Linking Digital Transformation to Organizational Performance Through Strategic Management in Indonesian Construction Companies

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Abstract. Digital transformation has become a pivotal driver for the construction industry, requiring continuous improvements in productivity, efficiency, and competitiveness in the disruptive era. This study investigates the relationship between digital transformation and organizational performance, with a particular focus on the mediating role of strategic management in Indonesian construction companies. A quantitative design was applied in three construction firms located in Makassar, involving 60 purposively selected managerial and staff respondents. Data were collected through a Likert-scale questionnaire and analyzed using multiple linear regression and the Sobel mediation test. Validity and reliability results confirmed that all instruments met statistical thresholds (CFA loading factor ≥ 0.50; Cronbach's $\alpha \geq 0.70$). Regression analysis demonstrated that digital transformation has a significant positive impact on organizational performance ($\beta = 0.52$; $p < 0.01$), while strategic management also exerts a significant positive effect ($\beta = 0.41$; $p < 0.01$). Moreover, mediation analysis revealed a significant indirect effect of digital transformation on performance through strategic management ($\beta = 0.23$; $p < 0.05$). These findings highlight the novelty of positioning strategic management as a critical mechanism for translating digital investments into sustainable performance. The study contributes to enriching the digital business strategy literature in developing economies, while providing practical guidance for construction managers in Indonesia to design measurable digital roadmaps and adaptive strategic governance.

Keywords: Digital transformation; strategic management; organizational performance; mediation; Indonesian construction companies

1 Introduction

The era of technological disruption has fundamentally reshaped the global business landscape, including the construction sector, which is highly capital-intensive and project-oriented. Construction firms are now compelled to adapt through digital transformation in order to remain competitive. Digital transformation, however, is not merely the adoption of software or new technologies; it encompasses organizational culture change, strengthened governance, business process alignment, and the restructuring of operational models to become more agile and data-driven [1], [2].

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In Indonesia, the urgency of digital transformation is reinforced by the national agenda of "Making Indonesia 4.0" and various digitalization initiatives across sectors, including construction. Within the construction industry, digital transformation is manifested through the adoption of Building Information Modelling (BIM), the integration of Internet of Things (IoT), and digital project management platforms that enable more effective stakeholder collaboration. Prior studies have shown that digital technology adoption in Indonesian construction projects improves productivity, although the outcomes are highly contingent on consistent strategic management support [3].

Nevertheless, in practice, not all organizations have successfully integrated digitalization into their business strategies. Common challenges include limited human resource competence in digital technologies, cultural resistance, financial constraints, and the absence of clear long-term strategic direction [4], [5]. These issues suggest that without robust strategic management, digital investments may fail to deliver significant performance improvements and could even result in new inefficiencies.

Previous studies have emphasized that digitalization efforts without strong strategic support often fail to produce sustainable organizational performance improvements [6], [7]. However, most research has focused primarily on the direct link between digitalization and performance, while empirical examinations of strategic management as a mediating factor particularly in developing-country construction sectors remain limited. This gap is especially evident in Indonesia, where construction companies in Makassar provide a relevant context to explore how strategic management bridges digital transformation and organizational performance

Accordingly, this study offers two main contributions. Theoretically, it enriches the digital business strategy literature by incorporating the mediating role of strategic management within the context of construction firms in a developing country. The novelty lies in the empirical analysis based on field data from three construction firms in Makassar, involving 60 respondents an area that remains underexplored in the international literature. Practically, the findings are expected to provide actionable insights for construction company leaders in designing appropriate digital strategies to improve operational efficiency, competitiveness, and business sustainability amid global challenges.

Based on this research agenda, the study addresses three central questions: (1) How does digital transformation affect organizational performance in construction firms in Makassar? (2) To what extent does strategic management influence organizational performance? (3) Does strategic management serve as a mediating variable in the relationship between digital transformation and organizational performance?

2 Literature Review

2.1 Digital Transformation

Digital transformation is understood as the integration of digital technologies into all aspects of organizational operations. It is not limited to adopting new tools, but involves restructuring business models, governance systems, and organizational processes to

create and deliver new value to customers [1]. In the construction sector, this includes the adoption of Building Information Modelling (BIM), cloud-based project management, and real-time data analytics for project monitoring, all of which have been shown to improve coordination, reduce costs, and enhance construction quality [2], [3].

However, recent studies highlight that digital transformation often faces barriers such as cultural resistance, limited digital infrastructure, and a lack of employee competence [8], [9]. These challenges underscore that digital transformation must be viewed as a continuous change process rather than a one-time technological intervention. Long-term success depends on an organization's ability to align technology adoption with its strategic business objectives [10].

2.2 Strategic Management

Strategic management is defined as a systematic process involving strategy formulation, implementation, and evaluation to achieve long-term goals [11]. In the digital era, it functions as a mechanism that translates digital investments into sustainable business value. Firms with strong strategic management capabilities are better equipped to align digital resources with organizational objectives, ultimately achieving superior performance outcomes [5], [12].

