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Supplier Relationship Management and Ethical Sourcing Practices as Determinants of Supply Chain Risk Reduction: The Mediating Role of Supplier Compliance

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ABSTRACT

To explain how governance becomes risk-reducing in practice, this study develops and tests a mechanism-based model that positions Supplier Compliance as the central pathway connecting governance investments to Supply Chain Risk Reduction. Four governance dimensions are specified as antecedents: Supplier Collaboration (joint planning, information sharing, joint problem solving, long-term orientation), Ethical Compliance Evaluation (codes of conduct, audits, corrective-action follow-up, enforcement routines), Transparent Sourcing (traceability, upstream visibility, disclosure, access to risk information), and Agreement Governance (contractual clarity, monitoring rights, enforceability, structured escalation/remediation provisions). A quantitative cross-sectional survey of 377 supply-chain and sourcing professionals was analyzed using PLS-SEM with bootstrapping. Measurement reliability and validity checks supported interpretation of the structural model. The governance dimensions jointly explain a substantial share of Supplier Compliance ($R^2 \approx 0.403$). Governance plus compliance explain meaningful variance in Supply Chain Risk Reduction ($R^2 \approx 0.453$), capturing improved capability to anticipate, mitigate, respond to, and recover from supplier-related disruptions, including those triggered by ethical non-compliance. Structural results show differentiated direct effects on risk reduction: Supplier Collaboration and Ethical Compliance Evaluation have significant positive direct impacts, suggesting immediate benefits from relational routines and credible enforcement for prevention and response coordination. Transparent Sourcing and Agreement Governance do not show significant direct effects at conventional thresholds, implying that traceability/visibility systems and contractual controls alone do not automatically reduce disruption exposure. Mediation tests indicate that compliance significantly mediates each governance–risk relationship, showing that governance reduces risk primarily when it produces embedded supplier routines (training, audit cooperation, timely corrective-action closure, continuous improvement) rather than remaining documentation- or infrastructure-heavy.

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1.1 Background of the Study

Global supply chains have become structurally more complex, multi-tier, and geographically dispersed, making them vulnerable to both operational disruptions and socio-ethical shocks that can quickly translate into delivery failures, legal exposure, and reputational damage (Ivanov & Dolgui, 2020; Roehrich et al., 2024). In risk-focused supply chain scholarship, scholars argue that risk is not only driven by logistics interruptions but also by governance failures, weak monitoring, and misaligned incentives across buyer–supplier interfaces (Bonatto et al., 2020; Um & Kim, 2019). As buyer firms increasingly face scrutiny from regulators, investors, and civil society, supplier practices related to labor rights, safety, and environmental conduct are becoming central to how "supply chain risk" is defined and managed (Micheli et al., 2020; Roehrich et al., 2024).

Within this landscape, Supplier Relationship Management (SRM) is widely treated as a strategic capability that structures how buying firms select, develop, coordinate, and govern suppliers to stabilize performance and reduce uncertainty (Bonatto et al., 2020; Um & Kim, 2019). Um and Kim (2019) illustrated that collaborative supplier relationships strengthen information sharing, joint planning, and

responsiveness—mechanisms that become particularly valuable under disruption conditions. In a similar vein, relational governance perspectives argue that trust-based coordination and joint problem solving can reduce opportunism and improve adaptation when formal contracts are incomplete (Bonatto et al., 2020; Prajogo et al., 2020). However, contemporary supply chain governance research also emphasizes that collaboration alone is insufficient if supplier practices violate ethical and legal expectations, because non-compliance can trigger shutdowns, buyer sanctions, or loss of market access (Asif, 2020; Akbar & Ahsan, 2019).

Parallel to SRM, ethical sourcing practices have expanded from a CSR-oriented agenda into an operational governance domain involving codes of conduct, social audits, corrective action plans, traceability systems, and contractual clauses that enforce minimum standards (Asif, 2020; Anner, 2020). Asif (2020) argued that even where standards exist, suppliers may "decouple" formal compliance from real practices, which creates hidden risks for buyer firms who rely on audit signals. Anner (2020) highlighted that disruptions such as COVID-19 exposed deep governance fragilities in global supply chains, particularly where suppliers operate with thin margins and weak bargaining power—conditions that can intensify non-compliance risk. Consequently, ethical sourcing is increasingly evaluated not simply as "doing good," but as a risk-relevant capability that reduces the probability and impact of supplier-related incidents (Chowdhury & Quaddus, 2021; Roehrich et al., 2024).

This risk logic is especially visible in Bangladesh-centered global supply chains, where the ready-made garment (RMG) industry is deeply integrated into global production networks and has experienced intense post-crisis reforms and compliance governance interventions (Alamgir & Banerjee, 2019; Rahman & Rahman, 2020). Alamgir and Banerjee (2019) argued that compliance regimes in Bangladesh are often contested and shaped by power asymmetries between global buyers and local suppliers, which complicates how compliance is achieved and sustained. After Rana Plaza, multi-actor initiatives expanded factory inspections and remediation efforts, yet studies show that governance outcomes remain uneven and political, rather than purely technical (Kabeer et al., 2020; Ashwin et al., 2020). Rahman and Rahman (2020) similarly illustrated that factory managers' experiences reveal both improvements and persistent constraints, indicating that "compliance" is not a static outcome but an evolving capability under pressure.

In this study, supplier compliance is treated as a mechanism through which SRM and ethical sourcing practices can translate into measurable supply chain risk reduction. Supplier compliance broadly refers to the supplier's consistent adherence to required labor, safety, and ethical standards, supported by documented procedures, training, audit cooperation, and corrective action execution (Asif, 2020; Anner, 2020). The study proposal operationalizes this logic by positioning supplier compliance as a mediator linking relationship and governance practices to risk reduction outcomes (e.g., stronger anticipation, faster recovery, and reduced disruption impact). In other words, SRM and ethical sourcing can be conceptualized as "inputs," supplier compliance as the "conversion mechanism," and risk reduction as the "performance consequence" (Chowdhury & Quaddus, 2021; Um & Kim, 2019).

Building on the proposed framework, this study focuses on SRM and ethical sourcing dimensions such as supplier collaboration, ethical compliance evaluation, transparent sourcing, and agreement governance, and examines how these elements influence supplier compliance and, ultimately, supply chain risk reduction. Supplier collaboration emphasizes long-term orientation, planning alignment, and joint problem-solving (Um & Kim, 2019; Prajogo et al., 2021). Ethical compliance evaluation captures the use of supplier codes, audits, and corrective action systems to enforce ethical performance expectations (Asif, 2020; Anner, 2020). Transparent sourcing focuses on traceability and upstream visibility that help buyers detect hidden risks earlier (Chowdhury et al., 2020; Chowdhury et al., 2023b). Agreement governance highlights contractual clarity and enforceability, including monitoring rights and penalties for repeated violations, strengthening accountability mechanisms (Prajogo et al., 2020; Um & Kim, 2019).

1.2 Problem Statement

Despite extensive investment in SRM programs and ethical sourcing systems, firms continue to experience severe supply disruptions and compliance-related crises that originate at the supplier level and escalate across supply networks (Anner, 2020; Roehrich et al., 2024). Scholars argue that supplier-related risk persists because modern supply chains are governed through a mix of relational coordination and formal compliance tools, yet these mechanisms often fail to ensure consistent behavioral alignment across contexts and tiers (Bonatto et al., 2020; Asif, 2020). Asif (2020) highlighted that suppliers may respond strategically to external standards, producing "audit-friendly" documentation without fully embedding compliance into daily operations, which leaves buyers exposed to sudden non-compliance events. In Bangladesh-linked supply chains, the persistence of this problem is particularly visible because the sector faces simultaneous pressures: (i) intense cost competition and short lead times, (ii) heightened global scrutiny on labor and safety, and (iii) governance complexity involving brands, suppliers, regulators, and multi-stakeholder initiatives (Alamgir & Banerjee, 2019; Kabeer et al., 2020). Anner (2020) illustrated that external shocks can amplify vulnerabilities in supplier governance, where order cancellations, payment pressures, and production volatility create conditions under which compliance can deteriorate. At the same time, studies of post–Rana Plaza governance show that even when safety initiatives exist, compliance is shaped by contestation, uneven enforcement, and power dynamics, which makes compliance outcomes fragile and variable across firms (Ashwin et al., 2020; Rahman & Rahman, 2020).

From a managerial standpoint, this creates a pressing risk management dilemma: buyer firms may have SRM routines (collaboration, long-term partnerships, performance monitoring) and ethical sourcing tools (codes, audits, CAPs, traceability), but still face disruption risk if suppliers do not internalize and sustain compliance practices (Akbar & Ahsan, 2019;

Chowdhury & Quaddus, 2021). Akbar and Ahsan (2019) showed that implementing workplace safety compliance in Bangladesh's RMG context faces practical challenges, suggesting that compliance cannot be assumed even when governance systems are in place. Chowdhury and Quaddus (2021) argued that sustainability governance is linked to risk mitigation and market outcomes, implying that firms need capability-based governance approaches rather than symbolic compliance.

Therefore, the central problem addressed in this study is that the pathways through which SRM and ethical sourcing practices reduce supply chain risk are not sufficiently understood unless supplier compliance is explicitly modeled as a mediating mechanism. The study proposal reflects this logic by hypothesizing both direct effects and indirect (mediated) effects from SRM/ethical sourcing dimensions to risk reduction via supplier compliance. Without examining mediation, firms may overestimate the risk-reduction impact of SRM or ethical sourcing practices, while underestimating the critical role of supplier compliance capability as the "risk-control channel" (Asif, 2020; Bonatto et al., 2020).

1.3 Rationale of the Study

This study is justified on theoretical, managerial, and contextual grounds because supplier-related disruptions increasingly arise from both operational shocks and ethical governance failures in multi-tier supply chains (Ivanov & Dolgui, 2020; Roehrich et al., 2024). Roehrich et al. (2024) argued that contemporary supply chain governance must integrate sustainability and ethical control mechanisms because non-compliance can quickly translate into continuity risk and reputational damage. Similarly, Ivanov and Dolgui (2020) illustrated that supply chains face compound disruption dynamics, where weak supplier governance amplifies vulnerability and slows recovery.

