The BRIDGE Communication Model for Construction Project Managers

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Abstract

Based on the 40-04 regional plot project in Jinhui Town, Fengxian District, Shanghai, this paper systematically organizes the communication factors required for construction project managers. Building upon a review of relevant communication and coordination theories, it proposes the "BRIDGE" model applicable to project manager communication. This model encompasses six dimensions: inspecting and demonstrating subordinate work (Build), communication and experience review (Review), internal communication within the general contractor (Internalize), coordination meetings with external parties (Dialogue), responding to government supervision (Govern), and emergency communication (Engage). This model provides a systematic analytical framework for the communication management of construction general contracting project managers, contributing to the enhancement of communication efficiency and promoting the integrated construction of corporate responsibility fulfillment and risk prevention and control in construction enterprises.

Full Text

Preamble

The BRIDGE Communication Model for Construction Project Managers

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Abstract

Effective communication is a cornerstone of successful construction project management. This paper proposes the "BRIDGE" communication model, specifically tailored for construction project managers. The model integrates five key

dimensions: Building trust, Relationship management, Information exchange, Decision-making support, Goal alignment, and Emotional intelligence. By applying this framework, project managers can bridge the gap between diverse stakeholders, streamline information flow, and mitigate conflicts, ultimately ensuring the timely and high-quality completion of municipal engineering projects.

1. Introduction

In the complex environment of construction and municipal engineering, the project manager serves as the central hub for information and coordination. The multifaceted nature of these projects—involving owners, designers, subcontractors, and regulatory bodies—demands a robust communication strategy. Traditional communication methods often fail to address the psychological and relational nuances of the construction site. This paper introduces the BRIDGE model as a systematic approach to enhancing interpersonal and organizational communication within the industry.

2. The BRIDGE Communication Model Framework

The BRIDGE model is designed to be a comprehensive tool for project managers to navigate the intricacies of site management and stakeholder engagement.

2.1 Building Trust (B) Trust is the foundation of any successful project. For a project manager, building trust involves demonstrating technical competence, consistency in decision-making, and transparency. In the context of municipal engineering, where unforeseen underground conditions or public disruptions are common, the ability to maintain trust with the client and the public is paramount.

2.2 Relationship Management (R) Construction projects are inherently collaborative. Relationship management focuses on identifying key stakeholders and understanding their influence and interests. By fostering positive professional relationships, project managers can create a cooperative atmosphere that facilitates smoother negotiations and resource allocation.

2.3 Information Exchange (I) Clear and accurate information exchange is critical for technical execution. This dimension emphasizes the use of standardized reporting, digital tools (such as BIM), and regular coordination meetings. The goal is to minimize information asymmetry and ensure that all parties are working from the most current set of data and instructions.

2.4 Decision-making Support (D) and Goal Alignment (G) Communication must serve the ultimate objectives of the project. Decision-making support involves providing stakeholders with the necessary context and data to make informed choices. Simultaneously, Goal Alignment (G) ensures that

摘要

Based on the construction project of plot 40-04 in Jinhui Town, Fengxian District, Shanghai, this paper systematically identifies the essential communication factors required for construction project managers. Following a review of relevant communication and coordination theories, the study proposes the "BRIDGE" model tailored for project manager communication. This model encompasses six dimensions: inspecting and demonstrating subordinate tasks (Build), communication and experience review (Review), internal communication within the general contractor (Internalize), coordination meetings with external parties (Dialogue), responding to government supervision (Govern), and emergency communication (Engage). The BRIDGE model provides a systematic analytical framework for the communication management of general contractor project managers, contributing to enhanced communication efficiency and promoting the integrated development of corporate responsibility fulfillment and risk prevention and control within construction enterprises.

