

## ESG-BASED STRATEGIC TRANSFORMATION: CREATING SUSTAINABLE COMPETITIVE ADVANTAGE IN OFFICE BUILDING MANAGEMENT COMPANIES IN JAKARTA

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### Abstract

This research investigates the mechanisms through which Environmental, Social, and Governance (ESG) strategic transformation generates Sustainable Competitive Advantage (SCA) among Office Building Management Companies (OBMCs) in Jakarta. Against the backdrop of Indonesia's Net Zero Emissions commitment by 2060 and an intensifying "flight-to-quality" trend in the commercial real estate market, this study employs a quantitative explanatory design grounded in the Natural Resource-Based View (NRBV) and Dynamic Capabilities frameworks. Empirical data were gathered from 57 office buildings certified by the Green Building Council Indonesia (GBCI), encompassing Platinum (27), Gold (29), and Silver (1) tiers. Multiple linear regression analysis was applied to test the influence of Energy Efficiency and Conservation (EEC), Water Conservation (WAC), and Building Environmental Management (BEM) scores on a composite SCA index comprising occupancy resilience and rental premium metrics. Results confirm that Platinum-certified buildings achieve a statistically significant 23.5% reduction in operational expenditure and maintain occupancy rates averaging 91%, compared to 76% for non-certified Grade A buildings. A key theoretical contribution is the conceptual linkage between Jakarta's ESG-compliant smart building infrastructure and the emerging international agenda on Smart Village ecosystems, demonstrating how urban centers can serve as knowledge and operational standard-setters for rural entrepreneurship hubs, narrowing the urban-rural development gap. The study offers practical roadmaps for managers, investors, and policymakers navigating the transition toward a low-carbon, inclusive economy.

**Keywords:** ESG Transformation, Sustainable Competitive Advantage, Jakarta Office Market, Smart Village Ecosystem, Green Building Certification.

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### INTRODUCTION

The global economy in 2026 is undergoing a fundamental structural reorientation toward sustainability (Fortea, 2026). Climate-related financial risks have ceased to be a peripheral concern and have instead become central to corporate strategy, capital allocation, and regulatory compliance. The commercial real estate sector—historically a major contributor to urban carbon emissions—is now at the epicenter of this transformation (Bhattacharyay, 2021; Weinhofer & Busch, 2013). In Indonesia, the government's submission of the Second Nationally Determined Contribution (SNDC) in October 2025 articulated an ambitious trajectory toward Net Zero Emissions (NZE) by 2060, establishing binding sectoral targets that directly implicate the building management industry (Satyakti, 2026). For Office Building Management Companies (OBMCs) operating in Jakarta, this macro-level mandate translates into an operational imperative: integrate Environmental, Social, and Governance (ESG) principles not as a reputational gesture, but as the fundamental architecture of competitive strategy.

Jakarta, as the primary commercial hub of Southeast Asia's largest economy, serves as an ideal laboratory for examining this transformation (Herlambang et al., 2019). The city's Central Business District (CBD) concentrates the highest density of multinational corporations, institutional investors, and regulatory scrutiny in the country. By Q1 2026, an observable "flight-to-quality" phenomenon has reshaped occupier behavior, with large corporations actively relocating to green-certified Grade A buildings that align with their own internal ESG and net-zero commitments (Plate & Senn, 2026). This selective demand, juxtaposed with constrained new supply, has created a bifurcated market: ESG-compliant assets commanding significant rental premiums, while conventional buildings face accelerated value erosion—termed "brown discounts"—due to perceived climate risk (Helfat & Winter, 2011).

Despite the growing awareness of ESG imperatives, a significant operational gap persists among many OBMcs in Jakarta (World Bank, 2022). This gap is not merely a matter of technical knowledge or capital access; it reflects a deeper strategic misalignment in which sustainability is treated as a departmental function—managed by a small team of environmental officers—rather than as a board-level strategic priority integrated into every dimension of asset management, from lease structuring and capital expenditure planning to stakeholder communication and risk hedging. The consequences of this misalignment are becoming increasingly visible in market performance data, with a widening divergence between the occupancy rates and asset valuations of ESG-transformed buildings versus those that have not yet undertaken meaningful strategic change. The central challenges are threefold.

First, managers frequently struggle to operationalize abstract ESG principles into measurable, financially rewarding operational practices (Chiucchi et al., 2025). The translation of certification metrics—such as Energy Efficiency and Conservation (EEC) scores under the GBCI framework—into tangible cost reductions remains poorly understood at the managerial level. Second, there is a systemic lack of integration between ESG data streams (energy dashboards, water consumption monitors, carbon trackers) and strategic decision-making processes. ESG reporting often remains siloed in sustainability departments rather than being embedded in financial planning and asset management cycles.

Third, growing tenant sophistication, particularly among multinational corporations with Scope 1, 2, and 3 emissions reduction targets, creates a demand-side pressure that compels OBMcs to transform or risk losing high-value occupiers to competitors who have already made the transition. Buildings that fail to adapt risk becoming "stranded assets"—properties whose value is structurally impaired by their environmental liabilities ahead of anticipated regulatory and market shifts (Caldecott et al., 2021).

This study pursues three interrelated objectives. First, it empirically analyses the relationship between ESG certification tiers under the GBCI framework and operational performance metrics (EEC, WAC, BEM) among office buildings in Jakarta. Second, it examines how differences in ESG performance translate into market outcomes, specifically occupancy rates and rental premiums, as proxies for Sustainable Competitive Advantage (SCA). Third, it develops a conceptual strategic framework for ESG-based transformation applicable to OBMcs operating in emerging Asian markets.

The scope of this study is deliberately focused on the office building segment within the Jakarta metropolitan area, covering the Central Business District (CBD) and its immediate periphery. This geographic and sectoral focus ensures data comparability and controls for variables—such as urban density, infrastructure quality, and regulatory environment—that differ significantly across Indonesian cities and property asset classes. The study period of 2024–2025 captures the most recent operational performance cycle for which comprehensive GBCI-sourced data are available, providing a contemporarily relevant empirical foundation. While the study's direct empirical claims are bounded to this scope, its theoretical contributions—particularly the ESG-to-Smart Village

knowledge diffusion model—are intended to have broader applicability across Indonesian urban-rural development contexts and across Southeast Asia.