From a theoretical perspective, SRM has been widely positioned as a relational capability enabling coordination, information sharing, and adaptive response in uncertain environments (Bonatto et al., 2020; Um & Kim, 2019). Um and Kim (2019) stated that collaborative inter-firm relationships can strengthen resilience-oriented responses through joint planning and rapid coordination. However, SRM-driven coordination alone may be insufficient when supplier behavior deviates from labor, safety, and ethical expectations, creating a governance-risk paradox where "good relationships" coexist with compliance failures (Asif, 2020; Roehrich et al., 2024). Asif (2020) highlighted that suppliers may engage in symbolic conformity while decoupling internal practice from external standards, which weakens the risk-reduction value of relationship investments.

The study is also warranted because ethical sourcing practices have shifted from a CSR narrative to a core governance and risk management toolset, involving audits, codes of conduct, corrective actions, transparency systems, and contractual enforcement (Asif, 2020; Venkatesh et al., 2020). Venkatesh et al. (2020) argued that sub-supplier compliance depends on governance pressures and relational conditions, implying that ethical sourcing practices must be embedded into supplier routines to be effective. Yet, evidence shows that ethical sourcing programs can deliver uneven outcomes when monitoring is imperfect and supplier incentives are misaligned (Asif, 2020; Kim et al., 2019). Kim et al. (2019) emphasized that supplier sustainability risks can affect firm value, rei that supplier ethics and compliance are not peripheral but financially material.

A central rationale is the need to explicitly theorize and test supplier compliance as a mediating mechanism. Many studies examine compliance as an outcome or treat it as assumed, but fewer models explain how SRM and ethical sourcing translate into risk reduction through compliance capability (Asif, 2020; Chowdhury & Quaddus, 2021). Chowdhury and Quaddus (2021) argued that sustainability governance can mitigate risk and strengthen market performance, suggesting that governance impacts are realized through internalized supplier practices rather than policy presence. Therefore, positioning supplier compliance as a mediator makes the model mechanism-sensitive and helps distinguish between "governance adoption" and "governance effectiveness" (Roehrich et al., 2024; Asif, 2020).

Contextually, the study is highly relevant to Bangladesh-linked global sourcing, where compliance governance has been extensively debated due to labor, safety, and ethical controversies in export manufacturing supply chains (Alamgir & Banerjee, 2019; Kabeer et al., 2020). Alamgir and Banerjee (2019) argued that compliance regimes operate under contested power relations, complicating how buyers secure sustained adherence across suppliers. Kabeer et al. (2020) highlighted that multi-stakeholder initiatives may drive improvements but also face limitations due to bargaining structures and uneven enforcement. These conditions make Bangladesh a theoretically meaningful and practically urgent setting for testing how SRM and ethical sourcing practices reduce risk via supplier compliance.

2.1 Literature Review

Contemporary supply chains are increasingly exposed to multi-dimensional risks that originate not only from operational variability (e.g., delivery failure) but also from social and ethical non-compliance incidents that trigger reputational, regulatory, and continuity shocks. Um and Han (2020) highlighted that global supply chain risk and supply chain resilience are closely linked through the mitigating strategies firms deploy, implying that governance and relationship mechanisms can shape the risk–resilience pathway. Similarly, Zhou et al. (2022) argued that risk information processing capability influences resilience outcomes, indicating that firms reduce disruption impact when they are able to sense, interpret, and act on risk signals.

Within this broader risk landscape, supplier relationship management (SRM) has evolved from transactional supplier coordination to a governance-oriented capability that integrates relational governance, contractual safeguards, and ethical oversight. Bonatto et al. (2020) synthesized relational governance research and illustrated that trust-based coordination, joint problem-solving, and shared norms can stabilize supply chain exchanges under uncertainty. Roehrich et al. (2024) emphasized that sustainable supply chain governance increasingly depends on how buyers combine monitoring and collaboration in supplier networks, suggesting that

SRM is inseparable from sustainability governance when legitimacy and compliance risk are material.

A critical observation emerging from sustainability and risk scholarship is that ethical sourcing practices do not automatically translate into risk reduction unless suppliers actually comply—consistently and not only ceremonially. Asif (2020) showed that supplier socio-environmental compliance can be undermined by standards decoupling, where formal conformance is claimed without corresponding behavioral change. Likewise, Asif et al. (2019) argued that buyer and supplier perspectives on social compliance standards can differ substantially, implying that compliance outcomes are shaped by relationship dynamics, audit credibility, and incentive alignment rather than the presence of standards alone.

This logic is especially relevant in Bangladesh's apparel and manufacturing ecosystem, where global buyer pressure, post–Rana Plaza governance reforms, and persistent enforcement gaps intersect in complex ways. Alamgir and Banerjee (2019) demonstrated that compliance regimes in the Bangladesh garment industry can become contested, with power asymmetries shaping what "compliance" means in practice. Fontana and Dawkins (2024) further illustrated that post–Rana Plaza labor governance is characterized by contestation and power struggles, suggesting that supplier compliance is not merely technical adherence but a negotiated governance outcome.

Against this background, the current study positions SRM and ethical sourcing practices as determinants of supply chain risk reduction, while arguing that supplier compliance is the central mechanism through which these practices produce risk-reducing effects. Chowdhury, Quaddus, and Agarwal (2023) found that resilience in Bangladesh's ready-made garments industry is influenced by antecedents that operate through mediated pathways such as supplier development, signaling that upstream capability-building and governance can translate into resilience through intermediate supplier-level changes. Similarly, Kähkönen et al. (2023) highlighted that sustainability-related risk management in multi-tier supply chains depends on the interplay of monitoring and collaboration, reinforcing the need to theorize compliance as a mediating construct rather than a peripheral control variable.

2.2 Development of Constructs

This study conceptualizes six latent constructs consistent with the proposed framework: four independent constructs (Supplier Collaboration, Ethical Compliance Evaluation, Transparent Sourcing, and Agreement Governance), one mediating construct (Supplier Compliance), and one dependent construct (Supply Chain Risk Reduction). The conceptual logic aligns with governance literature emphasizing that sustainable supply chain outcomes depend on combined monitoring and collaboration mechanisms (Kähkönen et al., 2023; Roehrich et al., 2024). Additionally, Bangladesh-focused governance research suggests that compliance is contested and shaped by power, incentives, and implementation constraints, making it appropriate to treat supplier compliance as a mediator (Alamgir & Banerjee, 2019; Fontana & Dawkins, 2024).

2.2.1 Supplier Collaboration (SRM Dimension)

Supplier collaboration refers to the extent of joint planning, problem-solving, and coordination between buyers and suppliers to achieve shared performance and governance outcomes. Bonatto et al. (2020) stated that relational governance relies on trust and shared norms that facilitate cooperative behavior, indicating that collaboration is a governance mechanism that can reduce coordination failure and opportunism. Kähkönen et al. (2023) further highlighted that collaboration interacts with monitoring in sustainability risk management, implying that collaboration is essential for implementing corrective actions and continuous improvement rather than merely detecting violations.

In Bangladesh's supply chain context, collaboration is complicated by asymmetric power relations that influence supplier willingness and ability to engage openly. Alamgir and Banerjee (2019) argued that compliance regimes are contested in global production networks, suggesting that collaboration is constrained when suppliers experience compliance as coercive rather than developmental. Rahman and Rahman (2020) similarly illustrated that factory managers interpret multi-actor initiatives differently, implying that collaboration success depends on shared understanding and perceived feasibility.

Conceptual indicators commonly associated with supplier collaboration include information sharing, joint planning, shared problem resolution, and cooperative improvement initiatives. Chowdhury et al. (2023) highlighted mediated effects through supplier development pathways, suggesting that collaborative development programs can strengthen supplier-level capability and behavior. This supports the expectation that supplier collaboration improves compliance and reduces risk through coordinated improvement processes (Kähkönen et al., 2023).

2.2.2 Ethical Compliance Evaluation (Ethical Sourcing Dimension)

Ethical compliance evaluation refers to buyer practices for assessing supplier adherence to social, labor, health and safety, and environmental standards, including audits, performance reviews, risk rating, and corrective action follow-up. D'Eusanio et al. (2019) emphasized that social sustainability management requires structured methods and tools, indicating that evaluation is critical for translating ethical expectations into measurable requirements. Cunha et al. (2019) argued that social supply chain risk management requires frameworks that classify and manage social risks, implying that evaluation is a foundational governance capability for prioritizing and controlling ethical risk exposure.

However, evaluation systems can fail when they encourage documentation over real change. Asif (2020) argued that standards decoupling can occur when compliance is treated as symbolic, suggesting that evaluation must be credible, improvement-oriented, and linked to incentives to reduce decoupling risk. Asif et al. (2019) further argued that buyers and suppliers may interpret standards differently, indicating that evaluation must incorporate dialogue and shared interpretation to avoid superficial compliance.

In Bangladesh's garment ecosystem, safety and labor evaluations are particularly salient due to historical tragedies and ongoing health and safety pressures. Akbar and Ahsan (2019) highlighted implementation challenges for workplace safety compliance, implying that evaluation must be matched with feasible improvement pathways. Fattah et al. (2019) similarly emphasized system capacity constraints, suggesting that ethical compliance evaluation should be coupled with capacity-building and realistic corrective actions.

2.2.3 Transparent Sourcing (Ethical Sourcing and Risk Visibility Dimension)

Transparent sourcing refers to the extent to which a firm ensures visibility into supplier practices, sourcing origins, sub-tier activities, and compliance performance through information disclosure, traceability, and data-driven monitoring. Zhou et al. (2022) emphasized that risk information processing capability strengthens resilience outcomes, implying that transparency improves risk reduction by enabling earlier detection of compliance failures and disruption triggers. Yang et al. (2023) similarly argued that advanced analytics and machine learning support risk management, suggesting that transparency becomes operational when data is captured and translated into actionable risk signals.

