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EARLY CONTRACTOR INVOLVEMENT IN A DEVELOPING COUNTRY CONTEXT: PUBLIC - PRIVATE SECTOR DIFFERENCES AND EMERGING VARIANTS

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ABSTRACT

Early Contractor Involvement (ECI) has been widely promoted for improving project performance and constructability. However, its application in developing country contexts remains underexplored. This study evaluates the awareness and practical adoption of ECI in Sri Lanka, a developing country, across public and private sectors, and identifies the appropriate level of contractor involvement in these sectors. A mixed-methods approach was adopted, combining a questionnaire survey and semi-structured interviews with industry professionals in the procurement of the public and private sectors. Quantitative data were analysed using the Relative Importance Index (RII) and the Mann–Whitney U test, while qualitative insights supported interpretation. The findings reveal that although there is a general awareness of ECI, the private sector demonstrates greater familiarity with its features, mainly in integrating contractor expertise, optimising resources, and enabling constructability inputs to designs. In contrast, the public sector shows limited adoption due to regulatory barriers, including strict adherence to procurement guidelines that prioritise transparency and lowest-cost selection over collaboration. Consequently, approaches such as Public–Private Partnerships and Target Cost Contracting have more potential for ECI in public projects, whereas BIM-based Integrated Project Delivery, Alliance and Design and Build Novated contracting are preferred in the private sector.

Keywords: *Construction Industry; Early Contractor Involvement (ECI); Private and Public Sector; Sri Lanka.*

1. INTRODUCTION

Procurement in construction is the process of identifying, selecting, and engaging suitable stakeholders and organisations to deliver projects (Adamtey, 2022) that significantly influence sustainability, productivity and overall success (Hettiaarachchige et al., 2022). The construction industry commonly adopts four main procurement methods: traditional, integrated, management-oriented, and collaborative (Jayasinghe et al., 2025). Although conventional methods have been widely used in industry since the 20th century, scholars

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have identified several issues arising from their adversarial nature and inefficiencies, including poor communication, cost overruns, project delays, and poor stakeholder collaboration (Jayasinghe et al., 2025). As a result, there has been a shift towards more collaborative procurement approaches with Early Contractor Involvement (ECI) emerging as a key method increasingly adopted, particularly in developed countries. (Narum et al., 2022).

The ECI approach facilitates the incorporation of the contractor's expertise during the pre-construction phase, enhancing project outcomes (Ishtiaque et al., 2024). Different countries have adopted ECI through a range of variants tailored to their local contexts and the nature of the construction industry (Tamura, 2022), with ECI implementation reported in around 30 countries (Laryea & Watermeyer, 2016). Osuizugbo et al. (2024) argued that most ECI-related studies have been conducted in developed countries. However, studies focusing on industry awareness and practical adoption of ECI in developing countries remain scarce. Osuizugbo et al. (2024) further highlighted the need for future research on ECI within developing countries.

In Sri Lanka, as a developing country, traditional separated procurement is generally prevalent in the industry, and secondly, the integrated procurement system is utilised (Silva & Kulatunga, 2023). However, current procurement practices in developing countries face several challenges, including increased errors, disputes, poor client satisfaction, and inefficiencies (Ogbu & Ehigiator-Irughe, 2020). Similar issues are evident in the Sri Lankan construction industry (Edirisinghe et al., 2020), highlighting the need for alternative procurement methods to address evolving challenges (Hettiaarachchige et al., 2022). As per Ishtiaque et al. (2024), the ECI approach promotes greater cost and time certainty by facilitating early clarification of scope, fewer variations, and greater transparency. Despite growing interest in a new procurement approach, research on the adoption of ECI within the Sri Lankan construction industry remains limited. Therefore, the research mounting to research question of *"what is the level of awareness and practical adoption of ECI in the Sri Lankan construction industry within public and private sectors?"* The study aims to evaluate awareness and practical adoption of ECI in Sri Lanka, as a developing country, considering the capacity in both the public and private sectors. The research objectives are;

1. To assess the current level of awareness of ECI within Sri Lanka's construction industry.
2. To evaluate the practical adoptability of the ECI approach in both public and private sector construction projects.
3. To determine the appropriate level of contractor involvement in the industry.
4. To explore emerging variants of ECI within the Sri Lankan context.

