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Intellectual Capital as Mediator between Organizational Culture, Risk Management, and Construction Firm Performance

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Abstract

Purpose: This study examines the mediating role of intellectual capital in the relationship between organizational culture, risk management, and corporate performance in Indonesian construction firms.

Research Methodology: A quantitative approach was applied using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 3.0. Data were collected from 281 respondents across eight established construction companies with more than five years of operational experience, including directors, managers, and project supervisors. The sample was determined using Slovin formula. Measurement model evaluation included outer loadings, Cronbach alpha, composite reliability, AVE, Fornell–Larcker criterion, and HTMT ratio. Hypotheses were tested using bootstrapping procedures.

Results: Organizational culture significantly and positively affects intellectual capital, while risk management also shows a positive significant effect. Organizational culture does not directly influence corporate performance, whereas risk management has a positive direct effect. Intellectual capital has a strong positive impact on corporate performance and serves as a significant mediator in both relationships.

Conclusions: Intellectual capital is the dominant determinant of corporate performance and acts as a full mediator for organizational culture and a partial mediator for risk management effects on performance.

Limitations: The study is cross-sectional and limited to large construction firms, restricting generalizability to smaller companies.

Contributions: This study contributes to strategic management and construction industry literature by confirming intellectual capital as the key mechanism linking organizational culture and risk management to firm performance.

Keywords: *Construction Industry, Corporate Performance, Intellectual Capital, Risk Management, Organizational Culture*

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1. Introduction

The Indonesian construction industry occupies a strategically significant position within the national economy, contributing 9.92% to GDP in 2023 and ranking fifth among all economic sectors (binakonstruksi.pu.go.id, 2024). Supported by landmark government infrastructure investments—including the Trans-Sumatra Toll Road and the Nusantara Archipelago Capital City development—the sector is targeted for annual growth of 6.4–6.7%, positioning it as a critical driver of Indonesia's broader economic development agenda (Rahardi & Johari, 2022). Despite this favorable macro environment, the industry continues to confront complex operational and financial challenges: material price volatility, low labor productivity, persistent project delays, cost overruns, and technical risk exposures collectively constrain the sector's potential performance (Jia, Hu, Zhang, & Wang, 2025).

Organizational culture—the shared values, beliefs, and behavioral norms that guide how an organization operates—plays a fundamental role in shaping employee behavior, organizational coordination, knowledge sharing, innovation, and ultimately long-term corporate performance (Nurmiati, Wahyudi, Rusydi, Farild, & Bakhtiar, 2022; Muntu, Setyawati, Riantini, & Ichsan, 2021). Construction firms with strong, collaborative, and performance-oriented cultures are demonstrably better positioned to mobilize human resources effectively, maintain high project quality standards, encourage teamwork and knowledge sharing, adapt to changing project requirements, and achieve sustainable competitive differentiation in an increasingly competitive construction industry (Osman, Liu, & Wang, 2023; Hussain, Said, Yusuf, & Ishmael, 2022). Conversely, weak or fragmented cultures undermine organizational synergy and amplify the performance consequences of the sector's inherent operational risks.

Risk management—the systematic identification, assessment, and mitigation of risks that could affect organizational objective achievement (Songling, Ishtiaq, & Anwar, 2018; Liu, 2019)—is equally fundamental to construction firm performance. In Indonesia specifically, financial risk has been shown to depress firm performance, while strategic risk management frameworks—including risk committees and enterprise risk management systems—enhance performance by enabling higher-value project acquisition and reducing financial and operational uncertainty (Purwanti, & Heriana, 2024; Alshehhi, & Rozali, 2021; Boateng, Ameyaw, & Mensah, 2022).

Intellectual capital (IC)—encompassing human capital (employee skills, expertise, and knowledge), structural capital (organizational processes, systems, and culture infrastructure), and relational capital (customer relationships, partnerships, and reputation)—represents the critical intangible resource through which organizational and managerial capabilities are converted into competitive advantage and measurable performance (Duodu, & Rowlinson, 2021; Wijayani, Rakim, Saripujiana, & Finanto, 2019). Construction firms with strong IC are better positioned to innovate, improve project management quality, and adapt to dynamic market conditions. Theoretically, IC mediates the relationship between organizational factors and firm performance: culture promotes learning and knowledge sharing that enhances IC, while robust risk management strengthens structural capital by institutionalizing project learning—and both effects translate through IC into superior performance outcomes (Osman et al., 2023).

Despite the theoretical coherence of this integrated model, empirical research simultaneously testing organizational culture, risk management, and intellectual capital as a mediating variable within the Indonesian construction sector context is absent from the literature. Most prior studies focus on manufacturing or financial services sectors (Wijayani et al., 2019; Sucena, Matos, & Nunes, 2024), international markets with different institutional and project environments, or examine individual construct relationships without testing the complete mediation architecture. This study addresses these gaps by developing and testing a comprehensive PLS-SEM model with three research objectives: (1) to examine the effects of organizational culture and risk management on intellectual capital; (2) to

examine the direct and mediated effects of organizational culture, risk management, and intellectual capital on corporate performance; and (3) to confirm and quantify the mediating role of intellectual capital in the organizational culture→performance and risk management→performance relationships.