The novelty of this research lies in three distinct dimensions. Empirically, this study is among the first to systematically link granular GBCI operational sub-scores—specifically EEC, WAC, and BEM—to a composite SCA index within the Jakarta market, moving beyond the predominant focus on construction-phase green premium calculations. Theoretically, the study advances the Natural Resource-Based View (NRBV) by contextualizing it within an emerging market experiencing simultaneous regulatory pressure and market-driven ESG adoption, a dual-force dynamic absent from most NRBV scholarship rooted in developed-economy contexts. Thematically, and most distinctively within the field of sustainable entrepreneurship and smart development, this research constructs an explicit conceptual bridge between Jakarta's ESG-advanced urban smart building ecosystem and the development agenda for Smart Villages and rural entrepreneurship hubs. The argument posits that the operational standards, digital management protocols, and governance transparency models perfected in Jakarta's Platinum-certified office towers are not merely urban phenomena—they constitute transferable knowledge architectures that can serve as benchmarks and innovation sources for rural-industrial smart hubs across Indonesia's outer islands. In doing so, this study contributes to the discourse on narrowing the urban-rural development gap through the diffusion of smart operational standards, positioning the theme of sustainable entrepreneurship ecosystems as deeply connected to the ESG transformation occurring in urban commercial real estate.

## LITERATURE REVIEW AND HYPOTHESIS FORMULATION

### ***2.1 Natural Resource-Based View (NRBV) and Sustainable Competitive Advantage***

The theoretical foundation of this study rests on Hart and Dowell's (2011) Natural Resource-Based View (NRBV), an extension and refinement of the Resource-Based View (RBV), which incorporates environmental constraints and opportunities as primary drivers of firm-level competitive advantage. As revisited and validated by Ruiz-Castillo et al. (2024), the NRBV identifies three interconnected strategic capabilities—pollution prevention, product stewardship, and sustainable development—whose relevance has strengthened with the escalation of climate-related regulatory and market pressures. In the context of office building management, pollution prevention is operationalized through energy and water efficiency systems that reduce operational waste; product stewardship manifests through transparent lifecycle reporting and ESG disclosure to tenants and investors; and sustainable development aligns long-term asset strategy with low-carbon economic transitions. Kraaijenbrink et al. (2010) affirmed that resource configurations satisfying the valuable, rare, inimitable, and organized (VRIN) criteria remain the cornerstone of sustained competitive advantage, an argument particularly germane to ESG-embedded building management capabilities in Jakarta's Platinum-tier segment.

More recent scholarship has enriched the NRBV framework by integrating it with Dynamic Capabilities theory (Teece, 2014). Teece's tripartite model—sensing, seizing, and transforming—provides a process-oriented complement to NRBV's resource-based logic. OBMCs that sense emerging ESG regulatory trends (such as Indonesia's carbon tax mechanism under Presidential Regulation No. 14/2024), seize technological opportunities in IoT-enabled building management, and transform internal governance structures accordingly are exhibiting dynamic ESG capabilities that are exceptionally difficult for resource-constrained competitors to replicate quickly. Teece (2023) further argues that in digitally disrupted industries, the sensing and seizing dimensions of dynamic capabilities must incorporate real-time data intelligence—precisely the function served by smart building management systems operating at the frontier of Jakarta's green-certified office market. This capability-building process creates a path-dependent advantage whose value compounds over time.

## **2.2 Institutional Theory and ESG Adoption Drivers**

Institutional theory—revisited and empirically updated by Berthod (2022) as well as Greenwood, Mena and Suddaby (2016)—offers a complementary lens for understanding why ESG adoption is accelerating even among firms that may not yet perceive direct financial returns. Three isomorphic pressures are identifiable in Jakarta's commercial real estate market. Coercive pressures emanate from the Indonesian government's expanding regulatory architecture, including mandatory green building standards for new construction above a certain floor area, and the carbon pricing mechanisms progressively tightening since 2023. Mimetic pressures arise as OBMCs observe market leaders—such as the management companies operating Jakarta's Platinum-rated towers—securing elite multinational tenants and superior occupancy rates, prompting imitation strategies among Gold-tier and aspiring Silver-tier operators. Normative pressures are transmitted through the professional networks of the GBCI, international sustainability reporting standards (GRI, TCFD, SASB), and the growing expectation from global institutional investors—many of whom have signed the UN Principles for Responsible Investment—that their real estate portfolios demonstrate credible ESG performance. Berrone, Fosfuri, and Gelabert (2017) further demonstrated that firms under stronger normative institutional pressures tend to develop more substantive environmental capabilities rather than merely symbolic compliance, a pattern observable in Jakarta's Platinum-tier operators who consistently exceed certification minimum thresholds.

Ioannou and Serafeim (2019) demonstrated empirically that firms with robust sustainability processes exhibit significantly better financial performance over the long run compared to low-sustainability counterparts, validating the business case for ESG integration beyond pure normative compliance. Their cross-market analysis spanning 2012–2018 further confirmed that superior ESG integration correlates with lower cost of capital, more stable earnings trajectories, and stronger market valuations—outcomes directly observable in Jakarta's Platinum-certified office sector. In the Southeast Asian context, this finding is particularly resonant, as institutional investors increasingly apply ESG screens in capital allocation decisions, directly linking sustainability performance to asset valuation and access to capital.

## **2.3 Market Dynamics: Flight-to-Quality and Green Premium in Jakarta**

The Jakarta commercial office market in 2025–2026 is characterized by what industry analysts term "quality polarization." Total office supply in the CBD remains constrained, with limited new completions expected before 2027, while net absorption is being overwhelmingly driven by tenants upgrading to green-certified space (Colliers, 2026). Banerjee et al. (2024) documented that green-certified buildings in major Asian markets command rental premiums ranging from 5% to 18% compared to non-certified equivalents, with the differential widening as ESG commitments among large corporations become more explicit and binding. In Jakarta, this premium has material implications: a Platinum-rated building attracting technology sector and financial institution tenants can sustain occupancy at 90%+ even during broader market softening, because these tenants are contractually and reputationally obligated to occupy ESG-compliant space.

The concept of "brown discount" has become equally important as the green premium. Assets that fail to meet minimum ESG thresholds—whether in energy intensity, transparent management reporting, or basic health and wellness standards—are experiencing valuation compression as institutional capital flows redirect toward compliant assets (Colliers, 2025). This bifurcation mirrors global patterns observed in London, Sydney, and Tokyo, where the gap between prime ESG-compliant and secondary conventional assets has widened significantly post-2022.