2. LITERATURE REVIEW

This section reviews the literature on the concept of ECI, its evolution, the level of contractor involvement, its features and variants, and its global implementation.

2.1 CONCEPT OF EARLY CONTRACTOR INVOLVEMENT (ECI)

The concept of ECI was first introduced in 1998 by the Institution of Civil Engineers in England, as an alternative to conventional procurement methods (Turner & Riding,

2015). In the early 2000s, the UK's Roads and Highways Agency adopted this collaborative method (Laryea & Watermeyer, 2016; Turner & Riding, 2015).

ECI is an advanced collaborative procurement strategy that promotes the contractor's active involvement in the design and development stages before entering a contract (Narum et al., 2022), thereby creating a supportive environment for innovative solutions and complex problem-solving (Ishtiaque et al., 2024). Early collaboration improves constructability and buildability by combining design expertise with contractors' practical knowledge on construction methods, materials, and local practices (Rahmani, 2021). However, ECI features may vary by project context (Ishtiaque et al., 2024).

2.2 LEVEL OF CONTRACTOR INVOLVEMENT

ECI is characterised by varying levels of Contractor involvement in the design development, ranging from limited involvement focused on constructability and cost advice to full integration with the client and design team at the earliest concept stage (Wondimu et al., 2020). Scheepbouwer and Humphries (2011) identified ECI approaches in which contractors provide advisory input during design, while Laryea and Watermeyer (2016) demonstrate moderate-to-high engagement, with contractors actively reviewing detailed design and contributing to value engineering.

2.3 FEATURES OF EARLY CONTRACTOR INVOLVEMENT (ECI)

The ECI approach is defined by a set of principles that distinguish it from conventional procurement methods and enable it to deliver successful construction and infrastructure projects (Farrell & Sunindijo, 2022). Table 1 provides ECI features and detailed descriptions, enabling a clearer understanding of the ECI collaborative approach.

Table 1: Features of the ECI approach

Features of ECI	Description
Early engagement of contractor [6],[7]	Contractors are involved in the pre-construction stage
Collaborative working [1],[6]	Trust-based collaboration among all parties involved in the project.
Joint risk management [6],[7]	The joint responsibility in the identification of risks, allocation, and management
Integration of Contractor expertise [3],[6],[7]	Strategic use of contractor experience in buildability, construction techniques, and Value Engineering
Integration with technology [4],[6]	Integrates through BIM to facilitate collaborative 3D modelling
Integration with technology [4],[6]	Integrates through BIM to facilitate collaborative 3D modelling
Mutual commitment [2],[6]	Align stakeholders using shared risks and shared rewards through collaborative contracting frameworks
Long-term relationship [7],[10]	Emphasises long-term relationships over conventional approaches
Requirement of optimising the use of resources [5],[6]	All participants maximise their resource effectiveness to achieve shared project goals and collective success

Features of ECI	Description
Contractor responsible for financing the project [6]	Responsibility for financing the project, in addition to their early involvement
Package Orders [3],[6]	Provide design and cost expertise for subsequent projects
Focus on innovation [8],[11]	To foster collaborative problem-solving and the development of creative technical solutions
Value-Based Selection [6],[7],[11]	Selection of contractors on non-price factors, like experience, innovative ideas, and cooperative mindset, rather than the lowest bid

[1] Rahman and Alhassan (2012); [2] Walker and Loyd-Walker (2012); [3] Laryea and Watermeyer (2016); [4] Ferme et al. (2018); [5] Eriksson et al. (2019); [6] Wondimu et al. (2020); [7] Farrell and Sunindijo (2022); [8] Finnie et al. (2023); [9] Ishtiaque et al. (2024); [10] Osuizugbo et al. (2024); [11] Filho (2025)

2.4 VARIANTS OF EARLY CONTRACTOR INVOLVEMENT (ECI)

ECI involves engaging contractors early in a construction project through various approaches, with different project delivery arrangements applied across countries (Wondimu et al., 2020). Public sector clients adopt ECI approaches based on their specific requirements and circumstances (Wondimu et al., 2018), while private sector projects implement diverse ECI variants tailored to their needs and contexts to enhance collaboration and innovation in project delivery (Filho, 2025). **Error! Reference source not found.** summarises ECI approaches identified in the literature with their features.

