

# Evaluating the Role of Integrated Project Delivery (IPD) in Facilitating Change Management in Construction Projects

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**Abstract:-** This paper investigates the effectiveness of integrated project delivery (IPD) in managing change in construction projects. Change is a common challenge that can lead to delays, cost overruns, and disputes (Halou et al., 2019). IPD is a collaborative approach that involves all stakeholders from project initiation (Mesa et al., 2019), but its effectiveness in managing change is not well-studied (Kahvandi et al., 2023). A survey of construction industry professionals was conducted to compare IPD to traditional delivery methods, identify success factors, and analyze implementation challenges. The results indicate that respondents perceive IPD as highly effective in facilitating collaboration, identifying and resolving issues early, and managing change during project execution. Engagement in Integrated Project Delivery (IPD) projects has been shown to influence perceptions of effectiveness positively. Key enablers include early stakeholder involvement, open communication, collaborative decision-making, and shared risk/reward structures (Kahvandi et al., 2020). However, cultural resistance and lack of trust can hinder implementation (Ebekozi et al., 2022). The findings contribute insights for improving the construction industry's change management practices and project outcomes. Future research opportunities include longitudinal studies, comparisons to other delivery methods, qualitative exploration of experiences, and examining technology's role. Overall, IPD shows promise as an approach for proactively and collaboratively managing change to reduce adverse impacts and enhance project performance.

**Keywords:-** Integrated Project Delivery, Change Management, Construction, Collaboration, Project Management.

## I. INTRODUCTION

### ➤ Problem Statement and Significance

Change is a pervasive challenge in the construction industry, often leading to delays, cost overruns, and disputes (Bitamba & An, 2020). Traditional project delivery methods with fragmented communication and delayed stakeholder involvement make it challenging to adapt to changes without incident (Bygballé & Swärd, 2019). Even with established project management practices, current approaches struggle to manage change in construction projects effectively (Maali et al., 2020). There is a need for a comprehensive, collaborative approach that engages key stakeholders from the start.

Integrated project delivery (IPD) is an emerging method involving all participants from project initiation to harness the talents and insights of all stakeholders (Nguyen & Akhavian, 2019). While IPD has shown benefits in improving overall project performance (Mesa et al., 2019), its specific effectiveness in managing change is not well-studied (Kahvandi et al., 2023). This research addresses this gap by investigating IPD's impact on change management to provide insights for researchers and practitioners.

### ➤ Research Objectives and Questions

Despite growing interest in IPD, empirical research on its effectiveness in managing change remains limited. The main objective of this study is to assess the effectiveness of IPD in managing change compared to traditional delivery methods and identify factors that influence success. The research questions are:

- How does IPD compare to traditional methods in change management effectiveness?
- What are the key enablers and success factors for IPD in managing change?
- What are the challenges and barriers to implementing IPD for change management?

By providing evidence-based insights, this research seeks to assist construction professionals in making informed decisions about adopting IPD and support the industry in improving change management practices.

## II. LITERATURE REVIEW

### ➤ Change Management in Construction

Change is an inherent aspect of construction projects, driven by their complexity and the involvement of various stakeholders (Halou et al., 2019). Key sources of change include evolving client requirements, unexpected site conditions, design mistakes, and technological issues (Maali et al., 2020). These changes can adversely affect costs, timelines, quality, and stakeholder relationships if not managed properly. While effective change management is essential for project success, it remains a challenge due to the fragmented nature of traditional delivery methods (Ebekozi et al., 2022). Proper strategies are necessary to navigate these complexities and meet project objectives.

### ➤ *Integrated Project Delivery (IPD)*

Integrated Project Delivery (IPD) is defined by the early engagement of essential stakeholders, collective risk and reward sharing, and a unified management approach through a multi-party agreement (Mesa et al., 2019). By cultivating collaboration and aligning interests from the outset, IPD aims to enhance project results. Research indicates that adopting IPD can lead to significant benefits such as cost savings, reduced project timelines, improved quality, and decreased disputes (Kahvandi et al., 2020). Despite these advantages, there remains a lack of widespread awareness and experience with IPD practices among professionals in the field (Durdyev et al., 2019). This gap highlights the need for increased education and dissemination of information about IPD, ensuring that more stakeholders can leverage its potential for better project outcomes and operational efficiencies.

### ➤ *IPD and Change Management*

Integrated Project Delivery (IPD) is proposed as a beneficial framework for enhancing change management in construction projects. Research indicates that the collaborative nature of IPD, which promotes early stakeholder engagement, facilitates the timely identification and resolution of issues (Kahvandi et al., 2020). Though limited, empirical evidence suggests that IPD leads to fewer change orders and faster resolution times than traditional methods, attributed to the integrated teams' risk anticipation and mitigation capabilities (Nguyen & Akhavian, 2019). Furthermore, Karasu et al. (2022) highlight that collaborative decision-making within IPD enhances adaptability to changes.

