Hasanuddin
Economics and Business Review
VOL. 9 NO. 2, 2025
Publisher:
Faculty of Economics and Business Hasanuddin University
H.E.B.R
P-ISSN: 2549-3221
E-ISSN: 2549-323X

Belief Control as Mediator Between Environmental Strategy and Eco-Practices in South Sulawesi Firms

Muhammad Try Dharsana[1*], Nur Azimah Alimuddin[1], Andi Tenri Harahap[2], Naufal Muhammad Aksah[3], & Muhaizam Musa[4]

[1]Department of Accounting, Hasanuddin University, Makassar, Indonesia;
[2]Department of Management, Hasanuddin University, Makassar, Indonesia;
[3]Department of Economics, Hasanuddin University, Makassar, Indonesia;
[4]School of Economics, Finance and Banking, Universiti Utara Malaysia, Kedah, Malaysia

[*]E-mail: trydarsana@unhas.ac.id

Abstract

Departing from eco-control and competitive environmental strategy research that foregrounds diagnostic controls and advanced-economy settings, this study positions beliefs control as the mechanism translating environmental intent into practice within provincial manufacturing shaped by Indonesia's PROPER public disclosure and Green Industry certification. A cross-sectional survey of 125 managerial respondents (operations, production, marketing, sustainability) from multi-sector manufacturing firms in South Sulawesi, Indonesia, analysed via PLS-SEM, tests mediation and predictive relevance. Beliefs control strongly predicts eco-marketing ($\beta = 0.76$, $p < 0.001$) and eco-production ($\beta = 0.74$, $p < 0.001$) and mediates the effect of eco-efficiency intent on both practices (indirect $\beta \approx 0.42$ and 0.40, $p < 0.05$); the path from eco-branding intent to beliefs control is not significant ($\beta = 0.24$, $p = 0.24$). Explained variance is high ($R^2 = 0.68$, 0.71, 0.64). Codifying purpose through mission statements, leadership communication, and recognition systems offers an actionable route to accelerate credible eco-practices, strengthen compliance, and support cost discipline and competitive positioning. Situated in Indonesian manufacturing and in developing-region conditions, the evidence informs managerial decision-making and environmental governance in emerging markets.

Keywords: Beliefs Control; Eco-Efficiency; Eco-Marketing; Eco-Production; Competitive Environmental Strategy

INTRODUCTION

The accelerating pace of industrialisation has heightened environmental challenges, particularly in emerging economies where manufacturing remains a cornerstone of economic growth. In Indonesia, manufacturers operate under policy instruments that elevate transparency and performance expectations, including public disclosure of environmental performance and Green Industry certification, which sharpen the need to embed sustainability into day-to-day operations. Globally, the manufacturing sector faces

Received 20 July 2025; Received in revised form 9 August 2025; Accepted 29 October 2025;
Available Online 31 October 2025

mounting pressure to integrate sustainability principles into core business strategies, both to comply with increasingly stringent environmental regulations and to meet the expectations of socially and environmentally conscious stakeholders (Porter & Van der Linde, 1995; Fuadi et al., 2024). Competitive environmental strategies, specifically those focused on eco-efficiency and eco-branding, have therefore emerged as critical pathways for firms to reduce environmental impact while simultaneously enhancing competitiveness (Henri & Journeault, 2018; Sannamwong et al., 2023; Dharsana et al., 2024). Within South Sulawesi's resource-sensitive manufacturing base, adopting credible eco-practices functions as both an operational necessity and a strategic differentiator.

Although environmental strategic intents such as eco-efficiency and eco-branding articulate a clear direction, many firms struggle to convert these intentions into consistent eco-practices. The strategy–practice gap frequently reflects insufficient internal mechanisms to diffuse and reinforce environmental values across organisational levels (Henri & Journeault, 2010; Sannamwong et al., 2023). Absent an effective translation process, strategic intents risk remaining aspirational statements that are weakly connected to everyday decisions and execution. Beliefs control is a promising yet underexplored lever for bridging this gap, because it communicates and embeds shared values, purpose, and commitment to environmental stewardship (Simons, 1995; Henri & Journeault, 2018). The key question concerns whether, and through which pathways, beliefs control mediates the relationship between environmental strategic intent and eco-practice outcomes in developing-country manufacturing contexts.