2.5 GLOBAL IMPLEMENTATION OF EARLY CONTRACTOR INVOLVEMENT

ECI has been adopted globally to enhance design efficiency and achieve economic benefits (Laryea & Watermeyer, 2016) in various forms (Wondimu et al., 2020). However, in some developing countries, ECI has been implemented through various variants such as partnering in Iran and Ghana, framework agreements in South Africa, Design-Build (DB), Construction Management at Risk (CMR), alliance, and the Swiss Challenge method in India, and low-cost housing project approaches in Nigeria (Jayasinghe et al., 2024; Laryea & Watermeyer, 2016; Sagvekar & Wayal, 2019; Wondimu et al., 2020).

2.6 OVERVIEW OF THE CURRENT PROCUREMENT PRACTICES IN THE CONSTRUCTION INDUSTRY OF SRI LANKA

In Sri Lanka, traditional and integrated procurement dominate, with growing interest in alternative approaches such as Public-Private Partnerships (PPPs), which require substantial investment to fund public infrastructure projects (Silva & Kulatunga, 2023; Fernando & Nanayakkara, 2020) and face challenges such as improper proposal analysis and a lack of prior experience in execution (Kavinda & Gallage, 2024). Partnering and Alliancing are currently practised in a low profile within the Sri Lankan construction industry, with a growing tendency among local clients to collaborate with foreign contractors (Hettige et al., 2025). In Sri Lanka, these procurement practices are applied without formally recognising them as ECI variants.

This study, therefore, aims to assess current awareness of ECI and its practical adoption in the Sri Lankan construction industry, considering both the public and private sectors. It also seeks to determine the most appropriate level of contractor involvement during the pre-contract stage for successful ECI adoption.

3. RESEARCH METHODOLOGY

The study utilised a mixed approach, adopting a sequential explanatory design, in which a quantitative survey was conducted first, followed by qualitative expert interviews to obtain a comprehensive understanding of the ECI approach. A quantitative survey was used to collect numerical data on ECI awareness, the adoptability of its key features, and alignment with ECI variants, as well as contractor involvement in Sri Lanka's public and private sectors. Using purposive sampling, 140 questionnaires were distributed to procurement professionals based on accessibility and availability of contacts, including 75 in the private sector and 65 in the public sector, yielding 50 responses from each sector. The absence of a comprehensive list of all professionals necessitated the use of purposive sampling, with criteria for involvement in construction procurement and accessibility. Cronbach's alpha was used to assess the reliability and internal consistency of the Likert scale data, following recommended thresholds of 0.90 for high reliability, 0.80 for moderate reliability, and 0.70 for low reliability (Maree & Pietersen, 2007). The Mann–Whitney U test was then applied to examine differences between the public and private sectors in ECI awareness and preferred levels of contractor involvement (McKnight & Najab, 2010). Finally, descriptive statistics and the Relative Importance Index (RII) were used to evaluate the practical adoptability and significance of ECI features (Kassem et al., 2020).

In the qualitative phase, semi-structured interviews were conducted to obtain contextual insights, in addition to findings from the questionnaire survey. This is used to further explain and interpret the quantitative findings by examining stakeholder experiences, perceptions, and contextual factors that influence ECI adoption. The integration of both methods enables enhancing the validity and reliability of the study (Creswell & Clark, 2018). Five interviews were conducted with experts purposively selected for their experience, profession and procurement experience in both the private and public sectors (Table 2). Thereafter, manual content analysis was used to analyse qualitative data.