Furthermore, organizations require dynamic capabilities to adapt to rapidly changing technologies [7]. Without effective strategic management, digital initiatives risk becoming inefficient and failing to contribute meaningfully to productivity [13]. Thus, strategic management is not merely an administrative function but a core capability that ensures digital transformation generates competitive advantage [14].

2.3 Digital Transformation and Organizational Performance

The positive relationship between digital transformation and organizational performance has been widely documented. Digital initiatives enhance efficiency, service quality, and innovation capacity [2]. In construction, technologies such as BIM and IoT improve design accuracy and accelerate project completion [3].

Nevertheless, some studies caution that digital transformation does not always produce linear performance improvements. Without proper strategies, digitalization can increase operational complexity and escalate costs [6], [16]. Therefore, the extent to which digital transformation improves performance depends on an organization's ability to integrate technology within its business strategy.

2.4 The Mediating Role of Strategic Management

Prior research emphasizes that technology alone is insufficient for organizational success; strategy is a decisive factor in digitalization outcomes [6]. Strategic management can serve as a mediating variable linking digital transformation to organizational performance [11]. Evidence suggests that strategic flexibility strengthens organizational resilience during digital transformation processes [17].

This highlights the importance of testing strategic management as a mediating factor in the digital transformation–performance relationship, particularly in developing countries where resource constraints and cultural resistance remain prevalent [4]. Consequently, this study addresses the research gap by expanding digital business strategy theory within the context of Indonesia's construction industry.

3 Methodology

3.1 Research Design

This study employed a quantitative approach with an explanatory research design. The design was chosen to examine the effects of digital transformation on organizational performance, with strategic management acting as a mediating variable. The research model was based on causal relationships, which were tested using multiple linear regression analysis.

3.2 Research Setting and Period

The research was conducted in three construction companies operating in Makassar: PT. Yodya Karya Wilayah II Makassar, PT. Wesitan Konsultasi Pembangunan Wilayah Makassar, and PT. Virama Karya Cabang Makassar. PT. Yodya Karya is a state-owned construction consulting firm specializing in supervision and planning of national projects. PT. Wesitan is a private consulting company engaged in regional infrastructure projects. PT. Virama Karya, another state-owned consulting company, plays an important role in both regional and national strategic projects. These firms were purposively selected due to their extensive experience and active engagement in digitalization, particularly in project management.

The data collection was carried out in August 2022 over a four-week period. This period coincided with the active implementation of digital systems in ongoing project management within the companies.

3.3 Population and Sampling Technique

The population comprised employees directly involved in project management in the three firms. Respondents were selected using purposive sampling, applying specific criteria to ensure alignment with the research objectives. The inclusion criteria were: (1) employees directly engaged in project planning or implementation, (2) at least two years of work experience in the company, and (3) prior use of digital systems in daily operations. Based on these criteria, a total of 60 respondents were obtained, with 20 from each company.

The selected sample of 60 respondents was considered sufficient to represent employees with relevant experience and direct involvement in digital-based project management, ensuring that the data accurately reflected the study objectives. However,

the limited sample size and focus on three firms in Makassar constrain the generalizability of the findings to a broader population

3.4 Research Instrument

Data for this study were collected using a structured questionnaire based on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The instrument was designed to capture three main constructs: Digital Transformation (X1), Strategic Management (X2), and Organizational Performance (Y). The Digital Transformation construct assessed the extent of technology adoption in project operations, the use of digital documentation and management systems, and the development of a digital-oriented organizational culture. The Strategic Management construct evaluated processes related to digital strategy formulation, implementation, and subsequent monitoring and control. Meanwhile, Organizational Performance was measured through indicators reflecting project productivity and efficiency, the quality of project outcomes, and the level of innovation in execution. The questionnaire items were adapted from previously validated instruments employed in earlier studies [1], [3], [5], ensuring both reliability and alignment with established research frameworks.

3.5 Validity and Reliability Testing

Validity was assessed using Confirmatory Factor Analysis (CFA), applying a loading factor threshold of ≥ 0.50. Reliability was measured using Cronbach's Alpha, where $\alpha \geq 0.70$ indicated acceptable internal consistency.

3.6 Data Analysis Technique

Data were analyzed using multiple linear regression to test hypotheses H1 and H2. The regression equation is formulated as follows.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon \quad (1)$$

Where Y represents Organizational Performance, X_1 is Digital Transformation, X_2 is Strategic Management, β_0 is the constant, β_1–β_2 are regression coefficients, and ε is the error term.

