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Internal Corporate Social Responsibility and Multilevel Labour Management in Fishing Organisations: A PLS-SEM Sequential Mediation Model for Sustainable Decent Work

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Abstract

The fishing processing industry in Chimbote, Peru, reflects structural vulnerabilities typical of high-informality extractive sectors, including precarious working conditions and limited internal corporate social responsibility (ICSR), hindering progress toward Sustainable Development Goal 8 (SDG 8). Although prior research has linked ICSR to positive employee outcomes, the multilevel mechanisms through which these effects translate into organisational outcomes remain insufficiently understood. This study examines the relationship between ICSR and labour management through a multilevel sequential framework. Using survey data from 384 workers in fishing processing firms, a structural model was estimated to analyse the pathways linking ICSR with individual-, group-, and organisational-level labour management. The findings reveal that ICSR does not directly predict organisational-level outcomes. Instead, its effects operate through a sequential bottom-up process, where ICSR is associated with individual-level labour management, which in turn relates to group-level dynamics, ultimately contributing to organisational-level outcomes. This indirect-only mechanism highlights the central role of individual and group processes in translating organisational practices into broader organisational effects. These results contribute to the literature by providing empirical evidence of a multilevel transmission mechanism in a high-informality context, extending current understanding of ICSR beyond single-level models. From a practical perspective, the findings suggest that organisations seeking to improve labour conditions should prioritise interventions at the individual and group levels to achieve sustainable organisational outcomes aligned with SDG 8.

Keywords: internal corporate social responsibility; labour management; PLS-SEM; sequential mediation; fishing industry; sustainable development; SDG 8; indirect-only mediation; multilevel theory; Peru

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1. Introduction

The quality of working life stands at the intersection of corporate governance, human rights, and sustainable development. Sustainable Development Goal 8 of the United Nations 2030 Agenda calls for sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all [1]. Whilst macroeconomic dimensions of SDG 8 have attracted considerable academic and policy attention, the firm-level mechanisms through which organisations in labour-intensive extractive industries either advance or systematically undermine this objective remain insufficiently theorised [2]. This gap is particularly consequential in the Global South, where high-informality industrial

sectors constitute the dominant employment landscape and where institutional enforcement of labour rights is weakest.

The Peruvian fishing processing industry represents a canonical illustration of this challenge. With an estimated 150,000 workers employed across the fishing processing facilities of Chimbote—the country's largest fishing hub—the sector is simultaneously a critical node in global aquatic food supply chains and a persistent site of labour precarity [3]. Independent estimates indicate that more than 70% of fishing workers operate without formal employment contracts or access to social security benefits [4], occupational accident rates are substantially elevated relative to the national manufacturing average [5], and sustained patterns of managerial inequity and limited investment in employee welfare have been documented across multiple surveys of the sector [6]. These conditions not only violate internationally recognised labour standards but also impose substantial organisational costs: elevated turnover, chronic disengagement, and the erosion of productive capacity.

Internal corporate social responsibility (ICSR)—understood as voluntary organisational commitments directed at guaranteeing the welfare, equitable treatment, and professional development of employees [7]—has been positioned in the management literature as a strategic lever for reconciling firm performance with dignified working conditions. Grounded in Carroll's [8] Pyramid of Corporate Social Responsibility, ICSR operationalises economic responsibilities (job stability and fair remuneration), legal responsibilities (formal contracts and occupational safety compliance), and ethical responsibilities (equity, transparency, and dignity) within the internal employment relationship. A growing empirical literature confirms that ICSR practices are positively associated with employee satisfaction, organisational commitment, and productivity across diverse sectoral and national contexts [9–11]. Recent studies have also highlighted the evolution of CSR toward ESG frameworks and sustainability governance, reinforcing its strategic role in organisational performance [12].

While this approach has facilitated empirical testing, it has also constrained theoretical development by obscuring the hierarchical nature of organizational processes [13]. In practice, organisations are intrinsically multilevel systems in which individual-level cognitions and behaviours are nested within group dynamics, which are in turn embedded in broader organisational structures and cultures [14]. Treating labour management as a single aggregate construct conflates analytically distinct processes, suppresses the identification of mediation pathways, and limits both explanatory precision and the actionability of managerial recommendations. Second, the vast majority of empirical ICSR research has been conducted in manufacturing and service organisations in East Asia and Western Europe [15], leaving extractive industries in Latin America systematically underexplored. This contextual gap is consequential: the institutional environment, labour market structure, and cultural norms governing the employment relationship in Peruvian fishing organisations differ substantively from those in previously studied contexts, constraining the direct generalisation of existing findings.

Recent studies published in sustainability-oriented journals have advanced the understanding of corporate social responsibility (CSR) by highlighting its positive effects on employee attitudes and organizational outcomes [16]. However, important theoretical gaps remain. First, although recent evidence confirms that CSR influences employee behaviours through psychological and social mechanisms, these processes are still insufficiently understood and remain at an early stage of theoretical development [17,18]. Second, contemporary research has predominantly focused on isolated levels of analysis—particularly the individual level—without integrating how these effects translate across group and organizational dynamics, limiting the explanatory power of existing models [19]. Third, most empirical studies have been conducted in formal organizational contexts

in developed or industrialized economies, leaving high-informality sectors in emerging economies largely underexplored.

As a result, current CSR literature lacks a comprehensive multilevel perspective capable of explaining how internal corporate social responsibility (ICSR) generates organizational outcomes through sequential processes across different levels of analysis.

The present study addresses both limitations through a theoretically integrated multilevel approach. Drawing on stakeholder theory [20], social exchange theory [21], and multilevel organisational behaviour (OB) theory [14], we propose and empirically test a sequential mediation model in which ICSR influences organisational-level labour management through cascading effects on individual-level and group-level labour management. Labour management is reconceptualised as a three-level nested construct following Robbins and Judge's [22] OB framework: the individual level encompasses personal values alignment, motivational states, and work attitudes; the group level encompasses communication quality, leadership effectiveness, and team cohesion; the organisational level encompasses cultural strength, workplace climate, and adaptive capacity. The model is estimated using partial least squares structural equation modelling (PLS-SEM) [23], a method well suited for predictive, theory-building research involving complex sequential mediation structures.

This article makes four principal contributions to the sustainability management literature. First, it advances a theoretically grounded multilevel operationalisation of labour management that transcends the limitations of unidimensional constructs prevalent in the ICSR literature. Second, it reveals an indirect-only sequential mediation effect [23]—whereby ICSR's influence on organisational outcomes is entirely contingent on the prior activation of individual motivational processes and their subsequent group-level aggregation; the non-significant direct path from ICSR to organisational outcomes (H4 not supported) is argued to be not a weakness but a theoretically meaningful finding, fully consistent with multilevel emergence and social exchange logic. Third, it provides empirical evidence from a high-informality extractive sector in an emerging economy, enriching the contextual diversity of ICSR scholarship. Fourth, it demonstrates how ICSR may function as a strategic instrument for advancing SDG 8 at the firm level by catalysing a bottom-up emergence process of organisational sustainability, with direct implications for labour governance in the fishing sector and analogous extractive industries.

2. Literature Review and Theoretical Framework

2.1. Internal Corporate Social Responsibility: Conceptual Foundations

Corporate social responsibility scholarship has historically privileged external dimensions—environmental management, community engagement, and philanthropic investment—over internally directed practices concerning employees [24]. The internal dimension of CSR, variously labelled workplace CSR, employee-oriented CSR, or ICSR, refers to voluntary organisational policies and practices directed at improving employees' working conditions, welfare, and professional development [7]. ICSR bridges CSR and sustainable human resource management (SHRM), operationalising Carroll's [8] ethical and legal responsibilities within the internal employment relationship and aligning corporate practice with the normative demands of sustainable labour governance [25].

Carroll's [8] four-part Pyramid of CSR provides the most widely adopted theoretical scaffold for ICSR. The pyramid orders organisational responsibilities hierarchically: economic responsibilities constitute the base (profitable operation, stable employment, and fair wages); legal responsibilities follow (compliance with labour law, occupational safety standards, and formal contracting); ethical responsibilities emerge at the third tier (equitable treatment, transparency, and dignity); philanthropic responsibilities occupy the apex. For extractive and labour-intensive industries, economic and legal compliance

constitute non-negotiable foundations; ethical and philanthropic dimensions represent the differentiating value that transforms minimal compliance into genuine organisational commitment to employee welfare [26].

The empirical literature consistently reports positive associations between ICSR and employee-level outcomes across diverse contexts. Studies such as Kim et al. [27], Turker [7], Farooq et al. [10], and Moktadir et al. [11] provide robust empirical evidence linking ICSR practices to outcomes such as organizational commitment, retention intentions, and employee performance. In particular, these studies demonstrate that employee-oriented CSR policies and practices related to welfare, fairness, and development are strongly associated with favourable attitudinal and behavioural responses.

However, despite this convergence of findings, the literature remains largely confirmatory in nature. Existing studies tend to emphasise the strength and significance of these relationships, often focusing on the magnitude of effects rather than critically examining the mechanisms through which such outcomes emerge. For instance, while mediation effects such as identification, trust, or internal HR practices are occasionally considered (e.g., Kim et al. [27]; Farooq et al. [10]), these are typically treated as isolated processes rather than as part of an integrated multilevel system. Recent contributions have also pointed to the growing need to integrate CSR within broader sustainability and governance frameworks, particularly in relation to organisational transparency and regulatory pressures [28].

Moreover, as highlighted by Gond et al. [15], the psychological microfoundations of CSR are well established at the individual level; however, the translation of these individual-level responses into broader group and organizational dynamics remains insufficiently theorised. Consequently, the literature has been more effective in demonstrating "that" ICSR matters than in explaining "how" its effects unfold across different levels of organisational analysis.

A substantial body of prior research has reported direct relationships between internal corporate social responsibility (ICSR) and organizational-level outcomes, such as organizational commitment, performance, and employee retention. For instance, Turker [7] and Farooq et al. [10] documented significant direct effects of CSR practices on organizational commitment, while subsequent studies have continued to model ICSR as a direct predictor of organizational outcomes, often without explicitly considering intermediate mechanisms.

While these findings have contributed to establishing the relevance of ICSR in organizational contexts, they also reflect an important limitation in the literature. Specifically, many of these studies rely on single-level or aggregated constructs that do not differentiate between individual, group, and organizational processes. As a result, the observed direct effects may partially reflect underlying multilevel dynamics that remain theoretically and empirically unexamined.