Table 2: Experts' profile

Code	Designation	Experience	Experience in procurement
R1	Ch. Quantity Surveyor	More than 20 years	More than 10 years
R2	Ch. Quantity Surveyor	More than 20 years	More than 20 years
R3	Ch. Quantity Surveyor/Client Representative	More than 20 years	More than 20 years
R4	Ch. Quantity Surveyor/Project Manager	More than 20 years	More than 15 years
R5	Ch. Quantity Surveyor	More than 20 years	More than 15 years

4. FINDINGS

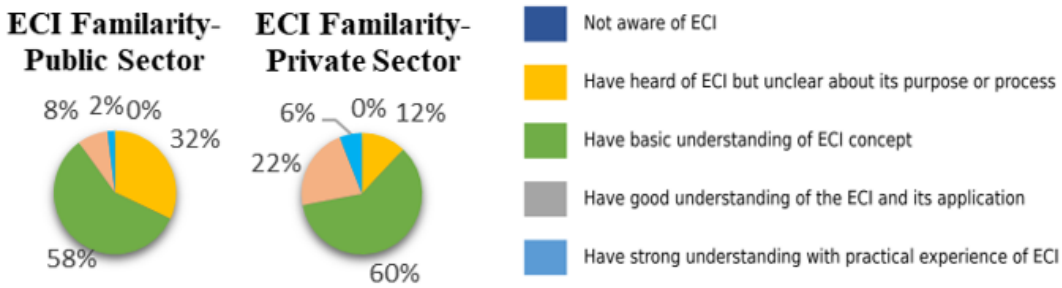
This section presents the analysis of quantitative data obtained from the questionnaire survey, followed by qualitative analysis to further explain and interpret the quantitative findings.

4.1 DETAILS OF SURVEY RESPONSES

A total of 100 completed responses out of 140 were targeted and received, with 50 responses from each sector. The respondent profile indicates that in the private sector, most participants were Contractors (58%), while Consultant/Client representatives were of 42%. In contrast, the public sector was mostly represented by Consultant/Client parties (70%). Quantity Surveyors formed the majority in both sectors (Private - 67% and Public - 68%), followed by Engineers (Private - 25% and Public - 22%), with other roles (Architects and procurement specialists) making up a smaller proportion.

4.2 AWARENESS LEVEL OF EARLY CONTRACTOR INVOLVEMENT (ECI)

The awareness level of ECI within the industry, in both the public and private sectors, was assessed through a survey to determine professionals' familiarity with the ECI concept as a collaborative procurement approach. The results indicate that the majority of respondents in both sectors reported having a basic understanding of ECI**,** 60**%** of private sector respondents and 58% of public sector respondents, as shown in **Error! Reference source not found.**. To examine whether there is a significant difference in familiarity levels between the two sectors, a Mann–Whitney U test was conducted. The results indicate a statistically significant difference between public- and private-sector respondents (U = 871.50, Z = -2.953, p = 0.003**)**. The findings further illustrate that the private sector (Mean = 3.22) is more familiar with the ECI concept than the public sector



(Mean = 2.68)**.**

Figure 1: ECI Familiarity

4.3 PRACTICAL ADOPTABILITY OF THE ECI APPROACH WITHIN THE SRI LANKAN CONTEXT THROUGH THE IMPLEMENTATION OF ECI VARIANTS

The questionnaire assessed respondents' perceptions of the practical adoptability of selected ECI features in the Sri Lankan construction industry in the public and private sectors. Cronbach's alpha was within the range of 0.8 to 0.9 in both sectors, indicating a high level of consistency and reliability. The RII method was used to rank ECI features and align them with identified ECI variants, while their levels of applicability were classified based on RII ranges proposed by Buertey et al. (2024), as presented in Table 3.

Table 3: RII classification

RII Values	Level	Colour Indication
$0.90 \leq RII \leq 1$	Strongly Adoptable	
$0.75 \leq RII \leq 0.89$	Very Adoptable	
$0.60 \leq RII \leq 0.74$	Adoptable	
$0.45 \leq RII \leq 0.59$	Moderately Adoptable	
$0.30 \leq RII \leq 0.44$	Not adoptable	
$0.15 \leq RII \leq 0.29$	Very not Adoptable	
$0 \leq RII \leq 0.14$	Strongly not Adoptable	

Table 3 shows the RII of features aligned with ECI variants, indicating the level of adoptability for both sectors.