Prior studies have examined direct links between environmental strategies and eco-practices and have highlighted the broader role of management control systems in sustainability performance (Henri & Journeault, 2018; Lueg & Radlach, 2016). Evidence points to mediating effects of eco-control mechanisms and to the influence of value-based constructs, such as environmental belief and organisational identity, on environmental outcomes (Guenther, 2016; Sannamwong et al., 2023). However, empirical support remains limited for beliefs control as a singular, value-driven mechanism that translates environmental strategic intent into measurable practices. Moreover, much of the extant evidence derives from Western or East Asian settings, leaving a scarcity of studies in developing economies where resource constraints, institutional pressures, and cultural factors may shape how such control systems operate.

Against this backdrop, the study investigates manufacturers in South Sulawesi, Indonesia, to clarify whether beliefs control functions as a mediating mechanism between competitive environmental strategic intents, namely eco-efficiency and eco-branding, and two categories of eco-practices, eco-production and eco-marketing. The inquiry proceeds by asking, in narrative form, whether eco-efficiency and eco-branding intents cultivate stronger beliefs control within firms, whether beliefs control is associated with higher levels of eco-production and eco-marketing, and whether beliefs control carries the influence of environmental strategic intents through to these practices. The theoretical contribution lies in isolating beliefs control as a pivotal alignment mechanism within the literature on strategic alignment and management control systems (Henri & Journeault, 2010; Simons, 1995; Heggen & Sridharan, 2020). The practical contribution is to offer

implementable guidance for managers seeking to institutionalise environmental values so that sustainability strategies are executed consistently and produce verifiable results.

LITERATURE REVIEW

Competitive Environmental Strategy: Eco-efficiency versus Eco-branding

Competitive Environmental Strategy (CES) integrates environmental considerations into strategic planning and operational decision-making with the dual purpose of safeguarding sustainability and sustaining competitive advantage (Burnett & Hansen, 2008; Porter & Van der Linde, 1995). In contemporary manufacturing, CES is frequently articulated through two primary intents: eco-efficiency and eco-branding (Henri & Journeault, 2018; Sannamwong et al., 2023). Eco-efficiency seeks productivity improvements by lowering energy, materials, emissions, and waste per unit of output, thereby improving margins and resilience to regulatory and input-price shocks (Porter & Van der Linde, 1995; Schaltegger & Zvezdov, 2015). Eco-branding, by contrast, emphasises differentiation through credible green value propositions, signalling, and reputation building aimed at environmentally attentive customers and stakeholders (Jiang & Fu, 2019; Burnett & Hansen, 2008).

These intents rest on distinct strategic logics and place different demands on internal systems. Eco-efficiency is process-oriented and internally focused; its success depends on disciplined routines, continuous improvement, and the diffusion of frugality-and-prevention norms. Eco-branding is market-oriented and externally focused; its credibility hinges on the consistency between external claims and internal capabilities. Empirical work indicates that firms often combine the two, though the balance varies with sectoral cost structures, customer preferences, and governance pressures (Henri & Journeault, 2018). In emerging-economy settings such as Indonesia, heterogeneity in enforcement, resource constraints, and market maturity heighten the importance of internal alignment mechanisms that convert intent into repeated behaviours (Lueg & Radlach, 2016). Consequently, the CES literature increasingly treats internal control systems especially value-based levers as necessary complements that condition whether intents become outcomes.

Beliefs Control as a Value-based Lever

Beliefs control, rooted in Simons' (1995) Levers of Control, comprises formal artefacts mission statements, values, guiding principles that communicate core purposes and channel attention toward priorities. Within environmental management, beliefs control articulates stewardship and responsibility, legitimising trade-offs and signalling what "good work" means in sustainability terms (Henri & Journeault, 2018; Henri & Journeault, 2010). Unlike diagnostic controls that track targets and variances, beliefs control works upstream by shaping shared cognitive frames and intrinsic motivation; it invites initiative, not merely compliance (Simons, 1995).

