Multiple studies suggest that collaborative approaches such Target Value Design (TVD) and Integrated Project Delivery (IPD), as alternative to the traditional tendering methods, can be integrated into the procurement phase to meet the needs of the project (Mosey, 2019; Musa & Pasquire, 2020; Whelton et al., 2004).

To reduce the chances of misaligned interests and effectively define value as the main objective of a construction project, an alternative to Lowest-Bid Procurement has been developed, known as BV (Nguyen et al., 2018). This procurement method attempts to choose the best AEC team based on what the client considers to add value to the project rather than the low price of the proposals (Ying et al., 2021). Moreover, BV procurement allows for the early involvement of the contractor in a public construction project (Nygård et al., 2019). The procurement method has commonly been used to minimize the involvement of the client during the design and execution phases of the project since the contractor is considered the expert and the only member capable of making decisions related to the development of the construction project (Wondimu et al., 2018). Multiple studies have reported (Lesjø et al., 2019; Nygård et al., 2019; Tillmann et al., 2017; Whelton et al., 2004; Wondimu et al., 2018) that, even though BV focuses on ensuring both value and lower costs before construction starts, there is still conflict and misalignment between the owner and the contractor about these aspects during the execution phase of the project. Furthermore, misalignments of commercial incentives in AEC projects can be avoided if participants select trusted and competent members; business models and key performance metrics is communicated well; stick around to adapt towards the principles of IPD and TVD; ensure that participants are adequately trained in lean construction; and adequate resources to implement IPD and TVD systems (Do et al., 2015).

Ying et al. (2021) conducted qualitative research on BV procurement in New Zealand, interviewing project managers, designers, engineers, and procurement specialists to explore ways to increase innovation and improve the system. The results suggest that innovation can be achieved by promoting a mindset shift among stakeholders and enhancing communication and collaboration throughout the procurement process to achieve the common goal of creating a project with the best value for the client. On a different study, Malvik et al. (2021) evaluated the performance of Best Value (BV) procurement in a public highway construction project, using Integrated Project Delivery (IPD) as the project delivery method. The study attempted to combine BV and Target Value Design (TVD) to improve collaboration among stakeholders. However, the results showed that a lack of transparency in managing the bill of quantities (BOQ) by the contractor and a lack of shared responsibilities during decision-making created conflicts and hindered efficient collaboration between the client and contractor. Since collaboration seems to be one of the root problems during the procurement phase, even with more progressive methods such as BV, other alternatives have been developed to stimulate shared responsibilities and the flow of ideas among interested parties to create a more valuable project.

CD is a procurement approach where the client narrows down potential bidders through pre-qualification, allowing for dialogue and idea exchange to optimize the project and gain more value before officially choosing the contractor (Wondimu et al., 2018). Both Best Value (BV) and CD consider value and price while selecting the AEC team, but CD allows the client to discuss ideas with multiple contractors before deciding on the best option, while BV only clarifies the project's scope and work strategy after selecting a single contractor (Wondimu et al., 2018). Both CD and BP procurement approaches were compared to each other during a research study where the participants of two different highway construction projects in Norway applied both procurement methods to improve the collaboration between client and contractor (Wondimu et al., 2018). The study included face-to-face interviews with executive managers from both sides of the contractual agreement. The results proved that BV and CD allow space for ECI thus, improved collaboration can be achieved in the two procurement strategies (Wondimu et al., 2018). However, pre-selection and dialogue in CD are time-consuming but increase the likelihood of selecting a contractor offering the best value, and optimize the project's original concept (Wondimu et al., 2018).

