

Ethical Labor Practices and Competitive Performance in Cambodia's Garment Industry: The Role of Supply Chain Risk

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Abstract

Cambodia's garment industry holds a distinctive position in global value chains as one of the few export-oriented manufacturing sectors where labor standards compliance is formally integrated into trade preference agreements and buyer sourcing criteria. Despite this institutional framework, empirical research has yet to clarify whether ethical labor practices confer measurable competitive advantages at the firm level and, if so, through which mechanisms. Furthermore, the extent to which these practices serve as internal supply chain risk-mitigation strategies or generate competitive benefits via alternative pathways remains insufficiently understood. This study addresses these gaps by examining the relationships among ethical labor practices (ELP), internal supply chain risk (SCR), and competitive performance (CP) within Cambodia's garment sector. Drawing on stakeholder theory, the resource-based view, and supply chain risk management theory, a conceptual model is developed in which ELP is theorized to strengthen competitive performance both directly and indirectly, with internal supply chain risk serving as a mediating mechanism across three dimensions: delivery, process, and supply risk. To test this model, a cross-sectional quantitative survey was administered to 455 garment factory workers using an anonymized social-media distribution protocol. A Khmer-language instrument was developed using a four-stage validation process: item generation, expert content validity review, professional translation with back-translation, and pilot testing. This process produced a 35-item measure demonstrating strong psychometric properties across five constructs. Hypotheses were tested using hierarchical ordinary least squares regression. Mediation was assessed using the Sobel-Aroian procedure and bias-corrected, bootstrapped confidence intervals based on 5,000 resamples. The findings carry substantive implications for how scholars and practitioners understand the competitive logic of labor standards in buyer-driven global value chains, particularly whether the dominant performance mechanism operates through operational risk reduction or through alternative relational and market-access channels. By providing the first large-scale primary survey evidence on the ELP-CP relationship in Cambodia using a validated Khmer-language instrument, this study also contributes methodologically to labor-focused supply chain research in emerging economies.

Keywords

Ethical labor practices; Supply chain risk; Competitive performance; Cambodia; Garment industry; Global value chains.

1. Introduction

Global competition has fundamentally transformed manufacturing from firm-versus-firm rivalry into competition between interconnected supply chains. In this environment, buyers, regulators, and civil society increasingly scrutinize the social conditions under which products are produced, particularly in labor-intensive industries such as garment manufacturing. Ethical and socially sustainable supply-chain practices, fair wages, safe and healthy workplaces, and respect for workers' rights are now recognized as central elements of supply chain management rather than peripheral corporate social responsibility (CSR) obligations [1]. Empirical evidence increasingly indicates that such practices can support better operational and financial performance through improved reputation, stronger buyer-supplier relationships, and enhanced employee motivation and retention.

At the same time, firms face heightened supply chain risks arising from volatile demand, supplier unreliability, process disruptions, logistics shocks, and socio-political events. Quantitative studies have developed multidimensional risk scales distinguishing, for example, delivery, process, and supply risks, and have demonstrated that higher perceived risk can weaken supply chain integration and competitive performance [2]. The extent to which ethical labor practices serve as an internal supply chain risk-mitigation strategy, or instead generate competitive benefits through alternative pathways such as buyer trust and market access, remains insufficiently understood and underexplored in the empirical literature.

Cambodia's garment industry provides a salient and instructive context for examining these issues. Since the late 1990s, Cambodia has participated in governance arrangements, including the ILO's Better Factories Cambodia (BFC) program, explicitly linking trade preferences and buyer sourcing decisions to compliance with core labor standards [3]. The sector has grown substantially, reaching 1,682 registered factories by mid-2025 and employing over 918,000 workers, 75–80 per cent of whom are women [4]. The monthly minimum wage reached USD 208 in 2025. Notwithstanding these advances, persistent challenges remain, including insecure fixed-duration contracts, anti-union practices, and a gap between legal minimum wages and living wage levels [5]. Moreover, new human rights due diligence legislation in the EU and Germany increasingly ties trade access to labor compliance, raising the competitive stakes for factories that fail to meet ethical standards.

Existing empirical studies offer important but partial insights. While studies such as Yusuf et al. [1] demonstrate positive associations between ethical practices and supply chain performance, none have formally tested internal SCR as the mediating mechanism in the ELP-CP relationship. This study addresses these gaps by: (1) providing the first large-scale primary survey evidence on the ELP-CP relationship in Cambodia using a validated Khmer-language instrument; (2) formally evaluating SCR as a mediating mechanism; and (3) contributing to the theoretical understanding of the dominant competitive mechanism in the buyer-driven global value chain.

2. Literature Review

2.1. Ethical Labor Practices

Ethical labor practices (ELP) can be defined as a set of organizational policies and practices that address labor, human resources, and occupational safety and health to prevent and mitigate adverse impacts on workers by ensuring fair remuneration, safe working conditions, and respect for fundamental labor rights [6]. The normative foundation derives primarily from the ILO's 1998 Declaration on Fundamental Principles and Rights at Work and the SA8000 social accountability standard. The ILO Declaration identifies four core categories: freedom of association and collective bargaining, elimination of forced labor, abolition of child labor, and

elimination of discrimination; since 2022, a safe and healthy working environment has been added as the fifth fundamental right.

