

Exploring Preconstruction Technologies That Enhance Diversity, Equity, and Inclusion in AEC Project Teams

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Research Problem Statement or Purpose:

Digital Transformation is a rapidly evolving domain due to the simultaneous thrust in software and hardware technology, which increasingly enables the integration of the design and construction process and enhances collaboration for architecture, engineering, and construction (AEC) project teams. However, AEC is still a profession predominantly driven by **human talent**. Even with the growing need and evolution of human-machine interaction or artificial intelligence, we continue to depend on AEC project teams to complete projects. *Therefore, we need digital transformation to complement human talent.*

Studies focused on the role of **diversity, equity, and inclusion** (DEI) in the AEC team's performance suggest it is a pertinent factor that can drive effectiveness on the project and organizational levels. *Attention to DEI could create a diverse, mature, inclusive, motivated, and thriving project and team environment that acknowledges individual needs to ensure equity.*

Further, the **preconstruction** phase and the gamut of associated services allow the organic adoption of project-specific digital tools and technologies early on to provide maximum benefits to the overall project delivery process. *This is when many AEC organizations have their preconstruction team involved, establishing the foundation for the project and the future team that will deliver it.*

Therefore, this study explores what digital technologies used in preconstruction complement human talent. As part of this exploration, a DEI-focused lens is adopted to review literature from academia and industry so that it can help derive conclusions that will inform the AEC community as digital transformation continues to grow and mature.

Brief Research Methodology and Approach:

Considering the value of an integrative literature review in developing emerging topics (Synder, 2019), this study is using it to define preliminary concepts by exploring the focus areas, including digital transformation, human talent, DEI, AEC project teams, and preconstruction. The priority is to collect data that is most relevant to and representative of the present context from selected literature versus all published previously and critique it to highlight new ideas or best practices. For this review, the components comprise the need and purpose, the definition of the topic, discussion of research methods, critical analysis, synthesis, logic and conceptual

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reasoning, and implications for further research (Torraco, 2016⁴). Four forms of synthesis can yield from an integrative review, such as a research agenda that provides directions for future research, a taxonomy that classifies existing knowledge to lay the groundwork for future use, conceptual frameworks that define new ways of thinking about a topic, and metatheory that supports future research across theoretical domains (Torraco, 2005⁵).

Based on this understanding, these steps are outlined at a high level to complete this work:

1. Literature search (inclusion and exclusion)
2. Knowledge organization
3. Critical analysis
4. Synthesis
5. Conceptual reasoning

Key Findings: Work is in progress and will be presented later at the conference.

Implications:

By identifying the digital tools and technologies that enhance DEI in AEC project teams and presenting them as a framework, we can inform their selection during preconstruction and planning. With repetitive use, we can benchmark their implementation for continuous improvement. Additionally, when applied, the AEC teams should have better DEI representation and morale, demonstrating engagement, curiosity, and innovation.

⁴ Torraco, R. J. (2016). Writing integrative reviews of the literature: Methods and purposes. *International Journal of Adult Vocational Education and Technology (IJAVET)*, 7(3), 62-70.

⁵ Torraco, R. J. (2005). Writing integrative literature reviews: Guidelines and examples. *Human resource development review*, 4(3), 356-367.