Wondimu et al. (2018) in essence considered that the key to improving collaboration between the stakeholders of a project stands in the pre-qualification and dialogue steps that are part of the CD. The pre-selection phase allows the client to choose the contractor that best aligns with the project they want to develop, and the dialogue phase allows the flow of ideas between the client, several contractors, and other interested parties to improve the current project design and share suggestions that could add more value to the construction before the execution (Wondimu et al., 2018). Currently, CD only chooses one of the interviewed contractors from the short-list as the construction manager for the project, but an alternative to increase even more collaboration in DB projects and reduce the waste of time for the contractors that were not selected includes that the client compensates the contractors that were selected for the short-list for their participation while hiring contractors with clever ideas for the project as consultants. The disadvantage of this alternative is that it implies additional costs for the client, but the advantage is that there is a possibility that each interviewed contractor comes up with an idea good enough to significantly improve the design and execution strategies for the project, which will result in a more valuable project by including collaboration from all the stakeholders (Wondimu et al., 2018). Although the previously mentioned studies provided valuable information about collaborative procurement, none of the studies addressed how the relationship between multiple contractors would work in a collaborative procurement scenario. Further studies need to be conducted to test this theory, which will be the focus of research for the present paper.

## METHODOLOGY

A comprehensive review of previous literature and studies on different procurement methods and project delivery methods will be done to identify the criteria and methods used during the pre-tendering phase and contractor prequalification. The literature review will be used to develop theoretical background on the topic and explore the current problems and issues faced in the current industry methods. Backward and forward snowballing methods will be used to not miss out on both new and old reference papers (Lesjø et al., 2019).

The research method was a mixed-method approach of quantitative and qualitative data collection (Roopa & Rani, 2012). A survey questionnaire was developed and sent to professionals in the AEC industry and gathered data from over 50 respondents. The respondents needed to have at least 5 years of experience, be actively working in the construction industry and needed to have a basic knowledge of collaborative project delivery methods. The respondents must be working under these construction disciplines: design architects, engineering consultants, contractors, and subcontractors. Respondents were from different countries such as Canada, Singapore, the Philippines, and Egypt. The questionnaire was formulated using close-ended questions where respondents were limited to a fixed set of responses and scales are closed-ended.

Lastly, to validate the survey results, interviews were conducted with 2 experts on the collaborative delivery approach and best value practices in the industry. The first interviewee is an experienced land developer in Canada and the second is a construction veteran in the Philippines. Interviews conducted were done through in-depth semi-structured interviews via video conferencing and are recorded and transcribed. A concurrent triangulation strategy is used to compare the survey results and interview responses gathered to determine any confirmation or disconfirmation. This approach will be used to first provide quantitative statistical data and then validate or invalidate based on the quantitative interview.

## SURVEY RESULTS

A total of 57 respondents were gathered. Out of the 57 respondents, 43.9% are from the main contractor background, 33.3% are from the Architect/Engineer/Consultant side, 12.3% are owners/developer experts, and 10.5% of the respondents are subcontractors. The distribution of respondents' years of experience is shown in Figure 1. This figure tells us that there are more professionals who have relatively less years of experience. The respondents' work experience in the industry ranges from 5 to 50 years and the designations were owners, architects, project engineers, planning engineers, M&E coordinators, quantity surveyors/estimators, associate directors, and directors, vice presidents, and senior project managers.



Figure 1: Histogram of the Years of Experience of Survey Respondents

The survey started with questions regarding the role, position, and years of experience of the respondents in the construction sector. By asking these questions, it was easier to identify if the respondents met the criteria to be qualified as participants in the present study. After the introductory questions, participants were asked about their previous experience in collaborative procurement (working with several stakeholders during the pre-tendering phase). The results showed that most of the respondents have experience in collaborative procurement (71.9%) and only 28.1% have not experienced collaboration during this phase of the project. Likewise, 61.4% agreed that collaboration during the pre-tendering phase improves the selection of the AEC (Architect, Engineer, and Contractor) while only a small percentage disagreed (1%). More than 90% of the respondents also agreed that collaborative procurement improves the overall delivery of the project, not only during the pre-tendering phase.

The survey was then divided into two sections, questions about collaborative procurement from the owner's point of view and then from the contractor's point of view. The objective behind this idea was to allow all the participants, regardless of their role within the industry, to think of how collaborative procurement would work from two different perspectives. Some of the questions were designed to be yes/no questions, while others provided additional space for the participants to give their input on the information they were being asked about.