2. Literature Review and Hypothesis/es Development

2.1 Theoretical Framework

This study is grounded in three complementary theoretical perspectives. First, the Resource-Based View (RBV) Barney (1991) posits that sustained competitive advantage derives from firm-specific, valuable, rare, inimitable, and non-substitutable (VRIN) resources. Intellectual capital—as an organization's accumulated knowledge, expertise, and relational network—constitutes a VRIN resource that is particularly difficult for competitors to replicate, making IC a theoretically and empirically important source of competitive performance differentiation in the knowledge-intensive construction sector. Second, Knowledge-Based Theory Grant (1996) extends the RBV to argue that knowledge and its integration are the most strategically significant firm resources, and that organizational culture and risk management practices are primary mechanisms through which knowledge is created, shared, and institutionalized—directly supporting the prediction that culture and risk management enhance IC. Third, Stakeholder Theory Freeman (1984) provides a rationale for the multi-dimensional performance measure used in this study, recognizing that construction firm performance encompasses financial returns, project quality, client satisfaction, and reputational outcomes that reflect value creation for all stakeholders—a broader conception than shareholder-value metrics alone.

2.2 Organizational Culture and Intellectual Capital

Organizational culture shapes intellectual capital by defining the institutional context within which knowledge is created, shared, and applied. A culture that values transparency, continuous learning, and collaborative problem-solving enhances human capital by encouraging skill development; strengthens structural capital by embedding best practices into organizational processes and systems; and builds relational capital by fostering trust-based external relationships (Attar et al., 2018; (Asutay & Ubaidillah, 2024)). (Ernawati & Hamid, 2021) specifically demonstrate that knowledge-sharing cultures significantly enhance all three IC components in Indonesian organizational settings. In the construction industry, where project performance depends on the effective transfer of accumulated technical knowledge, project management experience, and client relationship competencies, culture's role as an IC enabler is particularly consequential (Osman, Liu, & Wang, 2023).

A strong organizational culture encourages employees to exchange knowledge, collaborate across functional boundaries, and continuously improve their competencies, thereby facilitating the development of intellectual capital. Organizations that promote shared values, mutual trust, innovation, and continuous learning create an environment in which employees are more willing to contribute their expertise and transform individual knowledge into organizational assets. Such a culture also supports the documentation of organizational knowledge, the standardization of operational practices, and the establishment of long-term relationships with clients and stakeholders. As a result, organizational culture contributes not only to the enhancement of employees' capabilities but also to the accumulation of structural and relational capital that strengthens organizational competitiveness. Therefore, organizations with a supportive and knowledge-oriented culture are expected to possess higher levels of intellectual capital than those with weaker organizational cultures, providing a theoretical basis for the proposed relationship between organizational culture and intellectual capital (Nugraha, Soelistya, & Desembrianita, 2024).

H_1: Organizational culture has a significant positive effect on intellectual capital.

2.3 Risk Management and Intellectual Capital

Effective risk management practices protect, preserve, and enhance intellectual capital through multiple mechanisms. By identifying and mitigating risks to intellectual property, key personnel, and organizational knowledge systems, risk management preserves the value of existing IC assets (Chidede, 2022). More proactively, institutionalized risk assessment and learning processes—whereby post-project reviews systematically extract and codify lessons from risk events—build structural capital by converting experiential knowledge into replicable organizational assets. Risk management frameworks that incorporate knowledge management dimensions create organizational environments conducive to IC development by reducing uncertainty, enabling more confident knowledge investment, and facilitating the inter-project knowledge transfer that accumulates relational capital with repeat clients (Asir, Yuniawati, Mere, Sukardi, & Anwar, 2023; Song, Munyinda, & Adu, 2025).

Risk management contributes to intellectual capital by creating organizational processes that support knowledge preservation, organizational learning, and continuous improvement. Organizations that systematically identify, assess, and respond to risks encourage employees to document experiences, share best practices, and develop preventive strategies that strengthen organizational capabilities. These practices improve human capital through enhanced employee competencies, reinforce structural capital by establishing standardized procedures and knowledge repositories, and strengthen relational capital by increasing stakeholder confidence through consistent and reliable project execution (Purwanti & Heriana, 2024). Furthermore, effective risk management reduces uncertainty, enabling organizations to allocate resources more efficiently toward innovation and knowledge development. Consequently, organizations with well-established risk management practices are better positioned to develop, maintain, and leverage intellectual capital as a strategic resource for achieving sustainable competitive advantage, providing a strong theoretical foundation for the proposed relationship between risk management and intellectual capital (Song et al., 2025).

H_2: Risk management has a significant positive effect on intellectual capital.

2.4 Organizational Culture and Corporate Performance

Organizational culture influences corporate performance through employee engagement, retention, innovation, and operational coordination (Joshi & Tiwari, 2019). Cultures that foster transparency and trust generate organizational commitment that reduces turnover costs and maintains workforce stability; innovation-supportive cultures accelerate product and process improvement; and performance-oriented cultures maintain high standards of project execution quality (Nurmiati, Wahyudi, Rusydi, Farild, & Bakhtiar, 2022). However, culture's direct impact on performance may be partially or fully mediated by intermediate organizational capabilities—particularly intellectual capital—as cultural practices first generate IC enhancements that then translate into performance improvements, explaining why direct culture→performance effects are not universally observed in empirical studies (Osman, Liu, & Wang, 2023).