Despite its advantages, challenges such as cultural resistance, lack of experience with IPD, and mistrust can impede effective collaboration (Ebekozi et al., 2022). Additionally, contractual issues related to shared risk and reward may pose obstacles (Durdyev et al., 2019). Nevertheless, the potential benefits are substantial; early detection of changes through IPD can minimize delays, cost overruns, and disputes (Arshad et al., 2019). Ultimately, while IPD may not be a universal solution, it represents a viable strategy for navigating the complexities of change and improving project outcomes in the construction sector.

### ➤ *Theoretical Framework*

This study utilizes Lewin's Change Theory as its foundational framework. According to the theory, the change process unfolds in three key stages: unfreezing, changing, and refreezing (Ratana et al., 2020). In construction projects, the "unfreezing" stage involves recognizing the necessity for change and preparing all stakeholders for the transition. This stage is crucial for creating awareness and motivating participants to embrace new methodologies. The "changing" phase entails implementing new processes and behaviors guided by Integrative Project Delivery (IPD) principles. This approach encourages collaboration and innovation among project teams, fostering an environment where new practices can thrive. Finally, the "refreezing" phase is about solidifying these new practices as part of the organization's culture, ensuring they become the standard operating procedures moving forward. Throughout these stages, continuous

communication is vital in facilitating the change process, helping to address concerns and maintain engagement among all parties involved (Gandolfi & Tran, 2021). By effectively applying this framework, construction projects can navigate the complexities of change more successfully and ultimately achieve better outcomes.

## III. METHODOLOGY

### ➤ *Research Design and Sampling*

A quantitative survey was conducted to collect data on the experiences and perceptions of construction professionals regarding Integrated Project Delivery (IPD) and change management. The survey targeted individuals with experience in IPD, including project managers, contractors, architects, and engineers. Purposive sampling was employed to achieve a balanced representation of various roles and experience levels. Ultimately, 60 qualified responses were gathered, providing insights into the attitudes and experiences related to IPD among construction professionals. This data aims to enhance understanding and inform best practices in the management of projects utilizing IPD principles.

### ➤ *Data Collection and Analysis*

The survey focused on evaluating the effectiveness of Integrated Project Delivery (IPD) in promoting collaboration, addressing changes, and managing project lifecycle alterations. Descriptive statistics were employed to summarize the sample characteristics. The study involved hypothesis testing to explore the connections between participants' experiences with IPD and their perceptions of its effectiveness. Additionally, a thematic analysis of open-ended responses was conducted to extract more profound insights into the experiences and opinions gathered from participants. This multifaceted approach allowed for a comprehensive understanding of how IPD facilitates collaboration and change management within projects, highlighting the quantitative and qualitative aspects of participants' feedback. The findings aim to enhance the understanding of IPD practices and their impact on project outcomes, ultimately contributing to the knowledge surrounding collaborative project delivery methods in various construction and development scenarios.

### ➤ *Ethical Considerations*

Ethical standards aligned with the principles of the Belmont Report were strictly observed throughout the research. Participants gave informed consent and were informed of their right to withdraw without repercussions. To protect confidentiality, pseudonyms were utilized for all data, ensuring anonymity. Additionally, a commitment to bias-free analysis was prioritized to preserve the integrity and neutrality of the research findings, highlighting the importance of ethical considerations in conducting this study.

## IV. RESULTS AND DISCUSSION

### ➤ *Descriptive Statistics*

The study included a sample of 60 respondents, comprising 32 project managers (53.3%), 12 contractors (20%), four architects (6.7%), four engineers (6.7%), and

eight individuals in other roles (13.3%). Regarding industry experience, respondents were 26.7% with more than 15 years, 46.7% with 5-15 years, and 26.7% with less than 5 years. When assessing their experience with Integrated Project Delivery (IPD), 78.6% of participants rated their proficiency as "fair," suggesting notable opportunities for enhancement in this area. This distribution of roles and experience levels

highlights the diverse perspectives within the sample, underscoring the potential for further training and development in IPD methodologies among professionals in the construction industry. Overall, these results indicate a considerable need for professional growth and the implementation of best practices to strengthen IPD competence.