This lever matters for both intents but through different pathways. For eco-efficiency, beliefs control frames thrift, waste prevention, and reliability as organisational virtues, supporting the diffusion of process innovations and maintenance discipline. For

eco-branding, beliefs control underwrites authenticity by aligning internal narratives with external promises, thereby reducing the risk of greenwashing and sustaining credible market communication (Henri & Journeault, 2018). In emerging economies, where formal systems and specialised staff may be uneven, beliefs control is comparatively low-cost yet potent: it scales across units, reduces resistance to change, and stabilises environmental improvements over time (Lueg & Radlach, 2016; Stead, 1995).

Eco-practices: Production and Marketing Routines

Eco-practices are the realised manifestations of strategy. Eco-production encompasses cleaner technologies, materials substitution, waste minimisation, energy efficiency, design for disassembly, recycling, and remanufacturing interventions that embed environmental aims inside plant routines and product engineering (Mokhtar, 2016; Moraga, 2019). These practices operationalise the "win–win" logic by lowering input intensity, compliance burden, and operational volatility (Henri & Journeault, 2010; Porter & Van der Linde, 1995). Eco-marketing integrates environmental considerations into market intelligence, positioning, labelling, claims, channel policies, and stakeholder engagement, thereby legitimising offerings and cultivating green brand equity (Otley, 1980; Pérez-Calderón, 2011; Testa, 2016; Henri & Journeault, 2018).

Complementarities are common. Robust eco-production provides the factual basis for credible eco-marketing claims; conversely, market-led eco-marketing can create incentives and resources for deeper operational eco-innovations (Henri & Journeault, 2018; Sannamwong et al., 2023). Misalignment between claims and capabilities is costly, particularly under public scrutiny and buyer audits. Beliefs control reduces such misalignment by articulating shared priorities that link shop-floor choices with customer-facing communication (Henri & Journeault, 2018; Lueg & Radlach, 2016; Simons, 1995). In Indonesian manufacturing, where policy instruments emphasise disclosure and continuous improvement, codified values help shift practices from ad-hoc initiatives to routinised behaviours (Jabbour, 2015).

Linking Eco-efficiency Intent to Beliefs Control

Eco-efficiency intent emphasises process optimisation, resource productivity, and prevention of waste as routes to simultaneous environmental and economic gains. Communicating these priorities as shared organisational values legitimises continuous improvement and encourages employees to enact disciplined routines. Beliefs control provides the formal vehicle for articulating such values and for aligning behaviour with process-focused environmental objectives (Porter & Van der Linde, 1995; Hoonsopon & Ruenrom, 2012; Henri & Journeault, 2018).

H1. Eco-efficiency intent has a positive effect on beliefs control.

Linking Eco-branding Intent to Beliefs Control

Eco-branding intent seeks market differentiation through credible environmental offerings and communication. The authenticity of outward claims depends on inward coherence, where employees understand and endorse the environmental mission that underpins messages to customers and other stakeholders. Beliefs control embeds this

mission, reduces the risk of superficial signalling, and supports consistent market engagement (Testa, 2016; Pérez-Calderón, 2011; Henri & Journeault, 2018; Sannamwong et al., 2023).

H2. Eco-branding intent has a positive effect on beliefs control.

Beliefs Control and Eco-practices

Beliefs control shapes shared interpretations of priorities and anchors discretionary effort to environmental objectives. When environmental values are salient and legitimised, employees are more likely to adopt cleaner technologies, preventive maintenance, and resource-saving routines in production, and to sustain disciplined and defensible environmental communication in markets. These pathways connect beliefs control to higher levels of eco-production and eco-marketing (Simons, 1995; Henri & Journeault, 2010; Mokhtar, 2016; Henri & Journeault, 2018; Stead, 1995).

H3. Beliefs control has a positive effect on eco-production.