As per Table 4, in the Sri Lankan private sector, ECI features show high applicability. The "Integration of Contractor Expertise" is the most feasible feature (RII=0.892), "Requirement of optimising the use of resources for overall success by all participants" followed by (RII=0.840), and "Joint risk management" (0.828). Other features, such as "Early involvement of the Contractor", "Long-term commitment", and "Package orders", are classified as "Very Adoptable". This indicates that ECI Variants listed in the literature are adoptable in the private sector, confirming the need for collaborative, knowledge-driven decision-making and openness to a trust-based relationship.

In the public sector, "Integration of Contractor Expertise" (RII=0.74), "Mutual commitment" (RII=0.72), and collective decision-making (RII=0.66) fall into the "Adoptable" category. Features like "Requirement of optimising the use of resources for overall success by all participants" and "Integration with technology" also show moderate adoptability. However, "Early involvement of the Contractor" (RII= 0.432) and "Package orders" (RII= 0.352) are significantly hindered within the public sector, which are indicated as "Not adoptable". This indicates that the adoption of ECI Variants listed in the literature is limited because the early involvement of the Contractor, a primary feature, is not acceptable in the public sector. Therefore, while certain collaborative ECI features, such as integrating contractor expertise and mutual commitment, are moderately feasible, the core element of ECI, the early involvement of the contractor, is significantly constrained in the public sector. Expert interviews elaborated on the most applicable ECI Variants in both the public and private sectors, as discussed in the following sections.

4.4 MOST APPLICABLE ECI VARIANTS FOR THE PUBLIC SECTOR

Experts highlight that the implementation of ECI variants in the Sri Lankan public sector is relatively limited, and the primary hindrance is regulatory and governance restrictions. The government procurement procedures emphasise principles of transparency, accountability, and strict adherence to established procurement guidelines.

R1 explained, "*the public sector does not easily believe contractors, because they always have to consider transparency and the use of public money".* R1 further explained that most public projects strictly adhered to the National Procurement Commission (NPC) guidelines and standard bidding documents, which limit ECI. Similarly, R3 indicated that the public sector prioritises competitive bidding and lowest-price selection.

Apart from these issues, experts identified the Public-Private Partnership arrangement as one of the most feasible methods for incorporating ECI into the public sector. Respondents (R1, R3 and R4) added that Build-Operate-Transfer (BOT) and Build-Own-Operate-Transfer (BOOT) models are appropriate for long-term infrastructure developments where ECI principles can be embedded to some extent to enhance project outcomes.

R2 explained, "*the reason why PPP is possible is that the government can carry out projects without using big sums of public money and enjoy the benefits of the infrastructure in the long run*". R5 highlighted that BOT and BOOT schemes enable the government to deliver projects without upfront public funding as PPP delivery models rather than pure ECI approaches. According to R2, *"PPP is a better model to integrate ECI because the Sri Lankan public sector already uses this model to finance, build, and operate projects"*

In addition, R4 and R5 identified Target Cost Contracting (TCC) as a suitable ECI variant for the public sector, describing it as a structured cost-sharing mechanism. R4 added, *"Target cost contracting can be beneficial because the public sector often faces budget control issues."* R6 further explained, "*TCC facilitate ECI while maintaining financial discipline through pre-agreed target costs and pain-gain sharing"*.

4.5 MOST APPLICABLE ECI VARIANTS FOR THE PRIVATE SECTOR

Compared to the public sector, the private sector showed greater flexibility in adopting ECI approaches, especially for high-level, technically complex projects.

R1 explained, *"In the Sri Lankan private sector, ECI is sometimes used in complex projects such as power plant developments, where approaches like Alliancing and Target Cost Contracting allow contractors to provide technical input during early project stages*." Furthermore, Experts explained that BIM-based procurement approaches, such as Integrated Project Delivery (IPD) and partnering, facilitate ECI better. R2 and R5 noted that a BIM-based procurement approach facilitates ECI by enabling contractors to participate in the project through a shared digital model during the early stages, improving communication, reducing project risks, and enhancing coordination among project participants.