Transparency also matters in multi-tier sustainability governance because ethical risks frequently occur upstream of first-tier suppliers. Jabbour et al. (2018) argued that multi-tier sustainability management is essential for effective governance, implying that transparency must extend beyond immediate suppliers to reduce hidden ethical risk. Sarkis et al. (2019) reinforced that multi-tier sustainability management requires effective governance coordination, supporting the inclusion of transparency as an ethical sourcing practice that reduces risk by reducing informational blind spots.

In Bangladesh-oriented contexts, transparency is often shaped by governance contestation and power. Fontana and Dawkins (2024) highlighted contestation in labor governance, suggesting that transparency can be resisted when suppliers fear sanctions or reputational consequences. This indicates that transparent sourcing is most effective when paired with collaborative governance that supports problem solving rather than purely punitive enforcement (Bonatto et al., 2020; Kähkönen et al., 2023).

2.2.4 Agreement Governance (Contractual and Relational Control Dimension)

Agreement governance refers to the use of formal contracts, negotiated standards, and governance clauses that define ethical requirements, responsibilities, enforcement mechanisms, and dispute resolution procedures between buyers and suppliers. Bonatto et al. (2020) argued that governance systems often involve complementarities between relational and formal mechanisms, indicating that agreements can reduce ambiguity and opportunism while relational norms support flexible adjustment. Roehrich et al. (2024) similarly highlighted that sustainable governance depends on mechanism choice and effectiveness, implying that agreement governance is central to ensuring accountability for ethical and sustainability expectations.

In Bangladesh, governance through contracts and procurement procedures is increasingly linked to sustainable procurement practices and institutional expectations. Haq et al. (2024) argued that contract management shapes sustainable procurement outcomes, suggesting that agreement governance can formalize ethical sourcing requirements and clarify compliance responsibilities. Akbar and Ahsan (2019) further highlighted implementation challenges in safety compliance, implying that agreements should include realistic timelines, capacity expectations, and corrective action commitments to be effective.

Agreement governance is therefore conceptualized as including clarity of ethical clauses, enforcement credibility, corrective action protocols, and dispute resolution mechanisms. Asif et al. (2019) argued that buyer and supplier perspectives differ on compliance standards, implying that agreement governance must be negotiated and communicative to avoid misinterpretation and symbolic compliance.

2.2.5 Supplier Compliance (Mediating Construct)

Supplier compliance refers to the supplier's consistent implementation of required ethical, social, safety, and environmental standards in operational practice. Asif (2020) stated that compliance can decouple from standards when suppliers treat audits as symbolic, implying that compliance must be conceptualized as behavioral consistency rather than documentary readiness. Alamgir and Banerjee (2019) similarly argued that compliance regimes are contested, suggesting that compliance outcomes depend on governance power dynamics, buyer pressure, and local institutional environments.

The mediating role of supplier compliance is supported by governance research indicating that SRM practices and ethical sourcing mechanisms exert influence on outcomes primarily through supplier-level behavior change. Chowdhury et al. (2023) highlighted that resilience outcomes involve mediated effects through supplier development pathways, implying that buyer practices produce results through supplier capability and performance improvements rather than direct effects alone. Kähkönen et al. (2023) reinforced that monitoring and collaboration interact, suggesting that supplier compliance improves when oversight is combined with collaborative improvement mechanisms.

In Bangladesh's garment sector, compliance is also linked to safety climate and operational risk. Islam et al. (2023) emphasized that workplace safety compliance has implications for reducing operational risk, suggesting that compliance improvements reduce the likelihood of incidents that can escalate into disruptions. Anam et al. (2022) similarly emphasized ongoing safety and health challenges, reinforcing that compliance is a central mechanism for reducing risk exposure in this context.

2.2.6 Supply Chain Risk Reduction (Dependent Construct)

Supply chain risk reduction refers to the firm's enhanced ability to anticipate, mitigate, respond to, and recover from supplier-related disruptions, including those caused by compliance failures and ethical incidents. Um and Han (2020) argued that mitigating strategies strengthen resilience outcomes, implying that risk reduction is

achieved through governance and capability mechanisms that reduce disruption probability and impact. Raut et al. (2024) similarly emphasized that flexibility supports post-pandemic resilience, suggesting that risk reduction combines governance mechanisms (e.g., compliance and collaboration) with operational capabilities (e.g., flexibility and responsiveness).

Sustainability-related risks are particularly salient because ethical failures can trigger reputational damage and market penalties. Kim et al. (2019) demonstrated that supplier sustainability risk affects shareholder value, implying that ethical sourcing and compliance have measurable financial consequences. Li et al. (2023) further argued that ESG influences resilience and performance through mediating mechanisms, suggesting that risk reduction can be strengthened when SRM and ethical sourcing practices increase supplier compliance and related resilience capabilities.

In multi-tier environments, risk reduction is constrained without visibility and structured governance. Jabbour et al. (2018) emphasized multi-tier sustainability management for effective governance, implying that risk reduction requires understanding upstream risk propagation pathways. Sarkis et al. (2019) similarly highlighted the importance of multi-tier governance effectiveness, supporting the expectation that transparent sourcing and agreement governance can reduce risk by strengthening visibility, accountability, and coordinated response.

3.1 Theoretical Framework

This chapter develops the theoretical foundation and hypotheses for explaining how Supplier Relationship Management (SRM) and ethical sourcing practices reduce supply chain risk, and why supplier compliance is expected to operate as the central mediating mechanism. Roehrich et al. (2024) argued that sustainable supply chain governance has shifted toward integrating monitoring and collaboration mechanisms, because sustainability failures create both legitimacy risk and operational disruption risk. Similarly, Um and Han (2020) highlighted that mitigation strategies shape the relationship between risk exposure and resilience, implying that governance mechanisms can change disruption probability and disruption impact.

In risk-sensitive global supply chains, supplier-origin risks often travel through operational dependencies and information asymmetries, especially when buyers cannot directly observe sub-tier practices. Jabbour et al. (2018) emphasized that effective multi-tier governance is essential because sustainability risks frequently emerge upstream, where visibility and control are weaker. Sarkis et al. (2019) similarly illustrated that multi-tier sustainability management requires governance systems that combine oversight with coordinated action across tiers. These arguments imply that SRM and ethical sourcing do not reduce risk merely because they exist; they reduce risk when they generate observable supplier behavior change, which is captured in this study through the construct of supplier compliance (Asif, 2020; Kähkönen et al., 2023).

The model in this study positions four governance dimensions—Supplier Collaboration, Ethical Compliance Evaluation, Transparent Sourcing, and Agreement Governance—as strategic determinants of Supply Chain Risk Reduction, while treating Supplier Compliance as the mediating mechanism that converts governance inputs into risk outcomes. Asif (2020) highlighted that supplier standards can be decoupled from real practice, indicating that governance tools may fail when suppliers adopt symbolic compliance. Kähkönen et al. (2023) argued that monitoring and collaboration interact in multi-tier sustainability risk management, suggesting that compliance emerges through governance bundles rather than single mechanisms.

3.2 Theoretical Foundations Supporting the Model

3.2.1 Relational Governance and the Relational View of Inter-Firm Advantage

Relational governance theory and the relational view argue that firms can achieve performance advantages through inter-firm routines such as trust, commitment, joint problem solving, and information sharing. Bonatto et al. (2020) stated that relational governance reduces opportunism and supports cooperation by strengthening shared norms and informal coordination. From this perspective, SRM practices such as collaboration are not simply relationship "quality" variables; they are governance mechanisms that shape risk-relevant behaviors such as responsiveness, transparency, and willingness to implement corrective actions (Um & Han, 2020; Kähkönen et al., 2023).

Relational mechanisms are particularly important under uncertainty because supply disruptions require fast coordination and cooperative adaptation that cannot be fully specified in contracts. Um and Han (2020) illustrated that mitigation strategies strengthen resilience by shaping how firms respond to risk events, implying that relational routines can reduce disruption impact. Zhou et al. (2022) argued that risk information processing capability improves resilience outcomes, and such capability is often strengthened by collaborative relationships that facilitate data sharing, early warning, and coordinated decision-making. These arguments support the claim that supplier collaboration can directly contribute to risk reduction by improving visibility and response coordination (Bonatto et al., 2020; Zhou et al., 2022).

However, relational governance is not always sufficient in sustainability contexts because trust-based relationships can also create blind spots, tolerance for weak compliance, or overreliance on supplier assurances. Asif (2020) warned that suppliers may present compliance signals without internalizing standards, which suggests that relational closeness must be paired with accountability mechanisms and compliance verification to ensure risk reduction. Kähkönen et al. (2023) reinforced this logic by arguing that monitoring and collaboration jointly influence sustainability risk management, implying that relational governance creates a platform for compliance improvement but does not guarantee it.

3.2.2 Transaction Cost Economics and Contractual Control Mechanisms

Transaction cost economics emphasizes that exchange relationships involve hazards such as opportunism,

information asymmetry, and enforcement problems, which can be mitigated through governance structures including contracts and monitoring. Bonatto et al. (2020) emphasized that supply chain governance often involves combining relational and formal governance to manage exchange hazards. Agreement governance—through contractual clarity, enforcement rules, and dispute resolution—reduces ambiguity about ethical requirements and strengthens the credibility of sanctions for repeated violations, thereby reducing compliance risk and disruption risk (Haq et al., 2024; Bonatto et al., 2020).

In ethically sensitive supply chains, the cost of non-compliance is high because a single severe incident may trigger buyer termination, regulatory action, or factory shutdowns. Kim et al. (2019) demonstrated that supplier sustainability risk can influence firm value, reinforcing that weak control of supplier behavior is financially material. Roehrich et al. (2024) argued that sustainable supply chain governance requires effective mechanism choice, implying that formal agreements matter because they institutionalize expectations and accountability. Therefore, agreement governance is theoretically expected to reduce risk both directly (by strengthening control) and indirectly (by improving supplier compliance) (Bonatto et al., 2020; Roehrich et al., 2024).

3.2.3 Dynamic Capability Theory and Risk Reduction as an Outcome Capability

Dynamic capability theory emphasizes that firms reduce risk and sustain performance under turbulence by sensing threats, seizing opportunities, and reconfiguring routines. Chowdhury and Quaddus (2021) argued that sustainability governance mitigates sustainability risk and improves market performance through dynamic capabilities, suggesting that governance routines become effective when they produce adaptive learning and operational change. From this view, supply chain risk reduction is not only a passive outcome of control; it is an active capability that depends on governance-driven learning, responsiveness, and preparedness (Um & Han, 2020; Zhou et al., 2022).