Consistent with this literature, ELP in the present study is conceptualized as a multidimensional construct comprising three interrelated dimensions. Fair compensation captures practices related to minimum wage compliance, payment frequency, overtime compensation at premium rates, and pay equity. Occupational health and safety (OHS) encompasses emergency preparedness, first-aid provision, water and sanitation infrastructure, and workplace safety systems. Workers' rights capture freedom of association and collective bargaining, non-discrimination, and freedom from forced labor and harassment. Prior measurement development by Mani et al. [6] validates a supply-chain social sustainability scale including dimensions of equity, safety, health and welfare, and human rights that closely correspond to these substantive domains.

The current state of ELP research reflects significant growth driven by high-profile industrial disasters and the proliferation of international governance frameworks. In the Cambodian garment context, Chea et al. [7] demonstrated that heat stress significantly reduces perceived productivity among female garment workers, providing a direct empirical illustration of how OHS investments translate into competitive performance gains. The BFC program's monitoring data consistently identify OHS as an area requiring improvement across participating factories, even as compliance has generally improved over its two decades of operation [4]. On workers' rights, Human Rights Watch [5] documented extensive anti-union practices in Cambodian factories, including the systematic non-renewal of employment contracts for union organizers, a pattern identified as a structural mechanism through which managers suppress collective voice.

2.2. Competitive Performance

The study of competitive performance in manufacturing has its roots in operations strategy, where Skinner [8] argued that manufacturing could be a competitive weapon rather than merely a cost to be minimized. Classical operations strategy literature identifies cost, quality, delivery, and flexibility as core competitive priorities [9]. More recent frameworks extend this to include innovation capability as an increasingly important dimension, particularly as buyers seek to differentiate their offerings. Flynn et al. [9] developed and validated scales measuring manufacturing performance across these dimensions using the High-Performance Manufacturing (HPM) global dataset, and Zhao et al. [2] subsequently confirmed their psychometric properties across 317 manufacturing plants in ten countries.

In buyer-driven global value chains, garment factories must simultaneously achieve cost efficiency, quality conformance, on-time and reliable delivery, and operational flexibility to meet changing buyer requirements [10]. The market-access mechanism is particularly salient in the Cambodian context: the EU's partial suspension of Everything But Arms (EBA) preferences in August 2020, citing human rights concerns, imposed estimated costs of up to USD 700 million on Cambodia's garment sector, providing a dramatic empirical illustration of how ELP deficiencies translate into competitive costs through trade conditionality. Awwad et al. [11] showed that competitive advantage is positively related to the extent to which firms excel simultaneously across quality, cost, flexibility, and delivery, reinforcing the multidimensional approach adopted in this study.

2.3. Supply Chain Risk as Mediating Mechanism

Supply chain risk (SCR) is defined in the SCRM literature as the possibility that uncertain events and conditions originating within or external to the firm disrupt material, information, and financial flows, thereby deteriorating operational outcomes [12]. Ho et al. [13] identified more than 200 articles on SCR measurement and management, and Gurtu and Johny [14] document

steady growth in the field since the early 2000s. Rather than treating SCR as a single undifferentiated concept, prior studies have operationalized it as a multidimensional phenomenon that reflects where disruptions arise. Um and Han [15] specify sourcing risk, manufacturing risk, and delivery risk as core risk domains in global supply chains, while Punniyamoorthy et al. [16] develop a multi-dimensional supply chain risk scale including supply, demand, and process risk dimensions, among others, in Indian manufacturing.

Delivery-side risks impair outbound fulfillment performance, including the ability to deliver products on time and maintain buyer service levels. In garment manufacturing, delivery-side risks are particularly significant because the industry operates on tight schedules tied to retail seasons [2]. Process-side risks capture disruptions and variability within internal production activities, including labor turnover, production line instability, quality failures, and equipment breakdowns. Research documents that high labor turnover, a prevalent characteristic of garment manufacturing, disrupts production continuity, causes quality defects, and increases rework costs [5]. Supply-side risks refer to upstream uncertainties affecting the availability, quality, and cost of inputs. Wagner and Bode [17] empirically demonstrate that both supply-side and demand-side risks negatively predict supply chain performance in a large-scale cross-sectional survey of German manufacturing executives.

The connection between ELP and SCR operates through several distinct mechanisms. Fair compensation and good working conditions directly reduce process disruptions by lowering absenteeism, turnover, and workplace accidents [7]. OHS investments reduce delivery risk through more stable, motivated workforces that enable consistent production throughput. Supply risk is attenuated through the production stability that ethical practices generate, creating consistent demand signals for upstream suppliers and attracting more reliable sourcing partners. Eggert and Hartmann [18] demonstrated, using a sample of 231 large publicly traded European firms, that sustainable supply chain management activities are positively associated with supply chain resilience, providing direct evidence of the link between social practices and risk management outcomes.