R1 and R3 highlighted that the implementation of ECI in the private sector is limited by clients' need to maintain a high level of architectural and aesthetic control to prioritise design quality. In this context, R3 introduced the Design and Build Novated contract, which promotes ECI while maintaining original design intent, stating, "*Design and Build novated contract supports ECI where the design consultants can be transferred to the contractor, allowing them to integrate constructability and cost optimisation inputs to designs".* R5 also agreed with the newly proposed variant, proposing the mechanism to implement, *"in a Design and Build novated contract, the client can initially appoint the consultant, particularly a design consultant, who is later novated to the contractor after selection, enabling active contractor participation during design development."*

In addition, Best Value Procurement (BVP) was highlighted as a suitable approach for the private sector, as explained by R4, *"private sector clients expect the best value for their investment, therefore procurement approaches such as BVP are more suitable as ECI where they combine cost efficiency with early technical inputs."*

Table 4: ECI Variants align with features

	Literature Findings										Survey Findings	
Common Features	IPD	Partnering	Alliance	PPP	Framework agreement	Best value procurement	Target Cost Contacting Single TCC	Competitive single	Multiple/ dual TCC	2 -ECI	RII-Public	RII-Private
Early involvement of the Contractor	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	**0.432**	**0.816**
Collaborative working	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	**0.54**	**0.764**
Joint risk management	☒	☒	☒	☒	☒	☐	☒	☒	☒	☒	**0.516**	**0.828**
Integration with technology	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	**0.648**	**0.728**
Mutual commitment	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	**0.72**	**0.776**
Long-term commitment between the client & contractor	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	**0.58**	**0.816**
Requirement of optimising the use of resources for overall success by all participants	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	**0.648**	**0.84**
Collective decision making	☒	☒	☒	☒	☐	☒	☒	☒	☒	☒	**0.66**	**0.808**
Contractor responsible for financing the project	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	**0.68**	**0.732**
Package Orders	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	**0.352**	**0.804**
Focus on innovation	☒	☒	☒	☐	☒	☒	☒	☒	☒	☒	**0.68**	**0.768**
Integration of Contractor Expertise	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	**0.74**	**0.892**
References	[8] [10] [15] [17]	[4] [10]	[2] [4] [10]	[4] [10] [14]	[6] [7] [10]	[9] [10]	[1]; [5]; [10]			[11] [12] [13] [16]		

[1] Lahdenperä (2010); [2] Lahdenperä (2012); [3] Rahman & Alhassan (2012); [4] Walker & Lloyd-Walker (2012); [5] Lahdenperä (2015); [6] Walker & Lloyd-Walker (2015); [7] Laryea & Watermeyer (2016); [8] Pishdad-Bozorgi & Srivastava (2018); [9] Wondimu et al. (2018); [10] Wondimu et al. (2020); [11] Rahmani (2021); [12] Finnie et al., (2023); [13] Ng et al. (2023); [14] Mishra & Shah (2023); [15] Weinmann et al. (2024); [16] Filho (2025); [17] Nwajei et al. (2025)

4.6 LEVEL OF INVOLVEMENT

According to a survey, private-sector projects are in favour, with a mean of 4.04, that the most appropriate level of contractor involvement is during the pre-contract stage. However, in the public sector, it is lower (with the Mean = 3.12). An Independent-Samples Mann–Whitney U test was conducted to compare the two sectors, and the results ($U = 502$, $Z = -5.435$, $p < 0.001$) show a statistically significant difference, indicating that perceptions regarding the appropriate level of contractor involvement vary significantly between the two sectors. Interviews found that the level of contractor involvement in the Sri Lankan context was limited to providing constructability and cost optimisation inputs at the design stage, rather than being involved in decision-making.

5. DISCUSSION

While ECI literature has largely focused on developed countries, this research addresses that gap by examining the practical adoptability of the ECI approach in the Sri Lankan context, using ECI variants within Sri Lanka's public and private sectors, considering the current structure and capacity of the industry. The findings indicate that while the Sri Lankan construction industry is generally aware of the ECI concept, the level of familiarity is higher in the private sector than in the public sector.