Transparent sourcing directly connects to dynamic capabilities because visibility and traceability improve sensing and interpretation of risk signals across tiers. Zhou et al. (2022) emphasized the role of risk information processing capability in resilience, implying that transparency strengthens risk reduction by enabling early detection and faster response. Yang et al. (2023) argued that data-driven tools and analytics support risk management decisions, reinforcing that transparency is increasingly operationalized through digital monitoring, traceability systems, and structured information flows. In sustainability contexts, such capabilities reduce the chance that hidden supplier violations become sudden disruptions (Jabbour et al., 2018; Sarkis et al., 2019).

Supplier compliance can be interpreted as the behavioral and operational manifestation of dynamic capability at the supplier level. Asif (2020) argued that compliance failures often reflect decoupling, where routines are not embedded into practice. Chowdhury, Quaddus, and Agarwal (2023) illustrated mediated pathways in resilience outcomes through supplier development mechanisms, implying that buyer governance affects risk reduction through supplier-level changes that resemble capability building. These arguments support the hypothesis that supplier compliance is a primary mechanism translating SRM and ethical sourcing investments into reduced risk exposure and reduced disruption impacts.

3.2.4 Institutional and Stakeholder Perspectives in Ethical Sourcing

Institutional and stakeholder perspectives argue that firms face pressures from regulators, customers, investors, and civil society to demonstrate ethical supply chain conduct. In global production networks, suppliers and buyers operate under legitimacy constraints that increasingly define acceptable labor, safety, and environmental performance. Alamgir and Banerjee (2019) argued that compliance regimes in Bangladesh are contested and shaped by power dynamics, implying that institutional pressure does not always produce straightforward compliance. Kabeer et al. (2020) highlighted that worker perspectives on multi-stakeholder initiatives reveal both improvements and continuity of structural constraints, suggesting that compliance is shaped by enforcement credibility and local capability.

In such environments, ethical sourcing practices such as compliance evaluation and transparency can reduce risk by reducing legitimacy gaps and preventing severe incidents that disrupt operations. Asif et al. (2019) argued that buyer and supplier perspectives on compliance standards may diverge, implying that evaluation systems must be credible and dialogic to reduce misalignment-based non-compliance risk. Venkatesh et al. (2020) highlighted that sub-supplier social sustainability compliance is driven by governance conditions, reinforcing that institutional pressure needs governance mechanisms to translate into actual compliance. These insights support modeling ethical compliance evaluation and transparent sourcing as risk-reduction determinants that operate partly through supplier compliance.

Conceptual Framework

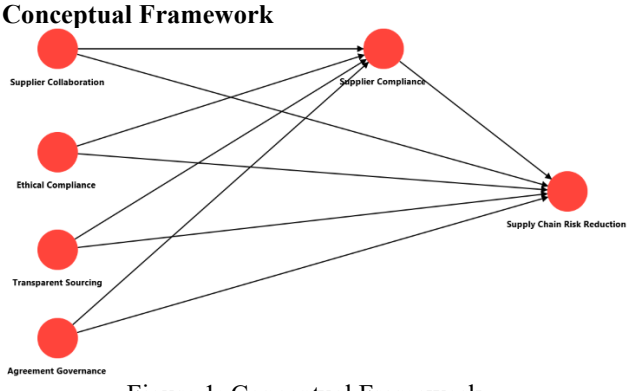


Figure 1: Conceptual Framework

3.3 Development of Hypotheses

3.3.1 Supplier Collaboration and Supply Chain Risk Reduction

Supplier collaboration refers to joint planning, information sharing, cooperative problem-solving, and coordinated improvement initiatives between buyers and suppliers. Bonatto et al. (2020) argued that relational governance supports cooperation and reduces opportunism, suggesting that collaboration can stabilize exchanges and reduce disruption probability. Um and

Han (2020) illustrated that mitigation strategies support resilience, implying that collaborative relationships can reduce disruption impact by enabling faster response and coordinated recovery.

Collaboration can reduce risk by strengthening communication routines that detect early warnings and coordinate alternative sourcing, production adjustments, or remediation actions. Zhou et al. (2022) argued that risk information processing capability improves resilience, and collaboration improves information quality and speed across organizational boundaries. In ethically sensitive contexts, collaboration also supports supplier improvement by enabling training, shared problem diagnosis, and implementation support, which reduces the likelihood of compliance-related shutdowns or buyer termination decisions (Kähkönen et al., 2023; Chowdhury et al., 2023).

However, collaboration may reduce risk most effectively when it is not purely relational but improvement-oriented, meaning it facilitates corrective actions and governance learning. Kähkönen et al. (2023) argued that collaboration and monitoring jointly shape sustainability risk management, implying that collaboration can reduce risk by enabling compliance improvements and continuous corrective cycles. Therefore, supplier collaboration is expected to directly enhance risk reduction outcomes.

H1: Supplier Collaboration has a positive effect on Supply Chain Risk Reduction.

3.3.2 Ethical Compliance Evaluation and Supply Chain Risk Reduction

Ethical compliance evaluation refers to the buyer's structured processes for assessing supplier adherence to social, labor, safety, and environmental requirements, including audits, performance reviews, risk rating, and corrective action verification. D'Eusanio et al. (2019) emphasized that social sustainability requires methods and tools that translate ethical goals into operational practices, implying that evaluation systems reduce ambiguity and strengthen accountability. Cunha et al. (2019) argued that social supply chain risk management requires structured frameworks because social risks can propagate and escalate, suggesting that evaluation reduces risk by identifying vulnerabilities before they become disruptions.

Evaluation is expected to reduce supply chain risk directly by improving detection of weak compliance, enabling earlier intervention, and reducing the probability of severe incidents that trigger shutdowns, sanctions, or reputational crises. Kim et al. (2019) demonstrated that supplier sustainability risk affects financial outcomes, reinforcing that systematic evaluation can reduce exposure by controlling risk drivers. Roehrich et al. (2024) argued that sustainable governance depends on mechanism effectiveness, implying that compliance evaluation contributes to risk reduction when it is credible, consistent, and aligned with governance consequences.

At the same time, Asif (2020) highlighted that standards can be decoupled from practice, suggesting that evaluation can become symbolic if it focuses on documentation rather than behavioral change. Asif et al. (2019) also emphasized differing buyer–supplier perspectives, implying that evaluation is most effective when it includes shared interpretation and improvement pathways. Despite these limitations, ethical compliance evaluation is expected to reduce risk directly by improving monitoring, accountability, and governance discipline.

H2: Ethical Compliance Evaluation has a positive effect on Supply Chain Risk Reduction.

3.3.3 Transparent Sourcing and Supply Chain Risk Reduction

Transparent sourcing refers to the visibility of sourcing origins, supplier practices, compliance information, and sub-tier activities through disclosure systems, traceability, and data-driven monitoring. Jabbour et al. (2018) argued that multi-tier sustainability management requires systemic oversight because upstream tiers frequently contain hidden sustainability risks. Sarkis et al. (2019) similarly highlighted that effective multi-tier management supports sustainability governance, implying that transparency reduces risk by minimizing blind spots and improving upstream control.

Transparency is expected to reduce supply chain risk by strengthening sensing capability and enabling faster responses to emerging disruptions. Zhou et al. (2022) argued that risk information processing capability improves resilience outcomes, implying that visibility and timely risk information strengthen mitigation decisions. Yang et al. (2023) showed that analytics and machine learning can support risk management by identifying patterns and signals, suggesting that transparent sourcing becomes a practical risk-reduction tool when data is actionable.

In ethical sourcing contexts, transparency reduces the probability that hidden violations become sudden crises. Roehrich et al. (2024) argued that governance mechanisms must adapt to complex sustainability risks, implying that transparency is part of modern governance effectiveness. Therefore, transparent sourcing is expected to have a direct positive effect on risk reduction.

H3: Transparent Sourcing has a positive effect on Supply Chain Risk Reduction.

3.3.4 Agreement Governance and Supply Chain Risk Reduction

Agreement governance refers to formal contractual mechanisms and governance clauses that define ethical requirements, responsibilities, enforcement rules, and dispute resolution procedures. Bonatto et al. (2020) argued that governance systems often combine relational and formal mechanisms to reduce exchange hazards such as opportunism and ambiguity. Roehrich et al. (2024) emphasized that sustainable governance depends on effective mechanism choice, implying that formal agreements matter for institutionalizing accountability and defining consequences for non-compliance.

Agreement governance is expected to reduce supply chain risk directly because contracts and governance clauses clarify expectations and reduce behavioral uncertainty. Haq et al. (2024) argued that contract management supports sustainable procurement outcomes, implying that formal governance strengthens compliance discipline and reduces disputes that can disrupt continuity. In ethically sensitive supply chains,

clear contractual requirements and enforceable remediation protocols reduce the likelihood of severe incidents by pushing suppliers to embed compliance routines and by enabling buyers to intervene earlier.

Agreement governance can also strengthen risk response by enabling structured escalation, remediation timelines, and defined responsibilities during disruptions. Um and Han (2020) highlighted that mitigation strategies influence resilience, implying that contractual clarity supports coordinated response and recovery. Therefore, agreement governance is expected to positively influence risk reduction.

H4: Agreement Governance has a positive effect on Supply Chain Risk Reduction.

3.3.5 Supplier Compliance and Supply Chain Risk Reduction

Supplier compliance refers to the supplier's consistent adherence to ethical, social, safety, and environmental requirements in day-to-day operations. Asif (2020) argued that compliance is frequently undermined by decoupling, suggesting that genuine compliance reflects embedded routines rather than symbolic adoption. In governance terms, compliance represents the behavioral outcome that buyers seek through SRM and ethical sourcing practices (Roehrich et al., 2024; Kähkönen et al., 2023).

