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Building Trust for a Stronger Construction Industry: A literature Review Exploring Gaps in Construction

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Construction is a complex industry reliant on a network of stakeholders. Trust, the cornerstone of successful collaboration, plays a crucial role in this ecosystem. This paper explores the significance of trust in improving project outcomes and the overall well-being of the industry. This exploration includes trust's impact on team dynamics, the criteria for establishing trust, and the need for more research on trust in the United States. The absence of trust acts as a substantial collaboration barrier, resulting in adversarial relationships, contractual disputes, and a lack of efficiency among the workforce. Trust fosters open communication, enhanced safety, better quality, predictable schedules, innovation, employee retention, and client satisfaction. Trust encourages addressing root causes, prioritizing people, and promoting a culture of care. This paper recommends areas for future research, including trust measurement, maintaining trust over the project lifecycle, creating psychological safety, and studying the long-term effects of trust.

Key Words: Trust in Construction, Trust Challenges in Construction, Trust Gaps, Psychological Safety in Construction

Introduction

The construction industry is a multifaceted and intricate sector, defined by a complex network of stakeholders, where effective collaboration is paramount (Vaux & Kirk, 2018). The industry's multifaceted nature extends beyond the construction site, encompassing architects, engineers, contractors, trade partners, clients, regulators, vendors, suppliers, and various other participants who contribute to projects. The right foundation for this complex web of interdependence is a cohesive and harmonious environment to create successful outcomes.

One critical element to achieving such a peaceful and productive environment is the presence of trust. Trust is the foundation for successful collaboration, and it is vital to establishing and maintaining the integrity of the construction process. In this context, trust refers to the confidence and reliance that stakeholders place in one another, believing that each party will fulfill their commitments, share information transparently, and act vulnerably in the best interest of the project (Rahman & Kumaraswamy, 2011).

The construction industry often does not operate with trust and mutual respect (Fischer, 2017; Zheng et al., 2017; Kumaraswamy, Ling, Rahman, & Phng, 2005). In fact, it often devolves into conflict,

which can have grave consequences on project outcomes. Distrust among stakeholders can lead to increased project delays, cost overruns, quality issues, safety problems, and disputes (Rahman & Kumaraswamy, 2011). These issues not only hamper individual projects but also contribute to a broader systemic problem that affects the industry's overall efficiency and reputation. This paper examines the literature to ascertain the importance/significance and effects of trust in construction.

Methodology

The methodology for conducting this investigative/reporting study was to conduct a literature search utilizing phrases such as “trust in construction”, “trust in team environments”, and “issues in construction” to ascertain the (1) importance of trust, (2) lack of trust as a barrier, (3) gaps to trust in construction, (4) use of trust as a solution, and (5) future research needs in trust and its effects on the construction industry. These searches yielded research across construction and manufacturing disciplines. The authors/research team paid special attention to any article discovered with trust in construction as the sole focus. Since the construction industry does not exist in a vacuum, articles about trust in other industries provided additional context for this review. Furthermore, the study contains a review of the current literature focused on strategies to build and measure trust in the industry to improve project outcomes. The research team’s unique and relevant experience (a 32-year major project delivery and operations veteran, a lean construction coach with 20 years of construction experience, and a psychology major), combining construction and psychology, provides a special lens to deliver this literature review research.

The Importance of Trust

Team cohesion positively impacts construction project success (Ibrahim, Costello, & Wilkinson, 2011). Understanding team dynamics is an important skill in the construction industry. Trust is the foundation upon which teams are built (Kumaraswamy et al., 2005). Trust alone has been shown to be positively correlated with project success (Lazar, 2000). Trust is granted when certain criteria such as risk tolerance, adjustment requirements, security, and similarities between parties are met (Hurley, 2006). In the research team's opinion, trust requires intentional development of processes to build connections and understanding. The importance of trust in construction is present in research; however, there is a lack of studies conducted in the United States about building trust (Zheng, Song, Zhang, & Gao, 2017). While studies of how other countries build trust have value, it is necessary to be mindful that some practices will not translate from one culture to another (Chen & Partington, 2004). While trust building in the US construction industry is not a thoroughly researched topic, trust building in other US industries is relevant. Schoonover et al. (2019) created a framework for stakeholder engagement that aligns motivations and builds trust. This framework is based in ecosystem development which has parallels in construction as there are many entities that must work together. The unique aspect of the Schoonover et al. (2019) study was the idea of creating space. This space could be physical or virtual but is a place where stakeholders can meet, collaborate, and build relationships. When interaction, through meeting space, is built into the process, stakeholders understand motivations. Stakeholders communicating their motivations is the first step towards aligning motivations. With the alignment of motivations comes the opportunity for trust.