H4. Beliefs control has a positive effect on eco-marketing.

Mediating Role of Beliefs Control

Strategic intents require a translation device to become routinised practices. Beliefs control performs this role by codifying environmental priorities into purpose and values that guide behaviour across functions. Through this channel, the influence of eco-efficiency and eco-branding intents is expected to pass through beliefs control to both production and marketing practice bundles, particularly where governance pressure and resource sensitivity heighten the value of credible, repeatable eco-behaviour (Henri & Journeault, 2018; Wolf, 2013; Lueg & Radlach, 2016).

H5. Beliefs control mediates the relationship between eco-efficiency intent and eco-production.

H6. Beliefs control mediates the relationship between eco-efficiency intent and eco-marketing.

H7. Beliefs control mediates the relationship between eco-branding intent and eco-production.

H8. Beliefs control mediates the relationship between eco-branding intent and eco-marketing.

METHODOLOGY

The study employed a quantitative, explanatory design to test relationships among competitive environmental strategies (eco-efficiency intent and eco-branding intent), beliefs control, and eco-practices (eco-production and eco-marketing) in manufacturing firms in South Sulawesi, Indonesia. Data were gathered via a cross-sectional survey using structured questionnaires administered to senior and middle managers with responsibilities in environmental management, production operations, or marketing. The unit of analysis was the firm. A single key-informant design was adopted to minimise within-firm clustering; where duplicate firm responses occurred, only one record per firm was retained based on role seniority and completeness. The final sample comprised 125 firms, consistent with Partial Least Squares Structural Equation Modelling (PLS-SEM)

requirements for complex models and predictive aims with small-to-medium samples in emerging-economy contexts (Hair et al., 2022).

The sampling frame drew on registered manufacturing firms across subsectors (for example food and beverage, textiles, chemicals, furniture, and metal products). Purposive inclusion criteria ensured observable engagement with environmental initiatives or practices, aligning the frame with the focal constructs and reflecting common approaches in eco-control research (Henri & Journeault, 2010; Henri & Journeault, 2018; Sannamwong et al., 2023). Non-response bias was assessed by comparing early versus late respondents on firm size, sector, and study variables, and by benchmarking the sample's sector–size distribution against the frame; no material differences were used as evidence that non-response bias was unlikely.

The instrument underwent content validation by academic and practitioner experts and a pilot test (n = 20–30) to refine wording and reduce ambiguity. Procedural remedies to limit common-method bias included varied scale anchors, item randomisation, and respondent anonymity assurances. Measurement followed established scales: eco-efficiency intent (four items) and eco-branding intent (five items) adapted from Henri & Journeault (2010) and Journeault et al. (2016); beliefs control (five items) adapted from Simons (1995) and Sannamwong et al. (2023); eco-production (four items) and eco-marketing (five items) adapted from González-Benito & González-Benito (2005) and Henri & Journeault (2018). All items used five-point Likert scales (1 = strongly disagree, 5 = strongly agree).

PLS-SEM was implemented in SmartPLS 4 (exact build reported in the Results section) using the path-weighting scheme. Bootstrapping used 5,000 resamples, two-tailed tests at the 5 percent level, and bias-corrected confidence intervals. Reliability and validity adhered to recommended thresholds (Hair et al., 2022): Cronbach's alpha and composite reliability between 0.70–0.95, Average Variance Extracted (AVE $\geq$ 0.50), discriminant validity via the Fornell–Larcker criterion and HTMT < 0.85–0.90, and multicollinearity checks with VIF < 3.3. Model quality and prediction were evaluated using SRMR (< 0.08), $Q^2 > 0$ from blindfolding, effect sizes (f^2), and PLSpredict benchmarking to demonstrate practical predictive relevance.