Supplier compliance is expected to reduce supply chain risk because compliance failures are a key source of disruption triggers, including shutdowns, sanctions, buyer termination, and reputational crises. Kim et al. (2019) emphasized that supplier sustainability risk affects financial value, implying that compliance reduces risk exposure by lowering sustainability-related incidents. Um and Han (2020) argued that mitigation strategies strengthen resilience, suggesting that compliance improves continuity by reducing incident probability and improving response readiness through better procedures, training, and safety routines.

In Bangladesh-linked contexts, contested compliance governance and uneven enforcement demonstrate that compliance remains a practical risk driver. Alamgir and Banerjee (2019) argued that compliance regimes are shaped by power dynamics, suggesting that compliance outcomes vary and can expose buyers to disruption risk. Kabeer et al. (2020) highlighted that worker perspectives indicate uneven progress, implying that compliance must be treated as a measurable capability linked to risk reduction rather than assumed. Therefore, supplier compliance is expected to have a direct positive effect on supply chain risk reduction.

H5: Supplier Compliance has a positive effect on Supply Chain Risk Reduction.

3.4 Mediating Role of Supplier Compliance

This study argues that SRM and ethical sourcing practices reduce risk partly through supplier compliance because compliance represents the behavioral mechanism that converts governance inputs into operational and legitimacy outcomes. Asif (2020) emphasized that governance tools may fail when compliance remains symbolic, indicating that the presence of governance does not guarantee risk reduction. Kähkönen et al. (2023) argued that sustainability risk management depends on the interplay of monitoring and collaboration, implying that mediation through compliance is theoretically consistent with governance-bundle logic.

Chowdhury et al. (2023) illustrated mediated pathways in resilience outcomes, reinforcing that buyer interventions often affect resilience through supplier-level changes rather than direct effects alone. Chowdhury and Quaddus (2021) argued that sustainability governance mitigates risk through dynamic capabilities, suggesting that compliance is a supplier-level capability outcome that strengthens risk reduction. Therefore, this study proposes that supplier compliance mediates the effects of supplier collaboration, ethical compliance evaluation, transparent sourcing, and agreement governance on supply chain risk reduction.

3.4.1 Mediation of Supplier Collaboration through Supplier Compliance

Supplier collaboration is expected to increase supplier compliance by enabling cooperative improvement, shared problem diagnosis, and supported remediation. Bonatto et al. (2020) argued that relational governance strengthens cooperative behavior, suggesting that collaboration improves willingness to implement compliance routines. Kähkönen et al. (2023) emphasized that collaboration supports sustainability risk management when paired with monitoring, implying that collaboration facilitates corrective actions and compliance embedding.

Once compliance improves, risk reduction is expected because compliance reduces incident probability and enhances readiness. Asif (2020) highlighted that compliance must be internalized to prevent decoupling-driven failures, implying that collaboration reduces risk primarily when it achieves real compliance. Thus, supplier compliance is expected to mediate the collaboration–risk relationship.

H6: Supplier Compliance mediates the relationship between Supplier Collaboration and Supply Chain Risk Reduction.

3.4.2 Mediation of Ethical Compliance Evaluation through Supplier Compliance

Ethical compliance evaluation is expected to strengthen supplier compliance by clarifying performance expectations, identifying gaps, and enforcing corrective action. D'Eusanio et al. (2019) highlighted that social sustainability requires operational tools, implying that evaluation systems help convert ethical requirements into routines. Cunha et al. (2019) argued that social risk frameworks require structured control, suggesting that evaluation increases compliance by prioritizing risk areas and monitoring progress.

However, Asif (2020) cautioned that evaluation can be symbolic if it incentivizes documentation over change, implying that evaluation improves compliance only when it is credible and improvement-linked. When evaluation does produce genuine compliance, risk reduction follows because compliance reduces severe incidents and disruption triggers (Kim et al., 2019; Um & Han, 2020). Therefore, supplier compliance is expected to mediate the effect of ethical compliance evaluation on risk reduction.

H7: Supplier Compliance mediates the relationship between Ethical Compliance Evaluation and Supply Chain Risk Reduction.

3.4.3 Mediation of Transparent Sourcing through Supplier Compliance

Transparent sourcing is expected to improve supplier compliance by reducing information asymmetry and increasing the detectability of violations. Jabbour et al. (2018) argued that multi-tier sustainability management requires oversight, implying that transparency supports compliance by increasing visibility into upstream practices. Zhou et al. (2022) emphasized risk information processing capability, suggesting that transparency improves governance effectiveness by enabling earlier identification and response to non-compliance.

Transparency can also motivate suppliers to embed compliance routines because visibility increases accountability and reduces the feasibility of decoupling. Asif (2020) argued that decoupling thrives when enforcement is weak and observation is limited, implying that transparency reduces symbolic compliance. When suppliers embed compliance more consistently, supply chain risk reduction improves through lower incident probability and stronger continuity readiness (Um & Han, 2020; Roehrich et al., 2024). Therefore, supplier compliance is expected to mediate the transparency–risk relationship.

H8: Supplier Compliance mediates the relationship between Transparent Sourcing and Supply Chain Risk Reduction.

3.4.4 Mediation of Agreement Governance through Supplier Compliance

Agreement governance is expected to strengthen supplier compliance by clarifying ethical requirements, defining responsibilities, and making enforcement credible. Bonatto et al. (2020) argued that formal governance reduces ambiguity and exchange hazards, suggesting that well-designed agreements reduce compliance uncertainty. Haq et al. (2024) emphasized contract management's role in sustainable procurement outcomes, implying that agreement governance institutionalizes expectations and supports compliance execution.

Agreement governance also complements relational mechanisms by formalizing corrective action processes and escalation procedures, which increases the likelihood that compliance improvements are sustained. Roehrich et al. (2024) argued that sustainable governance depends on mechanism effectiveness, implying that contracts matter when they are enforceable and aligned with practical supplier capability. Once supplier compliance improves, risk reduction is expected because compliance reduces disruptions driven by ethical failures and creates stable operational routines (Kim et al., 2019; Um & Han, 2020). Therefore, supplier compliance is expected to mediate the agreement governance–risk relationship.

H9: Supplier Compliance mediates the relationship between Agreement Governance and Supply Chain Risk Reduction.

4.1 Research Methodology

This study adopts a quantitative, explanatory research design to test how Supplier Relationship Management (SRM) and ethical sourcing practices reduce supply chain risk, and whether supplier compliance functions as a mediating mechanism linking governance-oriented practices to risk outcomes. Explanatory designs are appropriate when the aim is to validate theoretically grounded causal relationships among latent constructs using statistical modelling (Creswell & Creswell, 2018; Saunders et al., 2019).

A cross-sectional survey strategy is selected because SRM routines, ethical evaluation practices, and compliance enforcement mechanisms are typically institutionalized at the organizational level and can be captured through structured perceptual measures at a single time point. Cross-sectional designs are widely used in supply chain governance and sustainability research where firm-level practices and outcomes are assessed through managerial informants (Micheli et al., 2020; Queiroz et al., 2020). Moreover, contemporary responsible sourcing literature highlights that compliance and risk exposure often co-exist as ongoing conditions within buyer–supplier relationships, making survey-based measurement a practical approach for empirical testing (Anner, 2019; Chowdhury et al., 2020).

The research model operationalizes SRM/ethical sourcing through four antecedent constructs: supplier collaboration, ethical compliance evaluation, transparent sourcing, and agreement governance. The outcome construct is supply chain risk reduction, while supplier compliance is modelled as the mediator. The hypotheses follow the conceptual framework: H1–H4 (antecedents → supplier compliance), H5–H8 (antecedents → risk reduction), H9 (supplier compliance → risk reduction), and H10–H13 (mediation paths via supplier compliance). Because the model includes multiple predictors and mediation pathways, the study uses variance-based structural equation modelling to evaluate both measurement quality and the hypothesized direct and indirect relationships. Scholars emphasize that models featuring mediation and prediction-oriented objectives align well with PLS-SEM, particularly when the goal is to explain variance in a focal outcome (Hair et al., 2021; Sarstedt et al., 2022).

4.2 Population, Sample, and Sampling Strategy

4.2.1 Target Population and Unit of Analysis

The target population comprises organizational professionals directly involved in supplier governance and ethical sourcing decision-making—such as procurement managers, sourcing executives, supplier development officers, compliance managers, and supply chain managers—who can credibly assess the organization's SRM practices, compliance enforcement routines, and disruption-risk experiences. Key-informant designs are widely recommended for supply chain studies because many governance practices are not publicly observable and must be captured through knowledgeable managerial perceptions (Ahmed et al., 2019; Micheli et al., 2020).

The unit of analysis is the organization (i.e., buying firms and/or lead organizations managing suppliers), while the unit of observation is the individual respondent as a knowledgeable informant. This approach is consistent with research in responsible sourcing and compliance governance where organizational systems (audits, CAP

follow-ups, contract governance) are evaluated via managerial roles responsible for oversight (Anner, 2019; Chowdhury et al., 2023a).

The empirical context is aligned with Bangladesh's export-oriented supply networks, where ethical sourcing compliance, transparency pressures, and buyer-driven governance are salient due to global scrutiny and multi-tier supply risks. The operationalization of transparent sourcing and compliance evaluation is especially relevant in such contexts because traceability and auditability are central to reducing reputational, delivery, and disruption risks (Anner, 2019; Chowdhury et al., 2023b).

4.2.2 Sampling Technique

Given the need to reach qualified respondents who possess direct knowledge of SRM routines and compliance systems, the study employs purposive (judgmental) sampling. Purposive sampling is appropriate when the research requires access to specialized professional groups and when the theoretical constructs demand informed evaluation rather than general population opinions (Saunders et al., 2019).

In addition, snowball referrals can be used within professional networks (e.g., sourcing associations, compliance networks, supply chain communities) to identify additional respondents meeting the screening criteria. Similar recruitment strategies are common in supply chain and sustainability research where access is constrained and respondents must have experience with inter-firm governance, compliance audits, and disruption mitigation (Masood & Sonntag, 2020; Moktadir et al., 2019).