Taken together, these limitations suggest that the assumption of a direct ICSR–organizational relationship may oversimplify the complexity of organizational systems.

Therefore, this study contributes to the literature by re-examining the ICSR–organizational relationship through a multilevel sequential mediation framework, providing evidence that challenges the assumption of direct effects and instead supports an indirect-only transmission mechanism.

Importantly, however, the predominance of single-level approaches in prior research reinforces this limitation. By conceptualising employee responses to ICSR primarily as isolated outcomes, existing studies fail to theorise how ICSR-induced changes at the individual level cascade into group dynamics and, ultimately, organisational culture. This lack of multilevel integration represents a critical theoretical gap in the ICSR literature [13,15].

2.2. Labour Management as a Multilevel Hierarchical Construct

Mainstream HRM scholarship has operationalised labour management as a bundle of HR practices—recruitment, training, performance appraisal, and compensation management—without theorising the hierarchical structure of their effects [29]. Yet organisations are intrinsically multilevel systems: individual behaviours are nested within groups, which are embedded in broader organisational structures and cultures [14]. Treating labour management as a unidimensional construct conflates analytically distinct processes, suppresses the identification of mediation pathways, and obscures the emergent nature of organisational outcomes [30].

Robbins and Judge's [22] Organisational Behaviour Framework provides the conceptual scaffolding for a multilevel reconceptualisation. The model distinguishes three analytically separable levels of analysis. At the individual level, labour management encompasses the management of personal values, motivational states, and work-related attitudes. Social exchange theory predicts that employees who perceive their organisation as genuinely invested in their welfare—via ICSR—will respond by internalising pro-organisational values and exhibiting elevated motivational commitment [21,31]. This individual-level reciprocation constitutes the first link in the multilevel transmission chain.

At the group level, labour management encompasses the quality of team communication, the fairness and effectiveness of leadership, and the degree of interpersonal cohesion. When individual workers share aligned values and elevated motivational states, group-level processes are correspondingly enriched: communication becomes more open and trust-based, leadership is enacted more participatively, and conflict is managed more constructively [29,30]. Batt and Colvin [32] demonstrated that high-involvement HR systems—a cluster of practices strongly aligned with ICSR—produced superior group-level outcomes, including reduced conflict, elevated discretionary effort, and improved collective problem-solving. This group-level activation represents the second link in the chain.

At the organisational level, labour management reflects the macro-structural dimensions of organisational culture, workplace climate, and adaptive capacity. Schein [33] argues that organisational culture is the primary determinant of how employees collectively perceive, interpret, and act and that group-level norms and leadership practices constitute the primary mechanisms through which culture is formed and reproduced. Jones [34] further elaborates that organisational structure shapes information flows in ways that either reinforce or undermine positive individual and group dynamics cultivated at lower levels. Sustainable organisational performance, therefore, requires vertical coherence across all three levels [32].

2.3. Theoretical Integration: The Sequential Mediation Model

Three theoretical traditions converge to underpin the proposed sequential mediation framework. Stakeholder theory [20] establishes the normative foundation for ICSR: organisations bear obligations toward all parties whose interests are affected by their decisions, and employees—as the primary internal stakeholder group—possess legitimate claims to welfare, equity, and development. Freeman and Dmytriyev [35] elaborated this argument to demonstrate that internal stakeholder treatment constitutes a foundational condition for sustaining the legitimacy of the employment relationship and, by extension, for the long-term viability of the firm. ICSR is therefore not merely a reputational strategy but a structural response to the normative demands of stakeholder claims.

Social exchange theory (SET) [21,36] provides the micro-level mechanism linking ICSR to individual behaviour. SET proposes that employees continuously monitor organisational treatment and reciprocate with attitudes and behaviours proportionate to perceived organisational investment. Cropanzano and Mitchell [36] synthesised the SET literature to

demonstrate that the norm of reciprocity operates as a pervasive and powerful regulator of employment relationships: when organisations invest in ICSR practices signalling genuine care for employee welfare, workers respond by internalising pro-organisational values (individual level), enhancing collaborative behaviour (group level), and contributing to a positive organisational climate (organisational level). Critically, this reciprocation is sequential: individual cognitive and attitudinal change precedes and enables group-level behavioural change, which in turn aggregates into organisational-level culture [36].

Multilevel OB theory [14] operationalises the cross-level transmission mechanisms. Chan's [37] typology of compositional models posits that macro-level organisational properties emerge from the aggregation of micro-level individual cognitions and meso-level group dynamics through a process of bottom-up emergence. Kozlowski and Bell [38] elaborated this framework for work groups, demonstrating that group-level norms and collective efficacy emerge from the shared experience and motivational states of individual members. The sequential mediation model integrates these insights: ICSR operates as a top-down structural catalyst activating individual-level value internalisation and motivational commitment, which subsequently aggregates through group interaction processes into organisational-level cultural emergence. This bidirectional, multilevel logic is the theoretical core of the present study, and it generates a clear prediction: the direct effect of ICSR on organisational-level outcomes, bypassing individual and group-level activation, should be theoretically negligible—a prediction that the empirical results confirm.

3. Research Hypotheses

3.1. ICSR and Individual-Level Labour Management (H1)

SET predicts that employees reciprocate organisationally beneficial treatment by aligning personal values with organisational objectives and elevating motivational commitment [21,31]. ICSR practices—including fair remuneration, occupational safety investment, equitable treatment, and professional development—constitute high-quality organisational inducements that activate this reciprocation mechanism. Glavas [39] established a significant structural path from perceived ethical organisational behaviour—a core ICSR dimension—to intrinsic employee motivation in a multi-sector sample. Hofman and Newman [40] documented significant paths from perceived CSR to both perceived organisational justice and retention intention in Chinese manufacturing, with individual-level identification fully mediating the effect. Eisenberger et al. [31] demonstrated that perceived organisational support—a construct closely aligned with ICSR—predicts individual-level affective commitment and work engagement through felt obligation and trust. Based on this convergent evidence:

Hypothesis 1 (H1). *Internal corporate social responsibility (ICSR) is positively associated with individual-level labour management (motivation, values alignment, and work attitudes).*

3.2. Individual-Level to Group-Level Labour Management (H2)

Individual-level motivational and value-alignment states function as antecedents of group-level dynamics through processes of social contagion, normative influence, and resource enrichment [30]. When team members share elevated motivational states and pro-organisational values, communication norms become more open and reciprocal, leadership emerges as more participative, and interpersonal conflict is managed more constructively [23,31]. Batt and Colvin [32] demonstrated that investment in individual-level HR practices produced superior group-level conflict resolution and collective effort. Podsakoff et al. [41] confirmed that individual motivational states are strong predictors of group-level citizenship behaviours and collective efficacy. Therefore:

Hypothesis 2 (H2). *Individual-level labour management is positively associated with group-level labour management (communication quality, leadership effectiveness, and team cohesion).*

3.3. Group-Level to Organisational-Level Labour Management (H3)

Group-level dynamics constitute the meso-level building blocks from which organisational culture and climate emerge through a bottom-up aggregation process [31]. Teams characterised by high communicative quality and adaptive leadership generate behavioural norms and shared mental models that, when institutionalised across the organisation, manifest as a positive and adaptive organisational culture [33]. Schein [33] identifies group-level norm reinforcement and leadership behaviour as the primary mechanisms of cultural formation and change. Empirically, Batta et al. [42] established that HR system quality predicted organisational performance through both individual satisfaction and group-level governance quality in the Indian transportation sector. Kozlowski and Bell [38] confirmed that group-level collective efficacy and cohesion are the strongest predictors of organisational-level adaptive outcomes. Therefore:

Hypothesis 3 (H3). *Group-level labour management is positively associated with organisational-level labour management (culture strength, workplace climate, and adaptive capacity).*

3.4. Direct Effect and Sequential Mediation Hypotheses (H4–H6)

Beyond the constituent paths of the sequential chain (H1–H3), the integrated model requires that three additional propositions be formally tested: the direct relationship between ICSR and organisational-level outcomes (H4) and the two indirect pathways through which ICSR's organisational influence is theoretically transmitted (H5 and H6). The theoretical logic of the model implies that where the sequential mediation pathway operates efficiently, the direct effect of ICSR on organisational outcomes—bypassing lower-level activation—should be attenuated or absent, consistent with the cumulative reciprocation logic of SET [36] and the bottom-up emergence model of multilevel OB theory [14].

Hypothesis 4 (H4). *Internal corporate social responsibility (ICSR) has a direct effect on organisational-level labour management.*

Hypothesis 5 (H5). *Individual-level labour management mediates the relationship between ICSR and group-level labour management (ICSR → Individual → Group). This intermediate mediation pathway constitutes a secondary mechanism through which ICSR mobilises group-level dynamics.*

Hypothesis 6 (H6). *The effect of ICSR on organisational-level labour management is sequentially and fully transmitted through individual-level and group-level labour management via an indirect-only mechanism (ICSR → Individual → Group → Organisational). This full sequential mediation constitutes the primary theoretical contribution of the model.*

Figure 1 displays the proposed sequential mediation model, with ICSR as the exogenous construct, organisational-level labour management as the distal outcome, and individual-level and group-level labour management as sequential mediators. The dashed arrow from ICSR to ORG represents the direct path formalised in H4, theoretically predicted to be non-significant given the indirect-only transmission mechanism posited in H6.

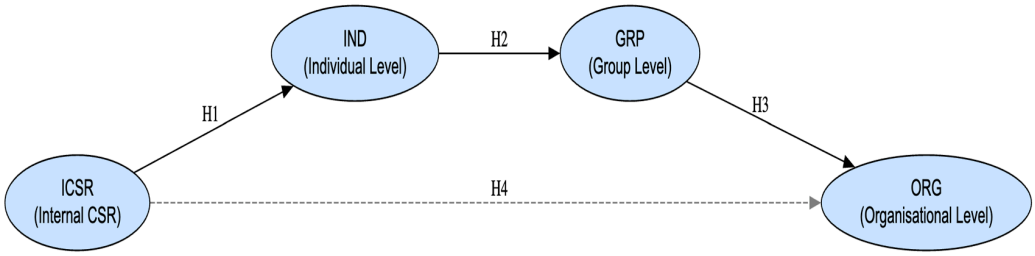


Figure 1. Proposed sequential mediation model. Dashed arrow represents the direct path (H4), theoretically predicted to be non-significant.