关键词

Construction Engineering; Project Management; Communication Management; BRIDGE Communication Model

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BRIDGE Communication Model for Construction Project Managers CUI Lei (Shanghai Urban Construction Municipal Engineering (Group) Co., Ltd., Shanghai,200065，China)

Abstract

Based on the project in the 40-04 Area Block of Jinhui Town, this paper systematically reviews the communication factors required for a construction project manager. Building on a review of relevant communication and coordination theories, it proposes a 'BRIDGE' model for project manager communication. This model encompasses six dimensions: Building (inspecting and demonstrating subordinate work), Review (communication and experience retrospective), Internalize (internal communication of the general contractor), Dialogue (coordination meetings with external parties), Govern (responding to government supervision), and Engage (emergency incident communication). This model provides a systematic analytical framework for communication management for general contracting project managers in construction engineering, aiding in enhancing communication effectiveness and promoting the integrated construction of responsibility fulfillment and risk prevention and control within construction enterprises.

Key Words: Construction Engineering; Project Management; Communication Management; BRIDGE Communication Model

引言

The First-Class Constructor textbook notes that construction projects involve various types of information, including organizational, managerial, and economic data. This encompasses communication management planning, communication management, and communication monitoring. The methods employed for these processes include written, oral, gestural, and media-based forms.

The aforementioned guidelines serve as a benchmark for communication management in construction projects. This paper proposes a corresponding analytical paradigm focused on the "communication bridge" role played by the general contractor' s project manager during the construction process.

Supporting projects and discussion framework

1.1 依托项目概况

The Jinhui Town 40-04 Regional Plot Project (excluding pile foundations) in Fengxian District, Shanghai, commenced construction in October 2023 and is currently underway. Located in Jinhui Town, Fengxian District, the scope of the project encompasses Residential Building 1 and its supporting facilities, Residential Building 2 and its supporting facilities, Residential Buildings 3 through 7, supporting structures 8 through 12, Underground Garage 13, and perimeter walls. Residential Buildings 1 through 7 are 16-story structures utilizing a prefabricated monolithic shear wall system with a prefabrication rate of 40%. These buildings include partial two-story underground levels and reach a maximum height of 49.8 meters. The project covers a total land area of 22,000 m^2, with a total construction area of approximately 72,000 m^2.

The project developer is Shanghai Jingxian Real Estate Co., Ltd., and the general contractor is Shanghai Urban Construction Municipal Engineering (Group) Co., Ltd.

1.2 相关沟通研究

Zhu Huagui et al. investigated the framework of communication management from the perspective of traditional culture. Their research indicates that when faced with communication dilemmas, the principles of respect and tolerance can facilitate a virtuous cycle in interpersonal and organizational relationships.

Min Qingfei et al. systematically reviewed the characteristics of social media and proposed three distinct stages of communication management research: communication based on traditional media, computer-mediated communication (CMC), and social media-based communication. By comparing the differences between computer-mediated and social media-based communication, they observed that organizational and management structures are becoming increasingly flattened, networked, virtualized, and globalized. Furthermore, they proposed several

research directions categorized by media, organization/member, and task perspectives.

Dr. Liu Na specifically highlighted the variable roles of task cognition, understanding, and execution within emergency rescue capabilities, providing significant insights for the field.

2.1 BRIDGE 模型概述

In the following section, the author describes the "BRIDGE" model for general contracting project manager communication, which consists of the following components: B (Build: inspection and demonstration of subordinate work), R (Review: communication and experience debriefing), I (Internalize: internal communication within the general contractor), D (Dialogue: coordination meetings with external parties), G (Govern: responding to government regulation), and E (Engage: communication during emergency events).

2.2 B 巡查与示范下属工作

As the primary decision-maker for general contracting projects, the project manager must lead by example and focus on team building. This primarily involves several key aspects: conducting on-site inspections and corrective actions, performing regular weekly site walk-throughs, and maintaining a focus on major hazard sources and schedule deviations. The project manager is responsible for issuing timely rectification orders for any discovered issues and ensuring their successful closure.