4.2.3 Sample Size Justification

Sample size is determined to ensure adequate statistical power for testing both direct effects and mediation effects in the structural model. In PLS-SEM, sample adequacy is commonly justified using (a) heuristic rules and (b) statistical power logic. The "10-times rule" provides a baseline heuristic by requiring at least 10 observations per maximum number of structural paths pointing to an endogenous construct, though modern scholars recommend power-based approaches as more rigorous (Hair et al., 2021; Sarstedt et al., 2022).

Because supply chain risk reduction and supplier compliance are endogenous and each receives multiple incoming paths, the study targets a sample size that supports stable bootstrapping estimation for indirect effects. Mediation testing is particularly sensitive to sampling variability; therefore, a higher sample size improves the reliability of indirect-effect confidence intervals (Hayes, 2018; Hair et al., 2021). In practice, many recent governance–compliance–performance studies in supply chain contexts use sample sizes in the range of ~200–400 for SEM-based estimation, particularly where multiple constructs are measured reflectively (Queiroz et al., 2020; Wamba et al., 2020).

4.3 Data Collection Procedure

Primary data are collected through a structured questionnaire administered via online and/or in-person distribution depending on access constraints. Survey-based data collection is widely used for assessing SRM governance routines and ethical sourcing systems because constructs such as collaboration intensity, contract governance, and compliance follow-up are best captured through standardized managerial assessments (Um & Kim, 2019; Prajogo et al., 2021).

The questionnaire begins with a brief informed consent statement clarifying voluntary participation, anonymity, confidentiality, and academic-only use of data. Ethical assurance at the start of the instrument is important because compliance-related topics can trigger reputational sensitivity and social desirability concerns (Podsakoff et al., 2003; Saeed et al., 2018).

4.4 Measurement Instruments

All constructs are operationalized using established scales adapted to the SRM–ethical sourcing context. Item wording is aligned with the study proposal's measurement plan covering supplier collaboration, ethical compliance evaluation, transparent sourcing, agreement governance, supplier compliance, and supply chain risk reduction.

4.5 Data Analysis Technique

The data analysis proceeds in two stages: (1) preliminary screening and descriptive analysis and (2) measurement and structural model evaluation using SEM. First, the dataset is screened for missingness, outliers, and response-pattern issues. Descriptive statistics summarize respondent profile and basic construct distributions, which supports contextual interpretation of SRM and ethical sourcing practices in the Bangladesh-oriented setting (Saunders et al., 2019).

Second, the hypothesized model is tested using SEM to examine both direct effects (H1–H9) and indirect effects (H10–H13). Mediation is evaluated through bootstrapped indirect effects rather than relying on causal-step logic, because bootstrapping provides more accurate inference for indirect-effect sampling distributions (Hayes, 2018; Hair et al., 2021).

5.1 Analysis and Findings

This chapter presents the empirical results of the study examining how Supplier Relationship Management (SRM) and Ethical Sourcing Practices (ESP) reduce Supply Chain Risk (SCR), with Supplier Compliance (SCOMP) tested as a mediating mechanism. Following the recommended procedure for PLS-SEM, the chapter first reports the sample profile, then evaluates the measurement model (reliability and validity), and finally assesses the structural model (hypothesis testing, explanatory power, effect sizes, and mediation). Hair et al. (2019) argued that this sequence is essential because structural inferences are only meaningful when construct measures are reliable and valid. Henseler et al. (2015) further highlighted that discriminant validity assessment is critical in PLS-SEM to avoid inflated path estimates. In this study, PLS-SEM was chosen due to its suitability for prediction-oriented research and for models containing mediation with multiple constructs (Hair et al., 2022). As Sarstedt et al. (2020) illustrated, PLS-SEM is especially appropriate when the objective is to explain variance in endogenous variables such as compliance and risk reduction. Bootstrapping (5,000 subsamples, two-tailed, 5% significance) was used to test the statistical significance of paths and indirect effects, consistent with widely accepted PLS-SEM guidance (Hair et al., 2019).

5.2 Respondent profile and demographic analysis

A total of 377 responses were captured in the demographic dataset and used to describe the sample characteristics. The profile indicates a strong representation from sourcing-related roles, which is appropriate because sourcing teams interact most frequently with suppliers and compliance requirements. Carter and Rogers (2008) emphasized that supply risk and sustainability outcomes are strongly shaped by boundary-spanning supply professionals. Similarly, Locke (2013) argued that compliance and ethical sourcing systems are operationalized primarily through buyer–supplier interactions managed by sourcing functions.

Table 1: Demographic profile of respondents (N = 377)

Variable	Category	Frequency	Percentage (%)
Gender	Male	258	68.4
	Female	119	31.6
Work Experience	Less Than 1 Year	58	15.4
	1–3 Years	98	26.0
	4–6 Years	98	26.0
	7–10 Years	64	17.0
	Above 10 Years	59	15.6
Department	Sourcing	304	80.6
	IE	20	5.3
	Merchandiser	19	5.0
	Production	17	4.5
	Distribution	17	4.5
Company Manpower	1–500	77	20.4
	501–1000	74	19.6
	1001–10000	78	20.7
	10001–20000	71	18.8
	Above 20000	77	20.4

The gender distribution shows a male majority (68.4%), reflecting the common workforce structure in many industrial supply functions in developing-country manufacturing contexts. Gereffi and Frederick (2010) noted that managerial and compliance-facing supply positions in global value chains often show uneven representation. The experience distribution indicates that most respondents have 1–6 years of experience (52%), suggesting the sample includes practitioners with active operational exposure to supplier monitoring systems. As Krause et al. (2007) argued, supplier development and compliance outcomes depend heavily on the day-to-day routines of buyer-side employees who interpret and enforce requirements.

5.3 Measurement model assessment

Measurement model evaluation was conducted to confirm indicator reliability, internal consistency reliability, convergent validity, discriminant validity, and collinearity diagnostics before interpreting the structural model. Hair et al. (2019) stated that these checks are mandatory to ensure the constructs are measured consistently and are empirically distinct. Henseler et al. (2015) further argued that HTMT should be prioritized in discriminant validity assessment because it is more sensitive than older approaches.

5.3.1 Indicator reliability (outer loadings)

Indicator reliability was assessed using outer loadings. Hair et al. (2019) suggested loadings above 0.70 are desirable because they indicate that indicators share more variance with the construct than with error. In this model, all loadings exceed the recommended threshold, supporting strong indicator reliability.

Table 2: Outer loadings (indicator reliability)

Outer loadings - Matrix

	AG	ECE	SC	SCOMP	SCR	TS
AG1	0.841					
AG2	0.796					
AG3	0.811					
AG4	0.790					
AG5	0.824					
ECE1		0.821				
ECE2		0.830				
ECE3		0.836				
ECE4		0.826				
ECE5		0.813				
SC1			0.823			
SC2			0.816			
SC3			0.867			
SC4			0.764			
SC5			0.824			
SCOMP1				0.874		
SCOMP2				0.777		
SCOMP3				0.841		
SCOMP4				0.813		
SCOMP5				0.833		
SCR1					0.834	
SCR2					0.810	
SCR3					0.869	
SCR4					0.813	
SCR5					0.840	
TS1						0.833
TS2						0.786
TS3						0.816
TS4						0.809
TS5						0.821

5.3.3 Internal consistency reliability and convergent validity

Internal consistency reliability was evaluated through Cronbach's alpha, rho_A, and composite reliability (rho_C). Hair et al. (2019) stated that values above 0.70 indicate satisfactory reliability. Convergent validity was assessed via AVE, where values above 0.50 indicate that constructs explain more than half the variance of their indicators (Fornell & Larcker, 1981).

All constructs exceed the threshold levels for reliability and convergent validity, indicating stable and coherent measurement. As Hair et al. (2022) highlighted, such evidence increases confidence that structural relationships reflect substantive effects rather than measurement artifacts.

Table 3: Reliability and convergent validity (α, rho_A, CR, AVE)

Construct reliability and validity - Overview				
	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
AG	0.871	0.872	0.907	0.660
ECE	0.883	0.883	0.914	0.681
SC	0.877	0.877	0.911	0.672
SCOMP	0.885	0.889	0.916	0.686
SCR	0.890	0.893	0.919	0.694
TS	0.872	0.876	0.907	0.661

5.3.4 Discriminant validity (HTMT)

Discriminant validity was assessed using HTMT. Henseler et al. (2015) argued that HTMT values below 0.85 (strict) or 0.90 (lenient) provide evidence that constructs are empirically distinct. The results show all HTMT values are well below 0.85, indicating strong discriminant validity.

Table 4: HTMT ratios (discriminant validity)

Discriminant validity - Heterotrait-monotrait ratio (HTMT) - Matrix						
	AG	ECE	SC	SCOMP	SCR	TS
AG						
ECE	0.227					
SC	0.247	0.327				
SCOMP	0.376	0.451	0.469			
SCR	0.307	0.529	0.565	0.617		
TS	0.147	0.195	0.341	0.523	0.382	

5.4 Structural model assessment

5.4.1 Explanatory power (R^2)

R^2 values indicate the proportion of variance explained in endogenous constructs. Hair et al. (2019) described R^2 values around 0.25 as weak, 0.50 as moderate, and 0.75 as substantial in many business research settings (interpretation depends on context). In this model, SRM and ethical sourcing dimensions explain 40.3% of supplier compliance, and SRM/ethical sourcing plus compliance explain 45.3% of supply chain risk reduction—indicating moderate explanatory power.