The applicability of ECI features and variants in the public sector is influenced by the existing procurement framework. Although the public sector has recognised the importance of integrating contractor expertise in the design stage, ECI implementation remains largely governed by national procurement guidelines, as identified by Silva and Kulatunga (2023), emphasising competitive tendering and transparency requirements. Furthermore, as per findings, the package order cannot be implemented within the public sector, which is one of the key features of the framework agreement. Therefore, some ECI variants cannot be implemented within the current public procurement framework. However, Public-Private Partnership (PPP) models such as Build-Operate-Transfer (BOT) and Build-Own-Operate-Transfer (BOOT) appear to be a feasible option that could enable contractors to participate in the early stages. Literature also identified the growing interest in PPP in the Sri Lankan construction industry (Fernando & Nanayakkara, 2020). Furthermore, Target Cost Contracting (TCC) is identified as another potential ECI variant because it supports improved cost management, collaborative risk-sharing, and greater cost certainty in public sector construction projects (Lahdenperä, 2015).

The private sector indicates a comparatively higher willingness to adopt ECI features such as early contractor participation, joint risk management, and resource optimisation due to its greater flexibility in selecting procurement approaches (Silva & Kulatunga, 2023) similar to the findings of this study. Literature has identified that Alliance Target Cost contracting, BIM-based procurement, and Partnering are used in the private sectors of many developed countries, facilitating early contractor involvement more effectively. Findings revealed Sri Lanka's potential to apply the same approach in the private sector, addressing the main constraint of the need for high architectural and aesthetic standards. This study suggests D&B-Novated as an emergent ECI variant, although it is not widely recognised in existing literature.

This study finds that higher levels of contractor involvement in the pre-contract stage are more suitable for the private sector in Sri Lanka, while the public sector prefers moderate

involvement. Literature identified that the contractor involvement may vary from limited roles in constructability and cost advice to highly active involvement in design reviews, value engineering, and collective decision making (Laryea & Watermeyer, 2016; Scheepbouwer & Humphries, 2011). However, this study found that, in Sri Lanka, it is typically limited to design reviews based on constructability and value engineering.

6. CONCLUSIONS AND RECOMMENDATIONS

This study demonstrates that the Sri Lankan construction industry has basic awareness of the ECI procurement approach, while the private sector shows greater potential for adopting its features than the public sector. Public sector adoption is primarily hindered by strict adherence to strict regulatory frameworks that prioritise transparency and lowest-price selection over early collaboration. However, ECI through Public-Private Partnership (PPP) and Target Cost Contracting (TCC) have some potential for adoption in public projects, whereas the private sector prefers BIM-based Integrated Project Delivery (IPD), Alliance contracting, and partnering. A key novel contribution of this study is the identification of the Design and Build-Novated approach as an emergent ECI approach that helps balance technical constructability with architectural expectations to adopt in the private sector. Moreover, Contractors' level of involvement in the early stages of private projects is preferred to be high-level active participation, while the public sector may prefer moderate active participation. Both sectors in Sri Lanka currently have limited involvement in design reviews through constructability inputs, cost optimisation and value engineering.

The study recommends providing industry awareness on ECI while revising procurement frameworks to support early collaboration with contractors without compromising transparency. The newly proposed Design and Build-Novated approach should be further explored for implementation in private-sector projects. This study extended ECI research to a developing-country context, with a clear comparison between the public and private sectors regarding awareness, applicable variants, and preferred levels of contractor involvement.

The study is limited by the use of purposive sampling and a relatively small sample size, which may affect statistical robustness. However, these were mitigated by including respondents from both the public and private sectors with diverse perspectives. The findings may be applicable to similar developing country contexts, although the Sri Lanka-specific context may introduce contextual bias. Future research is required to investigate the Design and Build-Novated contract as a potential ECI variant and to explore strategies to integrate collaborative provisions into public procurement guidelines to enable ECIs.

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