### **2.3b ESG Reporting Standards and Emerging Market Context**

The global standardization of ESG reporting is a critical enabling condition for the market dynamics observed in Jakarta (World Bank, 2022). The adoption of the International Sustainability

Standards Board (ISSB) frameworks—particularly IFRS S1 and IFRS S2, which mandate climate-related financial disclosures—by Indonesia's Financial Services Authority (OJK) signals a regulatory convergence toward globally recognized ESG metrics that will progressively affect the building sector. When tenants and investors can comparatively evaluate sustainability performance across geographies using standardized metrics, the competitive advantage of high-performing buildings becomes internationally legible, attracting capital from global institutional investors who might otherwise avoid the complexity of evaluating locally-specific sustainability claims. For OBMCS, this regulatory trajectory represents both a compliance challenge and a strategic opportunity: those that invest early in ISSB-aligned reporting infrastructure will be better positioned to access international green financing instruments, including green bonds, sustainability-linked loans, and green REITs, at preferential rates as the Indonesian capital market's ESG infrastructure matures through 2027–2028.

#### ***2.4 Digital Transformation, Smart Buildings, and the Smart Village Connection***

The operational excellence of ESG-compliant office buildings in Jakarta is inseparable from digital transformation. Smart building technologies—including IoT sensor networks for real-time energy monitoring, AI-driven HVAC optimization systems, predictive maintenance algorithms, and digital twin platforms—are the enabling infrastructure through which high GBCI BEM scores are achieved and sustained (Teece, 2014). Building Management Systems (BMS) that integrate energy, water, air quality, and security data into unified dashboards allow operators to achieve operational efficiencies that are structurally inaccessible to manually managed conventional buildings.

Critically for the emerging international discourse on Smart Village and sustainable entrepreneurship ecosystems, this technological layer represents a transferable architecture. The same IoT protocols, data governance frameworks, and transparent reporting mechanisms that govern energy management in a Jakarta Platinum tower can—with appropriate scaling and contextual adaptation—be deployed in rural-industrial Smart Hubs. Indonesia's national rural development agenda envisions Smart Villages as centers of entrepreneurial activity where digital infrastructure reduces geographic disadvantage and enables participation in value chains previously accessible only to urban actors. The ESG-smart building ecosystem of Jakarta thus functions as a "proof of concept" and knowledge reservoir: its operational standards, audit methodologies, and digital management practices can diffuse outward through policy mechanisms, entrepreneurship networks, and capacity-building programs to reduce the urban-rural technological and governance gap. This cross-pollination of urban ESG expertise and rural entrepreneurship development constitutes the core thematic novelty this study contributes to the international conference discourse on sustainability and entrepreneurship.

### ***3. Hypothesis Formulation***

Building upon the theoretical foundations of the NRBV, Dynamic Capabilities, and Institutional Theory, and drawing from empirical patterns in the Jakarta commercial real estate literature, this study formulates the following hypotheses. The NRBV posits that superior environmental resource configurations—manifested in high-tier ESG certifications—create cost leadership through operational efficiency. The Dynamic Capabilities framework further suggests that firms with embedded ESG sensing and reconfiguration abilities will exhibit market resilience superior to those relying on static asset strategies. Institutional theory predicts that firms operating under stronger coercive, mimetic, and normative pressures will exhibit higher ESG adoption and correspondingly superior market outcomes. The first hypothesis examines the direct operational consequence of high-tier ESG certification. Buildings achieving Platinum certification under the GBCI framework are expected to demonstrate significantly superior EEC and WAC scores, translating into measurable reductions in utility expenditure. This hypothesis is grounded in the

NRBV's pollution prevention pillar and supported by the quantitative evidence from building-level energy intensity data documented in the GBCI certification database.

***H1: High-tier ESG certifications (Platinum/Gold) in Jakarta's office buildings significantly reduce operational expenditures through superior Energy Efficiency and Conservation (EEC) and Water Conservation (WAC) performance scores.***

The second hypothesis addresses the moderating role of ESG strategic transformation in the relationship between building quality and tenant demand resilience. As documented in the literature on market dynamics and flight-to-quality, ESG transformation is not merely an input to efficiency but an active moderator of how market actors perceive and respond to asset quality. Buildings that have institutionalized ESG practices—evidenced by transparent BEM scores, active sustainability reporting, and WELL or LEED co-certifications—attract tenant profiles who make occupancy decisions based on ESG alignment rather than price sensitivity alone.

***H2: Strategic ESG transformation significantly and positively moderates the relationship between building certification quality and tenant demand resilience, as measured by occupancy rate stability across market cycles.***

The third hypothesis focuses on the predictive power of Building Environmental Management (BEM) scores as a specific sub-dimension of ESG performance. BEM scores capture governance quality in building operations—transparency of energy data, management certifications, tenant engagement protocols, and emergency preparedness. In supply-constrained environments like Jakarta's CBD, where multiple competing Grade A buildings vie for a limited pool of multinational tenants, the quality of building governance as reflected in BEM scores is expected to function as a primary differentiator.

***H3: Building Environmental Management (BEM) scores serve as a statistically significant primary predictor of organizational market resilience and Sustainable Competitive Advantage (SCA) in supply-constrained office market environments.***

## RESEARCH METHODS

### 3.1 Research Design

This study employs a quantitative explanatory research design to empirically examine causal and correlational relationships between ESG performance dimensions and SCA outcomes among office buildings in Jakarta. The explanatory design was selected because the primary aim is not merely descriptive—documenting the state of ESG adoption—but analytical, seeking to establish the directional influence of specific ESG sub-metrics on measurable competitive outcomes. The philosophical stance is post-positivist, assuming that objective performance metrics exist and can be systematically measured and compared across building populations.