4. Materials and Methods

4.1. Research Design

This study adopts a quantitative, explanatory, and cross-sectional research design [43]. The explanatory orientation reflects the objective of testing directional theoretical propositions embedded in a multilevel structural model, rather than merely documenting bivariate associations. The positivist epistemological stance is justified by the operationalisation of theoretically derived, numerically measurable constructs and the intention to generalise findings within the defined target population [44].

Given the cross-sectional nature of the research design, the findings should not be interpreted as evidence of strict causality. Instead, the structural relationships tested in this study reflect theoretically grounded directional associations derived from established frameworks such as social exchange theory and multilevel organisational behaviour theory. Therefore, the results are interpreted as predictive and explanatory relationships rather than causal effects in a longitudinal sense.

4.2. Population and Sample

The target population comprised workers engaged in fish processing activities—including filleting, cutting, quality control, and plant supervision—across fishing processing organisations registered with the Instituto Peruano de Economía in Chimbote, Ancash Region, Peru, estimated at 150,000 workers [3]. Security and cleaning personnel were excluded due to their distinct operational conditions and limited direct exposure to ICSR practices specific to the processing environment. Sample size was determined using the formula for finite populations: $n = (N \cdot Z^2 \cdot p \cdot q)/[(N - 1) \cdot E^2 + Z^2 \cdot p \cdot q]$, where N = 150,000, Z = 1.96 (95% confidence), p = q = 0.50 (maximum variance assumption), and E = 0.05 (5% margin of error), yielding n = 384 workers. Participants were recruited via simple random sampling across multiple facilities. Specifically, the study engaged workers from eight fish-processing plants registered with the Instituto Peruano de Economía in the Chimbote metropolitan area, selected to ensure coverage of both large-scale industrial processors and medium-sized enterprises representative of the sector's structural diversity. Questionnaire completion was voluntary, anonymous, and conducted under informed consent in accordance with Universidad César Vallejo Research Ethics Protocol (Resolution N.° 0470-2022/UCV).

4.3. Measurement Instrument

Data were collected via a structured, self-administered questionnaire comprising 26 items rated on a five-point Likert scale (1 = Never; 5 = Always). This frequency-based response format was selected because the ICSR and labour management constructs were operationalised as behavioural frequency phenomena—capturing how often specific practices are enacted rather than attitudes toward them—consistent with prior ICSR measurement approaches in Latin American industrial contexts [6,7].

Four latent constructs were measured: ICSR (14 items, covering economic, legal, and ethical dimensions of Carroll's [8] Pyramid), individual-level labour management (4 items: personal values alignment and motivational states), group-level labour management (4 items: communication quality and leadership effectiveness), and organisational-level labour management (4 items: organisational culture and workplace climate).

The measurement items were adapted from previously validated instruments in the CSR and organisational behaviour literature, ensuring conceptual consistency with established constructs (e.g., Turker [7]; Carroll [8]). Content validity was further assessed through expert evaluation by three subject matter specialists in management and labour studies, achieving full dichotomous agreement across all items on the criteria of sufficiency, clarity, coherence, and relevance.

Global instrument reliability was confirmed at $\alpha = 0.874$. All analyses were conducted using SmartPLS 4 [45].

Although the ICSR construct includes a relatively large number of indicators (14 items), this reflects its multidimensional conceptualisation based on the economic, legal, and ethical dimensions of Carroll's CSR framework. From an empirical perspective, the results do not indicate problematic redundancy or artificial inflation of reliability. All indicators exhibit satisfactory outer loadings with stable bootstrapped confidence intervals, and the construct meets established thresholds for composite reliability, rho_A, and AVE without exceeding values that would suggest redundancy. Furthermore, the cross-loadings analysis confirms that each indicator contributes uniquely to the construct. Therefore, the inclusion of multiple indicators is theoretically justified and supports the content validity of the ICSR construct.

4.4. Analytical Strategy

PLS-SEM was selected for four methodological reasons [23,46]: (a) the study adopts a predictive-explanatory approach, consistent with PLS-SEM's comparative advantage over covariance-based SEM in nascent theoretical domains; (b) the sequential mediation chain involves multiple endogenous constructs estimable simultaneously without distributional assumptions; (c) n = 384 substantially exceeds the minimum recommended sample for PLS-SEM (10 times the maximum number of paths directed at any endogenous construct); and (d) model fit was assessed via SRMR, consistent with contemporary PLS-SEM reporting standards [46]. Although covariance-based SEM (CB-SEM) is commonly recommended for theory testing when sample sizes are large and models are well-established, it was not selected in this study for several reasons. First, the primary objective is not solely model confirmation but the explanation and prediction of a complex sequential mediation mechanism across multiple levels of analysis. Second, CB-SEM is less suitable for handling hierarchical, multilevel-like structures with multiple mediators when the focus is on variance explanation rather than global model fit. Third, the study explicitly evaluates predictive performance using both in-sample (Q^2) and out-of-sample (PLS Predict) metrics, which are not central to CB-SEM approaches. Therefore, PLS-SEM is considered more appropriate as it prioritises predictive accuracy, supports complex model estimation, and aligns with the study's explanatory–predictive orientation. The measurement model was evaluated using outer loadings (threshold ≥ 0.70), AVE ($\geq$0.50), composite reliability ($\geq$0.70), rho_A ($\geq$0.70), the Fornell–Larcker criterion [47], and the HTMT ratio (<0.85 conservative criterion) [48]. The structural model was assessed via standardised path coefficients (β), explained variance (R^2 and R^2_adj), effect sizes (f^2), predictive relevance via blindfolding (Q^2, omission distance = 7), and PLS Predict for out-of-sample predictive accuracy [49]. Mediation effects (H5, H6) were tested using bias-corrected and accelerated (BCa) bootstrapped confidence intervals (5000 subsamples, two-tailed) [50]. Common

method bias (CMB) was assessed via Harman's single-factor test; the resulting single-factor solution explained less than 33% of total variance, indicating an acceptable level of common method variance. To complement this assessment, Kock's [51] full collinearity approach was additionally applied: all VIF values in the structural model were equal to 1.151, well below the threshold of 3.3, providing additional evidence that CMB does not substantially contaminate the model estimates [51]. It is important to acknowledge, however, that these statistical procedures serve as diagnostic indicators rather than definitive remedies for CMB; they assess its presence but cannot fully eliminate it in cross-sectional, single-source designs. Accordingly, the potential for residual common method variance should be considered when interpreting the magnitude of the reported associations, and future research should employ multi-source or longitudinal data to further mitigate this limitation.

The sequential mediation model assumes a theoretically justified temporal ordering of constructs, in which individual-level responses precede and enable group-level dynamics, which subsequently aggregate into organisational-level outcomes. Although temporal precedence cannot be empirically established within a cross-sectional design, this ordering is grounded in well-established theoretical frameworks, particularly social exchange theory and multilevel OB theory, which conceptualise behavioural processes as unfolding sequentially across levels of analysis. Therefore, the specified mediation sequence reflects theoretical temporality rather than observed temporal causation.

5. Results

5.1. Measurement Model Assessment

The measurement model was evaluated prior to structural estimation to ensure that constructs are valid and reliable representations of their respective latent variables. Table 1 reports reliability and convergent validity indices for all four constructs. All constructs substantially exceeded established thresholds: Cronbach's alpha and rho_A ranged from 0.833 to 0.943; composite reliability (CR) ranged from 0.888 to 0.950; and AVE ranged from 0.574 to 0.720. These values confirm that each construct exhibits adequate internal consistency and that a majority of variance is attributable to the latent construct rather than measurement error [46].

Table 1. Reliability and convergent validity of constructs.

Construct	Cronbach's α	rho_A	CR	AVE
ICSR	0.943	0.944	0.950	0.574
IND	0.838	0.839	0.892	0.673
GRP	0.870	0.874	0.911	0.720
ORG	0.833	0.836	0.888	0.665

Note: ICSR = internal corporate social responsibility; IND = individual-level labour management; GRP = group-level labour management; ORG = organisational-level labour management. All values exceed recommended thresholds (Cronbach's α and rho_A > 0.70; CR > 0.70; AVE > 0.50).

Table 2 presents outer loadings for all 26 items. All loadings ranged from 0.714 to 0.876, comfortably exceeding the 0.70 threshold [48]. To further substantiate indicator-level discriminant validity, bootstrapped 95% BCa confidence intervals (5000 subsamples) were computed for all outer loadings; the resulting intervals are reported in Table A1 (Appendix A). All confidence intervals exclude zero, confirming the stability of the indicators. A complete cross-loadings matrix is provided in Table A2 (Appendix A): each indicator consistently produced its highest loading on its theoretically assigned construct, with all cross-loadings substantially lower, confirming indicator-level discriminant validity.

Table 2. Outer loadings of all scale items.

Item	Construct	Outer Loading
ICSR1	ICSR	0.720
ICSR2	ICSR	0.758
ICSR3	ICSR	0.802
ICSR4	ICSR	0.762
ICSR5	ICSR	0.726
ICSR6	ICSR	0.778
ICSR7	ICSR	0.806
ICSR8	ICSR	0.714
ICSR9	ICSR	0.718
ICSR10	ICSR	0.789
ICSR11	ICSR	0.789
ICSR12	ICSR	0.759
ICSR13	ICSR	0.751
ICSR14	ICSR	0.728
IND1	IND	0.796
IND2	IND	0.850
IND3	IND	0.828
IND4	IND	0.806
GRP5	GRP	0.876
GRP6	GRP	0.813
GRP7	GRP	0.833
GRP8	GRP	0.869
ORG9	ORG	0.818
ORG10	ORG	0.844
ORG11	ORG	0.797
ORG12	ORG	0.802

Note: All outer loadings exceed the recommended minimum threshold of 0.70. ICSR = internal corporate social responsibility (14 items); IND = individual-level labour management (4 items); GRP = group-level labour management (4 items); ORG = organisational-level labour management (4 items).

Discriminant validity was assessed using both the Fornell–Larcker criterion and the more stringent HTMT ratio. Table 3 presents the Fornell–Larcker matrix. The square root of each construct's AVE (diagonal) exceeded all inter-construct correlations (off-diagonal), satisfying the criterion across all construct pairs [47]. The progressive attenuation of inter-construct correlations along the causal chain—ICSR–IND ($r = 0.608$) > IND–GRP ($r = 0.526$) > GRP–ORG ($r = 0.407$) > ICSR–ORG ($r = 0.172$)—is theoretically coherent with the sequential mediation structure, in which ICSR's association with distal outcomes diminishes as it is absorbed by intermediate constructs.

Table 3. Fornell–Larcker criterion matrix.