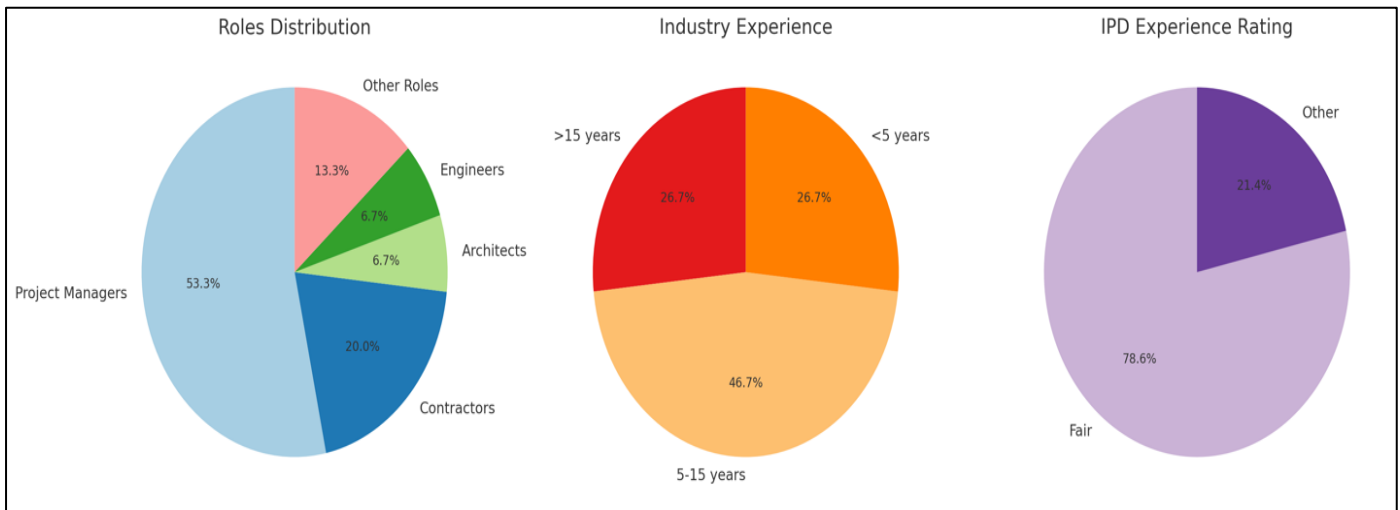


Fig 1 IPD Experience Distribution

➤ *IPD Effectiveness Compared to Traditional Methods*

The effectiveness of Integrated Project Delivery (IPD) was compared to traditional methods, revealing notable insights from survey respondents. A significant majority, 85.7%, reported having 1 to 5 years of experience with IPD projects. Among this group, 64.3% classified IPD as "very effective" in enhancing overall project delivery, while 57.1% recognized its efficacy in fostering collaboration. Furthermore, 64.3% attested to IPD's strong performance in

the early identification and resolution of change-related issues. Statistical analysis indicated a significant positive correlation between the respondents' levels of IPD experience and their perceptions of its effectiveness, with a p-value of less than 0.05. These findings underscore the advantages of IPD in contemporary project management, highlighting its potential to improve project outcomes through enhanced collaboration and proactive issue resolution.