### GENERAL PERSPECTIVE

As a more general question, the respondents were asked to rank on a scale of 1 to 5, how hard they think the collaboration or cooperation during the pre-tendering phase could be; with 1 being very easy and 5 as very hard and almost impossible. Only 7% of the respondents believe that it would be almost impossible, and about 52.6% of them believe it to be just at the halfway point, not too easy and not too hard. A summary of the result is shown in Figure 2. Regardless of their role in a project, 96.5% of the surveyed respondents believe that having a dialogue about possible optimal solutions for a project, instead of just a clarification phase before signing the contract, would reduce the chances of conflicts between stakeholders and add more value to the project.

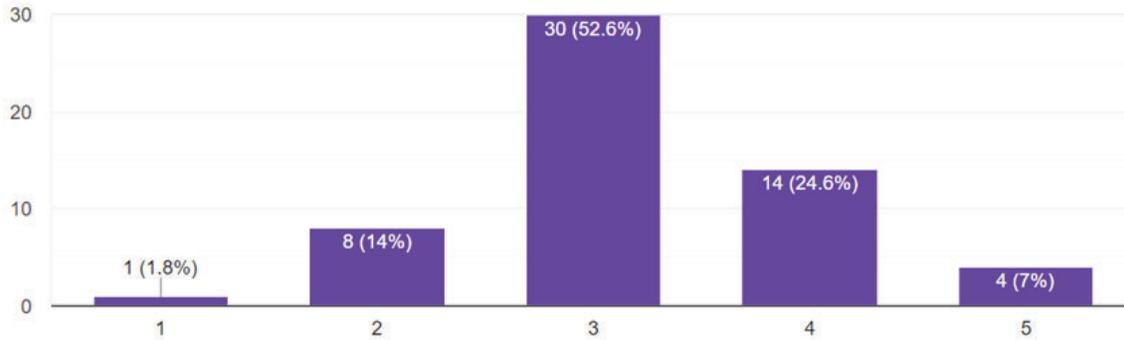


Figure 2: How Hard to Implement Collaboration (1 very easy and 5 very hard)

### OWNER'S PERSPECTIVE

From the owner's point of view, the results show that almost 90% of the respondents are willing to have a dialogue with several contractors before choosing the most suitable team for the project. However, one respondent highlighted that he will either go with the contractors he is most familiar with or with contractors recommended by people he trusts or from people in his circle. Similarly, if an idea comes from a contractor, who will not be the awarded contractor of the project, 87% of the respondents will consider using the idea if it adds value to the project, but only 63% of the participants are willing to pay for the idea. About 26% of the respondents do not agree to pay for the idea obtained from other contractors and the rest highlighted that it will depend on other factors to be considered such as the cost of the idea, if it is proprietary or not, and if it is an innovation or just an industry standard.

In addition, most of the respondents (74%) are willing to hire the contractors, who were not awarded the project but contributed value-adding ideas, as consultants for the project. However, some participants believe that not all contractors with brilliant ideas can execute their theory properly and that their performance would depend on the scope of the project.

### CONTRACTOR'S PERSPECTIVE

On the other hand, from the contractor's perspective, almost all (94.7%) of the respondents are willing to have a dialogue or discussion with the owner before signing the contract, despite not being certain about their future participation in the project. The survey results indicate that most of the contractors, 86%, do not get any form of compensation from the owner for losing a bid. The participants manifested, from the contractor's point of view, that 93% of them are willing to participate in the bid process knowing that there will be compensation for participating and giving value-adding ideas to the project. Moreover, 65% of the participants are also willing to be hired as consultants for the project despite not being awarded the contract.

### INTERVIEW RESULTS

To validate the results from the survey, and based on the responses of the participants, two interviews were arranged to ask more questions about collaborative procurement, one with a Developer/Owner expert and another one with an experienced Contractor. Some of the questions were the same as the ones provided in the survey, but the interview experience allowed more space for short explanations after every question. In addition, the interviewers were asked about their opinion on the advantages and disadvantages of paying multiple contractors, who were not granted the contract award, for their value-added ideas, and we also asked the experts about their input in hiring several contractors as consultants for a project.