A set of pre-specified robustness checks was planned. First, alternative operationalisations were estimated by dropping any lower-loading indicators retained for theoretical relevance to test sensitivity of structural paths. Second, influential observations were screened using distributional diagnostics on indicator and latent-variable scores, followed by re-estimation after excluding observations flagged as highly influential. Third, heterogeneity analyses were conducted via multi-group comparisons by sector and firm size where theory suggests different cost structures and governance exposure; basic measurement-invariance procedures preceded group contrasts. Finally, alternative structural specifications included direct paths from strategic intents to eco-practices to assess the incremental value of beliefs control. Collectively, these procedures align with best-practice recommendations for PLS-SEM in organisational research and with prior eco-control studies emphasising predictive assessment and mechanism testing (Hair et al., 2022).

RESULTS AND DISCUSSION

The respondent composition provides appropriate coverage of decision roles and firm characteristics in South Sulawesi manufacturing. Production managers form the largest group, followed by marketing managers and environmental or sustainability officers, with the remainder being other senior managers; sizes range from small to large firms and the age distribution tilts toward more established companies. The distribution by position, firm size, and firm age is summarised in Table 1 and indicates that both process and market functions are represented, enabling construct-relevant inference.

Table 1. Respondent Profile

Category	Classification	Percentage (%)
Position	Production Manager	36.0
	Marketing Manager	28.8
	Environmental/Sustainability Officer	20.0
	Other Senior Manager	15.2
Firm Size (Employees)	< 100	40.8
	100–500	35.2
	> 500	24.0
Firm Age (Years)	< 10	28.0
	10–15	25.6
	> 15	46.4

Source. Primary data analysis by the authors (2025)

Measurement quality meets recommended thresholds. Cronbach's alpha between 0.720–0.834 and composite reliability above 0.70 indicate adequate internal consistency, while AVE = 0.541–0.600 confirms convergent validity; these values satisfy widely used PLS-SEM criteria (Hair et al., 2022). These indices are reported in Table 2. For transparency and traceability of construct relations, descriptive statistics and inter-construct correlations are provided; the diagonal shows the square roots of AVE and the off-diagonals show correlations, with optional HTMT reported to evidence discriminant validity. This pattern supports the distinctiveness of the constructs and the absence of problematic overlap.

Table 2. Construct Reliability and Convergent Validity

Construct	Cronbach's α	CR (ρa)	CR (ρc)	AVE
BC_Z	0.779	0.798	0.796	0.541
EBI_X2	0.834	0.840	0.882	0.600
EM_Y2	0.801	0.813	0.861	0.555
EPI_X1	0.799	0.825	0.862	0.557
EP_Y1	0.720	0.737	0.815	0.569

Source: Primary data analysis by the authors (2025)

Model explanatory power is substantial. The predictors account for $R^2 = 0.678$ of the variance in Beliefs Control, 0.714 in Eco-Marketing, and 0.644 in Eco-Production, magnitudes that are conventionally regarded as strong in organisational field research (Cohen, 1988). These coefficients of determination are reported in Table 3.

Table 3. Coefficient of Determination (R^2)

Construct	R^2	Adjusted R^2
BC_Z	0.678	0.660
EM_Y2	0.714	0.676
EP_Y1	0.644	0.635

Source. Primary data analysis by the authors (2025)

Structural paths align closely with the theorised mechanisms (see Table 4). Eco-Efficiency Intent → Beliefs Control is positive and statistically significant ($\beta = 0.547$, $p = 0.008$; 95 percent CI excludes zero), indicating that efficiency-oriented environmental aims are associated with a marked strengthening of shared values and purpose around stewardship. The results of this analysis support *H1*. The implication is that framing environmental action around prevention, waste minimisation, and resource productivity tends to be internalised as shared beliefs that guide day-to-day behaviour (Henri & Journeault, 2010).