Construct	ICSR	IND	GRP	ORG
ICSR	0.758 *	0.608	0.362	0.172
IND	0.608	0.820 *	0.526	0.249
GRP	0.362	0.526	0.849 *	0.407
ORG	0.172	0.249	0.407	0.815 *

Note: Diagonal values (marked with *) are the square roots of average variance extracted (AVE). The Fornell–Larcker criterion is satisfied when diagonal values exceed all off-diagonal correlations in the corresponding row and column. ICSR = internal corporate social responsibility; IND = individual-level labour management; GRP = group-level labour management; ORG = organisational-level labour management.

Table 4 reports HTMT ratios with bootstrapped 95% confidence intervals (percentile bootstrap, 5000 resamples). All six inter-construct HTMT values were below the conservative 0.85 threshold [48], and—critically—the upper bounds of all confidence intervals

also remained below this threshold, confirming that discriminant validity is maintained with statistical rigour. The highest HTMT was HTMT(IND, ICSR) = 0.682 (95% CI [0.589, 0.755]). The notably low HTMT ratios between ICSR and ORG (0.191; 95% CI [0.110, 0.292]) and between GRP and ICSR (0.399; 95% CI [0.295, 0.494]) confirm that ICSR and the distal organisational construct are empirically well-differentiated—a prerequisite for demonstrating indirect-only mediation [48]. These inferential results strengthen confidence in the discriminant validity assessment beyond point-estimate comparisons.

Table 4. HTMT ratios with bootstrapped 95% confidence intervals.

Pair	HTMT	CI 2.5%	CI 97.5%	Criterion
ICSR–IND	0.682	0.589	0.755	✔ < 0.85
ICSR–GRP	0.399	0.295	0.494	✔ < 0.85
ICSR–ORG	0.191	0.110	0.292	✔ < 0.85
IND–GRP	0.615	0.532	0.692	✔ < 0.85
IND–ORG	0.297	0.191	0.399	✔ < 0.85
GRP–ORG	0.474	0.381	0.560	✔ < 0.85

Note: HTMT = Heterotrait–Monotrait ratio of correlations. Discriminant validity is established when the upper bound of the bootstrapped 95% confidence interval is below the conservative threshold of 0.85 [48]. All constructs meet this criterion. ICSR = internal corporate social responsibility; IND = individual-level labour management; GRP = group-level labour management; ORG = organisational-level labour management.

5.2. Structural Model Assessment

Prior to examining path coefficients, collinearity was assessed. All VIF values were 1.151, substantially below the critical threshold of 3.3 [51], indicating an absence of multicollinearity concerns in the structural model. Model fit was confirmed by SRMR = 0.045, well within the recommended threshold of $\leq$0.08 [46]. These diagnostics provide assurance that path coefficient estimates are not distorted by collinearity or model misspecification.

To further assess the robustness of the structural model and address potential endogeneity concerns, the Gaussian copula approach proposed by Park and Gupta [52] was applied. This method enables the detection of endogeneity in cross-sectional models without requiring instrumental variables. As shown in Table 5, none of the copula coefficients are statistically significant ($p \geq 0.05$), and all confidence intervals include zero, indicating that endogeneity is not a concern in the estimated model.

Table 5. Endogeneity assessment using the Gaussian copula approach.

Path	Copula Coefficient	CI 2.5%	CI 97.5%	*p*-Value	Interpretation
ICSR → IND	0.681	−0.001	1.362	0.051	No endogeneity
IND → GRP	0.141	−0.724	1.006	0.750	No endogeneity
GRP → ORG	0.945	−0.029	1.919	0.058	No endogeneity
ICSR → ORG	0.117	−0.672	0.906	0.771	No endogeneity

Note: Copula coefficients estimated following Park and Gupta [52]. Endogeneity is indicated when the copula coefficient is statistically significant ($p < 0.05$). CI = 95% confidence interval. All results indicate no evidence of endogeneity across structural paths. ICSR = internal corporate social responsibility; IND = individual-level labour management; GRP = group-level labour management; ORG = organisational-level labour management.

Table 6 presents path coefficients, standard deviations, t-values, *p*-values, bootstrapped 95% BCa confidence intervals, and effect sizes (f^2) for all structural paths. The results reveal a theoretically consequential and internally coherent pattern: three of the four direct paths are highly significant ($p < 0.001$), whilst one—the direct path from ICSR to ORG formalised in H4—is non-significant ($\beta = 0.029$, t = 0.573, $p = 0.567$, 95% CI [−0.071, 0.124]).

Table 6. Structural path coefficients, bootstrapped confidence intervals, and effect sizes.

Path	β	STDEV	t-Value	*p*-Value	95% CI Lower	95% CI Upper	Sig.	f^2
ICSR → IND	0.608	0.037	16.483	< 0.001	0.533	0.680	***	0.586
ICSR → ORG	0.029	0.050	0.573	0.567	−0.071	0.124	n.s.	0.001
IND → GRP	0.526	0.037	14.151	< 0.001	0.453	0.597	***	0.383
GRP → ORG	0.396	0.046	8.685	< 0.001	0.307	0.487	***	0.164

Note: Path coefficients estimated via PLS-SEM with bootstrapping (5000 subsamples, two-tailed, bias-corrected, and accelerated). f^2 = Cohen's effect size (small ≥ 0.02; medium ≥ 0.15; large ≥ 0.35). ICSR = internal corporate social responsibility; IND = individual-level labour management; GRP = group-level labour management; ORG = organisational-level labour management. *** $p < 0.001$; n.s., not significant ($p = 0.567$).

The path ICSR → IND was the strongest in the model (β = 0.608, t = 16.483, $p < 0.001$, 95% CI [0.533, 0.680]), representing a large effect size ($f^2 = 0.586$), consistent with H1. The path IND → GRP was also highly significant and substantively large (β = 0.526, t = 14.151, $p < 0.001$, 95% CI [0.453, 0.597], $f^2 = 0.383$), supporting H2. The path GRP → ORG was significant and moderate-to-large (β = 0.396, t = 8.685, $p < 0.001$, 95% CI [0.307, 0.487], $f^2 = 0.164$), supporting H3. By contrast, the direct path ICSR → ORG (H4) was negligible and non-significant (β = 0.029, t = 0.573, $p = 0.567$, $f^2 = 0.001$).

To further assess the robustness of the structural model, several control variables were incorporated, including tenure, firm size, work area, and educational level, in order to account for potential demographic and organisational influences on organisational-level labour management outcomes. As shown in Table 7, none of the control variables exerts a statistically significant effect on ORG (all $p > 0.05$). These results indicate that organisational-level outcomes are not driven by demographic or structural characteristics of respondents. Importantly, the inclusion of control variables does not alter the magnitude or significance of the main structural relationships, supporting the robustness and internal validity of the proposed model.

Table 7. Effects of control variables on organisational-level labour management.

Control Variable	β	t-Value	*p*-Value	Sig.
Tenure	−0.005	−0.099	0.921	n.s.
Firm size	−0.030	−0.645	0.520	n.s.
Work area	−0.018	−0.382	0.703	n.s.
Education level	0.049	1.012	0.312	n.s.

Note: Path coefficients correspond to the effects of the control variables on organisational-level labour management (ORG), estimated using PLS-SEM with bootstrapping (5000 subsamples, two-tailed). β = standardized path coefficient; STDEV = standard deviation; CI = 95% confidence interval; n.s. = not significant ($p > 0.05$). All control variables were modelled as single-item exogenous predictors directed to ORG.

5.2.1. Unobserved Heterogeneity Assessment (FIMIX-PLS)

To assess potential unobserved heterogeneity, a finite mixture PLS (FIMIX-PLS) analysis was conducted. The results indicate a two-segment solution with relatively balanced group sizes (Segment 1: 47.4%; Segment 2: 52.6%) (see Table 8). The two-segment solution was retained because both segments exceeded the minimum size threshold and showed meaningful differentiation in construct means, allowing substantively interpretable latent profiles.

Segment-level mean comparisons (reported in Appendix A, Table A3) reveal clear differences in construct scores, with Segment 1 showing consistently higher values across all constructs, while Segment 2 exhibits lower (negative) mean scores, indicating distinct respondent profiles.

Table 8. FIMIX-PLS results: segment sizes.

Segment	n	Percentage
1	182	47.4
2	202	52.6

Note: Segment sizes derived from the FIMIX-PLS analysis, indicating the distribution of observations across latent segments and supporting the presence of unobserved heterogeneity.

Although some variation in path magnitudes is observed, these differences are not statistically significant, as confirmed by MGA (Appendix A, Table A4). While the general pattern of relationships remains consistent, the magnitude of path coefficients differs, suggesting that the strength of the causal mechanisms may vary across latent subpopulations.

These findings indicate the presence of unobserved heterogeneity; however, given the consistency in the direction of relationships, the global PLS-SEM results remain robust and interpretable at the aggregate level.

5.2.2. Segment Profile Analysis (Exploratory)

To further interpret the latent segments identified through FIMIX-PLS, an exploratory segment profile analysis was conducted using key demographic and organizational variables (see Table 9). This analysis aims to provide descriptive insights into the composition of each segment and to support the interpretation of differences observed in construct levels.

Table 9. Segment profile characteristics (exploratory analysis).

Variable	Category	Segment 1 (n = 182) %	Segment 2 (n = 202) %
Tenure	1	30.8	27.2
Tenure	2	32.4	41.1
Tenure	3	36.8	31.7
Work area	1	14.3	23.3
Work area	2	71.4	62.9
Work area	3	14.3	13.9
Educational level	1	16.5	26.2
Educational level	2	42.9	40.1
Educational level	3	40.7	33.7
Company size	1	25.3	31.2
Company size	2	42.9	39.6
Company size	3	31.9	29.2

Note: Values represent the percentage of respondents within each segment (row %). Segment 1 (n = 182) and Segment 2 (n = 202) were derived from the FIMIX-PLS segmentation. This analysis is exploratory and is intended to support the interpretation of latent segments rather than to establish causal relationships.

The observed differences between segments extend beyond simple demographic variation and suggest the presence of structurally differentiated labour profiles within the sector. Specifically, Segment 2 appears to represent a more vulnerable subgroup characterised by lower educational attainment and reduced organisational integration, conditions that are consistent with labour patterns typically found in high-informality contexts. In such environments, limited access to stable employment structures and weaker exposure to internal corporate social responsibility (ICSR) practices may constrain the development of individual and group-level labour management processes.