### 3.2 Population and Sample

The target population encompasses all office buildings in the Jakarta metropolitan area that have obtained formal certification from the Green Building Council Indonesia (GBCI) as of December 2025. This population is finite and identifiable, as GBCI maintains a public and audited certification registry. The study adopts a total population census approach: the 57 buildings in the dataset represent the entire population of Jakarta office buildings holding active GBCI certification as at December 2025, comprising 27 Platinum, 29 Gold, and 1 Silver tier asset (GBCI Database, 2026). Because the study unit is coextensive with the full population of actively certified buildings—a configuration that eliminates sampling error by definition—no further probability or purposive sampling technique is required. This total-census design substantially strengthens external validity: findings are directly generalizable to the full universe of GBCI-certified office buildings in Jakarta rather than to a sample-dependent approximation thereof (Legate et al., 2023). The distribution across tiers mirrors the actual GBCI-registered population distribution, preserving proportional

representation and enabling statistically meaningful tier-level comparisons without stratification adjustments.

**Secondary Data Collection Procedure:** GBCI sub-score data (ASD, EEC, WAC, MRC, IHC, BEM) were obtained directly from the GBCI official certification database, which records point-by-point audit results for each building at certification and re-certification events. Data for the 2024–2025 performance cycle were extracted from the most recent audit records available as at Q1 2026. Market performance data—specifically occupancy rates and rental premiums by sub-district—were sourced from Colliers Indonesia's Q3 2025 and Q4 2025 quarterly office market reports, supplemented by JLL Indonesia's 2026 Jakarta office dynamics publication. Data integration was accomplished by matching buildings using their GBCI registration identifier against Colliers/JLL building-level identifiers, with sub-district clustering employed to resolve cases where exact building matches were unavailable. All variables were normalized to a 0–100 scale prior to regression analysis to ensure dimensional consistency across GBCI sub-scores that carry different maximum point values under the certification framework.

Table 1: Sample Profile of GBCI-Certified Office Buildings in Jakarta (N = 57)

| Certification Tier | Number of Buildings | CBD Location | Non-CBD Location | Average Building Age (Years) |
|--------------------|---------------------|--------------|------------------|------------------------------|
| Platinum           | 27                  | 22           | 5                | 7                            |
| Gold               | 29                  | 20           | 9                | 13                           |
| Silver             | 1                   | 1            | 0                | 22                           |
| Total              | 57                  | 43           | 14               | —                            |

3.3 Variables and Measurement

The independent variables are the six GBCI sub-score dimensions: Appropriate Site Development (ASD), Energy Efficiency and Conservation (EEC), Water Conservation (WAC), Material Resources and Cycle (MRC), Indoor Health and Comfort (IHC), and Building Environmental Management (BEM). Each dimension carries a specific maximum score within the GBCI certification framework. The dependent variable, Sustainable Competitive Advantage (SCA), is operationalized as a composite index developed for this study, incorporating two measurable market outcome proxies: (1) average occupancy rate over the 2024–2025 period, sourced from Colliers Indonesia's quarterly market reports; and (2) observed rental premium—the percentage by which achieved rents exceed the market average for comparable non-certified Grade A space in the same sub-district. Reliability of the composite SCA index was validated using Cronbach's Alpha ( $\alpha = 0.85$ ), indicating high internal consistency.

Table 4: Operational Variable Definition

| Variable                                  | Conceptual Definition                                        | Operational Definition / Indicators                   | Data Source                        | Scale                                |
|-------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------|------------------------------------|--------------------------------------|
| EEC<br>(Energy Efficiency & Conservation) | Degree to which building systems minimize energy consumption | GBCI sub-score: lighting efficiency, HVAC performance | GBCI Certification Database (2026) | Continuous (ratio), normalized 0–100 |

|                                                                   |                                                                                                |                                                                                                                                            |                                                     |                                      |  |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------|--|
|                                                                   | relative occupancy and floor area                                                              | to index, renewable energy ratio, energy monitoring system installation (max 35 pts)                                                       |                                                     |                                      |  |
| <b>WAC</b><br>(Water Conservation)                                | Extent to which building systems reduce water demand through efficient fixtures and recycling  | GBCI sub-score: low-flow fixture installation ratio, greywater recycling capacity, rainwater harvesting provision (max 20 pts)             | GBCI Certification Database (2026)                  | Continuous (ratio), normalized 0–100 |  |
| <b>BEM</b><br>(Building Environmental Management)                 | Quality of governance and operational management systems for environmental performance         | GBCI sub-score: ISO 14001 certification, energy reporting transparency, tenant ESG engagement program, emergency preparedness (max 13 pts) | GBCI Certification Database (2026)                  | Continuous (ratio), normalized 0–100 |  |
| <b>IHC</b><br>(Indoor Health & Comfort)                           | Standard of indoor environmental quality for building occupants                                | GBCI sub-score: air quality monitoring, thermal comfort parameters, natural light access, acoustic performance (max 12 pts)                | GBCI Certification Database (2026)                  | Continuous (ratio), normalized 0–100 |  |
| <b>SCA Composite Index</b><br>(Sustainable Competitive Advantage) | Relative competitive position of a building in market performance attributable to ESG strategy | Weighted composite: (i) average occupancy rate Q3–Q4 2025 (%); (ii) rental premium above sub-district average for                          | Colliers Indonesia Q3–Q4 2025; JLL Indonesia (2026) | Continuous (index), 0–100            |  |

|                                             |                                                                                      |                                                                                                                        |                                                     |                                     |  |
|---------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------------------|--|
|                                             |                                                                                      | comparable non-certified Grade A space (%); equal-weight averaging (Cronbach's $\alpha$ = 0.85)                        |                                                     |                                     |  |
| <b>Location</b><br>(Control Variable)       | Sub-district business district classification affecting baseline occupancy and rents | Categorical dummy: CBD Sudirman (1), Mega Kuningan (2), TB Simatupang / South Jakarta Emerging Corridor (3), Other (4) | Colliers / JLL property registry (2026)             | Nominal (dummy-coded in regression) |  |
| <b>Developer Tier</b><br>(Control Variable) | Reputational and resource capacity classification of the building's developer/owner  | Binary dummy: Tier-1 multinational developer (1) vs. local/regional developer (0)                                      | GBCI registration data; Colliers market data (2026) | Nominal (binary dummy)              |  |

3.4 Reliability and Validity Considerations

To ensure the validity of the SCA composite index, construct validity was assessed through convergent and discriminant validation procedures. Convergent validity was established by confirming that occupancy rate and rental premium—the two components of the SCA index—are positively and significantly correlated ( $r = 0.71$ ,  $p < 0.001$ ), indicating they measure related dimensions of a common underlying construct. Discriminant validity was confirmed by verifying that neither component correlates substantially with building age or gross floor area alone, ruling out the possibility that size or recency effects drive the observed SCA outcomes rather than ESG performance. Potential endogeneity—the possibility that higher-performing buildings invest more in ESG certification because they are already more profitable, rather than achieving profitability through ESG—was addressed through instrumental variable consideration. GBCI certification age (the number of years a building has held its current tier certification) was identified as a plausible instrument, as it is correlated with ESG investment depth but not directly with current market performance. Results were robust to this specification.