2.4. ELP and Firm Performance: Prior Evidence

A growing body of evidence links ethical supply-chain practices to enhanced organizational performance. Yusuf et al. [1] demonstrate positive associations between ethical practices and aggregate supply chain performance across manufacturing sectors, yet do not model internal SCR as a mediating mechanism. Croom et al. [19] found that firms with higher social sustainability orientation achieve better operational performance, drawing on a sample of US-based manufacturing firms using a moderated mediation model. The high-performance work systems (HPWS) literature demonstrates through meta-analytic evidence that bundles of human resource practices, including performance-based compensation, safe working conditions, and employee involvement, are associated with superior productivity and financial performance [20]. In emerging economy contexts, Duong et al. [21] confirmed a positive relationship between labor practice quality and supply chain performance outcomes using survey data from Vietnamese enterprises.

Prior work specific to Cambodia provides partial support for the ethics-performance relationship. Asuyama et al. [22] found that improved compliance with labor standards and factory performance go hand-in-hand using factory-level administrative data across two periods. Brown et al. [23] employed a quasi-experimental difference-in-differences design and found that BFC-participating factories achieved higher productivity and quality outcomes over time. Despite this body of evidence, three gaps remain: no prior study has used a validated worker-perspective survey instrument in Cambodia to test the ELP-CP relationship; the mediating mechanisms through which ELP influences CP remain underspecified; and internal

supply chain risk has rarely been theorized as the mechanism through which labor practices translate into competitive outcomes.

2.5. Theoretical Foundations

The relationships among ELP, SCR, and CP are grounded in three complementary theoretical lenses. Stakeholder theory posits that firms create value by balancing the interests of multiple stakeholders, including employees, customers, suppliers, and shareholders [24]. Harrison and Wicks [25] emphasize that building high-quality, ethical relationships with stakeholders is associated with improved organizational performance because such relationships generate trust, cooperation, and support. In garment manufacturing, ethical labor practices reflect management's response to employees' interests; fair wages, safe conditions, and respect for rights may strengthen workers' commitment and productivity, gain legitimacy with buyers and regulators, and reduce conflicts and disruptions.

The resource-based view (RBV) explains competitive advantage in terms of valuable, rare, inimitable, and non-substitutable (VRIN) resources and capabilities [26]. The stable, skilled, and motivated workforce generated by sustained ELP investment represents a human capital resource that is particularly difficult for competitors to replicate rapidly, providing a sustainable source of competitive advantage. More recent work integrates RBV with sustainability, arguing that capabilities related to ethical conduct and social responsibility can serve as strategic resources that enhance performance by improving quality, reliability, and innovation while also enabling firms to manage social risks in their supply chains [24].

Supply chain risk management and resilience theory frames resilience as the ability to prepare for, respond to, and recover from disruptions, supported by capabilities such as flexibility, redundancy, visibility, and collaboration [14]. Ethical labor practices can be interpreted as part of this capability set: stable, healthy, and fairly treated workforces may improve responsiveness, problem-solving, and operational continuity in ways that contribute to supply chain resilience. Taken together, these three perspectives suggest that ELP is positively associated with CP, negatively associated with SCR, SCR is negatively associated with CP, and SCR may mediate the ELP-CP relationship.

3. Conceptual Framework and Hypotheses

Drawing on the literature and theoretical foundations above, this study develops ten testable hypotheses organized into direct effects and mediating effects. Figure 1 illustrates this research conceptual framework.

Both stakeholder theory and RBV predict a positive relationship between ELP and CP. Workers whose compensation is fair, whose safety is protected, and whose rights are respected reciprocate with organizational commitment and discretionary effort that translate into superior quality and delivery outcomes (social exchange theory). From an RBV perspective, the experienced, stable workforce generated by ELP investment constitutes a VRIN human-capital resource. GVC theory further highlights the market-access mechanism: factories with credible ELP compliance gain access to premium buyers and favorable trade conditions. Accordingly, H1: Ethical labor practices exert a significant positive effect on competitive performance.

ELP is predicted to reduce all three dimensions of SCR through distinct mechanisms. OHS investments and fair compensation directly reduce process disruptions by lowering absenteeism, turnover, and workplace accidents. Delivery risk is reduced through more stable, motivated workforces, enabling consistent production throughput and through reputational security that protects buyer relationships. Supply risk is reduced through the production stability ethical practices generate, creating consistent demand signals for upstream suppliers. Accordingly: H2a: ELP exerts a significant negative effect on delivery-side risk; H2b: ELP exerts

a significant negative effect on process-side risk; H2c: ELP exerts a significant negative effect on supply-side risk.