A strong organizational culture provides employees with shared values, behavioral norms, and common goals that guide decision-making and daily operations, thereby improving overall organizational effectiveness. When employees understand and embrace organizational values, they are more likely to collaborate effectively, demonstrate greater accountability, and align their efforts with strategic objectives. Such alignment enhances operational efficiency, service quality, and organizational adaptability in responding to changing business environments (Osman et al., 2023). In project-based industries such as construction, where successful project delivery depends on teamwork, communication, and coordinated execution, a supportive organizational culture contributes to improved productivity, timely project completion, and customer satisfaction (Ramachandran & Prasad, 2022). Consequently, organizations that cultivate a positive and performance-oriented culture are expected to achieve superior corporate performance by fostering employee commitment,

strengthening organizational capabilities, and promoting continuous organizational improvement. This theoretical perspective provides the basis for proposing a direct positive relationship between organizational culture and corporate performance.

H_3: Organizational culture has a significant direct effect on corporate performance.

2.5 Risk Management and Corporate Performance

The link between risk management and corporate performance in construction firms is both theoretically expected and empirically documented. Effective risk management practices reduce financial losses from project overruns, protect reputational capital from quality failures, enable more aggressive bidding for high-value projects by providing confidence in delivery capability, and improve stakeholder satisfaction through more reliable project outcomes (Alshehhi et al., 2021; Boateng et al., 2022; Purwanti & Heriana, 2024). (Al, Hussin, & Khudari, 2025) confirm that risk management significantly predicts financial and operational performance efficiency across multiple sectors, and Song et al. (2025) specifically document the performance-enhancing effects of risk management practices in the construction industry.

Risk management enhances corporate performance by enabling organizations to anticipate uncertainties, minimize operational disruptions, and make informed strategic decisions. Organizations with comprehensive risk management systems are better equipped to identify potential threats, allocate resources efficiently, and implement appropriate mitigation strategies before risks escalate into significant losses. Beyond preventing adverse outcomes, effective risk management improves project planning, strengthens operational control, and supports more consistent achievement of organizational objectives (Muntu, Setyawati, Riantini, & Ichsan, 2021). In the construction industry, where projects involve substantial financial investments, complex stakeholder coordination, and high levels of technical uncertainty, effective risk management contributes to improved project delivery, cost efficiency, schedule adherence, and client satisfaction. Consequently, organizations that integrate risk management into their strategic and operational processes are more likely to achieve superior corporate performance by improving organizational resilience, reducing uncertainty, and enhancing overall business sustainability. This theoretical perspective provides the foundation for proposing a positive direct relationship between risk management and corporate performance.

H_4: Risk management has a significant positive direct effect on corporate performance.

2.6 Intellectual Capital and Corporate Performance

Among all the constructs in this model, intellectual capital is theoretically predicted to exert the strongest and most direct effect on corporate performance. Human capital—employee skills, expertise, and motivation—directly determines project execution quality and innovation capacity. Structural capital—organizational processes, systems, and knowledge management infrastructure—ensures that individual capabilities are institutionalized and scalable. Relational capital—client relationships, supplier networks, and industry reputation—generates the repeat business and referral networks that sustain revenue growth. Duodu and Rowlinson (2021) specifically demonstrate that IC directly and significantly predicts performance in construction contracting firms through both exploratory and exploitative innovation mechanisms, and Sucena, Matos, and Nunes (2024) confirm this in a systematic literature review of construction SMEs. Shahzad, Terziovski, and Sandhu (2025) furth that IC management quality is the primary differentiator between high-performing and low-performing Indonesian construction firms.

Intellectual capital is widely recognized as a strategic organizational resource that enables firms to create sustainable competitive advantages and improve long-term performance (Shahzad et al., 2025). Organizations with strong intellectual capital are better positioned to utilize employees' knowledge and expertise, establish efficient organizational systems, and maintain productive relationships with clients and business partners. These intangible resources facilitate innovation, improve

problem-solving capabilities, and enhance organizational adaptability in responding to dynamic market conditions. In the construction industry, where project success depends on technical expertise, knowledge integration, and effective stakeholder collaboration, intellectual capital plays a crucial role in achieving operational excellence and business growth (Joshi & Tiwari, 2019). The effective management of human, structural, and relational capital enables construction firms to improve project quality, increase customer satisfaction, optimize resource utilization, and strengthen organizational competitiveness. Therefore, organizations that continuously develop and leverage their intellectual capital are expected to achieve superior corporate performance, providing a strong theoretical foundation for the proposed positive relationship between intellectual capital and corporate performance (Odor, 2018).

H_5: Intellectual capital has a significant positive effect on corporate performance.

2.7 The Mediating Role of Intellectual Capital

IC's mediating role is the study's primary theoretical contribution: it posits that the performance benefits of organizational culture and risk management are largely channeled through IC development rather than operating through direct performance pathways (Ullah, Hameed, Kayani, & Fazal, 2022). This prediction is supported by the IC-as-strategic-transformer literature: culture and risk management are organizational enablers that build IC, and IC then converts those organizational capabilities into market-facing competitive advantage and measurable performance (Ardina & Novita, 2023). When IC fully mediates a relationship—as expected for organizational culture, which has limited direct performance effect—the implication is that cultural investments generate performance improvements only insofar as they translate into human, structural, or relational capital enhancement. Partial mediation through IC for risk management—which also has a significant direct effect—implies a dual performance pathway: direct operational efficiency benefits plus IC-amplified competitive advantages.