Table 5: R^2 values

R-square - Overview		
	R-square	R-square adjusted
SCOMP	0.403	0.396
SCR	0.453	0.445

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5.5 Hypothesis testing (direct effects)

Hypotheses H1–H5 were evaluated using bootstrapped path coefficients (β), t-values, and p-values. Hair et al. (2019) stated that significance should be judged using bootstrapped inference in PLS-SEM rather than relying on distributional assumptions. The results show that ethical sourcing enforcement (ECE) and supplier collaboration (SC) significantly reduce supply chain risk, while AG and TS do not have statistically significant direct effects on risk reduction at the 5% level. However, both AG and TS strongly predict compliance, which then predicts risk reduction—indicating a mediation-based mechanism. This aligns with the argument of Locke (2013) that governance and monitoring reduce downstream risk primarily through supplier behavioral compliance rather than through immediate performance shifts

Table 6: Direct effects (path coefficients) and hypothesis testing

Path coefficients - Mean, STDEV, T values, p values					
	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
AG -> SCOMP	0.195	0.196	0.042	4.656	0.000
AG -> SCR	0.059	0.061	0.041	1.460	0.144
ECE -> SCOMP	0.247	0.248	0.043	5.713	0.000
ECE -> SCR	0.254	0.255	0.044	5.793	0.000
SC -> SCOMP	0.201	0.201	0.042	4.767	0.000
SC -> SCR	0.276	0.277	0.043	6.463	0.000
SCOMP -> SCR	0.279	0.277	0.052	5.339	0.000
TS -> SCOMP	0.336	0.336	0.039	8.661	0.000
TS -> SCR	0.076	0.075	0.046	1.651	0.099

H1 (AG → SCR) is not supported (p = .144). This indicates that governance/audit alignment reduces risk mainly through indirect routes rather than direct influence. Wieland and Wallenburg (2013) similarly argued that relational governance often works through process stabilization mechanisms.

H2 (ECE → SCR) is supported (p < .001). This suggests ethical enforcement and code implementation directly reduce supplier-related risks (e.g., labor non-compliance and reputational disruptions). As Carter and Jennings (2004) highlighted, ethical purchasing practices reduce exposure to social-risk incidents in supply chains.

H3 (SC → SCR) is supported (p < .001). Collaboration appears to reduce risk through improved coordination and issue resolution. Christopher (2016) noted that collaborative risk sharing and visibility reduce vulnerability in supply networks.

H4 (TS → SCR) is not supported at 5% (p = .099). However, trust/transparency strongly predicts compliance, implying its main risk-reduction pathway is mediated. Poppo and Zenger (2002) argued that relational norms often influence outcomes indirectly via behavioral alignment.

H5 (SCOMP → SCR) is supported (p < .001). Compliance acts as a direct operational mechanism that lowers disruptions, nonconformance, and supplier-induced uncertainty, consistent with standard supplier-risk logic (Christopher, 2016).

5.6 Mediation analysis (Specific indirect effects: H6–H9)

Mediation was assessed via bootstrapped specific indirect effects. Zhao et al. (2010) emphasized that mediation should be interpreted based on the significance of indirect effects rather than the presence/absence of direct effects alone. In this model, all indirect effects through supplier compliance are statistically significant, indicating that compliance is a meaningful mechanism translating SRM and ethical sourcing into risk reduction.

Table 7: Specific indirect effects

Specific indirect effects - Mean, STDEV, T values, p values

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
AG -> SCOMP -> SCR	0.054	0.054	0.015	3.653	0.000
ECE -> SCOMP -> SCR	0.069	0.069	0.018	3.930	0.000
SC -> SCOMP -> SCR	0.056	0.056	0.016	3.453	0.001
TS -> SCOMP -> SCR	0.094	0.093	0.021	4.560	0.000

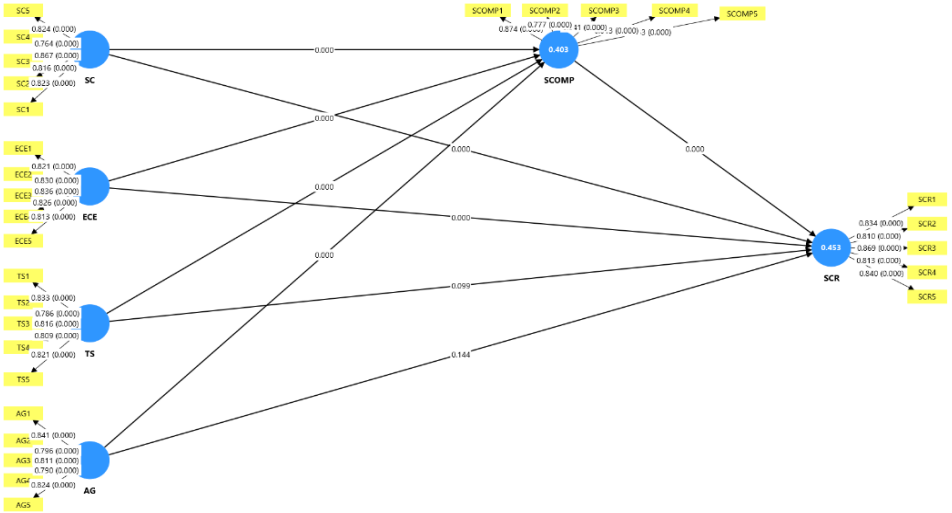
H6 is supported: governance/audit alignment reduces risk through compliance. This fits the logic that governance tools are effective when they translate into supplier behavioral adherence (Locke, 2013).

H7 is supported: ethical code enforcement reduces risk partly by strengthening supplier compliance—consistent with the idea that ethical programs lower social and regulatory risk only when suppliers implement them (Carter & Jennings, 2004).

H8 is supported: collaboration improves compliance and thereby reduces risk, aligning with supplier development theory where joint problem-solving enhances conformance capabilities (Krause et al., 2007).

H9 is supported: trust/transparency strengthens compliance and, through compliance, reduces risk. This supports the argument that relational capital improves supplier willingness and ability to comply (Poppo & Zenger, 2002).

Figure 2: PLS SEM



6.1 Discussion of Findings

The results support the central mechanism proposed: supplier compliance is a significant predictor of supply chain risk reduction and it mediates key governance–risk relationships. This aligns with the theoretical position that governance practices reduce supply chain vulnerability primarily by shaping supplier behavior and reducing the probability and impact of non-compliance incidents (Asif, 2020; Um & Han, 2020). Anner (2020) similarly illustrated that when compliance systems weaken under pressure, disruptions emerge not only from production failures but also from social-risk shocks and governance breakdowns.

At the same time, the model shows asymmetry across SRM and ethical sourcing dimensions: some governance practices demonstrate strong direct effects on risk reduction, while others reduce risk mainly through compliance. This mixed pattern strengthens the study argument that compliance is not simply a "control variable," but a behavioral bridge that converts SRM and ethical sourcing investments into risk reduction outcomes (Chowdhury & Quaddus, 2021; Roehrich et al., 2024). The empirical findings confirm that it is insufficient to assume governance automatically lowers risk; instead, the effectiveness depends on whether governance mechanisms actually translate into supplier-level compliance routines (Bonatto et al., 2020; Kabeer et al., 2020).

6.2 Discussion of H1: Agreement Governance → Supply Chain Risk Reduction

H1 proposed that agreement governance would directly reduce supply chain risk reduction. The results show that the direct path from agreement governance to risk reduction is not statistically supported ($p = .144$). This finding is theoretically plausible because contractual and agreement mechanisms often reduce risk indirectly by clarifying expectations and improving enforceability rather than immediately reducing disruptions (Bonatto et al., 2020). Wieland and Wallenburg (2013) similarly argued that governance effectiveness often depends on how formal mechanisms stabilize processes and reduce behavioral uncertainty across the supply network.

In Bangladesh-oriented sourcing, agreement governance can also become symbolic when enforcement capacity is weak or when economic pressures incentivize strategic non-compliance (Asif, 2020; Kabeer et al., 2020). Alamgir and Banerjee (2019) illustrated how supplier compliance challenges frequently persist despite formal governance reforms because supplier constraints and buyer cost pressures shape actual behavior. Thus, agreement governance may not automatically translate into reduced disruption risk unless it changes supplier routines and compliance execution.

However, the indirect/mediated results indicate that agreement governance still matters—just not as a direct risk-reduction lever. This strengthens the study' core argument: governance provisions reduce risk when they drive compliance, not simply when they exist on paper (Asif, 2020; Chowdhury & Quaddus, 2021).

6.3 Discussion of H2: Ethical Compliance Evaluation/Enforcement → Supply Chain Risk Reduction

H2 proposed that ethical compliance evaluation/enforcement would reduce supply chain risk reduction. The results show that ethical enforcement has a significant direct effect on risk reduction ($p < .001$). This aligns strongly with ethical sourcing scholarship that treats enforcement as a governance capability that reduces exposure to social-risk disruptions and reputational crises. Anner (2020) highlighted that breakdowns in governance systems can rapidly escalate into supply chain shocks, implying that enforcement mechanisms can function as early risk-control tools.

The finding also resonates with the notion that ethical sourcing systems—when implemented as monitoring, corrective actions, and consequences—can reduce the likelihood of sudden disruptions triggered by non-compliance incidents (Asif, 2020; Rahman & Rahman, 2020). In Bangladesh's global sourcing environment, compliance enforcement is particularly risk-relevant because safety and labor issues can produce immediate production shutdowns, buyer exit, and long-term reputational damage (Alamgir & Banerjee, 2019; Kabeer et al., 2020).

This result supports the managerial interpretation that enforcement is not only "ethically desirable" but also operationally protective. Roehrich et al. (2024) argued that sustainable supply governance increasingly functions as a continuity mechanism, where weak compliance systems become a direct risk factor. In this study model, ethical enforcement is one of the few constructs that shows both direct and indirect contributions, demonstrating its central position in ethical risk reduction.

6.4 Discussion of H3: Supplier Collaboration → Supply Chain Risk Reduction

H3 proposed that supplier collaboration reduces supply chain risk reduction. The results show that supplier collaboration significantly reduces risk ($p < .001$). This supports established SRM logic that collaboration improves coordination, joint problem-solving, and adaptation under uncertainty. Um and Kim (2019) highlighted that collaborative practices—such as information exchange and joint planning—strengthen supplier responsiveness and performance stability, which are foundational to disruption prevention and mitigation. In risk terms, collaboration reduces both the probability of disruption (through better alignment and fewer misunderstandings) and disruption impact (through faster issue resolution and shared recovery actions). Ivanov and Dolgui (2020) argued that modern supply chains require capabilities that support resilience and recovery, and collaboration is widely recognized as a core relational capability enabling those outcomes. The Bangladesh sourcing context further strengthens this logic because suppliers face operational volatility (capacity constraints, compliance costs, lead-time pressure), and collaborative buyers can stabilize operations through shared planning and improvement support (Rahman & Rahman, 2020; Kabeer et al., 2020).