In contrast, Segment 1 reflects a comparatively more stable and institutionally integrated workforce, exhibiting conditions that are more conducive to the effective internalisation of organisational practices and the activation of multilevel behavioural mechanisms. These findings are theoretically consistent with the premise that ICSR effects are contingent upon the structural conditions of the workforce, particularly in contexts where labour informality shapes access to organisational resources.

From a sustainability perspective, these differences highlight the uneven distribution of decent work conditions within the sector, reinforcing the relevance of Sustainable Development Goal 8 (SDG 8) at the micro-organisational level. Thus, the segment profile analysis not only supports the presence of unobserved heterogeneity but also provides substantive insight into how labour market stratification influences the effectiveness of ICSR practices.

5.2.3. Measurement Invariance and Multigroup Analysis (MICOM–MGA)

To ensure the validity of group comparisons identified through the FIMIX-PLS analysis, measurement invariance across latent segments was assessed using the measurement invariance of composite models (MICOM) procedure. Establishing measurement invariance is a necessary condition to guarantee that differences between segments reflect substantive variation rather than measurement artefacts. The MICOM procedure was implemented in three steps: configural invariance, compositional invariance, and equality of means and variances. The results of this analysis are presented in Table 10.

Table 10. Assessment of measurement invariance using the MICOM procedure.

Construct	Groups	Correlation (Original)	*p*-Value (Permutation)	Compositional Invariance	*p*-Value (Mean Differences)	*p*-Value (Variance Differences)	Result
ICSR	Segment 1 vs. Segment 2	0.999	0.559	Yes	1.000	1.000	Full invariance
IND	Segment 1 vs. Segment 2	0.989	1.000	Yes	1.000	1.000	Full invariance
GRP	Segment 1 vs. Segment 2	0.991	0.046	Yes	1.000	1.000	Partial invariance
ORG	Segment 1 vs. Segment 2	0.994	0.965	Yes	1.000	1.000	Full invariance

Note: Measurement invariance was assessed using the MICOM procedure. Compositional invariance was evaluated based on the correlation between composite scores across groups and the corresponding permutation test. Equality of means and variances was assessed through permutation-based *p*-values. Although the GRP construct showed a marginal *p*-value below 0.05, its correlation value was close to unity, supporting the comparability of the groups for subsequent multigroup analysis.

The results indicate that compositional invariance is generally supported, as all correlation values are close to unity. Although the permutation *p*-value for GRP is slightly below the conventional 0.05 threshold, its correlation remains very high (0.991), suggesting acceptable compositional similarity. In addition, no significant differences were observed in the equality of means and variances across segments, supporting the comparability of the groups for subsequent multigroup analysis.

5.2.4. Multigroup Analysis (MGA)

Following the establishment of measurement invariance, a multigroup analysis (MGA) was conducted to examine whether the structural relationships differ significantly across the latent segments identified through FIMIX-PLS. The results of the MGA are presented in Table 11.

The MGA results indicate that none of the differences in structural path coefficients between segments are statistically significant ($p > 0.05$). These findings indicate that unobserved heterogeneity exists at the level of construct means, as revealed by the FIMIX-PLS segmentation. However, the absence of statistically significant differences in structural path coefficients suggests that the underlying causal relationships remain invariant across latent subpopulations. Therefore, heterogeneity is present in respondent profiles but not in the structural mechanisms linking the constructs. This reinforces the robustness and generalizability of the proposed model across latent segments.

Table 11. Multigroup analysis (MGA) results.

Path	Segment 1 (β)	Segment 2 (β)	Difference (Δβ)	Permutation Mean	2.5% CI	97.5% CI	*p*-Value (Permutation)	Significance
ICSR → IND	0.410	0.354	0.056	0.003	−0.136	0.156	0.442	n.s.
ICSR → ORG	−0.172	−0.174	0.003	0.003	−0.189	0.198	0.978	n.s.
IND → GRP	0.155	0.246	−0.091	−0.003	−0.147	0.136	0.224	n.s.
GRP → ORG	0.230	0.107	0.123	0.005	−0.179	0.175	0.173	n.s.

Note: Multigroup analysis (MGA) was conducted using permutation tests. Differences in path coefficients are considered statistically significant when *p*-values are below 0.05 and confidence intervals do not include zero. In this study, all *p*-values exceed 0.05, and confidence intervals include zero, indicating that there are no significant differences in structural relationships between segments; n.s. = not significant ($p > 0.05$).

5.3. Explained Variance and Predictive Relevance

Table 12 reports coefficients of determination (R^2 and R^2_adj) and blindfolding-based predictive relevance (Q^2) for all endogenous constructs. ICSR explained 36.9% of the variance in individual-level labour management ($R^2 = 0.369$), indicating a moderate level of explained variance. The individual construct explained 27.7% of the variance in group-level labour management ($R^2 = 0.277$). Together, ICSR, IND, and GRP explained 16.6% of the variance in organisational-level labour management ($R^2 = 0.166$).

Table 12. Coefficients of determination and predictive relevance (in-sample).

Construct	R^2	R^2_adj	Classification	Q^2
IND	0.369	0.368	Weak–Moderate	0.364
GRP	0.277	0.275	Weak	0.269
ORG	0.166	0.162	Weak	0.154

Note: R^2 classification: ≥0.75 substantial; ≥0.50 moderate; ≥0.25 weak (Hair et al. [23]). Q^2 values > 0 indicate in-sample predictive relevance (blindfolding, omission distance = 7). ICSR = internal corporate social responsibility; IND = individual-level labour management; GRP = group-level labour management; ORG = organisational-level labour management.

Whilst these R^2 values are modest according to the benchmarks proposed by Hair et al. [23], they must be interpreted in light of the cross-sectional design and the inherent complexity of multilevel organisational outcomes. Critically, all three Q^2 values—obtained via blindfolding (omission distance = 7)—were positive and substantially above zero (Q^2_IND = 0.364; Q^2_GRP = 0.269; Q^2_ORG = 0.154), confirming that the model exhibits meaningful in-sample predictive relevance for all endogenous constructs [53].

In particular, the explained variance for ORG ($R^2 = 0.166$) can be considered modest according to conventional benchmarks. However, this result is theoretically and contextually interpretable. First, organisational-level labour management represents a distal and complex construct influenced by multiple structural, institutional, and macro-level factors that extend beyond the scope of the present model. In highly informal labour contexts such as the Peruvian fish-processing sector, organisational outcomes are not solely driven by internal CSR practices, but also by external constraints such as regulatory enforcement, market volatility, and labour informality.

Second, the sequential mediation structure implies that the effect of ICSR on organisational outcomes is transmitted indirectly through individual- and group-level mechanisms, which naturally reduces the direct explanatory power at the organisational level. This is consistent with multilevel emergence theory, where distal outcomes exhibit lower explained variance due to the accumulation and transformation of lower-level processes.

Third, effect size estimates (f^2) indicate that the included predictors exert meaningful contributions to the endogenous constructs, while predictive relevance (Q^2) and out-of-

sample predictive performance (PLS Predict) confirm that the model retains explanatory and predictive validity despite the modest R^2 value.

Nevertheless, the relatively low R^2 suggests the presence of omitted variables and potential moderators. Relevant factors that may enhance explanatory power in future research include organisational characteristics (e.g., firm size and ownership structure), labour conditions (e.g., contract type, tenure, and unionisation), and contextual variables (e.g., regulatory intensity and sectoral competition). Additionally, moderating effects may exist across different subpopulations, as suggested by the FIMIX-PLS results, indicating latent heterogeneity within the sample.

Overall, while the explained variance at the organisational level is limited, the consistency of structural relationships, the significance of indirect effects, and the predictive performance of the model support its robustness and theoretical validity.

To further assess the robustness of the proposed sequential mediation model, alternative model specifications were estimated and compared, including a direct-only model (ICSR → ORG) and a parallel mediation model (ICSR → IND → ORG; ICSR → GRP → ORG). The results of this comparison are presented in Table 13.

Table 13. Comparison of alternative structural model specifications.

Model Specification	R^2 (ORG)	Q^2 (ORG)	Key Structural Findings	Interpretation
Direct-only	0.038	0.026	ICSR → ORG significant ($\beta = 0.194$, $p < 0.001$)	Very weak explanatory power
Parallel mediation	0.167	0.155	IND → ORG not significant ($\beta = 0.051$, $p > 0.05$)	Partial mediation
Sequential mediation model (Full model)	0.166	0.154	All paths consistent; significant indirect effects	Theoretically consistent (preferred model)

Note: R^2 = coefficient of determination; Q^2 = predictive relevance obtained via blindfolding (d = 7). The direct-only model includes only the path ICSR → ORG. The parallel mediation model includes ICSR → IND → ORG and ICSR → GRP → ORG. The sequential mediation model represents the hypothesised multilevel structure (ICSR → IND → GRP → ORG). Results indicate that the sequential model provides a more theoretically coherent and empirically supported representation of the relationships among constructs.

The direct-only model exhibited very low explanatory power ($R^2 = 0.038$) and weak predictive relevance ($Q^2 = 0.026$), indicating that ICSR alone is insufficient to explain organisational-level outcomes. The parallel mediation model showed improved explanatory power ($R^2 = 0.167$; $Q^2 = 0.155$); however, the path from IND to ORG was not statistically significant ($\beta = 0.051$, $p > 0.05$), suggesting that the mediating mechanism is not fully captured when the sequential structure is omitted.

In contrast, the sequential mediation model provides a theoretically consistent representation of the multilevel process, in which effects are transmitted progressively from individual to group and organisational levels. The significant indirect effects and the consistency of structural relationships support the validity of the proposed sequential mediation structure. Overall, these comparisons provide convergent evidence that the sequential mediation model offers a more appropriate and theoretically grounded explanation of the relationships among constructs than alternative model specifications.

Out-of-sample predictive accuracy was assessed via PLS Predict [49], which evaluates whether the PLS-SEM model provides predictions superior to a naïve linear model (LM) benchmark—namely, a simple mean-based predictor applied using k-fold cross-validation (k = 10). As shown in Table 14, for all three endogenous constructs, the structural model's RMSE and MAE were uniformly lower than those of the LM benchmark, confirming that the PLS-SEM model's out-of-sample predictions are more accurate than those achievable by the mean-based baseline. Q^2_predict values—computed as $1 - (RMSE^2_model/RMSE^2_naïve)$—ranged from 0.150 (ORG) to 0.361 (IND), con-

firming medium-to-large out-of-sample predictive accuracy [49]. The IND construct achieved the highest predictive relevance (Q^2_predict = 0.361, RMSE_model = 0.799 vs. RMSE_naïve = 0.999, RMSE reduction = 20.0%), classified as large, whilst GRP (Q^2_predict = 0.267, RMSE reduction = 14.5%) and ORG (Q^2_predict = 0.150, RMSE reduction = 7.8%) demonstrated medium predictive accuracy consistent with the distal position of these constructs in the causal chain. These results demonstrate that the model produces generalisable predictions beyond the estimation sample across all levels of the sequential mediation structure.