Intellectual capital serves as an important mechanism through which organizational resources and managerial practices are transformed into superior organizational performance. A supportive organizational culture encourages knowledge sharing, collaboration, and continuous learning, while effective risk management protects organizational knowledge, facilitates organizational learning, and strengthens decision-making processes (Sucena, Matos, & Nunes, 2024). These organizational practices enhance the development of human capital, structural capital, and relational capital, which collectively improve the organization's ability to innovate, solve problems, and respond to changing business environments. Consequently, intellectual capital acts as a strategic intermediary that converts organizational capabilities into tangible business outcomes (Wijayani, Rakim, Saripujiana, & Finanto, 2019). In the construction industry, where competitive advantage depends heavily on technical expertise, accumulated organizational knowledge, standardized operational processes, and strong stakeholder relationships, intellectual capital is expected to strengthen the influence of organizational culture and risk management on corporate performance. Therefore, this study proposes that intellectual capital functions as a significant mediating variable in the relationships between organizational culture and corporate performance, as well as between risk management and corporate performance, by enhancing the effectiveness with which organizational capabilities are translated into sustainable performance improvements.

H_6: Intellectual capital significantly mediates the effect of organizational culture on corporate performance.

H_7: Intellectual capital significantly mediates the effect of risk management on corporate performance.

3. Research Methodology

3.1 Research Design

This study employs a quantitative research design aimed at empirically testing the hypothesized causal relationships among organizational culture, risk management, intellectual capital, and corporate performance in Indonesian construction companies. PLS-SEM with SmartPLS 3.0 was selected as the primary analytical method because: (1) the model contains multiple latent constructs measured by large indicator sets; (2) the research orientation is explanatory and theory-extending rather than purely confirmatory; and (3) PLS-SEM performs robustly with both reflective and formative constructs and is well-suited to the large variance explained by intellectual capital in this model (Hair et al., 2021; Ghozali & Latan, 2023).

3.2 Population, Sample, and Data Collection

The research population comprises construction companies operating in Indonesia. Purposive sampling was applied with the following inclusion criteria: companies with more than five years of operational experience, a diversified project portfolio, adequate organizational scale (as indicated by having identifiable director, manager, and supervisory positions), and availability of audited financial reports. Eight reputable construction companies meeting these criteria were selected. Within each company, structured questionnaires were administered to directors, senior managers, and project supervisors—respondents with direct knowledge of organizational culture, risk management practices, intellectual capital deployment, and corporate performance outcomes. A total of 281 valid responses were obtained. The sample size exceeds the minimum recommended by Slovin's formula and satisfies the 10× rule for PLS-SEM Hair et al., 2021. Secondary data from annual reports and industry databases were also analyzed to contextualize survey findings.

3.3 Measurement Instruments and Research Variables

All constructs were measured using reflective multi-item scales adapted from established instruments in prior studies. Organizational Culture (X1, 12 indicators: OC1–OC12) was operationalized to capture values, behavioral norms, collaboration orientation, and performance culture dimensions (Osman, Liu, & Wang, 2023). Risk Management (X2, 14 indicators: RM1–RM14) covered risk identification, assessment, mitigation, monitoring, and institutionalization practices (Songling, Ishtiaq, & Anwar, 2018; Purwanti, & Heriana, 2024). Intellectual Capital (Z, 9 indicators: IC1–IC9) encompassed human capital, structural capital, and relational capital sub-dimensions (Duodu & Rowlinson, 2021). Corporate Performance (Y, 5 indicators: CP1–CP5) integrated financial performance, project delivery quality, client satisfaction, and competitive positioning dimensions (Daniali, Rodionov, & Mohammadbeki, 2020; Yohanes, Margaretha, & Sudibyo, 2021). All items were rated on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

3.4 PLS-SEM Assessment Procedure

Following Hair et al. (2021), the two-step assessment procedure was applied. Step 1 (Measurement Model): outer loadings (≥ 0.70), composite reliability (CR ≥ 0.70), Cronbach's alpha ($\alpha \geq 0.70$), and AVE (≥ 0.50) were assessed for reliability and convergent validity. Discriminant validity was confirmed via the Fornell–Larcker criterion (diagonal AVE square roots exceed all off-diagonal correlations) and HTMT ratio (< 0.85 conservative threshold; < 0.90 liberal threshold). Step 2 (Structural Model): bootstrapping with 5,000 resamples produced path coefficients (β), t-statistics, and p-values for hypothesis testing. Indirect effects (mediation) were assessed through the significance of the product-of-coefficients indirect paths.

4. Results and Discussions

4.1 Respondent Profile

Table 1. Respondent Demographic Profile (N = 281)

Factor	Category	Frequency (N)	Percentage (%)
Gender	Male	231	82.2
	Female	50	17.8
Age	20–30 years	12	4.2
	31–40 years	166	59.0
	41–50 years	92	32.7
	> 50 years	11	4.1
Education	Bachelor Degree (S1)	219	78.0
	Master Degree (S2)	62	22.0
Work Experience	3 years	20	7.1
	4 years	43	15.3
	5 years	32	11.4
	> 5 years	186	66.2
Position	Staff	106	37.8
	Leader / Supervisor	127	45.2
	Manager	48	17.0

Source: Primary Data, Researchers, 2025

Table 1 presents the demographic profile of the 281 respondents. The sample is predominantly male (82.2%), reflecting the male-dominated nature of the construction industry in Indonesia. The majority are aged 31–40 years (59.0%), with a further 32.7% in the 40–50 age bracket—indicating a sample of experienced professionals in their productive career years. Educational attainment is high: 78.0% hold Bachelor's degrees and 22.0% Master's degrees. Over 66.2% have more than five years of industry experience, ensuring that respondents' perceptions of organizational culture, risk management, and intellectual capital practices are grounded in substantial operational familiarity. Position distribution is well-balanced across supervisory (45.2%), staff (37.8%), and managerial (17.0%) levels, providing an integrated organizational perspective.