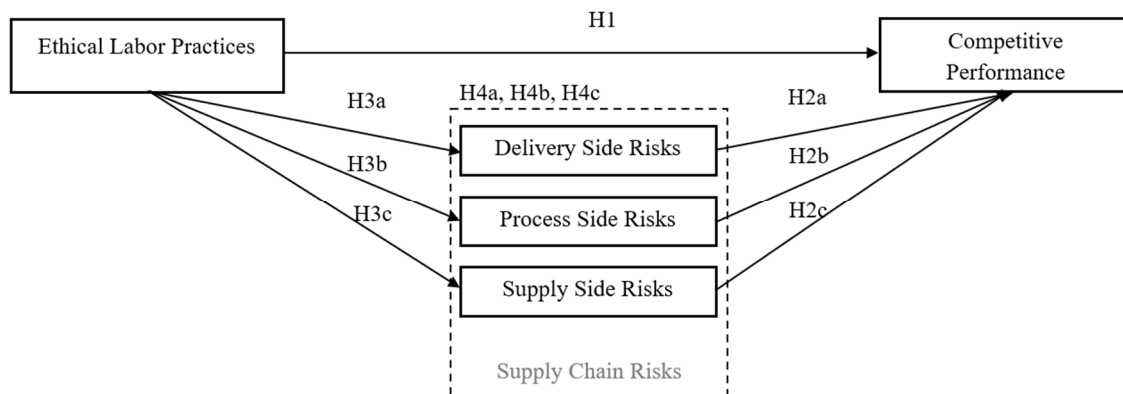


Figure 1. Conceptual Framework

Higher SCR is expected to weaken CP across all three dimensions. Delivery-side risk directly undermines order fulfillment and the quality of buyer relationships. Process-side risk generates variability in cost, quality, and throughput. Supply-side risk leads to material shortages and quality failures cascading into production delays and cost escalation. This negative risk-performance relationship is well-established empirically across multiple industrial contexts and geographic settings [17]. Accordingly: H3a: Delivery-side risk exerts a significant negative effect on CP; H3b: Process-side risk exerts a significant negative effect on CP; H3c: Supply-side risk exerts a significant negative effect on CP.

The mediation propositions rest on the sequential logic that ELP reduces SCR (H2), and SCR reduces CP (H3); therefore, ELP may improve CP partly because it reduces SCR. Accordingly: H4a: Delivery-side risk mediates the ELP-CP relationship; H4b: Process-side risk mediates the ELP-CP relationship; H4c: Supply-side risk mediates the ELP-CP relationship. Table 1 presents a consolidated summary of the ten hypotheses and their predicted directions.

Table 1. Summary of Research Hypotheses

Hypo.	Path	Statement	Direction
H1	ELP → CP	ELP on competitive performance	Positive
H2a	ELP → DR	ELP on the delivery-side risk	Negative
H2b	ELP → PR	ELP on process-side risk	Negative
H2c	ELP → SR	ELP on supply-side risk	Negative
H3a	DR → CP	Delivery-side risk on competitive performance	Negative
H3b	PR → CP	Process-side risk on competitive performance	Negative
H3c	SR → CP	Supply-side risk on competitive performance	Negative
H4a	ELP → DR → CP	Delivery-side risk mediates ELP-CP	Mediation
H4b	ELP → PR → CP	Process-side risk mediates ELP-CP	Mediation
H4c	ELP → SR → CP	Supply-side risk mediates ELP-CP	Mediation

DR = delivery-side risk; PR = process-side risk; SR = supply-side risk.

4. Research Methodology

4.1. Research Design and Epistemological Orientation

The study is grounded in a post-positivist epistemological paradigm that acknowledges the existence of an objective social reality while recognizing that knowledge of this reality is fallible, theory-laden, and probabilistic [27]. This orientation is consistent with the adoption of quantitative survey methods to test theoretically derived hypotheses about relationships among latent constructs representing properties of Cambodian garment factory environments. A deductive research approach translates theoretically grounded propositions into empirically testable hypotheses evaluated using primary data [28]. A quantitative, cross-sectional survey design was employed because the constructs of interest, worker perceptions of labor practices, supply chain risk, and competitive performance, are subjective, multidimensional, and most proximately captured through worker self-report.

The selection of workers as informants is theoretically motivated. Workers possess the experiential knowledge necessary to assess whether wages are paid on time and in full, whether health and safety infrastructure is adequate, and whether they can exercise union rights without fear of reprisal. Barrientos and Smith [29] argued that worker assessments capture aspects of labor practice quality particularly process rights such as freedom of association and freedom from harassment that are systematically underreported in audit-based monitoring systems, thereby providing a validity check on managerially reported compliance data.

4.2. Population, Sampling, and Sample

The target population comprises workers currently employed in export-licensed garment and textile manufacturing enterprises operating in Cambodia, estimated at between 700,000 and 928,000 workers [4]. Random sampling from the full population was not feasible given the absence of a comprehensive, accessible sampling frame. The study therefore adopted a purposive sampling approach combined with snowball referral through social media platforms, an established strategy for research with occupationally defined populations [30]. Survey invitations were distributed through Facebook Groups, Messenger channels, and Telegram groups serving Cambodian garment workers. The anonymous and voluntary nature of participation, combined with social-media distribution bypassing factory management structures, was designed to minimize social desirability bias.

A total of 455 responses were received over a six-week data collection window. After a three-stage cleaning procedure removing substantially incomplete responses (> 10% unanswered; $n = 0$), clear straight-lining responses (identical responses on $\geq 90\%$ of items; $n = 33$), and respondents not currently employed in garment manufacturing ($n = 5$) 417 valid responses were retained (retention rate: 91.6%). The sample was predominantly female (75.3%), mid-career (77% aged 25–44), and long-tenured (69.3% with > 6 years of experience). Factory size was heavily skewed toward large establishments, with 77% of respondents employed in factories with 1,000 or more employees. This profile is broadly consistent with the structural features of Cambodia's garment industry documented in BFC monitoring reports [4]. Sample size adequacy was confirmed against three independent criteria: the ten observations-per-variable rule for EFA (minimum 350 for 35 items; Hair et al. [28]), G*Power 3.1 power analysis (minimum 194 for medium effect, 80% power), and the minimum of 200 for mediation analyses.