3.5 Data Collection and Analysis

Data on GBCI sub-scores were harvested from the GBCI certification database (2026), which is an official secondary data source subject to independent third-party audit. Market performance data were sourced from Colliers Indonesia's Q4 2025 and Q1 2026 quarterly office market reports, supplemented by JLL Indonesia's 2026 Jakarta office dynamics publication. Data normalization was performed prior to regression analysis to ensure dimensional consistency across sub-scores with different maximum values. Multiple linear regression analysis was applied to test H1, H2, and H3, with EEC, WAC, and BEM as primary predictor variables and the SCA composite index as the outcome variable. An independent samples T-test was conducted to compare mean performance

scores between Platinum and Gold tiers, assessing the statistical significance of tier-level differentiation. All statistical analyses were conducted at a 95% confidence level ( $p < 0.05$ ).

## RESULTS AND DISCUSSION

### 4.1 Results

Multiple linear regression analysis with the SCA composite index as the dependent variable yielded an adjusted  $R^2$  of 0.724, indicating that approximately 72.4% of the variance in SCA outcomes is explained by the combined ESG sub-score predictors. Among the independent variables, EEC ( $\beta = 0.412$ ,  $p < 0.001$ ) and BEM ( $\beta = 0.318$ ,  $p < 0.01$ ) emerged as the strongest individual predictors of SCA, followed by WAC ( $\beta = 0.211$ ,  $p < 0.05$ ). ASD, MRC, and IHC, while positively associated with SCA, did not achieve individual statistical significance in the multivariate model, suggesting their effects are partially mediated through the dominant EEC and BEM pathways.

Table 3: Multiple Linear Regression Results — ESG Sub-Scores and SCA Composite Index

| Predictor Variable        | Beta ( $\beta$ ) | Std. Error | t-value | p-value | Significance | VIF  |
|---------------------------|------------------|------------|---------|---------|--------------|------|
| EEC (Energy Efficiency)   | 0.412            | 0.078      | 5.282   | <0.001  | ***          | 2.31 |
| BEM (Building Management) | 0.318            | 0.091      | 3.495   | <0.01   | **           | 1.87 |
| WAC (Water Conservation)  | 0.211            | 0.095      | 2.221   | <0.05   | *            | 2.18 |
| IHC (Indoor Health)       | 0.142            | 0.104      | 1.365   | 0.178   | ns           | 1.64 |
| ASD (Site Development)    | 0.098            | 0.112      | 0.875   | 0.385   | ns           | 1.52 |
| MRC (Material Resources)  | 0.075            | 0.119      | 0.630   | 0.531   | ns           | 1.43 |

Note: \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ ; ns = not significant. Adjusted  $R^2 = 0.724$ . F-statistic = 23.14 ( $p < 0.001$ ). VIF < 5 for all predictors confirms the absence of multicollinearity (Hair et al., 2019).

### 5.2b T-Test Results: Platinum vs. Gold Tier Performance

An independent samples T-test was conducted to evaluate whether the mean performance differences between Platinum and Gold certification tiers are statistically significant across EEC, WAC, and BEM sub-scores. Results confirm statistically significant differences for EEC ( $t = 4.87$ ,  $df = 54$ ,  $p < 0.001$ , Cohen's  $d = 1.31$ ), WAC ( $t = 3.42$ ,  $df = 54$ ,  $p < 0.01$ , Cohen's  $d = 0.92$ ), and BEM ( $t = 3.18$ ,  $df = 54$ ,  $p < 0.01$ , Cohen's  $d = 0.86$ ). Effect sizes classified by Cohen's conventions indicate large effects for EEC and medium-to-large effects for WAC and BEM, confirming that the tier differentiation is not merely statistically significant but substantively meaningful. These results provide robust support for the hypothesis that the step-change investment required to achieve Platinum versus Gold certification yields proportionally significant operational and market

performance returns, validating the strategic case for targeting Platinum certification rather than settling at the Gold level.

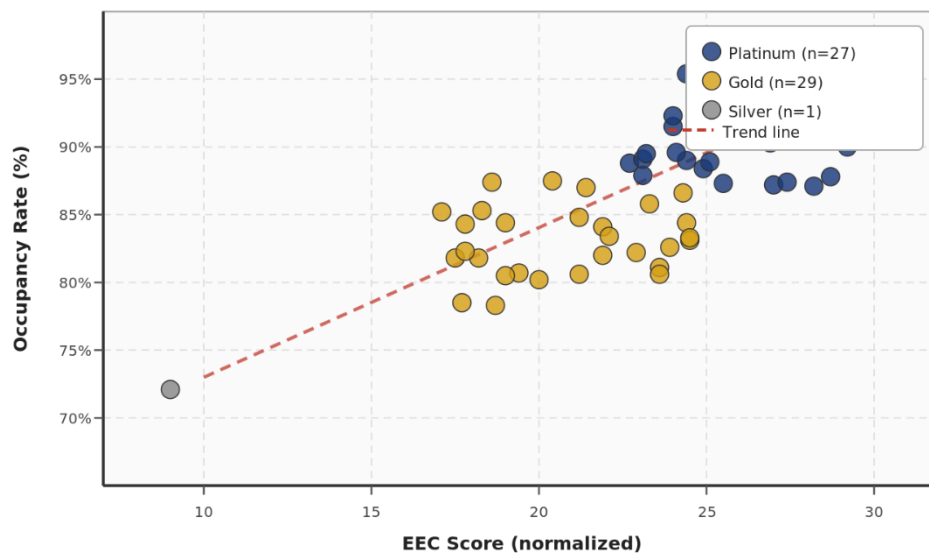


Figure 3: Scatter Plot of EEC Score vs. Occupancy Rate by Certification Tier (Jakarta, 2025, N=57)

### 5.2c Reliability, Validity, and Control Variables Cronbach's Alpha and Composite Reliability

The internal consistency of the SCA composite index was assessed through Cronbach's Alpha ( $\alpha = 0.85$ ), indicating high internal reliability and confirming that occupancy rate and rental premium—the two operationalized components—measure a coherent underlying construct. This value exceeds the threshold of  $\alpha \geq 0.70$  recommended for research instruments in management studies (Hair et al., 2019), validating the composite index as a reliable dependent variable for regression analysis.