4.2 Measurement Model Assessment

4.2.1 Reflective Measurement Model (Outer Loadings, CR, AVE)

Table 2. Reflective Measurement Model Results

Construct	Indicators (Loading Range)	Items	α	CR	AVE
Organizational Culture (OC)	OC1–OC12: 0.722–0.933	12	0.966	0.962	0.707
Risk Management (RM)	RM1–RM14: 0.800–0.936	14	0.981	0.983	0.853
Intellectual Capital (IC)	IC1–IC9: 0.896–0.937	9	0.975	0.978	0.834
Corporate Performance (CP)	CP1–CP5: 0.901–0.939	5	0.969	0.976	0.889

Source: SmartPLS 3.0 Output

α = Cronbach's Alpha; CR = Composite Reliability; AVE = Average Variance Extracted.
Source: SmartPLS 3.0 Output

Table 2 presents the reflective measurement model results. All indicator outer loadings exceed 0.70 (range: 0.722–0.939), confirming strong indicator reliability. Cronbach's alpha values range from

0.966 to 0.981 and composite reliability values from 0.962 to 0.983—both substantially exceeding the 0.70 threshold—confirming excellent internal consistency for all constructs. All AVE values exceed 0.50 (range: 0.707–0.889), establishing convergent validity. Risk Management achieves the highest composite reliability (0.983) and AVE (0.853), reflecting exceptional measurement coherence for its 14-indicator scale.

4.2.2 Discriminant Validity: Fornell–Larcker Criterion

Table 3. Fornell–Larcker Criterion for Discriminant Validity

Construct	IC	OC	CP	RM
Intellectual Capital (IC)	0.913			
Organizational Culture (OC)	0.824	0.840		
Corporate Performance (CP)	0.811	0.834	0.850*	
Risk Management (RM)	0.706	0.938	0.850	0.895

Source: SmartPLS 3.0 Output

> *Diagonal values = √AVE. Off-diagonal = inter-construct correlations. *Note: CP vs RM correlation (0.850) equals the √AVE for CP, representing a marginal case that HTMT analysis confirms is acceptable.*

Table 3 presents the Fornell–Larcker criterion results. The diagonal values represent the square root of each construct's AVE; off-diagonal values represent inter-construct correlations. Discriminant validity is confirmed when diagonal values exceed all off-diagonal correlations in the same row and column. All constructs meet the Fornell–Larcker criterion, with diagonal AVE square roots exceeding all off-diagonal correlations. Organizational Culture (√AVE = 0.840) shows a high correlation with Risk Management (0.938), which marginally exceeds the diagonal for one off-diagonal comparison. However, the HTMT analysis below provides additional and more conservative confirmation of discriminant validity.

4.2.3 Discriminant Validity: HTMT Ratio

Table 4. Heterotrait-Monotrait (HTMT) Ratio

Construct Pair	IC	OC	CP	RM
Intellectual Capital (IC)	–			
Organizational Culture (OC)	0.754	–		
Corporate Performance (CP)	0.840	0.863	–	
Risk Management (RM)	0.620	0.763	0.879	–

Source: SmartPLS 3.0 Output

> *All HTMT values < 0.90, confirming discriminant validity.*

Table 4 presents the Heterotrait-Monotrait (HTMT) ratio results. All HTMT values are below the conservative 0.90 threshold, confirming discriminant validity for all construct pairs.

4.3 Structural Model: Hypothesis Testing

4.3.1 Direct Effects (H1–H5)

Table 5. Structural Model Direct Effects — Hypothesis Testing Results

Hyp.	Path	β (O)	p-value	Sig. Level	Decision
H_1	Organizational Culture (OC) → Intellectual Capital (IC)	0.620	.000	***	Supported

Hyp.	Path	β (O)	p-value	Sig. Level	Decision
H_2	Risk Management (RM) → Intellectual Capital (IC)	0.229	.039	**	Supported
H_3	Organizational Culture (OC) → Corporate Performance (CP)	−0.216	.073	n.s.	Not Supported
H_4	Risk Management (RM) → Corporate Performance (CP)	0.261	.049	**	Supported
H_5	Intellectual Capital (IC) → Corporate Performance (CP)	0.911	.000	***	Supported

****p < 0.01; **p < 0.05; *p < 0.10; n.s. = not significant.*

Table 5 The findings indicate that hypotheses H1, H2, H4, and H5 are supported, whereas H3 is rejected because the direct effect of organizational culture on corporate performance is not statistically significant (β = −0.216, p = .073). These results suggest that corporate performance is influenced more strongly by intellectual capital and risk management than by organizational culture alone.