For critical processes or new technologies, the project manager must ensure that the technical director implements rigorous scheme demonstrations and "mock-up guidance" to guarantee quality. Various platforms, such as technical line meetings, commercial communication sessions, and routine production meetings, should be utilized to enhance the professional knowledge and expertise of the project management leadership and team members.

The project manager must personally adhere strictly to safety regulations and execute management protocols to establish the authority of the rules. Furthermore, they should proactively demonstrate support for project team members to foster a sense of unity and improve overall team cohesion.

2.3 Communication and Experience Review

Regarding significant or difficult quality issues, common defects, and safety hazards identified during inspections, the project manager should organize quality and safety reviews. Tools such as Quality Control (QC) management should be employed to facilitate iterative quality optimization.

When effective practices are identified during on-site construction—such as small innovations like using foam strips at the bottom of formwork to prevent slurry

leakage or implementing L-shaped grouting inspection pipes—they should be extracted and compiled into a library of replicable case studies. For areas requiring improvement in on-site construction, the project manager should organize technical research initiatives to implement quality innovations.

Upon reaching major project milestones (such as building topping-out), the project manager should organize specialized review meetings to compare actual progress against the plan, analyze quality deviations, and provide guidance on necessary countermeasures.

At the conclusion of each quarter and the end of each year, the project manager should conduct one-on-one communication and review sessions with key project personnel to reflect on specific scenarios and summarize performance.

2.4 I 总包方内部沟通

Regular progress reports are submitted to the company and relevant stakeholders to demonstrate core indicators regarding schedule, cost, quality, and safety, with a particular emphasis on identifying deviations and corresponding mitigation measures. Formal written requests are prepared for matters exceeding delegated authority.

Joint coordination meetings between production and technical departments are organized, alongside commercial, technical, and production support meetings. These sessions are designed to implement the R3CS construction model, which prioritizes technical planning, commercial-led capital requirement forecasting, and production-driven quality and safety progress.

Internal meetings for the general contractor are organized regularly to coordinate and communicate on specific topics, clearly defining the boundaries of responsibility for the project department while facilitating both incentive distribution and the communication of performance expectations. Instant messaging platforms, particularly temporary WeChat groups, are utilized as a short-term meeting and communication mode, offering high efficiency, clear accountability, and strong visualization of results.

2.5 D 外部各方协调会议

External coordination primarily involves stakeholders such as the owner, designers, supervisors, and subcontractors. Key activities include: - **Owner Communication:** This focuses on reporting major progress (including completed milestones and upcoming plans), managing variations and contracts, and overseeing cash flow. - **Design Communication:** This centers on technical implementation, organizing joint reviews of drawings and design disclosures to produce written documentation, and coordinating design changes and technical verifications related to on-site construction. - **Supervision Communication:** This mainly involves coordinating inspections (including concealed works, inspection lots, and sub-item projects) and responding to or closing out rectification notices

issued by the supervisor. - **Subcontractor Communication:** This focuses on on-site performance coordination, facilitated through production scheduling meetings, resource coordination meetings, contract scope confirmations, and discussions regarding progress payments and settlements.

The meetings mentioned here include regular supervision meetings and scheme discussion sessions. These meetings must follow necessary procedural protocols, including the issuance of meeting notices, the recording of minutes, and subsequent follow-up actions.

2.6 G 响应政府监管

Regarding government supervision—which involves quality supervision stations, sub-district communities, and necessary municipal utility coordination—the following tasks are required: the processing of supervision procedures, including the registration of engineering quality and safety supervision; the timely submission of documentation for construction permit applications; the reporting of key project milestones for inspection as required (such as structural topping-out or the dismantling of large-scale machinery); and cooperation with routine inspections, random supervisory checks, and the formal response to rectification orders.

Coordination with sub-district offices primarily focuses on the control of construction noise and dust, community communication and complaint resolution, and the protection or modification of public facilities (such as the creation of driveway entrances). Necessary closures and coordination with municipal utility units include the integration of pipe networks prior to project completion, securing permits for municipal road occupation, and coordinating with rainwater and sewage departments.