Lack of Trust as a Barrier

The absence of trust can be a substantial barrier to successful project outcomes. Construction has a tradition of adversarial relationships between all parties involved (Sarhan & Fox, 2013). These

relationships become adversarial because the only connection between the parties is a legal document. This frequent scenario turns conflict into an opportunity for litigation. A lack of trust between parties makes reliance on contracts the only option. The absence of trust is reinforced by western culture's view of work as an individual task (Scarnati, 2001). With an individualistic view of work and performance, the need for trust is not obvious. This individualistic way of thinking harms the construction industry. Projects succeed with teamwork (Ibrahim, Costello, & Wilkinson, 2011). Naismith et al. (2005) found that the largest barriers to trust are miscommunication and preconceptions about other parties. The lack of trust in today's construction industry prevents projects from being more successful (Kereri & Harper, 2019). The connection between trust and communication is reciprocal, for with communication comes trust, and with trust comes more honest communication (Wood, McDermott, & Swan, 2002).

Gaps to Trust in Construction

Based on literature search findings, observations, and industry experience, the authors developed

Table 1

Gaps in Construction

Abnormal Current State	Ideal Future State
Contractual Agreements	Collaboration Agreements
Quality After Construction	Quality Before Construction
Problem Solving Symptoms	Problem Solving Root Cause
Process over People	People over Process
Critical Path Method (CPM)	Schedule Utilize Buffers
Detail Gap	Time Machine
Late Contractor Involvement	Early Contractor Involvement
Data and Knowledge Loss	Data Standardization and Sharing

Table 1 to explain potential gaps to trust in construction and solutions in an ideal future state.

Contractual Agreements gap: The construction industry contends with multiple operational gaps stemming from its inherent complexity and diversity (Willis & Alves, 2019), exacerbated by a lack of trust as revealed in the literature. Dominant contractual agreements often hinder collaboration and productivity (Dubois & Gadde, 2002), with current contract structures biased toward litigation rather than guiding projects to operate as one unit directed towards success.

Quality After Construction gap: The construction industry faces an inadequacy in comprehending and defining quality management, which requires going beyond checklist completion to meet diverse stakeholders' conditions of satisfaction (Vesela & Synek, 2019; Hoonakker, Carayon, & Loushine, 2010). Detailed and thorough communication channels play a pivotal role in understanding the definition of quality requirements, integrating them into the project design, and measuring them. This process sometimes requires tools like product samples, mockups, or virtual reality for stakeholders to experience the project in real time (Gordon, 2023).

Problem Solving Symptoms gap: The construction industry tends to prioritize treating symptoms over uncovering root causes (Abdelhamid, & Everett, 2000), posing challenges in identifying the actual problems within its complex network. This transactional nature often results in reactive responses to surface-level symptoms instead of proactive resolution of underlying issues (Jin, Zhang, & Xia 2016),

necessitating a mindset shift towards comprehensive problem-solving methods centered around root cause analysis, collaboration, continuous improvement, proactive risk management, and trust as a foundational element (Ramkumar & Gopalakrishnan, 2014).

Process over people gap: In the construction industry, skilled workers are often seen solely as labor to complete tasks without considering their potential insights to enhance project flow (Mollo, Emuze, & Sishuba, 2020). Oftentimes, Construction Supervisors walk past skilled trade workers without even acknowledging the entity as a human being. (Hoots, 2022). In addition to placing emphasis on productivity and timelines, recognizing workers' significance in the project can transform them into engaged team members rather than mere cogs in the process (Naoum, 2011).

Critical Path Method (CPM) gap: The Construction Industry's current reliance on Critical Path Method (CPM) scheduling has shown consistent issues over the years, remaining largely unaltered since its creation in the 1950s (Galloway, 2006). With just 25% of projects concluding within 10% of their original deadlines, the construction sector faces a prevalent challenge in meeting project timelines (KPMG, 2023). Despite considerable efforts to enhance project controls in both the US and the UK over the last two decades, research by Park (2021) indicates a lack of progress in overall project performance, particularly in the aspect of adhering to schedules. Contractors often lack precise estimates when questioned about schedules, leading to planning challenges and variations in time requests, impacting project scheduling (Lucko, Thompson, & Su, 2016).