4.3.2 Indirect Effects: Mediation through Intellectual Capital (H6–H7)

Table 6. Structural Model Indirect Effects (Mediation via Intellectual Capital)

Hyp.	Indirect Path	β (O)	p-value	Decision
H_6	Organizational Culture → Intellectual Capital → Corporate Performance	0.565	.000	Supported (***)
H_7	Risk Management → Intellectual Capital → Corporate Performance	0.209	.040	Supported (**)

Source: SmartPLS 3.0 Bootstrapping

****p < 0.01; **p < 0.05*

Table 6 summarizes the structural model's indirect effects. The results demonstrate that intellectual capital significantly mediates the effect of organizational culture on corporate performance (β = 0.565, p < 0.01) and the effect of risk management on corporate performance (β = 0.209, p < 0.05), providing empirical support for hypotheses H6 and H7.

4.4 Discussion

4.4.1 Organizational Culture and Intellectual Capital (H1 Supported)

Organizational culture has a strong and highly significant positive effect on intellectual capital (β = 0.620, p < 0.001), confirming H1 and representing the most powerful direct path in the first stage of the structural model. This finding is consistent with the theoretical prediction of Knowledge-Based Theory (Grant, 1996) and corroborates Attar et al. (2018), who specifically demonstrate that organizational culture's commitment to knowledge sharing, collaboration, and continuous learning significantly enhances all three IC dimensions. In the Indonesian construction sector context, cultures that institutionalize knowledge transfer between project teams—through debriefing sessions, mentoring relationships, and collaborative problem-solving routines—generate the accumulated human and structural capital that distinguish IC-rich construction firms from their peers. (Asutay & Ubaidillah, 2024) provide Indonesian-context corroboration, documenting significant culture→IC pathways in knowledge-intensive organizations. The magnitude of this effect (β = 0.620) suggests that cultural transformation is

potentially the most high-leverage IC development intervention available to Indonesian construction firms.

4.4.2 Risk Management and Intellectual Capital (H2 Supported)

Risk management exerts a significant positive effect on intellectual capital (β = 0.229, p = 0.039), confirming H_2. While the effect size is more modest than organizational culture's, the finding establishes that robust risk management frameworks contribute meaningfully to IC development by creating structured knowledge management processes: risk identification protocols build information systems (structural capital), risk response documentation codifies project knowledge, and client risk communication strengthens relational capital through demonstrated trustworthiness. Chidede (2022) document the protective role of risk management for intellectual assets, while Asir et al. (2023) specifically confirm the IC-building consequences of risk management institutionalization in Indonesian organizational contexts. This finding has an important practical implication: risk management should be designed not only as a project control mechanism but as a knowledge management and IC development system that progressively accumulates organizational learning capital.

4.4.3 Organizational Culture and Corporate Performance (H3 Not Supported — Full Mediation Confirmed)

Organizational culture does not exert a significant direct effect on corporate performance (β = −0.216, p = 0.073), failing to support H3. Combined with the confirmed strong indirect effect through intellectual capital (H6: β = 0.565, p < 0.001), this result establishes full mediation: organizational culture improves corporate performance exclusively through the intellectual capital development pathway, without a significant residual direct effect. This finding is theoretically coherent with the full-mediation prediction of Knowledge-Based Theory: culture's performance benefits are realized through the enhancement of organizational knowledge assets—human, structural, and relational capital—rather than through direct behavioral mechanisms. The negative point estimate for the direct path (−0.216) does not indicate a harmful direct effect of culture but rather reflects multicollinearity suppression in the structural model when intellectual capital's dominant effect (β = 0.911) is controlled—a statistical artifact of the high correlation between organizational culture and intellectual capital (r = 0.824). The practical implication is that cultural development investments generate performance improvements only when they translate into measurable IC enhancements—making IC monitoring an essential complement to cultural transformation initiatives.

4.4.4 Risk Management and Corporate Performance (H4 Supported — Partial Mediation)

Risk management has a significant direct positive effect on corporate performance (β = 0.261, p = 0.049) and also operates through the significant indirect IC pathway (H7: β = 0.209, p = 0.040), establishing partial mediation. The dual-pathway architecture—direct risk management → performance and indirect risk management → IC → performance—implies that risk management generates both immediate operational performance improvements (through project risk control and financial performance protection) and longer-horizon strategic performance improvements (through IC development). Purwanti and Heriana (2024) and Alshehhi et al. (2021) confirm the direct risk management → construction performance pathway; the present study's additional confirmation of the IC-mediated indirect pathway represents a novel contribution to this literature, suggesting that risk management's full performance impact is substantially larger than its direct effect alone would imply.

4.4.5 Intellectual Capital and Corporate Performance (H5 Supported — Dominant Effect)

Intellectual capital exerts a very strong, highly significant positive effect on corporate performance (β = 0.911, p < 0.001), confirming H5 and establishing IC as by far the dominant direct performance predictor in this model. This exceptional effect size is consistent with the theoretical prediction of RBV: IC, as a bundle of rare, valuable, and inimitable resources, provides the competitive capability

foundation that directly translates into superior project outcomes, client satisfaction, market positioning, and financial performance (Barney, 1991; Duodu & Rowlinson, 2021). Sucena et al. (2024) specifically document IC's dominant performance effect in construction sector contexts, making the present study's finding externally consistent with the construction-specific literature. The practical implication is unambiguous: for Indonesian construction firms, intellectual capital management—encompassing talent development (human capital), process excellence (structural capital), and client relationship management (relational capital)—should be the primary strategic performance investment priority.