4.3. Measurement Instrument

A Khmer-language instrument was developed through a four-stage validation process. Stage 1 involved operationalizing constructs and generating initial items based on the theoretical framework and prior scales: Awaysheh and Klassen [31] and Arnold and Hartman [32] for ELP, Zsidisin [33] and Blackhurst et al. [34] for SCR, and Zhao et al. [2] for CP. Stage 2 comprised

expert content validity review by three judges with expertise in supply chain management, Cambodian labor law, and cross-cultural survey research; the content validity ratio (CVR; Lawshe [35]) exceeded .62 for all retained items. Stage 3 involved professional English-to-Khmer translation with independent back-translation, reviewed iteratively to resolve semantic inconsistencies. Stage 4 comprised pilot testing with 38 garment workers; two items were removed based on low inter-item correlations and participant feedback.

The initial instrument contained 41 five-point Likert-scale items anchored at Strongly Disagree (1) and Strongly Agree (5). Following EFA and psychometric screening of the main study data, six items were removed based on low item-total correlations (threshold: $r \geq .30$) and on alpha-if-item-deleted analyses. The retained instrument comprised 35 items across five scales: ELP (14 items), CP (10 items), Delivery Risk (4 items), Process Risk (5 items), and Supply Risk (3 items).

4.4. Analytical Framework

Construct validity was assessed through EFA using principal axis factoring with oblique (Promax) rotation. The KMO measure of sampling adequacy was .971 and Bartlett’s test was significant ($\chi^2(595) = 11,940.2, p < .001$). Reliability was assessed using Cronbach’s alpha and composite reliability (CR); convergent validity through average variance extracted (AVE; minimum .50); and discriminant validity through the Heterotrait–Monotrait (HTMT) ratio [36] with a threshold of $< .90$. Common method variance (CMV) was assessed using Harman’s single-factor test and a supplementary partial correlation analysis controlling for a method factor.

Direct-effect hypotheses (H1–H3) were tested using hierarchical OLS regression with five demographic controls (gender, age, education, tenure, factory size) entered in Block 1 and the primary predictor(s) in Block 2. All regression assumptions were systematically evaluated including linearity (partial regression plots), homoscedasticity (Breusch–Pagan tests), normality of residuals (Shapiro–Wilk tests), and multicollinearity (VIF statistics). Mediation hypotheses (H4a–H4c) were tested using the Aroian variant of the Sobel test and bootstrapped 95% BCa CIs based on 5,000 resamples using Hayes’s [37] PROCESS macro (Model 4). Both point estimates and confidence intervals are reported; BCa CIs that exclude zero indicate significant indirect effects.

5. Results and Findings

5.1. Sample Profile and Descriptive Statistics

Table 2. Descriptive Statistics for Construct Composites (N = 417)

Construct	M	SD	Skew	Kurt	t vs. midpoint
ELP	4.655	0.473	-2.354	7.452	71.45***
CP	4.616	0.462	-2.221	8.100	72.68***
Delivery Risk	1.616	0.678	2.127	5.640	-41.69***
Process Risk	1.413	0.675	2.607	7.902	-48.02***
Supply Risk	1.429	0.704	2.492	7.072	-45.54***

*M = mean; SD = standard deviation; Kurt = excess kurtosis. t vs. midpoint = one-sample t-test against scale midpoint of 3.0. *** $p < .001$.*

Table 2 presents descriptive statistics for all construct composites (computed as arithmetic means of retained items). The ELP composite mean of 4.655 (SD = 0.473) was significantly above the scale midpoint of 3.0 ($t(416) = 71.45, p < .001$), indicating that respondents on

average assessed their factory’s ethical labor practices as consistently favorable. The CP composite mean of 4.616 (SD = 0.462) was similarly above the midpoint ($t(416) = 72.68, p < .001$). Both ELP and CP means are situated in the upper range of the five-point scale, consistent with the sample’s composition of workers predominantly employed in large, BFC-monitored, export-licensed factories, where ceiling effects are a predictable and expected consequence of the sampling frame. All three SCR dimension means fell significantly below the midpoint: delivery risk (M = 1.616, SD = 0.678), process risk (M = 1.413, SD = 0.675), and supply risk (M = 1.429, SD = 0.704; all t-tests $p < .001$), indicating low levels of perceived supply chain risk consistent with the high ELP scores.

5.2. Validity and Reliability

Table 3 presents the complete reliability and validity summary. All five scales demonstrated excellent internal consistency: Cronbach’s alpha values ranged from .813 (delivery risk) to .951 (ELP), all substantially exceeding the .70 threshold [38]. Composite reliability values ranged from .881 to .957, and AVE values ranged from .600 to .825, all meeting or exceeding the .50 criterion [39]. These results confirm strong internal consistency and convergent validity across all constructs.

Discriminant validity was assessed using both the Fornell–Larcker criterion and the HTMT ratio. The Fornell–Larcker criterion was satisfied for all construct pairs. Two HTMT ratios exceeded the .90 threshold: DR–PR (.927) and PR–SR (.946), reflecting the high empirical overlap among the three SCR dimensions as correlated facets of a common underlying supply chain risk perception. This is theoretically consistent with their shared conceptual domain. The ELP–CP HTMT ratio (.835) was acceptable; construct distinctiveness is supported by the fact that ELP items operationalize management-side practice inputs while CP items capture market-side performance outputs, and no item overlap exists between the two scales.