### **EXPERT VALIDATION (OWNER / DEVELOPER)**

The first interviewed expert works as a Vice-President of Development in Edmonton, Canada. He reviews and takes a lead in design directions, manages approvals with the city of Edmonton, and oversees the Construction Managers' work on several projects. He has over 20 years of experience working in the construction industry.

When asked about the popularity of collaborative project delivery, the expert mentioned that there has been an increased interest in this type of delivery method in the last four years due to its economical effectiveness and cooperation between stakeholders throughout the design and execution phases of a project. He mentioned that he had experienced the successful results of collaborative projects himself when his company was able to save \$300,000 because of collaborative meetings, where all the stakeholders were able to participate in the decision-making process of a water project after a conflict with one of the suppliers of a pipeline had arisen.

When choosing an AEC team during collaborative procurement, the expert highlighted that he would feel more comfortable working under this type of procurement with a contractor he has previously worked with and has known for many years. In case he is required to seek a new contractor, he would set up an interview to get to know the contractor on a personal level and would do a background check to verify the level of expertise of the contractor and his availability to handle the costs and risks related to the scope of a project.

When asked if he had previously used input ideas of different contractors on a construction project without granting them the contract, the expert said that he had done it before, but not without compensating them for their input. He mentioned that he has hired other contractors, different from the main contractor, as consultants for his projects.

The interview was finalized with advantages, disadvantages, and recommendations about paying different contractors for their ideas and hiring them as consultants, instead of just having one contractor for a project. Among the advantages, the expert mentioned that collaborative procurement has proven to be economically efficient, and the teamwork environment makes the project an enjoyable social experience. When asked about the disadvantages, he mentioned that the relationship between contractors is extremely competitive, and it would be very difficult to make them work together as a team, since conflicts and disputes between them would be very likely to occur. One of the recommendations he suggested is to make the stakeholders and different contractors share what is known as the profits and risk pool. This means that the contractors should be rewarded proportionally for their involvement in a project and the profitability of their ideas. Similarly, in case of financial losses, contractors should take accountability for their actions based on their level of involvement in the event.

### **EXPERT VALIDATION (CONTRACTOR)**

The second interviewed expert has over 40 years of work experience in design, construction, risk management, and project management. He was the former President and CEO of a major construction company in the Philippines specializing in industrial, infrastructure, and specialty works. He is currently the President and CEO of another construction company specializing in mid to high-rise commercial and residential buildings.

Through his work experience, he pioneered early contractor engagement in Philippine power plant projects. He explained that by engaging contractors early, they did not need to wait for drawings to be prepared which saves the total project duration by almost 2 months. Projects were approached like an open book and other stakeholders were treated as partners. However, there will still be a consultant engaged to do the checking and inspection. Every stakeholder shares the risk of quantities but there is also a guaranteed margin of around 15% to 20%, discussed and agreed upon before the collaboration.

When asked what type of projects are more suitable for collaborative delivery, he mentioned that in the Philippines, most PPP projects are already engaging early contractor involvement. Owners now do not go for bidding because, from the time the project is conceptualised, the approvals almost take 3 years. Aside from PPP projects, there is still much hesitancy in collaborative projects, mostly due to owners rather than contractors. From a contractor's point of view, there is no loss in being engaged early because it entails the assurance of a project.

Collaborative procurement has advantages such as saving time and costs for the owner. He explained that contractors can provide more options to the owner, not only based on cost but also on choosing the better methodology. Methodology drives the price. Some designers design specifications that are not available or feasible. By engaging the contractor early on, specifications can be agreed upon with the owner and there will be fewer variations when the project starts.