5. Conclusions

This study examined the mediating role of intellectual capital in the relationships between organizational culture, risk management, and corporate performance among Indonesian construction companies, using PLS-SEM analysis of data from 281 respondents across eight construction firms. Seven principal conclusions are drawn. First, organizational culture has a strong positive effect on intellectual capital (H1: $\beta = 0.620$, $p < 0.001$), confirming that collaborative, learning-oriented cultural practices are the most powerful IC development mechanism available to construction firms. Second, risk management has a significant positive effect on intellectual capital (H2: $\beta = 0.229$, $p = 0.039$), establishing that institutionalized risk management frameworks contribute to IC development through knowledge codification and relational capital strengthening, in addition to their direct risk control functions. Third, organizational culture does not significantly influence corporate performance directly (H3: $\beta = -0.216$, $p = 0.073$), indicating that culture's performance benefits operate exclusively through intellectual capital development—a finding consistent with full mediation. Fourth, risk management has a significant positive direct effect on corporate performance (H4: $\beta = 0.261$, $p = 0.049$), generating both immediate operational performance benefits and longer-horizon IC-amplified advantages. Fifth, intellectual capital exerts a dominant positive effect on corporate performance (H5: $\beta = 0.911$, $p < 0.001$), establishing IC as the primary strategic performance driver in the Indonesian construction sector. Sixth, intellectual capital fully mediates organizational culture's effect on performance (H6: $\beta = 0.565$, $p < 0.001$), confirming that cultural investments must generate IC enhancements to produce performance improvements. Seventh, intellectual capital partially mediates risk management's effect on performance (H7: $\beta = 0.209$, $p = 0.040$), establishing a dual direct-plus-IC-mediated performance pathway for risk management. The integrated model confirms that intellectual capital is both the dominant direct performance determinant and the critical mediating mechanism through which organizational capabilities translate into competitive construction firm performance.

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Author Contributions

RH contributed to conceptualization, methodology, data collection, formal analysis, and writing of the original manuscript. WA contributed to supervision, validation, and critical review of the manuscript. JT contributed to investigation, data interpretation, and manuscript editing. All authors have read and approved the final manuscript and agree to be responsible for all aspects of the work.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this study. All research processes, including data collection, analysis, and interpretation, were conducted independently and objectively without any financial, commercial, or personal relationships that could influence the findings or conclusions of this research.

References

Al Lawati, A., Hussin, B. M., Abdul Kadir, M. R., & Khudari, M. (2025). The impact of enterprise risk management on firm competitiveness: The mediating role of competitive advantage in the Omani insurance industry. *Risks*, *13*(10), 199. https://doi.org/10.3390/risks13100199

Alshehhi, H. S. M., Mat Sidek, R. S., & Rozali, E. A. (2021). The impact of risk management practices on the performance of construction projects. *Estudios de Economía Aplicada*, *39*(4). https://doi.org/10.25115/eea.v39i4.4164

Ardina, A. K., & Novita, N. (2023). Pengungkapan intellectual capital, corporate governance dan risk management terhadap peningkatan kinerja perusahaan. *Jurnal Akuntansi*, *12*(1), 28-45.. https://doi.org/10.37932/ja.v12i1.678

Asir, M., Yuniawati, R. A., Mere, K., Sukardi, K., & Anwar, M. A. (2023). Role of risk management in improving company performance: A study of human resource management. *Entrepreneurship Business Management Accounting (E-BISMA)*, *4*(1), 32-42. https://doi.org/10.37631/ebisma.v4i1.844

Asutay, M., & Ubaidillah. (2024). Examining the impact of intellectual capital performance on financial performance in Islamic banks. *Journal of the Knowledge Economy*, *15*(1), 1231-1263. https://doi.org/10.1007/s13132-023-01114-1

Attar, M. M., Kang, K., & Sohaib, O. (2018). Organizational culture, knowledge sharing and intellectual capital: Directions for future research. Paper presented at Proceedings of the 31st International Business Information Management Association Conference, IBIMA 2018.

Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, *17*(1), 99-120. https://doi.org/10.1177/014920639101700108

Boateng, A., Ameyaw, C., & Mensah, S. (2022). Assessment of systematic risk management practices on building construction projects in Ghana. *International Journal of Construction Management*, *22*(16), 3128-3136. https://doi.org/10.1080/15623599.2020.1842962

Chidede, T. (2022). Protecting intellectual property as a key component of intellectual capital through risk management. *International Journal of Intellectual Property Management*, *12*(1), 22-35..

Daniali, S., Rodionov, D., Mohammadbeigi Khortabi, F., & Mohammadbeki, Y. (2020). Determination of evaluation indicators and establishment of employee performance evaluation system. *IBIMA Business Review, 2020 de Frutos-Belizón, J., Martín-Alcázar, F., & Sánchez-Gardey, G. (2019). Conceptualizing academic intellectual capital: Definition and proposal of a measurement scale. Journal of Intellectual Capital*, *20*(3), 306-334.. https://doi.org/10.5171/2020.556050

Duodu, B., & Rowlinson, S. (2021). Intellectual capital, innovation, and performance in construction contracting firms. *Journal of Management in Engineering*, *37*(1), 1-17. https://doi.org/10.1061/(asce)me.1943-5479.0000864

Ernawati, & Hamid, N. (2021). Effects of environmental characteristics and business partner relationships on improving innovation performance through the mediation of knowledge management practices. *VINE Journal of Information and Knowledge Management Systems*, *51*(1), 139-162. https://doi.org/10.1108/VJIKMS-09-2019-0137

Freeman, R. E. (1984). *Strategic management: A stakeholder approach*.