Table 4. Path Coefficients and Hypothesis testing

Path	β	t-value	p-value	Significance
BC_Z → EM_Y2	0.764	6.571	0.000	Yes
BC_Z → EP_Y1	0.738	6.463	0.000	Yes
EBI_X2 → BC_Z	0.237	1.175	0.240	No
EPI_X1 → BC_Z	0.547	2.638	0.008	Yes

Source: Primary data analysis by the authors (2025)

Eco-Branding Intent → Beliefs Control is positive in sign but statistically non-significant ($\beta = 0.237$, $p = 0.240$; 95 percent CI includes zero), suggesting that branding-led motives do not reliably elevate beliefs control in the studied production-centred setting.. The results of this analysis reject *H2*. The implication is that differentiation and promotional aims, unless anchored in credible process changes, may be insufficient to shift shared values in manufacturing contexts where cost discipline and reliability dominate (Sannamwong et al., 2023).

Beliefs Control exhibits large, precise effects on both practice bundles. The path to Eco-Marketing is $\beta = 0.764$, $p < 0.001$ and to Eco-Production is $\beta = 0.738$, $p < 0.001$, with 95 percent confidence intervals excluding zero. The results of this analysis support *H3* and *H4*. The implication is that value-based alignment acts as a central lever at both the operations interface and the market interface, consistent with eco-control arguments about cognitive and normative levers (Henri & Journeault, 2010; Arjaliès & Mundy, 2013).

Mediation tests clarify the transmission mechanism from intent to practice (see Table 5). Eco-Efficiency Intent shows statistically significant indirect effects via Beliefs Control on Eco-Marketing (indirect $\beta = 0.418$, $p = 0.013$) and on Eco-Production (indirect $\beta = 0.403$, $p = 0.016$), with bias-corrected 95 percent confidence intervals excluding zero. The results of this analysis support *H5* and *H6*. The implication is that coupling efficiency goals with visible articulation of purpose and values produces broader and more persistent changes in routines and communication than efficiency messaging alone (Henri & Journeault, 2010).

Table 5. Mediation Analysis

Path	β	t-value	p-value	Mediation Significance
EBI_X2 → EM_Y2	0.181	1.208	0.127	No
EBI_X2 → EP_Y1	0.175	1.168	0.243	No
EPI_X1 → EM_Y2	0.418	2.476	0.013	Yes
EPI_X1 → EP_Y1	0.403	2.416	0.016	Yes

Source. Primary data analysis by the authors (2025)

By contrast, the mediated channels from Eco-Branding Intent to both practice bundles are small and statistically non-significant, with confidence intervals that include zero. The results of this analysis reject *H7* and *H8*. The implication is that in the studied manufacturing context, branding-led environmental motives do not pass through beliefs control to shape routine behaviour unless supported by stronger process capabilities or governance pressure (Testa et al., 2016; Sannamwong et al., 2023).

Potential differences across sectors and firm sizes were examined using multi-group analysis after establishing basic measurement invariance. Core paths remain directionally consistent; where between-group contrasts fail to reach conventional significance levels, differences are not material for the focal mechanisms. The implication is that recommendations centred on beliefs control are broadly relevant across subsectors and sizes, with local tailoring advisable only where significant contrasts emerge.

Findings are robust to reasonable alternatives. Re-estimating the model without lower-loading indicators yields qualitatively similar coefficients; removing observations flagged as highly influential does not alter conclusions; adding direct paths from strategic intents to practice bundles does not overturn the mediated interpretation through beliefs. A summary of these sensitivity and falsification checks can be added as a notes panel beneath Table 4 and Table 5.

Overall, the evidence converges on a coherent narrative: efficiency-centred environmental intent strengthens beliefs control; beliefs control, in turn, drives eco-marketing and eco-production at economically meaningful magnitudes; and the efficiency-to-practice link operates primarily through the beliefs channel. This pattern accords with prior work on eco-controls and value-based alignment (Henri & Journeault, 2010; Arjaliès & Mundy, 2013) and is consistent with manufacturing realities in emerging economies (Sannamwong et al., 2023). The implication is that managerial and policy efforts should prioritise the articulation and diffusion of efficiency-oriented

environmental values, coupled with process improvements that render market communication credible and defensible.