In another follow-up question, he asked a contractor if he would be willing and if it is possible to collaborate with another main contractor. He agreed it is possible and that they have done it before. They had a previous joint venture with 2 other biggest contractors in the Philippines. "We derive strengths where we are weak", he quoted. In previous experience, since his company is good in electromechanical works, but another main contractor is good with civil works, they collaborated and had a successful project.

The interviewers then asked how tough will introducing collaborative procurement and project delivery be, especially since traditional contracts are competitive instead. Usually, when the competitors rely on a subcontractor to do the work, it means it is not their core competency. Instead of you winning alone, you can suggest joining together, sharing the loss and profit. That is where consortiums come in. However, this can only happen with "mature" contractors. "If you want us to be stronger than the rest, let us combine forces and bring value in different ways", he quoted.

Regarding compensation for contractors contributing ideas, there should be reasonable compensation depending on the level of engagement. If they cannot add value to the contractor company, it is better to accept the compensation rather than join the project and contribute to the waste. According to him, the biggest challenge in this type of delivery is getting the owner to participate willingly in this kind of collaboration and early contractor engagement. If the client is willing to do it and the contract agreement is fair, the contractors will always want to do the work.

To wrap up his final thoughts, he concluded by highlighting that the more owners and contractors adopt the idea, the more benefits they will reap on time and costs and there will be fewer issues, disputes, and arbitrations. Arbitrations put a stop to the beneficial use of the projects. People can do more important things than attend to disputes. If the big industry players will start to adopt this kind of procurement, the advantages are very clear, it saves time and cost. If there is mutual trust, we can eliminate cheating and corruption which is rampant in the construction industry in any country. To be able to do repeat engagements, one cannot cheat. It has more advantages than disadvantages. Once more people accept the idea and become more open to exploring it, they will realize it is all advantageous rather than disadvantageous.

## RESULTS AND DISCUSSION

Both the survey questionnaire and the interview results exhibit that there has been an increased popularity of collaborative procurement in recent years. Though this collaborative procurement comes with its own advantages and disadvantages as summarized in Table 1. The results from the survey questionnaire showed that there is a high willingness from contractors and owners to engage in a dialogue before awarding a contract, to discuss project ideas, and elevate the relationship to a more personal level to increase trust among the involved stakeholders, an indispensable element in collaborative projects. Moreover, the survey shows that owners are

open to having a dialogue with multiple contractors and using their ideas if it is considered that would add value to the project, even though the ideas are not coming from the awarded contractor.

Table 1: Summary of Advantages and Disadvantages of Collaborative Procurement

<b>Advantages</b>	<b>Disadvantages</b>
Share technical best practices between the owner, designer, and contractor.	The contractor becomes involved in the project before it has been designed in detail and may not provide an accurate price for the construction works.
The earlier the contractor is identified, the greater the potential benefits the contractor can bring to the project.	Traditional contracts generally provide elements of transparency and competition. In early contractor engagement, other contractor bidders could lose interest in the project since the early-engaged contractor will have a competitive advantage.
Well-defined scope of work and target price at completion of conceptual design and fewer potential scope gaps	Conflicts and disputes may occur if there are too many experts in the project.
Owner, designer, and contractor collaborate to achieve goals on overall project cost & schedule; less risk of claims and variation orders from the contractor.	Some great ideas during the pre-tendering phase cannot be executed well.

As supported by experts' personal experience, collaborative procurement was also sought to be both cost and time-efficient and contributed greatly to the success of projects. These findings are in support of the ideas for collaborative procurement under lean construction theory as discussed in the studies of Gomes & Tzortzopoulos (2020) and Malvik (2022). The challenge, based on the owner's point of view, contractors are the ones who may not be willing to participate in early collaboration, which was the opposite of the contractor's point of view. Contrary to owners' belief, contractors consider that there is no loss in being engaged early in the procurement phase because it ensures that they would be part of the construction project. Study results also show that there is no problem with contractors working with multiple other contractors. However, due to the culture of competition in the construction industry, conflicts between multiple contractors during execution are likely to occur. This would represent a challenge for collaborative procurement in the present practice in construction.