Detail Gap gap: The detail gap is a working theory developed by Dunn (2022), supported by preceding insight from the MacLeamy Curve (AIA, 2007) and Paulson's Level of Influence graph (1976). Construction plans are often incomplete, or not communicated with a medium that each stakeholder understands. The opportunity exists to use technology as a time machine, and bring people together with a common understanding and a foundation of trust early enough to influence project outcomes (Reed, 2023).

Late Contractor Involvement gap: Most current delivery models in construction bring the contractor builder knowledge to the project too late, which results in inefficient construction sequences and limited optimization (Miller 2009). Most perniciously, this late knowledge drives a wedge between owners, designers, and contractors as costs and schedule increase, and of course, trust erodes (Dunn & Lyons, 2023).

Data and Knowledge Loss gap: Ironically, construction wastes the opportunity to use standard data due to a lack of trust and data standardization. The industry functions in an "every project for itself, one project at a time" model, and does not capture and reuse data (Dunn, 2023). By comparison, other industries respect the knowledge of the worker and capture baseline standards for improvement (Liker, 2020).

Trust as a Solution

Baiden and Price (2011) identified having a high level of trust between team members as crucial for positive outcomes. When people have trust on a project team and everyone is fighting for the same end goal, magic happens. In contrast, when trust does not exist within a project team, the project team wastes energy. People spend time trying to prove when someone is right or when someone is adding value rather than contributing to timely completion of the project. The gaps in the construction industry, including addressing symptoms rather than root causes, neglecting the importance of people, contractual disputes, safety concerns, and more, often find their root in a lack of trust among the various stakeholders involved. Trust is the lever for closing these gaps:

Collaboration Agreements: Owners and Developers should explore using Integrated Project Delivery (IPD) Methods that incorporate Integrated Forms Of Agreement (IFOA) for construction services. These agreements intentionally focus on fostering a culture of continuous improvement and prioritizing care for the people doing the work (Fischer, 2017). These agreements, and others such as

design/build, promote enhanced collaboration among the project team. Early agreement on these terms significantly enhances the likelihood of a successful project outcome. Trust forms the cornerstone of effective contractual relationships, leading parties to willingly fulfill their obligations with integrity, thus minimizing the need for legal disputes and saving valuable time and resources. Knowing that others rely on our performance motivates us to complete tasks as promised, maintaining the expected quality level for the subsequent parties involved (Scarnati, 2001).

Quality Before Construction: Teams must practice design quality of installation into the design of the product before the product is ready to be built (Gordon, 2023). There are two forms of expectations when it comes to the quality of products delivered in construction. The first is a prescriptive quality expectation, which is typically defined by the plans, specifications, contracts, and other legal documents that govern our actions and behaviors on the project site. The second quality consideration is descriptive, which is typically defined by all project stakeholders (Owner, Designers, Users, etc.)

Problem Solving Root Cause: Trust forms the foundation for open and transparent communication among all stakeholders (Schoonover et al., 2019). When trust exists, individuals are more likely to collaborate in identifying and addressing the root causes of problems, as they feel safe sharing information and perspectives without fear of blame or reprisal (Kumaraswamy et al., 2005). On teams that have trust in one another, blame is always given to the process and never handed out to the people who are working within the process (Liker, 2020).

People over Process: Prioritizing trust creates a supportive and inclusive work environment (Schoonover et al., 2019). When people feel trusted and valued, they are more likely to be engaged, motivated, and committed to a common cause (Kumaraswamy et al., 2005). Trust fosters a sense of ownership, responsibility, and teamwork, which is vital for creating a people-focused construction culture (Zheng et al., 2017).

Schedule utilizing buffers: All projects should be scheduled with the appropriate amount of time, inventory, and capacity buffer to allow for the necessary risk within each activity on the project. These properly located buffers allow for a continuous flow of work. The buffers should be sized according to the skill and capacity of the people who are constructing the project, the flow of information, and the flow of materials to the project site.

Time Machine: Technology can now provide a common understanding of work in the future, so that design and construction experts can optimize for fabrication and installation. This common visual language that links the schedule and the model removes barriers to communication, and establishes trust in the early planning stage of a project (Dunn, 2022). Builder knowledge influences design in a construction informing design process (Reed, 2023).