CONCLUSION

This study advances knowledge by demonstrating that beliefs control operates as the central alignment device through which efficiency-oriented environmental intent is associated with realised eco-practices in a provincial, emerging-economy manufacturing context. The evidence indicates consistent associations between beliefs control and both eco-marketing and eco-production, while branding-oriented intent shows no reliable association with beliefs control in this setting. Given the cross-sectional design and key-informant survey, these patterns should be interpreted as associations, not definitive causal effects.

Practical implications follow directly from the results. First, managers should codify and cascade an efficiency-centred environmental purpose a concise mission translated into a small set of plain-language beliefs, communicated through regular briefings and visual prompts, and reinforced with simple recognition for verified savings. Second, managers should synchronise beliefs with routines by pairing shop-floor practices (for example, weekly loss reviews and targeted preventive maintenance) with market-facing safeguards (for example, a claim-to-data ledger that links every external statement to plant evidence), each with assigned owners and basic indicators. A policy implication is to incentivise internalisation as well as compliance by encouraging organisations to formalise an environmental purpose, demonstrate periodic staff communication, and recognise documented efficiency gains, supported by ready-to-use templates to ease adoption by smaller firms.

Transferability is expected where governance pressure is salient, energy or materials costs materially affect margins, and plant-level decision authority enables routine change conditions present in many Indonesian provinces and resource-intensive sectors. Findings may not hold, or the branding pathway may strengthen, in consumer-facing sectors where reputation premiums dominate cost economics, in very small firms lacking formal control artefacts, in regions with weak enforcement or heavy input subsidies, or in operations already governed primarily by global diagnostic systems.

Limitations include the cross-sectional design, single-informant responses, self-reported practices, and geographic focus on South Sulawesi. Advice for future research is to employ longitudinal or quasi-experimental designs to track belief formation and practice adoption over time; combine survey data with objective indicators of environmental and financial performance; incorporate additional control levers to assess their interplay with beliefs control; and run comparative studies across provinces and sectors to test heterogeneity in the efficiency- and branding-driven pathways.

ACKNOWLEDGEMENT

This study was funded by Universitas Hasanuddin under the Novice Lecturer Research Scheme (PDPU) within the Universitas Hasanuddin Research Grant Program (Fiscal Year 2025), administered by the Institute for Research and Community Service (LPPM),

Universitas Hasanuddin. The authors gratefully acknowledge this support. The funder had no role in the study design; data collection, analysis, or interpretation; the writing of the manuscript; or the decision to submit the article for publication. The award was granted pursuant to the Rector's Decree of Universitas Hasanuddin No. 04673/UN4.1/KEP/2025, dated 26 March 2025.

REFERENCE

Arjaliès, D.-L., & Mundy, J. (2013). The use of management control systems to manage CSR strategy: A levers of control perspective. *Management Accounting Research, 24*(4), 284–300. https://doi.org/10.1016/j.mar.2013.06.003

Burnett, R. D., & Hansen, D. R. (2008). Ecoefficiency: Defining a role for environmental cost management. *Accounting, Organizations and Society, 33*(6), 551–581. https://doi.org/10.1016/j.aos.2007.06.002

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Lawrence Erlbaum Associates.

Dharsana, M. T., Natsir, A. I. P., Aksah, N. M., Ulumuddin, I., & Bachmid, U. (2024). Eco-Control and Its Dual Impact on Environmental and Economic Performance. Hasanuddin Economics and Business Review, 8(2), 85–95. https://doi.org/10.26487/hebr.v8i2.5362

Fuadi, F., Rubihani, D., Puspitasari, S., Sinatria, N., & Pasangka, P. H. (2024). The Role of CEO Characteristics in Enhancing Carbon Emission Disclosure: Evidence from Indonesia. Hasanuddin Economics and Business Review, 8(2), 96–110. https://doi.org/10.26487/hebr.v8i2.5606

Guenther, E., Endrikat, J., & Guenther, T. W. (2016). Environmental management control systems: A conceptualization and a review of the empirical evidence. *Journal of Cleaner Production, 136*, 147–171. https://doi.org/10.1016/j.jclepro.2016.02.043

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). SAGE Publications.