The Sobel test was applied to examine the mediating effect (H3). The Sobel test statistic was calculated as:

$$Z = \frac{a \times b}{\sqrt{(b^2Sa^2 + a^2Sb^2)}} \quad (2)$$

Where a and b represent unstandardized regression coefficients, and Sa and Sb are their standard errors.

Statistical analyses were conducted using SPSS 25 and AMOS 24 software. The results were then compared with previous findings to strengthen the study's external validity.

Multiple regression analysis was applied because it effectively examines the simultaneous influence of multiple independent variables on a dependent variable, allowing us to assess both the direct effects of digital transformation and strategic management on organizational performance [5], [6]. The Sobel test was employed to confirm the mediating role of strategic management, as it provides a reliable statistical approach for identifying indirect effects in causal models [17].

4 Result

4.1 Respondent Profile

A total of 60 respondents participated in this study, consisting of 20 individuals from each company: PT. Yodya Karya Wilayah II Makassar, PT. Wesitan Konsultasi Pembangunan Wilayah Makassar, and PT. Virama Karya Cabang Makassar. Demographically, the majority of respondents were male (65%), predominantly aged between 25 and 40 years (70%), and more than half (55%) had over five years of work experience. This indicates that the respondents possessed sufficient professional experience to provide informed assessments of digitalization practices within their organizations.

The distribution of respondents by division shows that 60% were from project planning and supervision, 25% from administration, and 15% from finance. This distribution highlights that the respondents represented strategic functions directly involved in the implementation of digital transformation within construction companies.

4.2 Descriptive Statistics

The results of descriptive analysis indicate that respondents' perceptions of Digital Transformation (X1) were at a high level, with a mean score of 4.1 on a five-point Likert scale. This suggests that most respondents recognized their companies' efforts in adopting digital technologies, digitizing documentation, and initiating the development of a digital-oriented organizational culture. The Strategic Management variable (X2) recorded a mean score of 3.9, reflecting that processes of planning, implementing, and evaluating digital strategies had been applied, though further strengthening is required. Meanwhile, Organizational Performance (Y) achieved a mean score of 4.0, indicating that digital transformation has made tangible contributions to project productivity, service quality, and innovation.

4.3 Validity and Reliability Testing

Validity testing using Confirmatory Factor Analysis (CFA) showed that all indicators for Digital Transformation (X1), Strategic Management (X2), and Organizational Performance (Y) had loading factor values of ≥ 0.50. In addition, the Average Variance Extracted (AVE) values for each construct were above 0.50, confirming that all constructs met the criteria for convergent validity.

Reliability testing using Cronbach's Alpha demonstrated strong internal consistency, with $\alpha = 0.82$ for Digital Transformation, $\alpha = 0.85$ for Strategic Management, and $\alpha = 0.83$ for Organizational Performance. Since all values exceeded the minimum threshold of 0.70, the measurement instrument can be considered reliable.

4.4 Multiple Regression Analysis

(X1) has a significant positive effect on Organizational Performance (Y) with a coefficient of $\beta = 0.52$, $t = 6.50$, $p < 0.01$. This indicates that a higher level of digital adoption leads to greater improvements in organizational performance, particularly in terms of productivity, efficiency, and project quality.

Similarly, Strategic Management (X2) also exerts a significant positive influence on Organizational Performance ($\beta = 0.41$, $t = 5.86$, $p < 0.01$). This finding confirms that well-formulated, consistently implemented, and regularly evaluated strategies strengthen the positive impact of digital transformation on organizational outcomes.

4.5 Mediation Test (Sobel Test)

The Sobel mediation test further reveals that Strategic Management (X2) mediates the relationship between Digital Transformation (X1) and Organizational Performance (Y). The indirect effect value of $\beta = 0.23$ with $t = 2.55$ and $p < 0.05$ indicates that the mediating role is statistically significant. This suggests that digital transformation alone is insufficient to ensure sustainable performance; strategic management is necessary to align technology adoption with long-term organizational goals.

4.6 Hypothesis Testing Results

Table 1. Descriptive Statistics of XYZ Variables

Variable	Coefficient (β)	Std. Error	t-value	Significance (p)
Digital Transformation (X1)	0.52	0.08	6.50	< 0.01
Strategic Management (X2)	0.41	0.07	5.86	< 0.01
Mediation (Indirect Effect)	0.23	0.09	2.55	< 0.05

Based on the analysis, all hypotheses are supported by empirical data. H1 is accepted, confirming that digital transformation significantly improves organizational performance. H2 is also accepted, indicating that strategic management positively

influences performance. Finally, H3 is confirmed, showing that strategic management mediates the relationship between digital transformation and organizational performance.