Early Contractor Involvement: The data for the value this approach is beginning to flow in from IPD projects (Fischer, 2017). Creating a diverse team early pays tremendous benefits in eliminating construction bottlenecks and seizing early opportunities for innovative approaches to improve schedule and cost outcomes (Reed, 2023).

Data Standardization and Sharing: Here, construction can cross-pollinate from industries like manufacturing and health care. As we establish enterprise and global data standards, we will see dividends from research, offsite and onsite production, and insurance, as all stakeholders gain more trust in the supply chain and the value creation of a focus on continuous improvement (Kumaraswamy et al., 2005).

Each of these gap examples show that trust is the lever that can close industry's gaps. Trust serves as the foundation for addressing root causes, prioritizing people, resolving contractual disputes, enhancing safety, reducing project delays, promoting innovation, retaining talent, and satisfying clients. The authors conclusion is that when project teams prioritize and focus on building trust, this reduces friction in project delivery.

The shift to trust is illustrated by figure 1. In construction today most relationships are solely transactional, with the focus being only what is gained and lost. The utopian world has relationships

being transformational with the focus on how both parties can gain (Emiliani, 2018). The realistic ideal is a mix of these two philosophies of relationships (Emiliani, 2018). For there is always some give and take and that necessitates transactions but there is also a need for trust and looking out for the best interest of the other which is transformational. Trust does not necessitate nor require blind faith but rather a mutual understanding that someone will do what is promised and promise what is necessary (Zheng et al., 2017).

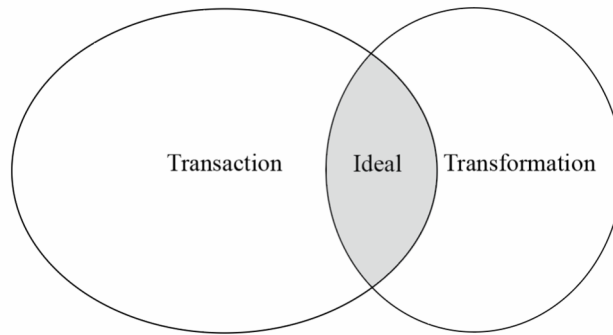


Figure 1. Theories of Relationships

Future Research

While it is undeniable that there are numerous conflicts within the construction industry, there is no definitive research into the effect of trust on each of those challenge areas. Future research would strengthen the field of construction management practices. The researchers are making the following recommendations for more research to be taken place on how trust can impact construction:

Trust Measurement: Identifying the need for research on measuring trust in construction relationships. If trust is of the utmost importance as we are describing then how do we measure trust to ensure that it exists on our project site?

Trust Maintenance: Discussing the importance of maintaining trust throughout the project lifecycle. Research should be conducted to better understand how the construction industry can maintain the level of trust once established with the team.

Psychological Safety: There is a growing body of research on psychological safety; however not much on how to create these environments, specific to the construction industry.

Long-Term effects of trust: More time should be spent better understanding how trust established during a construction project can have enduring effects on future collaborations and partnerships in the industry.

Contracts effect on trust: Further research should be conducted to study language of typical AIA contracts. Specifically a study into the use of the word collaboration vs. the use of the words dispute resolution.

The possibilities for studying trust and its effect on the construction industry are endless. As this brief study has shown, trust is not simply a theoretical concept but a practical catalyst for addressing a multitude of the construction industry's gaps. By exploring areas of future research, the construction industry will better understand what and how the industry is shaped.

Conclusion

This paper begins the analysis of the pivotal role of trust in addressing challenges within the construction industry. It calls for a fundamental shift in perspective, moving from a focus on symptoms to addressing the root causes, with trust as a cornerstone of collaboration and success. While other countries have explored trust-building in construction, the study highlights the need for research within the United States, considering the potential cultural differences. The tradition of adversarial relationships stems from a lack of trust. Miscommunication and preconceptions further exacerbate the trust deficit, hindering project effectiveness.

Trust provides a solution to multiple issues threatening the construction industry. This paper recommends areas for future research to find simplified and improved project delivery processes, transforming construction projects and the way people experience these projects. The authors believe that shifting the construction industry's focus to trust, people, and relationship dynamics is foundational to evolve construction and meet growing global demand.

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