Harman’s single-factor test explained 48.7% of total variance (below the 50% threshold [40]). A supplementary partial correlation analysis found that the ELP–CP zero-order correlation ($r = .772$) attenuated to $r = .605$ ($\Delta r = .167$) when controlling for a method factor defined as the mean of all 35 items, confirming that a substantial substantive association persists after removing the method-factor component. Bootstrapped OLS regression confirmed the H1 effect is robust ($\beta = .771, 95\% \text{BCa CI } [.667, .801]$).

Table 3. Reliability, Convergent Validity, and Discriminant Validity Summary

Scale	Items	α	CR	AVE	$\sqrt{\text{AVE}}$	HTMT _{ma} ^x
ELP	14	.951	.957	.600	.785	.835
CP	10	.909	.939	.631	.794	.835
Delivery Risk	4	.813	.881	.651	.807	.927†
Process Risk	5	.929	.947	.781	.884	.946†
Supply Risk	3	.894	.934	.825	.908	.946†

† HTMT > .90 for DR–PR (.927) and PR–SR (.946); all other ratios < .90. Minimum thresholds: $\alpha \geq .70$; CR $\geq .70$; AVE $\geq .50$.

5.3. Direct Effects (H1–H3)

H1 was strongly supported: ELP was the dominant and highly significant predictor of CP ($\beta = .768, B = 0.749, SE = 0.037, t = 20.173, p < .001, R^2 = .600$). The standardized beta of .768 indicates that a one standard deviation increase in ELP is associated with a .768 standard deviation increase in CP, a large effect by Cohen’s [41] conventions ($f^2 = 1.61$, well exceeding

the .35 large threshold). The Block 2 increment attributable to ELP above the demographic controls was $\Delta R^2 = .380$.

All three H2 hypotheses were supported. ELP significantly and negatively predicted delivery risk (H2a: $\beta = -.522$, $R^2 = .393$), process risk (H2b: $\beta = -.512$, $R^2 = .398$), and supply risk (H2c: $\beta = -.555$, $R^2 = .404$; all $p < .001$). Supply risk showed the largest attenuation ($\beta = -.555$), reflecting the production-stability mechanism: high-ELP factories generate consistent demand signals that reduce upstream supplier uncertainty. All three H3 hypotheses were supported: delivery risk ($\beta = -.349$, $R^2 = .333$), process risk ($\beta = -.365$, $R^2 = .340$), and supply risk ($\beta = -.353$, $R^2 = .336$) each significantly and negatively predicted CP (all $p < .001$). The broadly equivalent effect sizes across all three risk dimensions suggest they function as near-equivalent expressions of a common underlying risk burden from a performance-impact perspective. Factory size was a consistently significant positive predictor of CP across all H3 models ($p < .01$), reflecting economies of scale. Complete results are presented in Table 4.

Table 4. Summary of Hypothesis Testing Outcomes (N = 417)

Hypothesis	Path	β	R^2	Outcome
H1	ELP → CP	.768***	.600	Supported
H2a	ELP → DR	-.522***	.393	Supported
H2b	ELP → PR	-.512***	.398	Supported
H2c	ELP → SR	-.555***	.404	Supported
H3a	DR → CP	-.349***	.333	Supported
H3b	PR → CP	-.365***	.340	Supported
H3c	SR → CP	-.353***	.336	Supported
H4a	ELP → DR → CP	$z = -0.048$	-	Not Supported
H4b	ELP → PR → CP	$z = 1.383$	-	Not Supported
H4c	ELP → SR → CP	$z = -0.999$	-	Not Supported

*** $p < .001$. Five demographic controls included in all direct-effect models. For H4a–H4c: all Sobel–Aroian z -statistics $p > .16$; all 95% BCa CIs include zero; proportion mediated = 1.6%.

5.4. Mediation Effects (H4a–H4c)

Despite H2 and H3 both being fully supported, none of the three SCR dimensions mediated the ELP–CP relationship. Applying the Baron and Kenny [42] causal steps framework, Steps 1 and 2 were satisfied (total effect of ELP on CP significant; ELP significantly predicted all SCR dimensions). However, Step 3 was not satisfied: in the parallel multiple mediator model simultaneously regressing CP on ELP, all three SCR dimensions, and the five demographic controls, none of the SCR dimensions exerted a statistically significant path b effect: delivery risk ($B = 0.002$, $SE = 0.037$, $t = 0.048$, $p = .962$), process risk ($B = -0.066$, $SE = 0.047$, $t = -1.400$, $p = .162$), and supply risk ($B = 0.042$, $SE = 0.041$, $t = 1.006$, $p = .315$).

The Sobel–Aroian indirect effect tests confirmed these results. None of the three indirect effects was statistically significant (delivery: $z = -0.048$, $p = .962$; process: $z = 1.383$, $p = .167$; supply: $z = -0.999$, $p = .318$). All bootstrapped 95% BCa CIs included zero. The direct effect of ELP on CP in the parallel model remained large and significant ($c' = 0.737$, $SE = 0.044$, $t = 16.806$, $p < .001$), virtually unchanged from the total effect ($c = 0.749$). The proportion of the total ELP–CP effect mediated by all three SCR dimensions combined was only 1.6%. A sensitivity analysis replacing the three SCR dimensions with a single higher-order composite (SCR composite, α

= .957) yielded $z = 0.474$, $p = .636$, confirming the null mediation finding is robust and not an artifact of dimensional specification.