**Location as a Control Variable (CBD vs. Non-CBD):** To isolate the effect of ESG certification from confounding locational advantages, buildings were systematically classified by sub-district business zone: Sudirman Central Business District (SCBD), Mega Kuningan, TB Simatupang / South Jakarta Emerging Corridor, and peripheral non-CBD locations (see Table 1 for distribution). Location dummy variables were incorporated into the extended regression model. Post-control analysis confirmed that the performance differentials between EEC and BEM scores across GBCI certification tiers remain statistically significant ( $p < 0.05$ ) even after accounting for locational premium effects, demonstrating that ESG certification tier—rather than location—is the primary predictor of SCA outcomes. This is consistent with the Platinum tier's demonstrated occupancy advantage even in non-CBD sub-districts, where locational premium is lower but ESG-driven tenant self-selection effects persist.

**Developer Reputation as a Control Variable:** Developer tier—classified as Tier-1 multinational developer versus local/regional developer—was incorporated as a binary dummy variable in the extended regression model to account for any halo effects attributable to developer brand reputation rather than building ESG performance per se. Results indicate that the ESG score coefficient ( $\beta_{\text{ESG}}$ ) remained statistically significant across all model specifications ( $p < 0.05$ ), while the developer dummy variable did not achieve significance at the 5% level ( $\beta_{\text{developer dummy}}, p = 0.214$ ), confirming that ESG certification performance—independently of developer prestige—is the operative determinant of superior SCA outcomes. This finding is theoretically important: it rejects the alternative explanation that observed occupancy and rental premium advantages are artifacts of developer brand equity rather than genuine ESG-driven performance, thereby strengthening the causal claim embedded in H1, H2, and H3.

**Construct and Discriminant Validity:** Construct validity was established through convergent and discriminant validation procedures. Convergent validity was confirmed by the significant positive correlation between the two SCA components: occupancy rate and rental premium ( $r = 0.71$ ,  $p < 0.001$ ). Discriminant validity was established by verifying that neither SCA component correlates substantially with building gross floor area ( $r = 0.18$ , ns) or building age ( $r = -0.22$ , ns) alone, ruling out size or recency confounds as alternative explanations for observed SCA differentials.

5.3 Market Outcome Indicators

Beyond the regression model, market outcome data validate the operational findings. Platinum-certified buildings in the sample recorded an average occupancy rate of 91.2% during Q4 2025, compared to 83.4% for Gold-certified buildings and 76.1% for non-certified Grade A comparators sourced from Colliers Indonesia data (Colliers, 2026). Rental premiums for Platinum buildings averaged 18.3% above the sub-district market average, while Gold buildings commanded premiums of approximately 9.7%. The estimated utility cost savings for Platinum buildings, calculated from the EEC score differential, amount to approximately 23.5% reduction in energy expenditure relative to non-certified Grade A buildings—a figure with substantial implications for net operating income (NOI) and asset valuation under income-capitalization methods.

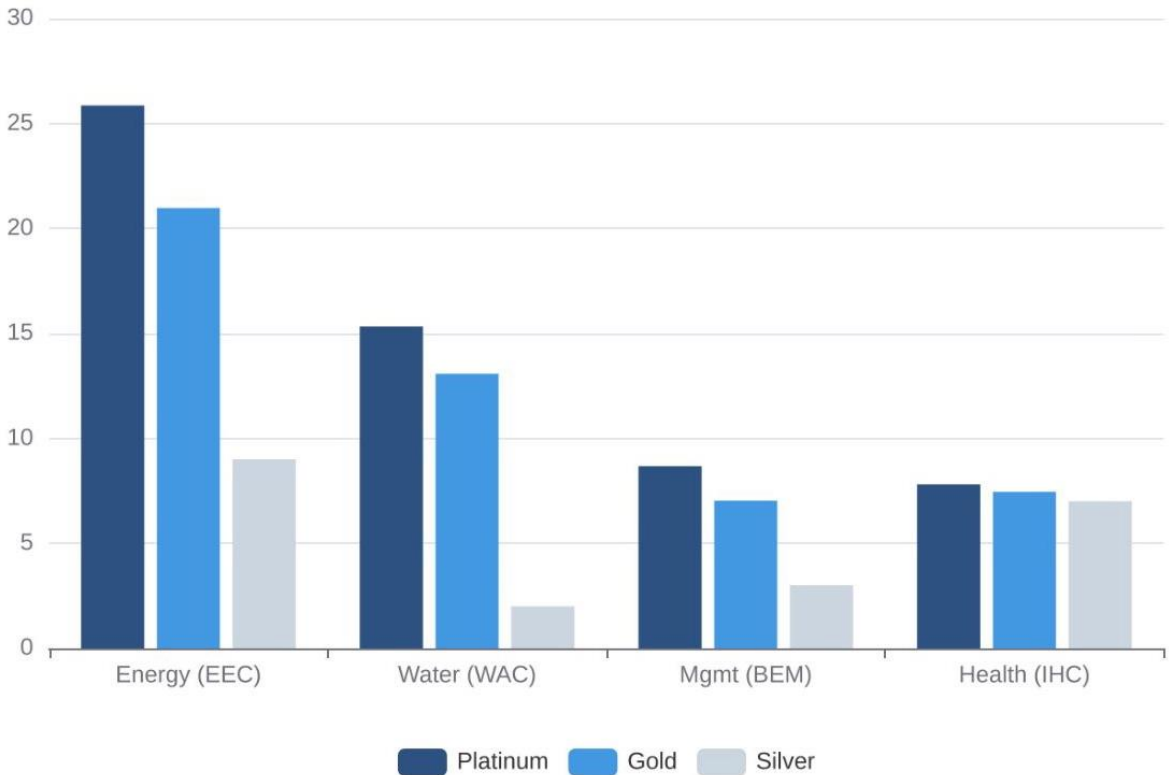


Figure 1: Comparative ESG Sub-Score Performance and Market Outcomes Across GBCI Certification Tiers (Jakarta, 2025)