4.7 Conceptual Framework

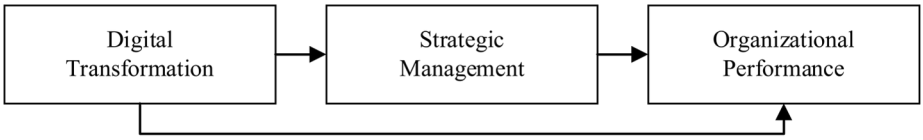

Fig. 1 Conceptual Framework for Strategic Integration

The arrow from X1 to Y indicates the direct effect of digital transformation on organizational performance ($\beta = 0.52$). The path X1 → X2 → Y represents the indirect effect mediated by strategic management ($\beta = 0.23$). This diagram emphasizes that strategy serves as a key connecting factor that strengthens the contribution of digital transformation to the performance of construction companies in Makassar.

5 Discussion

The findings of this study demonstrate that digital transformation has a significant positive effect on organizational performance, particularly within construction companies in Makassar. The adoption of technologies such as Building Information Modelling (BIM), electronic document management systems, and cloud-based project management applications has been shown to enhance productivity, efficiency, and project quality. These results are consistent with previous studies [2], [15], which emphasized that digital adoption is a critical determinant of organizational efficiency and competitiveness. However, the results also reinforce the notion that digital transformation should be understood as a continuous change process rather than a one-time technological intervention [8]. Without adequate strategic support, digitalization may fail to yield tangible performance outcomes [6].

This study further confirms that strategic management plays a significant role in strengthening organizational performance. Well-formulated, consistently implemented, and continuously evaluated strategies enhance the positive effects of digitalization. This suggests that companies with strong strategic management capabilities are better equipped to align digital resources with long-term objectives, thereby achieving superior outcomes [5], [12]. Hence, strategic management should not be viewed merely as an administrative function but as a fundamental mechanism that directs technological adoption toward competitive advantage [7].

The mediation analysis highlights that strategic management acts as a bridge between digital transformation and organizational performance. While digitalization directly contributes to performance, its effects are optimized when guided by deliberate strategies. This finding underscores that strategic flexibility enhances organizational

resilience and competitiveness during the digital transformation process [17]. In the context of construction companies in Makassar, variations in digital adoption across firms only translate into significant outcomes when accompanied by clear and consistent strategic management.

The theoretical contribution of this study lies in advancing the digital business strategy literature. While much of the prior research has focused on the direct link between digitalization and performance [2], [15], this study integrates the mediating role of strategic management as a key explanatory factor for digital effectiveness. In doing so, it expands existing conceptual models [6], [18] and provides new empirical evidence from a developing-country context, specifically Indonesia's construction industry.

From a practical perspective, the findings provide actionable insights for construction company leaders in Makassar. Digital investments should be accompanied by clear strategic roadmaps, performance indicators aligned with digital initiatives, ongoing evaluation mechanisms, and an organizational culture that fosters innovation. Sustainable competitive advantage can only be achieved when strategies effectively guide organizational capabilities in managing technological change [11]. Furthermore, enhancing employees' digital competencies through training is essential to ensure that human resources are adequately prepared to support digital transformation initiatives.

Despite its contributions, this study has several limitations. The sample size was relatively small, involving only 60 respondents across three companies, which limits the generalizability of the findings. Future research should expand the sample to include a broader range of construction firms across different regions of Indonesia, or even extend to cross-sectoral comparisons. Additionally, this study employed a purely quantitative approach; subsequent studies are encouraged to adopt mixed-methods designs, incorporating in-depth interviews to further explore how digital strategies are formulated, implemented, and evaluated in practice.

6 Conclusion

This study confirms that digital transformation plays a vital role in improving organizational performance in Indonesian construction companies, particularly those operating in Makassar. Empirical analysis demonstrates that the adoption of digital technologies such as Building Information Modelling (BIM), electronic document systems, and cloud-based project management applications has a significant positive impact on productivity, efficiency, and project quality. Furthermore, the study reveals that strategic management not only directly influences performance but also acts as a mediator that amplifies the effects of digital transformation. Accordingly, all three hypotheses proposed in this research are empirically supported.

From a theoretical standpoint, the study contributes to the digital business strategy literature by reinforcing the idea that digital transformation cannot be separated from strategic management processes. It extends existing conceptual models by integrating strategic management as a mediating factor, providing new empirical evidence from a developing-country context. Practically, the findings underscore the importance for

construction managers to design measurable digital roadmaps, cultivate an innovation-oriented organizational culture, and enhance employees' digital competencies to ensure that technology investments translate into sustainable competitive advantage.

Nonetheless, this research has limitations, particularly in terms of sample size, which involved only 60 respondents from three firms in Makassar. As such, the results cannot be widely generalized. Future studies should incorporate larger samples, include construction companies from different regions or sectors, and employ mixed-methods or longitudinal approaches to provide deeper insights into the dynamics of digital transformation and strategic management over time. In practical terms, the results of this study can serve as a foundation for developing structured digital transformation guidelines and strategic management training programs, enabling construction firms to systematically align technological innovations with long-term organizational goals.

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