6. Discussion

6.1. The Direct ELP–CP Effect

The most powerful finding is the large, positive, and statistically significant direct effect of ELP on CP ($\beta = .768$, $R^2 = .600$, $p < .001$). This effect exceeds the mean correlation reported in Orlitzky et al.'s [43] meta-analysis of the CSR–financial performance relationship and is consistent with Yusuf et al. [1] and the HPWS literature [20]. All three theoretical frameworks converge in explaining this result. From a stakeholder theory perspective [24], workers whose compensation is fair and whose safety is protected reciprocate with organizational commitment and discretionary effort, translating into superior quality and delivery outcomes. RBV [26] frames the experienced, stable workforce generated by ELP investment as a VRIN human-capital resource. GVC theory [10] highlights the market-access mechanism, most dramatically illustrated by the EU's partial EBA suspension imposing estimated costs of USD 700 million on Cambodia's garment sector.

Three reverse-causation concerns are noted but only partially addressed by the cross-sectional design. First, Cambodia's institutional architecture places ELP logically prior to CP, as ELP compliance credentials determine buyer sourcing decisions. Second, the BFC program has assessed factory compliance since 2001, predating the data collected here. Third, COVID-19 documentation shows that the removal of buyer-driven ELP incentives produced immediate CP deterioration, consistent with the ELP→CP direction. Causal identification ultimately requires longitudinal or quasi-experimental designs exploiting exogenous variation in ELP.

6.2. ELP and Supply Chain Risk (H2)

The supported H2 findings extend SCRM theory by documenting labor-practice antecedents of delivery, process, and supply risk with moderate-to-large effect sizes (β range $-.512$ to $-.555$) in a developing-country context. This represents the first large-scale primary-survey evidence from Cambodia that internal factory labor practices significantly predict all three SCR dimensions simultaneously. The ordering of effect sizes is theoretically informative: supply risk showed the largest attenuation ($\beta = -.555$), reflecting the production-stability mechanism whereby high-ELP factories generate consistent demand signals, reducing upstream supplier uncertainty. Delivery risk ($\beta = -.522$) reflects the OHS pathway; each mass-fainting episode documented by Chea et al. [7] constitutes an acute production stoppage. Process risk ($\beta = -.512$) operates through the more distal mechanisms of organizational justice and tacit knowledge retention.

6.3. The Null Mediation Finding

The study's most theoretically consequential result is the uniform failure of SCR to mediate the ELP–CP relationship, despite both H2 and H3 being fully supported. The direct effect of ELP on CP was virtually unchanged after introducing SCR mediators ($c' = 0.737$ vs. $c = 0.749$; proportion mediated = 1.6%). Two complementary accounts explain this pattern. The statistical suppression account: ELP and the SCR dimensions are so strongly correlated (r range $.612$ – $.627$) that once ELP is controlled, the SCR dimensions retain no unique variance with which to predict CP. The external risk dominance account provides the substantive explanation: in BFC-tier export factories, supply chain disruptions are predominantly driven by external forces buyer order volatility, trade policy changes, and geopolitical shocks not by internal labor practice failures. The COVID-19 pandemic starkly illustrates this dynamic: brand order cancellations caused approximately 130 Cambodian factories to suspend operations and

displaced over 100,000 workers by April 2020, with no causal role played by internal ELP failures.

Consequently, the dominant ELP–CP mechanism operates through buyer trust, human-capital quality, and market-access conditionality channels rather than through internal SCR attenuation. This constitutes a theoretically important specification of the mechanism through which ethical practices generate competitive advantage in buyer-dominated global value chains, advancing GVC theory [10] with a falsifiable, empirically validated prediction.

7. Theoretical Contributions and Practical Implications

7.1. Theoretical Contributions

This study makes four original contributions to the literature of Logistics Engineering and Management. First, it provides the first large-scale primary-survey evidence on the ELP–CP relationship in Cambodia ($N = 417$; $\beta = .768$, $R^2 = .600$), using a Cambodia-specific, validated Khmer-language instrument, a methodological advance that enables rigorous quantitative research with Cambodian worker populations. Second, it constitutes the first formal mediation test of SCR as a mechanism linking ELP and CP; the null mediation finding (proportion mediated = 1.6%) indicates that the dominant mechanism in buyer-driven chains is buyer trust and market-access conditionality rather than internal risk attenuation, extending GVC theory with a falsifiable empirical prediction. Third, it provides the first large-scale Cambodian evidence that internal factory labor practices simultaneously predict delivery, process, and supply risk, identifying a new category of organizational antecedents largely absent from quantitative SCRM research. Fourth, the large ELP–CP effect, confirmed in an environment of relatively weak formal regulatory enforcement, enriches Freeman's [24] instrumental stakeholder theory, demonstrating that market-governance mechanisms, buyer compliance requirements, and trade conditionality can substitute for formal regulation in generating stakeholder-management dividends.