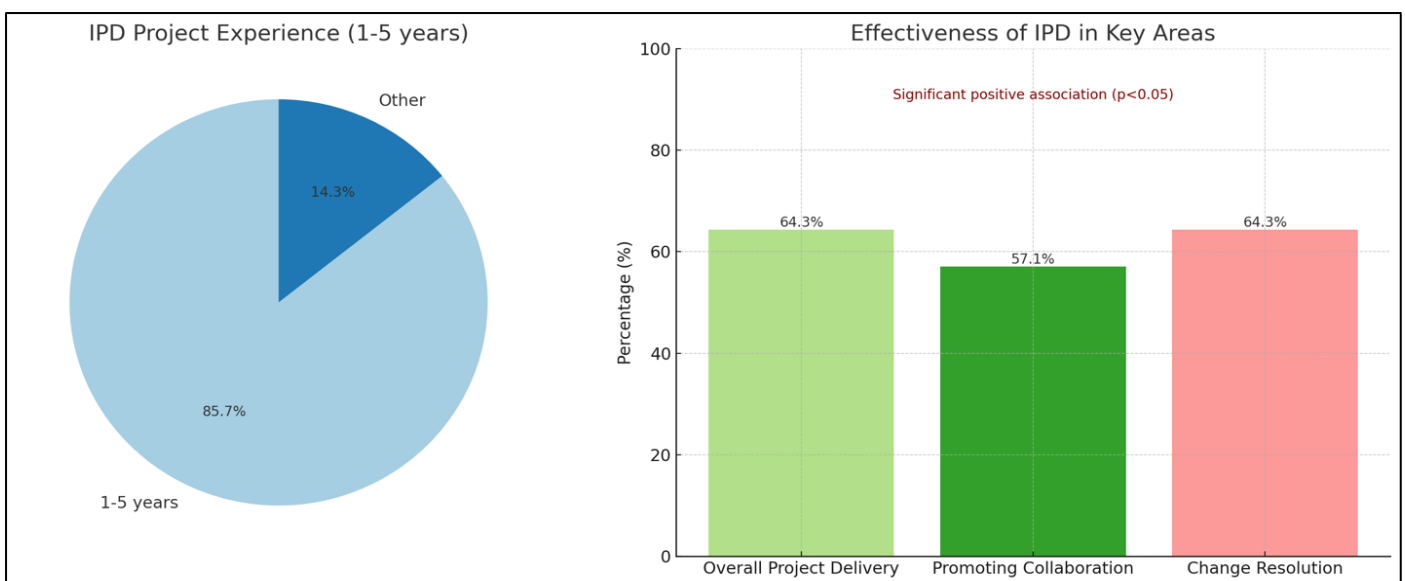


Fig 2 Perceived IPD Effectiveness

➤ *Key Enablers and Success Factors*

The effectiveness of integrated project delivery (IPD) in change management is significantly attributed to several key practices. Early engagement of stakeholders (Karasu et al.,

2022), open lines of communication, and collaborative decision-making (Ebekozi et al., 2022) are pivotal components. Furthermore, shared risk and reward structures contribute to the overall success of IPD (Kahvandi et al.,

2020). Respondents in recent studies have identified the primary benefits of IPD as enhanced collaboration, a diminished likelihood of disputes, increased operational efficiency, and improved value for money (Marco & Karzouna, 2018). Additionally, elements such as a supportive contractual framework and the active commitment of stakeholder leadership are considered essential for facilitating these improvements (Shadhar et al., 2022). Together, these factors streamline project delivery and foster a conducive environment for collective stakeholder engagement and mutual success within the project lifecycle.

#### ➤ *Implementation Challenges and Barriers*

The primary challenges identified in implementing Integrated Project Delivery (IPD) include cultural resistance to change, insufficient stakeholder experience with IPD, and prevailing mistrust among the parties involved (Durdyev et al., 2019). Furthermore, barriers to broader adoption of IPD were attributed to unsupportive contractual frameworks, insurance-related complications, and a general lack of awareness regarding its benefits (Ebekozién et al., 2022). Some respondents observed that certain team members continued to operate in siloed manners, undermining the collaborative ethos that IPD aims to foster. To address these challenges, several strategies were suggested, such as implementing comprehensive training programs, launching pilot projects to demonstrate effectiveness, and refining contractual agreements to promote better alignment among stakeholders (Kahvandi et al., 2023). These findings highlight the critical need for proactive measures to cultivate a collaborative environment essential to adopting IPD successfully in construction projects.

## V. LIMITATIONS AND FUTURE RESEARCH

While this study provides valuable insights, it is not without limitations. The use of a survey relies on self-reported perceptions, which may be subject to bias. Future research could triangulate findings through case studies and objective project data. The study's cross-sectional nature captures perceptions simultaneously; longitudinal research could examine IPD's impact on project lifecycles. Comparative studies with other delivery methods and investigations of IPD in different project types and geographic contexts would also be valuable.

## VI. CONCLUSION

This research provides valuable empirical insights into the efficacy of Integrated Project Delivery (IPD) in facilitating change management within the construction industry. According to perceptions gathered from industry professionals, IPD demonstrates significant advantages over conventional delivery methods, particularly in promoting collaborative practices and proactively managing changes that arise throughout project lifecycles. However, the realization of IPD's full potential is contingent upon addressing entrenched cultural and relational obstacles that permeate the industry.

The findings underscore the critical importance of early stakeholder engagement, transparent information sharing, aligned interests among participants, and a framework of joint governance that IPD enables (Karasu et al., 2022). There remains a need for further comparative research to quantitatively assess the discrepancies in change-related outcomes across various delivery systems (Hashem M. Mehany et al., 2018; Ibrahim et al., 2020). Longitudinal studies can provide insights into the sustained impacts of IPD (Raouf & Al-Ghamdi, 2019), while qualitative methodologies can offer a more nuanced understanding of participant experiences (Kahvandi et al., 2023).

As construction projects often encounter challenges due to change, IPD is posited as a promising strategy to alleviate adverse effects through enhanced multi-party collaboration. Project leaders are encouraged to critically assess the applicability of IPD for their specific contexts and invest in the necessary supporting mechanisms (Nguyen et al., 2018; Kahvandi et al., 2020). With increased adoption and ongoing refinement, IPD has the potential to improve change management practices in the industry significantly (Arshad et al., 2019).

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