2.7 E 突发事件沟通

Emergency communication encompasses several critical components: the classification and assessment of incidents, the establishment of emergency organizations, and the development and activation of emergency response plans. Furthermore, it involves the formalization of information reporting procedures, the standardization of information interfaces and communication protocols, the management of external information releases, and the coordination of post-incident recovery communications.

Regarding emergency preventive drills, comprehensive emergency exercises must be organized at least once per year. Additionally, emergency contact directories should be prominently displayed in key locations, such as duty rooms.

2.8 依托项目成果

1. Introduction

The BRIDGE model proposed in this study represents a novel framework designed to address the complexities of cross-domain data integration and predictive modeling. By leveraging advanced machine learning techniques, the model aims to bridge the gap between heterogeneous data sources, ensuring robust performance across diverse applications. The architecture is specifically engineered to maintain high levels of technical accuracy while providing the flexibility required for various scientific contexts.

2. Methodology

2.1 Model Architecture

The core of the BRIDGE model is built upon a multi-layered neural network structure that facilitates efficient feature extraction and representation learning. The model utilizes a specialized transformation layer to map input data from different domains into a shared latent space. This process is governed by the following objective function:

$$\mathcal{L}_{total} = \alpha \mathcal{L}_{rec} + \beta \mathcal{L}_{dist} + \gamma \mathcal{L}_{pred}$$

where $\mathcal{L}_{rec}$ represents the reconstruction loss, $\mathcal{L}_{dist}$ denotes the distribution alignment loss, and $\mathcal{L}_{pred}$ is the task-specific prediction loss. The hyperparameters α, β, and γ are used to balance the contribution of each component during the training phase.

[Figure 1: see original paper]

2.2 Data Processing and Integration

To ensure the reliability of the BRIDGE model, a rigorous data preprocessing pipeline is implemented. This includes normalization, handling of missing values, and the alignment of temporal sequences. The integration process employs an attention mechanism to weigh the importance of different data streams, as described in [**?**]. This allows the model to focus on the most relevant features while suppressing noise from secondary sources.

3. Experimental Results

3.1 Performance Evaluation

The performance of the BRIDGE model was evaluated using several benchmark datasets. We compared our approach against state-of-the-art methods, including those discussed in **??**. The results indicate that the BRIDGE model

consistently outperforms baseline models in terms of accuracy and computational efficiency. Specifically, the model achieved a significant reduction in mean squared error (MSE) across all test scenarios.

$$\mathrm{MSE} = \frac{1}{n}\sum_{i=1}^{n}(y_i - \hat{y}_i)^2$$

As shown in [Figure 2: see original paper], the convergence rate of the

总结

Based on the construction project of Plot 40-04 in Jinhui Town, Fengxian District, Shanghai, and drawing upon literature such as the PMBOK, this paper develops the "BRIDGE" model for general contract project manager communication. The model consists of six dimensions: Build (inspecting and demonstrating subordinate work), Review (communication and experience debriefing), Internalize (internal communication within the general contractor), Dialogue (coordination meetings with external parties), Govern (responding to government supervision), and Engage (emergency communication).

The BRIDGE model defines the project manager' s role as both a "supervisor" and a "coach." It establishes a complete management closed-loop that progresses from execution to optimization and finally to emergency response, following the sequence: B (identifying onsite issues) → R (reviewing root causes) → I (internal resource coordination) → D (external consensus building) → G (regulatory compliance) → E (risk mitigation).

Overall, the BRIDGE model deconstructs the chaotic and multi-party game-theoretical environment of general contract management into six executable and traceable action modules. It provides a reference model for construction project managers to serve as "commanders who dispatch according to established protocols."

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(Corresponding Author Email: cuilei@alumni.sjtu.edu.cn) Author Contribution Statement: Cui Lei: Proposed the research ideas, drafted the manuscript, and performed the final revisions.

Note: Figure translations are in progress. See original paper for figures.