Table 14. PLS Predict results: out-of-sample predictive accuracy.

Construct	RMSE_Model	MAE_Model	RMSE_Naïve	MAE_Naïve	Q^2_Predict	Level
IND	0.799	0.640	0.999	0.808	0.361	Large ★★★
GRP	0.855	0.686	0.999	0.807	0.267	Medium ★★
ORG	0.921	0.755	0.999	0.822	0.150	Medium ★★

Note: RMSE = root mean square error; MAE = mean absolute error; Q^2_predict > 0 indicates out-of-sample predictive relevance. Level: Large (★★★) = Q^2_predict ≥ 0.35; Medium (★★) = Q^2_predict ≥ 0.15. IND = individual-level labour management; GRP = group-level labour management; ORG = organisational-level labour management.

5.4. Mediation Analysis: Sequential Indirect Effects

To test the sequential mediation hypotheses (H5 and H6), specific indirect effects were estimated via bootstrapping (5000 subsamples, BCa 95% confidence intervals). Table 15 reports all specific indirect effects. The indirect effect ICSR → IND → GRP was significant (β_indirect = 0.320, t = 10.752, $p < 0.001$, 95% CI [0.262, 0.378]), supporting H5. The sequential indirect effect IND → GRP → ORG was also significant (β_indirect = 0.209, t = 7.368, $p < 0.001$, 95% CI [0.153, 0.264]), consistent with H6.

Table 15. Specific indirect effects: sequential mediation analysis.

Indirect Path	β_Indirect	STDEV	t-Value	*p*-Value	95% CI Lower	95% CI Upper	Sig.
ICSR → IND → GRP	0.320	0.030	10.752	<0.001	0.262	0.378	***
IND → GRP → ORG	0.209	0.028	7.368	<0.001	0.153	0.264	***
ICSR → IND → GRP → ORG	0.127	0.019	6.722	<0.001	0.090	0.164	***

Note: Specific indirect effects estimated via bootstrapping (5000 subsamples, bias-corrected and accelerated). BCa = bias-corrected and accelerated confidence intervals. All confidence intervals exclude zero, confirming significance. *** $p < 0.001$. ICSR = internal corporate social responsibility; IND = individual-level labour management; GRP = group-level labour management; ORG = organisational-level labour management.

Critically, the complete sequential chain ICSR → IND → GRP → ORG yields a total specific indirect effect of β = 0.127 (computed as 0.608 × 0.526 × 0.396), with a 95% BCa confidence interval excluding zero ($p < 0.001$). In combination with the non-significant direct path ICSR → ORG (β = 0.029, $p = 0.567$), these results provide robust evidence of indirect-only mediation [23]: ICSR exerts no significant direct influence on organisational-level outcomes; its entire effect is transmitted through the sequential individual–group cascade. This constitutes an indirect-only transmission mechanism, fully consistent with multilevel bottom-up emergence theory [14].

Table 16 consolidates direct, indirect, and total effects across all paths, confirming the structural dominance of the mediated pathway over the direct pathway in the ICSR → ORG relationship. Figure 2 presents the final estimated structural model with all path coefficients, significance levels, and R^2 values. Notably, the total effect of ICSR on ORG (direct + indirect) equals β = 0.156, of which only β = 0.029 (18.6%) constitutes a direct effect. This decomposition confirms that the overwhelming majority (81.4%) of ICSR's influence

on organisational-level outcomes is transmitted through the sequential mediating chain, providing robust quantitative support for the indirect-only mechanism.

Table 16. Direct, indirect, and total effects summary.

Path	Direct Effect	Indirect Effect	Total Effect	Mediation Type
ICSR → IND	0.608 ***	—	0.608 ***	N/A
IND → GRP	0.526 ***	—	0.526 ***	N/A
GRP → ORG	0.396 ***	—	0.396 ***	N/A
ICSR → IND → GRP	—	0.320 ***	0.320 ***	Secondary mediation
IND → GRP → ORG	—	0.209 ***	0.209 ***	Secondary mediation
ICSR → IND → GRP → ORG	0.029 n.s.	0.127 ***	0.156	✔ Indirect-only mediation

Note: n.s. = not significant ($p > 0.05$). *** $p < 0.001$. Total effect = direct effect + sum of specific indirect effects. For ICSR → ORG: total effect = 0.029 (direct, n.s.) + 0.127 (indirect, ***) = 0.156. The non-significant direct effect ICSR → ORG (H4 not supported), combined with a significant total specific indirect effect through IND and GRP (H6 supported), is indicative of indirect-only mediation [23]. Note: The IND → GRP → ORG path is a secondary indirect effect not explicitly hypothesised; it is reported to illustrate the full sequential cascade but does not correspond to a formal hypothesis in the study. ICSR = internal corporate social responsibility; IND = individual-level labour management; GRP = group-level labour management; ORG = organisational-level labour management.

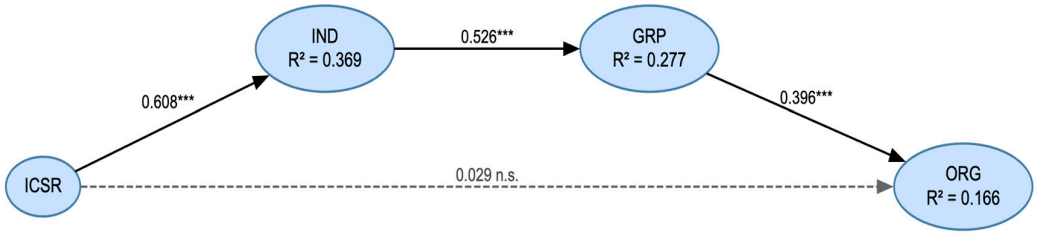


Figure 2. Final estimated structural model. Values adjacent to arrows are standardised path coefficients (β). Values in parentheses below constructs are R^2. Dashed line indicates non-significant direct path (ICSR → ORG; H4 not supported). *** $p < 0.001$; n.s., not significant ($p = 0.567$). Mediation type: indirect-only sequential mediation (H6 supported).

5.5. Summary of Hypothesis Testing

Table 17 summarises the outcomes of all six hypothesis tests, confirming support for H1, H2, H3, H5, and H6 and non-support for H4.

Table 17. Summary of hypothesis testing results.

H	Relationship	B	T	*p*	95% CI	Decision
H1	ICSR → IND	0.608	16.483	<0.001	[0.533, 0.680]	✔ Supported
H2	IND → GRP	0.526	14.151	<0.001	[0.453, 0.597]	✔ Supported
H3	GRP → ORG	0.396	8.685	<0.001	[0.307, 0.487]	✔ Supported
H4	ICSR → ORG (direct)	0.029	0.573	0.567	[−0.071, 0.124]	✗ Not Supported (indirect-only mediation confirmed)
H5	ICSR → IND → GRP	0.320	10.752	<0.001	[0.262, 0.378]	✔ Supported
H6	ICSR → IND → GRP → ORG	0.127	6.722	<0.001	[0.090, 0.164]	✔ Supported

Note: H = Hypothesis. β = standardised path coefficient (direct paths: H1–H3; indirect paths: H5–H6). H4 tests the direct effect ICSR → ORG. All significant paths: $p < 0.001$. 95% CI = bootstrapped bias-corrected and accelerated confidence interval. ICSR = internal corporate social responsibility; IND = individual-level labour management; GRP = group-level labour management; ORG = organisational-level labour management.

6. Discussion

6.1. Indirect-Only Mediation as the Central Theoretical Finding

The central and theoretically consequential finding of this study is not merely that ICSR is positively associated with labour management outcomes—a conclusion broadly consistent with extant literature [7,9–11]—but that this association operates exclusively through a sequential multilevel cascade. H4, which posited a direct effect of ICSR on

organisational-level labour management, was not supported: the direct path was non-significant (β = 0.029, $p = 0.567$) with a trivial effect size ($f^2 = 0.001$), whilst the sequential indirect pathway tested in H6 (ICSR → IND → GRP → ORG) was robustly significant (β_indirect = 0.127, $p < 0.001$). This pattern constitutes indirect-only mediation [23]—or more precisely, an indirect-only effect: ICSR's influence on organisational outcomes is entirely contingent on prior activation of individual motivational and value-alignment processes and their subsequent aggregation into group dynamics.

This finding resolves a persistent ambiguity in the ICSR literature. Prior studies reporting direct associations between ICSR and organisational performance have predominantly employed unidimensional outcome constructs, thereby collapsing individual, group, and organisational levels into a single measure and precluding the identification of mediation pathways [13,15]. For instance, Turker [7] and Farooq et al. [10] both documented significant direct paths from ICSR to organisational commitment using single-level outcome operationalisations; the present study suggests that these apparent direct effects may reflect statistical aggregation artefacts arising from the failure to disaggregate multilevel pathways. When labour management is properly operationalised as a multilevel nested construct—as theorised by Robbins and Judge [22] and consistent with multilevel OB theory [14]—the direct ICSR-to-organisation pathway disappears. The implication is not that ICSR is inconsequential for organisational performance, but that its consequences are entirely transmitted through the hierarchical activation of human behaviour: ICSR first changes how individuals think and feel about their work; those changed individuals collectively transform how groups communicate, lead, and collaborate; those transformed groups institutionalise a more positive and adaptive organisational culture. This is not a methodological artefact; it is a theoretically meaningful result that demands explicit interpretation.

6.2. The Non-Significant Direct Path: A Theoretically Meaningful Absence

The non-significant direct effect of ICSR on organisational-level labour management formalised in H4 (β = 0.029, $p = 0.567$) is a theoretically important, not incidental, result. It is not a measurement failure; it is a theoretically predicted outcome of three convergent mechanisms.

First, from a SET perspective, the reciprocation mechanism is inherently sequential at the micro-to-meso-to-macro level [21,36]. Organisational culture is not a direct product of managerial policy; it is an emergent property arising from sustained patterns of individual cognition and group interaction. Cropanzano and Mitchell [36] synthesise decades of SET research to establish that the norm of reciprocity is mediated by cognitive and affective processes that are inherently gradual and cumulative. Attempting to bypass individual and group activation by directly implementing cultural change initiatives—without first investing in conditions that motivate individual reciprocation—is predicted by SET to fail because culture cannot be imposed; it must emerge from within [33].