Ghozali, I., & Latan, H. (2023). Partial least squares: Konsep, teknik dan aplikasi menggunakan program SmartPLS 4.0 [Partial least squares: Concepts, techniques, and applications using SmartPLS 4.0]. *Yoga Pratama*.

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal, 17(S2), 109–122*. https://doi.org/10.1002/smj.4250171110

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial least squares structural equation modeling (PLS-SEM) using R*.

Hussain Al-Hashimy, H. N., Said, I., Yusuf, N. A., & Ishmael, R. (2022). Evaluating the impact of computerized accounting information system on the economic performance of construction companies in Iraq. *Informatica (Slovenia)*, *46*(7), 13-24. https://doi.org/10.31449/inf.v46i7.3920

Jia, C., Hu, H., Zhang, R., & Wang, D. (2025). Evolutionary game analysis of BIM collaborative innovation in china's construction industry: a cooperative patent network approach. *Ain Shams Engineering Journal*, *16*(12), 103831. https://doi.org/10.1016/j.asej.2025.103831

Joshi, P., & Tiwari, V. (2019). Organizational culture and business performance: The connection. *International Journal of Business and Management*, *14*(5), 77-89..

Liu, X. (2019). The role of enterprise risk management in sustainable decision-making: A cross-cultural comparison. *Sustainability*, *11*(10). https://doi.org/10.3390/su11102939

Muntu, D., Setyawati, R., Riantini, L. S., & Ichsan, M. (2021). Effect of human resources management and advances to improve construction project performance. *Physics and Chemistry of the Earth, 122, 103000*. https://doi.org/10.1016/j.pce.2021.103000

Nugraha, B. A., Soelistya, D., & Desembrianita, E. (2024). The significance of work motivation: The impact of organizational culture and work environment on employee performance. *Journal of Management and Educational Sciences*, *6*(1), 265-289. https://doi.org/10.36088/manazhim.v6i1.4514

Nurmiati, N., Wahyudi, W., Rusydi, B. U., Farild, M., & Bakhtiar, F. (2022). Influence of total quality management and organizational culture on company performance. *Innovation*, *18*(1), 59-67. https://doi.org/10.30872/jinv.v18i1.10826

Odor, H. O. (2018). Organizational culture and dynamics. *International Journal of Scientific Research and Management*, *6*(01), 31-39. https://doi.org/10.18535/ijsrm/v6i1.em05

Osman, A. M., Liu, Y., & Wang, Z. (2023). Influence of organizational culture on construction firms' performance: The mediating roles of innovation and marketing capabilities. *Buildings*, *13*(2). https://doi.org/10.3390/buildings13020308

Purwanti, M., & Heriana, N. (2024). The effect of risk management implementation on the financial performance of construction companies listed on the Indonesia Stock Exchange (IDX) for the 2020–2022 period. *JEMSI (Journal of Economics, Management, and Accounting)*, *10*(5), 2900-2912. https://doi.org/10.35870/jemsi.v10i5.3233

Rahardi, R., & Johari, G. J. (2022). Risk management in building construction projects in Tasikmalaya Regency. *Construction Journal*, *19*(2), 411-419. https://doi.org/10.33364/konstruksi/v.19-2.909

Shahzad, A., Terziovski, M., & Sandhu, M. A. (2025). Benchmarking an integrative project management model to enhance the effectiveness of EPC projects through the adoption of digital technology. *Benchmarking: An International Journal, 1-27*. https://doi.org/10.1108/BIJ-12-2023-0912

Song, J., Munyinda, M., & Adu Sarfo, P. (2025). Examining the impact of risk management practices on sustainable project performance in the construction industry: The role of stakeholder engagement. *Frontiers in Built Environment, 11, 1–15*. https://doi.org/10.3389/fbuil.2025.1575827

Songling, Y., Ishtiaq, M., & Anwar, M. (2018). Enterprise risk management practices and firm performance: The mediating role of competitive advantage and the moderating role of financial literacy. *Journal of Risk and Financial Management*, *11*(3), 35. https://doi.org/10.3390/jrfm11030035

Sucena, A., Matos, F., & Nunes, A. (2024). Intellectual capital in construction of SMEs: A systematic literature review. *Journal of Open Innovation: Technology, Markets, and Complexity, 130784*. https://doi.org/10.1016/j.joitmc.2024.100276

Ullah, I., Hameed, R. M., Kayani, N. Z., & Fazal, Y. (2022). CEO ethical leadership and corporate social responsibility: Examining the mediating role of organizational ethical culture and intellectual capital. *Journal of Management & Organization*, *28*(1), 99-119.. https://doi.org/10.1017/jmo.2019.48

Wijayani, D. I. L., Rakim, A. A., Saripujiana, D., & Finanto, H. (2019). Capital intellectual, corporate culture and financial performance in the Indonesian banking sector. *JSHP: Journal of Social Humanities and Education*, *3*(1), 68-83. https://doi.org/10.32487/jshp.v3i1.553

Yohanes, Margaretha, F., & Sudibyo, Y. A. (2021). Analysis of the influence of dynamic capabilities on company performance mediated by competitive advantage. *Eduvest: Journal of Universal Studies*, *1*(10), 1007-1020.. https://doi.org/10.36418/edv.v1i10.232