Some suggestions from the owner and contractor's perspective are to share profits and risks between stakeholders, follow an open-book accounting format, and offer a guaranteed margin to the contractor for their involvement or consideration in a project. In addition, hiring other contractors, different from the awarded contractor, as consultants or paying them for their ideas have been done before and is possible if it gives benefits to both parties. Contractors are willing to contribute their ideas early in the project planning phase if they will be well compensated for their value-adding ideas. Compensation should be proportional to the level of involvement and application of the ideas of the contractors because some ideas cannot be executed well.

## CONCLUSION

Collaborative procurement can only be achieved if all the stakeholders work together towards accomplishing the objective of adding value to a project. Following lean principles is key to ensure an efficient collaboration between stakeholders towards a common goal. Project owners could be initially hesitant to reward multiple contractors for their bidding participation and

valuable ideas since it represents a financial increase in the overall project cost. However, financial compensation motivates stakeholders to work as a team and create beneficial ideas for the projects to achieve a common goal. Antagonistic behaviors within the project team should be avoided, and conflicts should be resolved with the sole purpose of optimization and continuous improvement, which are essential lean principles. Additionally, the early involvement of the partners in selection process increases the chances of building a well-functioning team (Tillmann et al., 2022). Early stakeholders' involvement provides the opportunity to work on the expected project quality through open and continuous communication, resulting in lower costs and a reduced schedule for a construction project.

In conclusion, collaboration and early contractor involvement are dependent on the accurate application of lean principles for the method to work. Stakeholders are required to work as a team to increase innovation and efficiency in construction projects. Including key participants of the project in the early design phase results in shared knowledge and continuous improvement, reducing the occurrence of common mistakes during the project execution phase, such as the case of project delays. Each participant is rewarded for their value-added ideas, which motivates contribution and flow of ideas within the team.

As demonstrated in this study, owners, A/E, contractors, and other trade partners are mostly open to the idea of collaboration in the pre-tendering phase to improve value during the execution of the project, as it is already a technique that has been widely used in many countries. The method still needs improvement, but industry practitioners who have already experienced this kind of collaboration consider the method as time efficient. The interest in collaborative procurement could further increase if proper compensation, proportional to the ideas contributed by the contractors/trade partners, is stipulated before the bidding for a construction project. This study mentions that trust between contractors could be a difficult aspect to resolve during collaborative procurement.

Further research should be conducted to investigate solutions to this problem. Additional research could evaluate the impact of applying open book approaches for collaborative procurement and alternative methods to deal with conflict between stakeholders in case of a collaborative contract. Moreover, evaluating contract pricing for added value for ideas is an area that could benefit from further research. Research on this topic could explore ways to incentivize contractors to offer innovative and value-adding ideas by incorporating performance-based incentives in the contract pricing. This could include mechanisms to measure and compensate for the added value generated by these ideas, such as a share of the cost savings or additional revenue generated.

## REFERENCES

- Do, D., Ballard, G., & Tommelein, I. (2015). An analysis of potential misalignments of commercial incentives in integrated project delivery and target value design. *Proceedings of IGLC 23 - 23rd Annual Conference of the International Group for Lean Construction: Global Knowledge - Global Solutions*, 277–286.
- Gomes, D., & Tzortzopoulos, P. (2020). Challenges and opportunities for early project collaboration. *Lean Construction*, 408–425.
- Lesjø, E. S., Wondimu, P. A., & Lædre, O. (2019). Best value procurement from a contractor point of view. *27th Annual Conference of the International Group for Lean Construction, IGLC 2019, 121*, 121–132. [doi.org/10.24928/2019/0190](https://doi.org/10.24928/2019/0190)
- Malvik, T. O. (2022). Putting the Collaborative Style of a Successful Football Team in a Lean Construction Context. *Proc. 30th Annual Conference of the International Group for Lean Construction (IGLC)*, 295–306. [doi.org/10.24928/2022/0131](https://doi.org/10.24928/2022/0131)