Second, from a multilevel OB theory perspective, Chan's [37] typology of compositional models holds that macro-level constructs are functionally distinct from micro-level constructs, even when they share surface-level similarities. Organisational culture and individual work motivation are qualitatively different phenomena, related by causal mechanisms rather than definitional overlap. The absence of a significant direct ICSR → ORG path is therefore consistent with this theoretical position: ICSR operates at the level of individual–organisation exchange; its macro-level consequences emerge only through the accumulation of meso-level group processes.

Third, contextual factors specific to the Chimbote fishing sector may amplify this structural pattern. In high-informality environments characterised by historically low managerial trust and limited institutional protection, workers are less likely to translate

ICSR practices into immediate cultural change. Trust must be built incrementally at the individual level before it can aggregate into group cohesion and, subsequently, cultural transformation. The time-lagged, iterative nature of this trust-building process in the Peruvian extractive context renders the direct ICSR-to-culture pathway particularly implausible in the short term [6,20]. The cross-sectional design of the present study captures only a single temporal snapshot of this ongoing process, further constraining the visibility of a direct organisational-level effect.

6.3. Comparison with Prior Literature and Theoretical Advancement

The magnitude of the ICSR → IND path (β = 0.608, f^2 = 0.586) is among the largest reported in cross-sectional ICSR-to-individual-outcome research. Glavas [39] documented significant paths between perceived ethical organisational behaviour and intrinsic motivation in a multi-sector sample, establishing the mechanism through which ICSR activates individual motivational responses via identity-based processes. Hofman and Newman [40] confirmed that perceived CSR predicted individual-level justice perceptions and retention intention in Chinese manufacturing, with collectivism moderating the strength of the relationship. The convergence of these findings across geographically and institutionally distinct contexts strengthens confidence in the ICSR–individual relationship as a robust, cross-cultural phenomenon. These findings are consistent with recent evidence in Latin American organisational contexts, where labour flexibility and internal organisational practices have been shown to significantly influence employee commitment and organisational outcomes [54].

The IND → GRP path (β = 0.526, f^2 = 0.383) is consistent with Batt and Colvin's [32] finding that high-involvement HR systems—practices strongly aligned with ICSR—produced superior group-level outcomes, including reduced interpersonal conflict and elevated collective citizenship behaviour. Podsakoff et al. [41] confirmed that individual-level motivational states are reliable predictors of group-level citizenship behaviours and collective efficacy, providing a mechanism-level explanation for the IND → GRP pathway documented here. The GRP → ORG path (β = 0.396, f^2 = 0.164) aligns with Schein's [33] theoretical position that group dynamics—specifically, norm reinforcement and leadership behaviour—constitute the primary mechanisms through which organisational culture is formed and reproduced. The progressive attenuation of path coefficients along the chain (0.608 → 0.526 → 0.396) is theoretically coherent: each mediation step introduces additional organisational and environmental variance, reducing the proportion attributable to the upstream causal chain. This pattern is consistent with prior findings in the fishing sector, where variations in organisational conditions significantly affect employee attitudes and organisational commitment [55].

This study advances beyond prior research in three analytically distinct ways. First, to the best of the authors' knowledge, it is the first study to empirically test a three-level sequential mediation model of ICSR within the fishing sector in Latin America, demonstrating that the multilevel cascade structure predicted by theory is recoverable in an extractive, high-informality context. Second, it demonstrates that indirect-only mediation—not merely partial mediation—characterises the ICSR–organisational relationship when levels are properly disaggregated, challenging the implicit assumption in the prior literature that ICSR has a direct organisational-level impact. Third, it provides evidence that the individual level is the critical entry point for ICSR's organisational influence: the large effect size on IND (β = 0.608, f^2 = 0.586) indicates that ICSR's primary leverage resides at the level of individual psychology rather than at the level of culture management.

Additionally, the FIMIX-PLS, MICOM, and MGA results indicate that although respondents differ in their overall levels of perceived ICSR and labour management, the

sequential structural mechanism remains stable across latent subpopulations. This strengthens the claim that the proposed multilevel mediation process is not restricted to a single respondent profile.

The segment profile analysis provides additional insight into the heterogeneity identified through FIMIX-PLS. Although structural relationships remain invariant across segments, the observed differences suggest that workers experience organisational conditions unevenly. In particular, variations in characteristics such as tenure, educational level, and work area indicate the presence of structurally differentiated subgroups, some of which may be relatively less integrated within the organisation. This pattern is consistent with the stratified nature of labour markets in high-informality contexts, where access to organisational resources and stability is unevenly distributed.

These findings reinforce the importance of considering workforce heterogeneity when evaluating the effectiveness of internal corporate social responsibility (ICSR) practices. From a sustainability perspective, they also highlight the uneven distribution of decent work conditions within the sector, strengthening the relevance of Sustainable Development Goal 8 (SDG 8) at the micro-organisational level.

These findings are also consistent with recent contributions in sustainability, which emphasise that internal organisational mechanisms play a critical role in shaping employee-level outcomes that underpin social sustainability. In particular, organisational self-management practices—such as autonomy, participatory decision-making, and role clarity—have been shown to significantly enhance employee well-being through underlying behavioural and psychological processes [56].

This perspective reinforces the argument that internal corporate social responsibility (ICSR) operates through multilevel behavioural mechanisms, linking internal governance practices with broader sustainability outcomes at the organisational level.

6.4. Implications for Sustainable Labour Governance and SDG 8

These findings are consistent with recent studies emphasising the strategic role of CSR and sustainability practices in shaping organisational performance and long-term value creation [57–59].

The results carry substantial implications for the pursuit of SDG 8 within extractive industries in emerging economies. If ICSR's organisational benefits are entirely mediated through individual and group-level activation, then the strategic priority for fishing organisations should not be the direct implementation of culture transformation programmes—which evidence suggests are ineffective without prior lower-level foundations [33]—but rather systematic investment in the foundational ICSR practices that initiate the cascade.

Concretely, this implies that the highest-return organisational interventions for fishing firms in Chimbote are those targeting the economic and legal ICSR dimensions: job stability guarantees, formal contract regularisation, occupational safety provision, and fair wage structures. These practices most directly activate individual-level motivational reciprocation ($\beta = 0.608$). Once this individual foundation is established, group-level leadership development and communicative practices can leverage individual-level changes into team-level transformation ($\beta = 0.526$). Only at this stage do organisational-level cultural interventions become likely to produce sustainable and durable change ($\beta = 0.396$).

For policymakers and labour regulatory bodies, the findings underscore the critical importance of enforcing foundational labour rights—formal contracting, minimum wage compliance, and occupational safety standards—as necessary preconditions for the cascading organisational benefits that ICSR can generate. The sequential, bottom-up strategic logic identified here is fully consistent with Carroll's [8] hierarchical Pyramid, which orders responsibilities such that economic and legal compliance must precede ethical and philan-

thropic aspirations. Regulatory frameworks that prioritise these foundational dimensions are therefore not merely intrinsically valuable for worker welfare but also instrumentally necessary for the multilevel activation mechanism to operate.

From a theoretical perspective, these findings contribute to advancing ICSR research by challenging the predominant assumption of direct relationships between CSR practices and organizational outcomes. Instead, the results provide empirical support for a multilevel and sequential understanding of ICSR, in which organizational-level outcomes emerge through intermediate individual and group processes. This finding suggests that prior models reporting direct effects may have overlooked the hierarchical nature of organizational systems, thereby oversimplifying the mechanisms through which CSR influences performance.

Furthermore, the identification of an indirect-only mediation mechanism reinforces the relevance of social exchange theory and multilevel organisational behaviour theory when integrated, highlighting that employee responses to ICSR are not isolated reactions but part of a cascading process across levels of analysis. This contributes to a more nuanced theoretical framework for understanding how internal CSR practices translate into sustainable organisational outcomes.

From a managerial perspective, the findings indicate that investments in ICSR should not be expected to yield immediate organizational-level outcomes in isolation. Instead, managers should prioritise interventions at the individual and group levels, fostering employee motivation, value alignment, and team cohesion as necessary precursors for achieving broader organisational improvements.

This implies that labour management strategies in high-informality sectors should move beyond compliance-based approaches and incorporate structured internal CSR practices focused on employee welfare, training, and fair treatment. Such strategies can enhance not only employee engagement but also collective organisational capacity, particularly in contexts characterised by precarious working conditions.

In terms of real-world impact, the findings have direct implications for the advancement of Sustainable Development Goal 8 (Decent Work and Economic Growth). The results suggest that ICSR can function as a strategic mechanism for improving labour conditions within organisations, particularly in high-informality extractive sectors such as the fishing industry.

By promoting fair treatment, occupational safety, and employee development, ICSR contributes to the creation of more stable and dignified working environments. Importantly, the multilevel nature of these effects indicates that achieving decent work is not solely a matter of formal policy adoption, but of fostering organisational processes that translate such policies into meaningful improvements at the individual and group levels. This highlights the relevance of labour governance frameworks that integrate organisational practices with broader sustainability objectives.

7. Conclusions

This study advances a theoretically grounded, empirically substantiated multilevel model of the relationship between internal corporate social responsibility and labour management in the fishing processing industry of Chimbote, Peru. By reconceptualising labour management as a three-level sequential construct—individual, group, and organisational—and by integrating stakeholder theory, social exchange theory, and multilevel organisational behaviour theory within a PLS-SEM framework, the study transcends the limitations of the prior ICSR literature, which has systematically conflated analytically distinct levels of analysis into unidimensional outcome measures.

The study's principal theoretical contribution is the empirical demonstration of indirect-only sequential mediation [23]: ICSR exerts no significant direct influence on organisational-level labour management outcomes, but its effect is entirely and robustly transmitted through a bottom-up multilevel cascade. The sequential chain ICSR → individual-level (β = 0.608, large effect) → group-level (β = 0.526, large effect) → organisational-level (β = 0.396, medium-large effect) represents, to the best of the authors' knowledge, the first empirically validated, three-level indirect-only transmission model in the ICSR literature applied to extractive industries in high-informality Latin American contexts. This finding reframes the field's understanding of how ICSR produces its benefits: not through direct cultural engineering, but through the activation of individual motivational reciprocation that cumulatively generates group-level and ultimately organisational-level transformation.