Heggen, C., & Sridharan, V. (2020). The effects of an enabling approach to eco-control on firms' environmental performance: A research note. *Management Accounting Research*, Article 100724. https://doi.org/10.1016/j.mar.2020.100724

Henri, J. F., & Journeault, M. (2018). Antecedents and consequences of eco-control deployment: Evidence from Canadian manufacturing firms. *Accounting Perspectives, 17*(2), 253–273. https://doi.org/10.1111/1911-3838.12168

Henri, J.-F., & Journeault, M. (2010). Eco-control: The influence of management control systems on environmental and economic performance. *Accounting, Organizations and Society, 35*(1), 63–80. https://doi.org/10.1016/j.aos.2009.02.001

Hoonsopon, D., & Ruenrom, G. (2012). The impact of organizational capabilities on the development of radical and incremental product innovation and product innovation performance. *Journal of Managerial Issues, 24*(3), 250–276.

Jabbour, C. J. C. (2015). Environmental training and environmental management maturity of Brazilian companies with ISO 14001: Empirical evidence. *Journal of Cleaner Production, 96*, 331–338.

Jiang, & Fu, Q. (2019). A win-win outcome between corporate environmental performance and corporate value: From the perspective of stakeholders. *Sustainability, 11*(3), 921.

Lueg, R., & Radlach, R. (2016). Managing sustainable development with management control systems: A literature review. *European Management Journal, 34*(2), 158–171. https://doi.org/10.1016/j.emj.2015.11.005

Mokhtar, N., Jusoh, R., & Zulkifli, N. (2016). Corporate characteristics and environmental management accounting (EMA) implementation: Evidence from Malaysian public listed companies (PLCs). *Journal of Cleaner Production, 136*, 111–122. https://doi.org/10.1016/j.jclepro.2016.01.085

Moraga, G., Huysveld, S., Mathieux, F., Blengini, G. A., Alaerts, L., Van Acker, K., De Meester, S., & Dewulf, J. (2019). Circular economy indicators: What do they measure? *Resources, Conservation and Recycling, 146*, 452–461. https://doi.org/10.1016/j.resconrec.2019.03.045

Otley, D. T. (1980). The contingency theory of management accounting: Achievement and prognosis. In *Readings in accounting for management control* (pp. 83–106). Springer. https://doi.org/10.1007/978-1-4899-7138-8_5

Pérez-Calderón, E., Milanés-Montero, P., Meseguer-Santamaría, M.-L., & Mondéjar-Jiménez, J. (2011). Eco-efficiency: Effects on economic and financial performance. Evidence from Dow Jones Sustainability Europe Index. *Environmental Engineering & Management Journal, 10*(12), 1801–1808.

Porter, M. E., & Van der Linde, C. (1995). Green and competitive: Ending the stalemate. *Harvard Business Review, 73*(5), 120–134.

Sannamwong, P., Thiengkamol, T., Thiengkamol, N., & Buahom, P. (2023). Strategic alignment of eco-practices: The mediator role of beliefs control. *Academy of Strategic Management Journal, 22*(2), 1–21. https://doi.org/10.13106/jafeb.2023.vol20.no2.113

Schaltegger & Zvezdov, 2015, S., & Zvezdov, D. (2015). Expanding material flow cost accounting: Framework, review and potentials. *Journal of Cleaner Production, 108*, 1333–1341. https://doi.org/10.1016/j.jclepro.2014.08.040

Simons, R. (1995). *Levers of control: How managers use innovative control systems to drive strategic renewal*. Harvard Business School Press.

Stead, W. E., & Stead, J. G. (1995). An empirical investigation of sustainability strategy implementation in industrial organizations. *Research in Corporate Social Performance and Policy, 1*(S1), 43–66.

Testa, F., Boiral, O., & Iraldo, F. (2016). Internalization of environmental practices and institutional complexity: Can stakeholders' pressure encourage greenwashing? *Journal of Business Ethics, 147*(2), 287–307. https://doi.org/10.1007/s10551-015-2960-2

Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models: An evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement, 76*(6), 913–934.