- Malvik, T. O., Johansen, A., Torp, O., & Olsson, N. O. E. (2021). Evaluation of target value delivery and opportunity management as complementary practices. *Sustainability (Switzerland)*, 13(14), 1–19. [doi.org/10.3390/su13147997](https://doi.org/10.3390/su13147997)
- Maturana, S., Alarcon, L., & Vrsalovic, M. (2004). Achieving collaboration in the construction supply chain: An onsite subcontractors' evaluation methodology. In S. Bertelsen & C. T. Formoso (Eds.), *12th Annual Conference of the International Group for Lean Construction*. <http://iglc.net/Papers/Details/281/pdf>
- Mosey, D. (2019). *Collaborative construction procurement and improved value*. John Wiley & Sons Ltd.
- Musa, M., & Pasquire, C. (2020). Target value delivery in bid process. *Proc. 28th Annual Conference of the International Group for Lean Construction (IGLC28)*, 709–719. [doi.org/10.1201/9780429203732-23](https://doi.org/10.1201/9780429203732-23)
- Narum, K. B., Engebø, A., Lædre, O., & Torp, O. (2022). Collaborative Project Delivery With Early Contractor Involvement and Target Cost. *Proc. 30th Annual Conference of the International Group for Lean Construction (IGLC)*, 984–995. [doi.org/10.24928/2022/0208](https://doi.org/10.24928/2022/0208)
- Nguyen, P., Lines, B., & Tran, D. (2018). Best-Value Procurement in Design-Bid-Build Construction Projects: Empirical Analysis of Selection Outcomes. *Journal of Construction Engineering and Management*, 144(10), 04018093. [doi.org/10.1061/\(ASCE\)CO.1943-7862.0001550](https://doi.org/10.1061/(ASCE)CO.1943-7862.0001550)
- Nygård, E. F., Wondimu, P., & Lædre, O. (2019). Best value procurement - Experiences from the execution phase. *27th Annual Conference of the International Group for Lean Construction, IGLC 2019*, 109, 109–120. <https://doi.org/10.24928/2019/0170>
- Roopa, S., & Rani, M. (2012). Questionnaire Designing for a Survey. *The Journal of Indian Orthodontic Society*, 46, 273–277. [doi.org/10.5005/jp-journals-10021-1104](https://doi.org/10.5005/jp-journals-10021-1104)
- Tillmann, P., Do, D., & Ballard, G. (2017). A case study on the success factors of target value design. *Proceedings of the 25th Annual Conference of the International Group for Lean Construction (IGLC)*, July, 563–570. [doi.org/doi.org/10.24928/2017/0324](https://doi.org/10.24928/2017/0324)
- Tillmann, P., Eckblad, S., Whitney, F., & Koefoed, N. (2022). Rethinking Project Delivery to Focus on Value and Innovation in the Public Sector. *Proc. 30th Annual Conference of the International Group for Lean Construction (IGLC)*, 107–117. [doi.org/10.24928/2022/0113](https://doi.org/10.24928/2022/0113)
- Whelton, M., Pennanen, A., & Ballard, G. (2004). Fostering collaboration and learning in project definition: A case study in workplace planning. *The 12th Annual Conference of the International Group for Lean Construction*, 3–5.
- Wondimu, P. A., Klakegg, O. J., Lædre, O., & Ballard, G. (2018). A comparison of competitive dialogue and best value procurement. *IGLC 2018 - Proceedings of the 26th Annual Conference of the International Group for Lean Construction: Evolving Lean Construction Towards Mature Production Management Across Cultures and Frontiers*, 1, 13–22. [doi.org/10.24928/2018/0248](https://doi.org/10.24928/2018/0248)
- Ying, F. J., Zhao, N., & Tookey, J. (2021). Achieving construction innovation in best value procurement projects: New Zealand mega projects study. *Construction Innovation*. [doi.org/10.1108/CI-11-2020-0182](https://doi.org/10.1108/CI-11-2020-0182)