The study's methodological contribution is threefold: it demonstrates the analytical value of disaggregating labour management into its constituent organisational levels; it applies PLS-SEM with indirect-only mediation testing in a novel extractive-sector context; it combines in-sample (Q^2) and out-of-sample (PLS Predict) predictive validation to establish the model's generalisability beyond the estimation sample.

The study's practical contribution is direct: fishing organisations seeking to improve labour management outcomes consistent with SDG 8 should sequence their interventions hierarchically—foundational economic and legal ICSR practices first, group-level leadership development second, and organisational culture initiatives third. This sequencing is not merely strategically rational; it is theoretically mandated by the cascade mechanism documented here. Labour inspectorates and policymakers in Peru and analogous emerging economy contexts should enforce foundational decent work standards as the necessary precondition for the multilevel benefits that ICSR can generate.

The study's sustainability contribution lies in its reframing of ICSR as a bottom-up sustainability mechanism. Sustainable organisational performance is not achievable through top-down cultural edicts; it emerges from the cumulative activation of individual dignity, group cohesion, and organisational adaptive capacity. ICSR, properly implemented, initiates this emergence. The fishing sector of Chimbote represents a critical test case for this model, and the results suggest that even in high-informality, low-trust environments, ICSR retains the capacity to activate meaningful multilevel organisational change—provided interventions begin at the foundational level where their leverage is greatest.

7.1. Limitations

This study is subject to several important limitations that should be considered when interpreting the findings. First, the cross-sectional design precludes strict causal inference. Although the sequential mediation model is theoretically grounded and empirically supported, the absence of temporal data limits the ability to confirm the directional ordering of relationships. As a result, the findings should be interpreted as indicative of theoretically consistent associations rather than definitive causal effects. Future research should employ longitudinal or panel data designs to validate the temporal sequencing proposed in this study.

Second, all data were collected through self-reported Likert-scale questionnaires, which introduces the risk of social desirability bias and common method variance. While Harman's single-factor test and full collinearity assessments indicated acceptable levels, these statistical remedies do not fully eliminate method bias. Future studies should incorporate multi-source data, including supervisor evaluations or objective organisational indicators, to enhance measurement robustness.

Third, the study is geographically restricted to Chimbote, which limits the generalisability of the findings to other regions and sectors. The institutional, cultural, and regulatory characteristics of the Peruvian fishing industry may differ significantly from those of other extractive industries or national contexts. Future research should replicate the model in diverse geographical and sectoral settings to assess its external validity.

Fourth, the relatively modest explained variance at the organisational level ($R^2 = 0.166$) suggests that additional factors not included in the model may play a significant role in shaping organisational outcomes. Variables such as leadership styles, macroeconomic conditions, regulatory enforcement, and union presence may contribute to explaining organisational-level labour management. Future research should extend the model by incorporating these contextual and structural variables.

Fifth, the exclusive reliance on perceptual data limits the ability to triangulate findings with objective organisational performance metrics. The absence of indicators such as accident rates, turnover records, or productivity measures constrains the assessment of the real organisational impact of ICSR practices. Future studies should integrate archival and behavioural data to strengthen the construct validity and practical relevance of the findings.

7.2. Future Research Directions

The limitations identified above open productive avenues for future investigation. Longitudinal panel designs tracking individual, group, and organisational outcomes across multiple measurement waves would enable causal identification of the sequential cascade and assessment of the temporal dynamics of mediation. Cross-sectoral replications—encompassing mining, agriculture, and manufacturing in Latin America—would establish boundary conditions for the indirect-only mediation finding and assess whether sectoral or institutional moderators attenuate specific links in the chain. The systematic integration of potential moderators, including trade union presence, managerial gender diversity, regulatory enforcement intensity, and organisational size, would enrich the model's explanatory architecture. Cross-country comparative designs would permit assessment of whether cultural dimensions—particularly power distance and collectivism—moderate the strength of the individual-to-group and group-to-organisational pathways. Finally, the incorporation of objective performance indicators—occupational accident frequency, turnover rates, absenteeism, and objective productivity metrics—as distal outcomes would strengthen the practical validation of the multilevel cascade mechanism documented here.

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Abbreviations

The following abbreviations are used in this manuscript:

Abbreviation	Definition
ICSR	Internal Corporate Social Responsibility
CSR	Corporate Social Responsibility
HRM	Human Resource Management
SHRM	Sustainable Human Resource Management
PLS-SEM	Partial Least Squares Structural Equation Modelling
AVE	Average Variance Extracted
CR	Composite Reliability
HTMT	Heterotrait–Monotrait Ratio
SDG	Sustainable Development Goal
OB	Organisational Behaviour
SET	Social Exchange Theory
VIF	Variance Inflation Factor
BCa	Bias-Corrected and Accelerated (confidence interval)
SRMR	Standardised Root Mean Square Residual
IND	Individual-Level Labour Management
GRP	Group-Level Labour Management
ORG	Organisational-Level Labour Management

Appendix A. Supplementary Measurement Model Tables

Table A1. Bootstrapped 95% confidence intervals (percentile method).

Item_Construct	Loading	CI_2.5	CI_97.5	Bootstrap Std. Error	Stable
ICSR1 -> ICSR	0.72	0.668	0.771	0.026	Accepted
ICSR2 -> ICSR	0.758	0.709	0.807	0.025	Accepted
ICSR3 -> ICSR	0.802	0.768	0.836	0.017	Accepted
ICSR4 -> ICSR	0.762	0.715	0.809	0.024	Accepted
ICSR5 -> ICSR	0.726	0.678	0.775	0.025	Accepted
ICSR6 -> ICSR	0.778	0.738	0.817	0.02	Accepted
ICSR7 -> ICSR	0.806	0.77	0.842	0.018	Accepted
ICSR8 -> ICSR	0.714	0.661	0.767	0.027	Accepted
ICSR9 -> ICSR	0.718	0.667	0.769	0.026	Accepted
ICSR10 -> ICSR	0.789	0.75	0.827	0.02	Accepted
ICSR11 -> ICSR	0.789	0.75	0.829	0.02	Accepted
ICSR12 -> ICSR	0.759	0.714	0.804	0.023	Accepted
ICSR13 -> ICSR	0.751	0.707	0.795	0.022	Accepted
ICSR14 -> ICSR	0.728	0.679	0.777	0.025	Accepted
IND1 -> IND	0.796	0.757	0.836	0.02	Accepted
IND2 -> IND	0.85	0.823	0.877	0.014	Accepted
IND3 -> IND	0.828	0.792	0.865	0.019	Accepted
IND4 -> IND	0.806	0.768	0.845	0.019	Accepted
GRP5 -> GRP	0.876	0.852	0.9	0.012	Accepted
GRP6 -> GRP	0.813	0.77	0.857	0.022	Accepted
GRP7 -> GRP	0.833	0.799	0.867	0.017	Accepted

Table A1. *Cont.*

Item_Construct	Loading	CI_2.5	CI_97.5	Bootstrap Std. Error	Stable
GRP8 -> GRP	0.869	0.842	0.896	0.014	Accepted
ORG9 -> ORG	0.818	0.78	0.857	0.02	Accepted
ORG10 -> ORG	0.844	0.808	0.879	0.018	Accepted
ORG11 -> ORG	0.797	0.754	0.84	0.022	Accepted
ORG12 -> ORG	0.802	0.756	0.848	0.023	Accepted

Note: Outer loadings are reported with bootstrapped 95% confidence intervals (percentile method, 5000 resamples). All confidence intervals exclude zero, confirming the stability of the indicators. All loadings exceed the recommended threshold of 0.70.

Table A2. Cross-loadings matrix.

Item	ICSR	IND	GRP	ORG	Assigned_to
ICSR1	0.72	0.425	0.314	0.091	ICSR
ICSR2	0.758	0.47	0.242	0.107	ICSR
ICSR3	0.802	0.493	0.318	0.196	ICSR
ICSR4	0.762	0.444	0.227	0.025	ICSR
ICSR5	0.726	0.431	0.21	0.159	ICSR
ICSR6	0.778	0.497	0.318	0.142	ICSR
ICSR7	0.806	0.512	0.282	0.105	ICSR
ICSR8	0.714	0.411	0.257	0.116	ICSR
ICSR9	0.718	0.443	0.317	0.129	ICSR
ICSR10	0.789	0.448	0.255	0.163	ICSR
ICSR11	0.789	0.493	0.278	0.12	ICSR
ICSR12	0.759	0.441	0.232	0.175	ICSR
ICSR13	0.751	0.474	0.352	0.156	ICSR
ICSR14	0.728	0.447	0.226	0.125	ICSR
IND1	0.474	0.796	0.412	0.183	IND
IND2	0.517	0.85	0.44	0.28	IND
IND3	0.525	0.828	0.427	0.148	IND
IND4	0.477	0.806	0.448	0.205	IND
GRP5	0.312	0.465	0.876	0.367	GRP
GRP6	0.268	0.416	0.813	0.329	GRP
GRP7	0.33	0.415	0.833	0.324	GRP
GRP8	0.317	0.485	0.869	0.357	GRP
ORG9	0.191	0.226	0.351	0.818	ORG
ORG10	0.11	0.182	0.345	0.844	ORG
ORG11	0.126	0.21	0.34	0.797	ORG
ORG12	0.13	0.192	0.282	0.802	ORG

Note: Cross-loadings matrix of all indicators across constructs. Each indicator exhibits its highest loading on its assigned construct, supporting indicator-level discriminant validity.

Table A3. FIMIX-PLS results: segment-level means.

Segment	Construct	Media	n_seg
1	ICSR	0.615	182
1	IND	0.707	182
1	GRP	0.655	182
1	ORG	0.504	182
2	ICSR	−0.554	202
2	IND	−0.637	202
2	GRP	−0.59	202
2	ORG	−0.454	202

Note: Segment-level means of latent constructs derived from the FIMIX-PLS analysis.

Table A4. FIMIX-PLS results: segment-specific path coefficients.

Segment	Path	Beta_seg	n_seg
1	ICSR -> IND	0.397	182
1	IND -> GRP	0.138	182
1	GRP -> ORG	0.287	182
1	ICSR -> ORG	−0.203	182
2	ICSR -> IND	0.286	202
2	IND -> GRP	0.246	202
2	GRP -> ORG	0.109	202
2	ICSR -> ORG	−0.141	202

Note: Segment-specific path coefficients derived from the FIMIX-PLS analysis, indicating variation in structural relationships across latent segments.

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