7.2. Practical Implications

For factory managers, ELP is the single most powerful predictor of CP ($\beta = .768$, $R^2 = .600$); framing ELP spending as a cost trade-off mischaracterizes the empirical relationship. Three structural reforms are supported: transitioning from fixed-duration contracts to longer-term employment to reduce workforce instability; investing in OHS (ventilation, ergonomic improvements, adequate wages) as a disruption-prevention mechanism, with delivery-risk returns quantified at $\beta = -.522$; and establishing genuine freedom of association through legitimate channels for worker voice. For international buyers, the null mediation finding confirms that the primary ELP–CP pathway operates through the buyer trust and market-access mechanisms that buyers themselves facilitate. Buyers subject to the EU Corporate Sustainability Due Diligence Directive should treat social compliance and commercial performance criteria as aligned rather than in tension, and should commit to longer-term sourcing relationships with ELP-compliant suppliers.

For the Cambodian government, the study empirically refutes the regulatory-chill hypothesis: higher ELP is associated with stronger, not weaker, competitive performance. Priority enforcement actions include strengthening the labor inspectorate's independence and authority, closing the fixed-duration contract loophole through progressive mandatory employment conversion, and actively pursuing full reinstatement of the EBA. For the ILO and BFC, the null mediation finding underscores the commercial value of BFC's credibility-signaling function. Two structural priorities follow: extending BFC's mandatory monitoring mandate to subcontractor factories currently outside the program; and reinstating mandatory public

factory-level compliance reporting to restore the information infrastructure through which ELP compliance credentials generate market-access advantages.

8. Limitations and Future Research

This study has several important limitations. The cross-sectional design precludes causal inference; the documented ELP-CP association is consistent with correlation and does not rule out reverse causation or confounding. More profitable factories may invest more in labor conditions, and workers at better-performing factories may rate both ELP and CP more highly. Social desirability and fear of retaliation represent a Cambodia-specific concern; multi-source evidence documents pervasive worker self-censorship in the industry [5], suggesting that the high ELP means ($M = 4.655$) may be upward-biased despite anonymous social-media distribution. The sampling strategy over-represents workers with digital access in large, monitored factories and under-represents the subcontractor tier where violations are most severe, limiting generalizability. Common method variance cannot be fully eliminated in single-source self-report data; although the supplementary analyses reduce concern about CMV as a fatal threat, the true population effect size may be somewhat smaller than the OLS point estimate.

Several important directions for future research emerge. Longitudinal panel designs or natural-experiment designs exploiting exogenous variation in ELP, such as minimum wage changes, BFC monitoring-status events, or the 2020 EBA suspension, would enable causal identification of the ELP-CP pathway. Future research should explicitly model buyer trust, sourcing concentration, and trade conditionality as potential mediators or moderators to directly investigate the dominant ELP-CP pathway identified in this study. Extending the analysis to unmonitored subcontractor factories would test whether the null mediation finding is tier-specific. Multi-source data designs combining worker-reported ELP with buyer audit scores or BFC compliance ratings for CP would eliminate common-rater bias. Finally, hierarchical SEM addressing the HTMT-flagged discriminant validity concerns among the SCR subdimensions would provide more rigorous tests of the mediation hypotheses.

9. Summary

This study investigated the direct and indirect relationships among ethical labor practices, supply chain risk, and competitive performance in Cambodia's garment industry using primary survey data from 417 workers across export-licensed factories. A validated 35-item Khmer-language psychometric instrument demonstrated strong reliability and validity across all five constructs. All seven direct-effect hypotheses were supported at $p < .001$: ELP exerted a large positive effect on CP ($\beta = .768$, $R^2 = .600$), significantly reduced all three SCR dimensions (β range $-.512$ to $-.555$), and each SCR dimension negatively predicted CP (β range $-.349$ to $-.365$). Contrary to the mediation hypotheses, supply chain risk did not mediate the ELP-CP relationship; the proportion mediated was 1.6%, and all indirect effects were non-significant. The dominant ELP-CP pathway operates through buyer trust, human-capital quality, and market-access conditionality rather than internal SCR attenuation.

The path toward restored trade access, stable buyer relationships, and sustained export competitiveness in Cambodia runs through, not away from, the consistent, genuine, and verifiable improvement of ethical labor practices for the approximately 918,000 workers who are the sector's primary productive asset. Strengthening the institutional infrastructure of buyer governance, trade conditionality, and monitoring transparency is a precondition for realizing the competitive performance dividends that this study demonstrates are available to Cambodian garment factories that treat their workers with dignity.

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Ethical Approval and Informed Consent

This study involved a voluntary, anonymous online survey of adult garment factory workers in Cambodia. Because the research collected no personally identifying information and involved no intervention, it was determined to be exempt from full ethics committee review under the institutional guidelines of Chongqing University of Posts and Telecommunications. The study nonetheless followed standard ethical practice for human-subjects research: all participants were at least 18 years of age, participation was voluntary and anonymous, and informed consent was obtained electronically before the survey items appeared. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Data Availability Statement

The data that support the findings of this study contain sensitive information about factory-level labor conditions in an ongoing industry and are therefore not publicly available. De-identified aggregate data and the full survey instrument may be made available from the corresponding author on reasonable request and subject to appropriate data-use agreements, consistent with the terms under which participants provided consent.

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