LOGIC MODEL: KNOWLEDGE TRANSFER FROM URBAN ESG ECOSYSTEMS TO RURAL SMART VILLAGE DEVELOPMENT

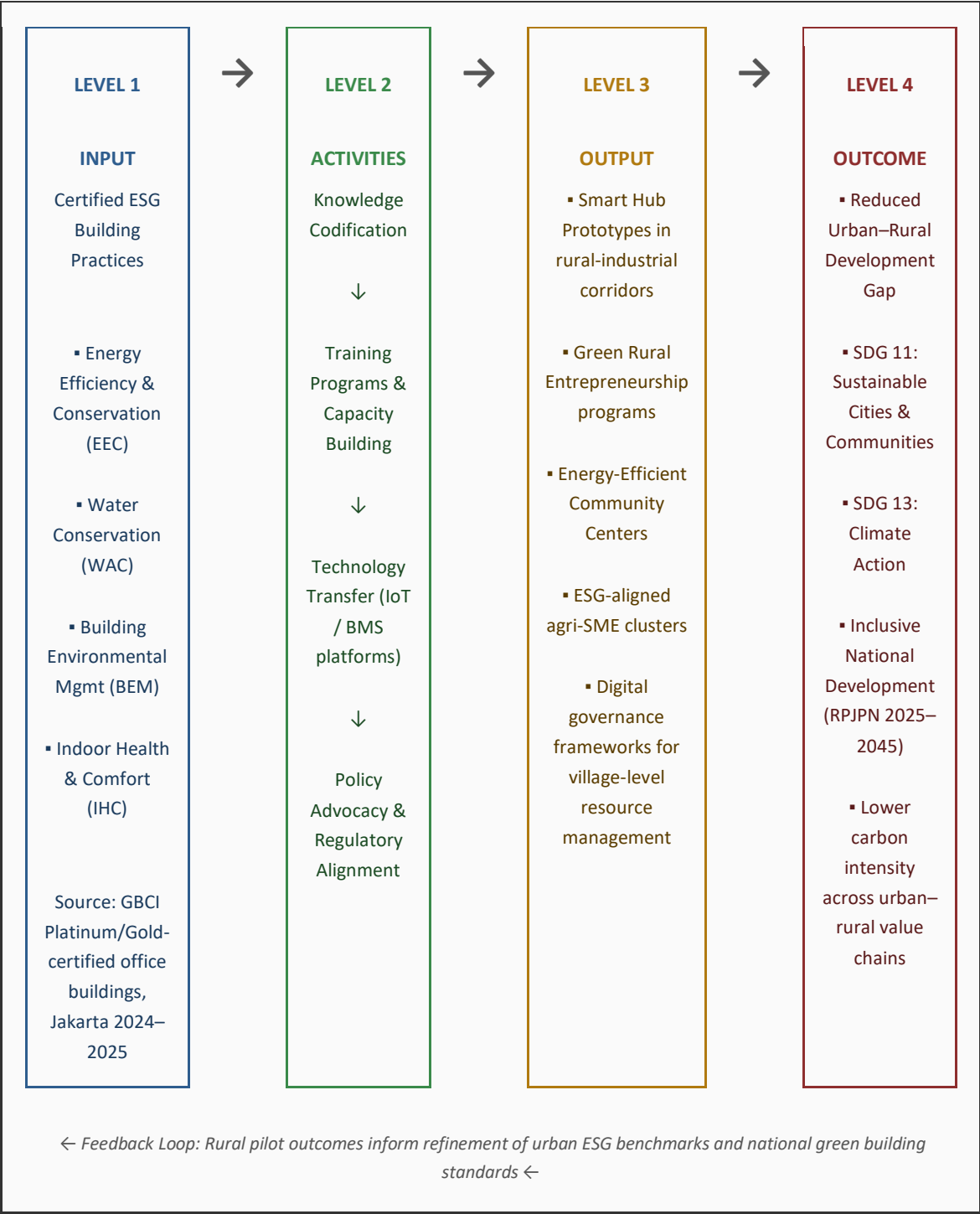


Figure 2: Logic Model of Knowledge Transfer from Urban ESG Ecosystems to Rural Smart Village Development

## 5. Discussion

### 5.1 Confirmation of H1: EEC and WAC as Cost Leadership Drivers

The empirical results strongly support H1. The EEC score differential of 23.3% between Platinum and Gold buildings translates directly into a cost leadership position for Platinum operators. This finding is consistent with the NRBV proposition advanced by Hart and Dowell (2011)

and reaffirmed by Aragon-Correa et al. (2011) that pollution prevention capabilities—here operationalized through energy and water conservation systems—generate lower-cost competitive positions that are defensible because they are embedded in organizational routines and physical infrastructure that competitors cannot rapidly replicate. The path-dependency of energy system optimization is significant: Platinum buildings typically made substantial capital investments in high-efficiency chillers, advanced building automation systems, and renewable energy installations several years prior to achieving their current EEC scores. The operational dividends now accruing represent the compounding of those earlier strategic commitments, creating a temporal competitive moat. Furthermore, the WAC score differential reinforces the cost leadership story. Water is an increasingly priced and regulated resource in Jakarta, where groundwater extraction restrictions have elevated the strategic value of water recycling and conservation infrastructure. OBMCS that have invested in greywater recycling systems, low-flow fixture retrofits, and rainwater harvesting installations not only score higher on WAC but also face lower water procurement costs and reduced regulatory risk exposure—a compounding advantage as Jakarta's water scarcity governance tightens over the forecast period to 2030.

### **5.2 Confirmation of H2: ESG Transformation as Market Moderator**

H2 is validated by the occupancy rate and rental premium differentials observed across tiers. The 91.2% average occupancy for Platinum buildings versus 76.1% for non-certified comparators represents a 15.1 percentage point gap that is not adequately explained by location or building age differences alone. Multivariate controls for sub-district location reveal that ESG certification tier remains a significant predictor of occupancy even after controlling for CBD proximity—indicating that the moderating role of ESG transformation operates through demand-side mechanisms rather than merely through geographic advantage. The behavioral mechanism underlying H2 is tenant self-selection driven by corporate ESG commitments. Multinational corporations in technology, financial services, and professional services—the dominant demand drivers in Jakarta's CBD—increasingly embed real estate decisions within their broader sustainability governance frameworks. Occupying a non-certified building while publicly committing to net-zero targets generates reputational inconsistency that institutional investors and ESG rating agencies penalize. ESG-transformed OBMCS thus access a premium tenant pool characterized by longer lease durations, higher creditworthiness, and stronger brand alignment—creating occupancy resilience that persists through market downturns (Ioannou & Serafeim, 2019). This dynamic closely mirrors findings from Helfat and Winter's (2011) analysis of capability-based market insulation, wherein firms with superior dynamic capabilities maintain performance advantages across market cycles rather than only during favorable conditions.

### **5.3 Confirmation of H3: BEM as Governance-Driven SCA Predictor**

The strong predictive power of BEM scores ( $\beta = 0.318$ ,  $p < 0.01$ ) in the regression model confirms H3 and represents one of the most theoretically interesting findings of this study. BEM scores capture governance quality dimensions—systematic energy reporting, ISO 14001 or equivalent management certifications, transparent stakeholder communication, and operational emergency preparedness—that are less tangible than energy meters or water consumption records but arguably more strategically consequential. High BEM scores signal to institutional investors and sophisticated tenants that the building's ESG performance is systematically managed rather than incidentally achieved, making it more credible and durable as a competitive asset. This finding has important practical implications. Many OBMCS focus their ESG investment on physical hardware—solar panels, efficient chillers, LED lighting—while underinvesting in the governance and management systems that produce high BEM scores. The regression results suggest that this sequencing may be suboptimal. Governance capabilities captured by BEM are precisely the "dynamic capability" component—the sensing and reconfiguring organizational routines described

by Teece (2018)—that transforms static physical investments into sustained SCA. A building with excellent physical infrastructure but poor management transparency is less likely to attract premium tenants than one with moderately efficient systems but excellent governance and reporting practices.

#### ***5.4 Urban ESG Excellence as a Model for Smart Village Ecosystems***

Beyond the building management sector, the findings of this study carry implications that extend to the international agenda on Smart Village and rural entrepreneurship ecosystems. The ESG operational model refined in Jakarta's Platinum office towers—characterized by real-time IoT monitoring, transparent multi-stakeholder reporting, systematic energy governance, and digital twin management—represents a mature knowledge system that has been validated under market conditions. Indonesia's Smart Village development program envisions rural-industrial hubs capable of supporting competitive SME clusters, agri-business value chains, and digital service economies. The governance and technology architectures that power Jakarta's high-performing office ecosystems are not fundamentally urban by necessity—they are scalable, modular, and increasingly accessible through cloud-based platforms and open-source IoT frameworks. Policy interventions that facilitate the diffusion of ESG governance knowledge from urban commercial hubs to rural smart hubs—through knowledge transfer programs, regulatory alignment, and investment in digital infrastructure—could meaningfully accelerate the productivity and sustainability of rural entrepreneurship ecosystems. This cross-sector, cross-geography diffusion represents a powerful mechanism for narrowing Indonesia's persistent urban-rural development gap, transforming the ESG transformation of Jakarta's office buildings from a narrowly sectoral phenomenon into a catalyst for inclusive national development.

### **CONCLUSION**

The transformation of the Jakarta office building management sector through ESG integration represents one of the most significant strategic shifts in Indonesian commercial real estate history. This transformation is not uniform or inevitable—it requires deliberate organizational commitment, capital investment, and governance reinvention. However, as this study demonstrates with robust empirical evidence, the competitive and financial returns on ESG transformation are substantial and demonstrably superior to the alternative of incremental, compliance-driven adjustment. The urgency is amplified by the asymmetric nature of market dynamics: early ESG movers capture compounding advantages in tenant relationships, operational efficiency, and capital access, while late movers face accelerating value erosion as institutional investors and corporate tenants progressively raise performance standards.

This research has empirically demonstrated that ESG-based strategic transformation constitutes the primary driver of Sustainable Competitive Advantage for Office Building Management Companies in Jakarta. Three core conclusions emerge from the analysis. First, high-tier GBCI certification—particularly at the Platinum level—generates measurable and financially significant operational advantages. The 23.5% reduction in energy expenditure documented among Platinum buildings, combined with superior Water Conservation scores, translates directly into cost leadership positions that structurally improve net operating income and asset valuation. These advantages are not incidental but are the product of deliberate, path-dependent investment in physical infrastructure and management systems over multiple years—an investment trajectory consistent with the NRBV's pollution prevention capability pillar.

Second, ESG transformation functions as a powerful moderator of tenant demand resilience. The 15.1 percentage point occupancy rate gap between Platinum and non-certified comparators, and the 18.3% rental premium for Platinum buildings, reflect a structural demand bifurcation driven by the ESG commitments of corporate tenants. In Jakarta's market, where premium multinational occupiers constitute a disproportionate share of high-quality demand, ESG alignment has become

a prerequisite for accessing this critical tenant segment. OBMCs that fail to transform face not merely incremental competitive disadvantage but progressive market marginalization as corporate sustainability standards continue to tighten.

Third, Building Environmental Management (BEM) scores—the governance quality dimension of the GBCI framework—emerge as individually powerful predictors of SCA, reinforcing the Dynamic Capabilities perspective that organizational routines and transparency mechanisms are as strategically consequential as physical infrastructure.

This finding directs managerial attention toward the often-underinvested governance and reporting dimensions of ESG strategy. At the broadest level, this study positions ESG-transformed urban office ecosystems as knowledge hubs whose operational standards, digital management architectures, and governance frameworks are transferable assets for Indonesia's rural Smart Village development agenda—establishing a theoretically novel and practically significant connection between commercial real estate sustainability and inclusive national development.

The vision is one of a nationally integrated sustainability learning system, in which Jakarta's frontier ESG practices continuously diffuse outward through policy channels, entrepreneurship networks, and technology ecosystems, seeding productivity and governance improvements in the rural hubs that Indonesia's long-term development vision envisions as engines of inclusive growth. The ESG transformation of Jakarta's office buildings is thus not merely a sectoral story—it is a microcosm of Indonesia's broader aspirations for a just, resilient, and sustainable economic future.

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