The finding also confirms the study' positioning of SRM as a risk-reduction approach rather than only a performance approach. Bonatto et al. (2020) argued that relational governance can support adaptation, but its effectiveness depends on whether collaboration is coupled with credible governance. In this study, collaboration appears to contribute to risk reduction directly and through compliance (see mediation discussion), implying a "dual pathway" effect.

6.5 Discussion of H4: Transparent Sourcing/Trust-Transparency Sharing → Supply Chain Risk Reduction

H4 proposed that transparent sourcing (trust/transparency-sharing) directly reduces supply chain risk reduction. The results show that this direct effect is not supported at the 5% level ($p = .099$). This does not imply transparency is unimportant; rather, it suggests that transparency may not immediately convert

into risk reduction unless it changes supplier behavior and compliance routines.

Asif (2020) argued that governance systems often fail due to "decoupling," where suppliers symbolically comply without embedding real compliance practices. Transparency can reduce decoupling by increasing visibility, but visibility alone does not guarantee behavior change unless paired with enforcement and capability support (Anner, 2020; Roehrich et al., 2024). In Bangladesh's sourcing system, transparency initiatives can be constrained by sub-contracting, documentation gaps, and cost pressures, limiting the direct operational effect of transparency on disruptions (Alamgir & Banerjee, 2019; Kabeer et al., 2020).

The more important interpretation emerges in the mediation results: transparency strongly predicts supplier compliance, which then predicts risk reduction. This indicates transparency becomes risk-reducing when it functions as a compliance enabler rather than a standalone governance signal (Chowdhury & Quaddus, 2021; Um & Han, 2020).

6.6 Discussion of H5: Supplier Compliance → Supply Chain Risk Reduction

H5 proposed that supplier compliance reduces supply chain risk reduction. The results show that supplier compliance has a positive, significant effect on risk reduction ($p < .001$). This finding is central to the study contribution because it empirically validates supplier compliance as a behavioral mechanism linking governance investment to operational risk outcomes. Chowdhury and Quaddus (2021) noted that compliance is frequently assumed rather than modeled, even though it is the key mechanism through which governance affects performance and risk.

From a risk perspective, compliance reduces the probability of disruption events (e.g., safety incidents, labor violations, regulatory interventions) and improves response readiness by embedding standardized routines and corrective action processes (Um & Han, 2020; Roehrich et al., 2024). Anner (2020) emphasized that fragile governance can destabilize supply continuity under stress, implying that compliance capability strengthens resilience by reducing vulnerability to governance shocks.

In Bangladesh's context, supplier compliance is particularly salient because compliance failures have historically generated both humanitarian harm and severe supply chain shocks. Kabeer et al. (2020) and Alamgir and Banerjee (2019) illustrated that compliance outcomes depend on institutional pressure, buyer behavior, and supplier constraints. This study supports the view that compliance is not simply a "moral" outcome, but also a core operational risk-reduction asset.

6.7 Discussion of H6: Mediation of Agreement Governance through Supplier Compliance

H6 tested whether supplier compliance mediates the relationship between agreement governance and risk reduction. The mediation is supported ($p < .001$). This pattern implies indirect-only or compliance-driven governance, where formal agreements reduce risk only when they are translated into actual supplier compliance routines. Bonatto et al. (2020) argued that formal governance reduces ambiguity and exchange hazards; in this model, the hazard reduction appears to occur through compliance, not as an immediate reduction in disruption risk.

This result also aligns with Bangladesh-focused governance debates showing that formal compliance frameworks can be undermined by weak implementation and structural pressure. Asif (2020) emphasized that compliance improvements are fragile when monitoring and enforcement do not penetrate actual production practices. Therefore, agreement governance becomes meaningful when it is accompanied by compliance execution and behavioral alignment.

6.8 Discussion of H7: Mediation of Ethical Compliance Evaluation/Enforcement through Supplier Compliance

H7 tested whether supplier compliance mediates the relationship between ethical compliance enforcement and risk reduction. The mediation is supported ($p < .001$). This reinforces the idea that enforcement operates through two routes: a direct route (immediate risk reduction by deterring violations) and an indirect route (risk reduction through building sustained compliance routines). Anner (2020) implied that compliance systems matter most when they remain robust under stress; sustained compliance is precisely the pathway captured by the mediator.

In Bangladesh, enforcement-related mechanisms (audits, codes, corrective action, escalation) have been central to reform efforts, yet outcomes vary widely depending on implementation depth (Rahman & Rahman, 2020; Kabeer et al., 2020). This study provides empirical support that enforcement is most effective when it does not stop at monitoring but results in supplier-level compliance behavior that stabilizes operations and reduces disruptions.

6.9 Discussion of H8: Mediation of Supplier Collaboration through Supplier Compliance

H8 tested whether supplier compliance mediates the collaboration–risk relationship. The mediation is supported ($p < .001$). This finding helps reconcile two literatures: SRM literature that highlights relational collaboration and ethical sourcing literature that emphasizes compliance control. Um and Kim (2019) highlighted collaboration as a performance driver, but this study shows that collaboration also builds compliance—likely through shared problem-solving, capability development, and alignment of expectations.

In Bangladesh supply chains, suppliers may lack capability to implement compliance requirements without buyer support (Alamgir & Banerjee, 2019; Kabeer et al., 2020). Collaboration can function as a capability-building tool that enables suppliers to meet compliance standards and reduce risk exposure. This supports Roehrich et al.'s (2024) argument that sustainable governance depends on mechanism effectiveness, which often requires both relational support and formal monitoring.

6.10 Discussion of H9: Mediation of Transparent Sourcing through Supplier Compliance

H9 tested whether supplier compliance mediates the transparency–risk relationship. The mediation is supported ($p < .001$). This clarifies why H4 was not significant directly: transparency reduces risk chiefly when it changes compliance behavior rather than directly lowering disruptions. Asif (2020) argued that decoupling thrives when observation is limited; transparency reduces decoupling by increasing visibility and accountability, which strengthens compliance routines that then reduce risk.

In multi-tier sourcing contexts like Bangladesh, transparency is often uneven due to subcontracting and documentation gaps, which can weaken direct risk impacts (Rahman & Rahman, 2020; Alamgir & Banerjee, 2019). The mediation result implies that transparency should be treated as a "compliance-enabling infrastructure" that requires enforcement and supplier capability to translate visibility into real behavioral improvement (Roehrich et al., 2024; Chowdhury & Quaddus, 2021).

7. Implications of the Study

7.1 Theoretical Implications

This study makes three primary theoretical contributions. First, it extends SRM scholarship by positioning SRM and ethical sourcing not only as performance drivers but as risk governance capabilities. Um and Kim (2019) noted that collaboration drives operational performance, and this study shows collaboration also reduces risk—both directly and through compliance mechanisms. Ivanov and Dolgui (2020) emphasized that resilience requires governance capabilities that reduce vulnerability; this study identifies supplier compliance as a concrete mechanism through which governance converts into risk reduction outcomes.

Second, the results strengthen governance theory by demonstrating that formal governance (agreement governance) may be ineffective in reducing risk unless mediated by compliance. Bonatto et al. (2020) argued that formal governance reduces hazards and ambiguity; here, that hazard reduction manifests through supplier compliance behavior rather than direct risk reduction. This supports a "behavioral governance" view: governance works when it changes supplier practices and routines (Asif, 2020; Chowdhury & Quaddus, 2021).

Third, the study advances ethical sourcing literature by empirically modeling the connection between ethical sourcing practices and measurable risk reduction outcomes. Anner (2020) highlighted the fragility of governance under crisis; this study clarifies that ethical sourcing reduces risk not only through direct deterrence (enforcement) but also through sustained compliance capability. In a Bangladesh context—often studied through macro governance debates—this construct-based model offers a structured mechanism explanation that connects governance inputs to operational risk outcomes (Rahman & Rahman, 2020; Kabeer et al., 2020).

7.2 Managerial Implications

For buying firms and sourcing managers, the results provide clear prioritization. First, ethical compliance evaluation/enforcement should be treated as both an ethical requirement and a risk-reduction tool, because it shows a strong direct effect on risk reduction and an indirect compliance-driven pathway. Anner (2020) suggested that governance breakdowns can generate systemic disruptions; proactive enforcement reduces that probability and protects continuity. Managers should therefore invest in credible monitoring systems, corrective action pathways, and supplier development support that ensures enforcement becomes implementation, not paperwork (Asif, 2020; Roehrich et al., 2024).

Second, supplier collaboration is a high-value SRM lever for risk reduction. Um and Kim (2019) emphasized collaboration as a coordination mechanism; this study supports collaboration as a stability mechanism that reduces disruptions through faster issue resolution and compliance capability. Practically, managers should strengthen joint planning, shared performance review routines, supplier training programs, and problem-solving teams—particularly for high-risk categories and strategically critical suppliers (Ivanov & Dolgui, 2020; Roehrich et al., 2024).

Third, managers should interpret transparency and agreement governance as enabling systems that reduce risk mainly through compliance. Asif (2020) argued that transparency reduces decoupling when it increases accountability; thus, transparency investments should be linked to compliance routines—such as traceability, supplier documentation systems, and structured corrective action follow-up. Similarly, agreement governance should be designed for implementability: clear clauses, realistic compliance requirements, enforceable escalation processes, and alignment with supplier capability (Bonatto et al., 2020; Kabeer et al., 2020).

7.3 Policy and Industry Implications

At the policy and industry level, the findings support strengthening institutional capacity for compliance and governance rather than relying on symbolic reforms. Rahman and Rahman (2020) highlighted that compliance governance reforms in Bangladesh remain contested and uneven across supplier tiers, implying the need for stronger institutional monitoring and capability-building ecosystems. Industry associations and regulators can use these findings to justify programs that support supplier compliance infrastructure, training, and credible verification systems that reduce the likelihood of disruption events.

The results also highlight the importance of multi-stakeholder governance arrangements that combine monitoring with supplier capability development. Kabeer et al. (2020) documented that compliance outcomes depend on power relations and economic realities, meaning policies that ignore supplier constraints may lead to superficial compliance. Therefore, compliance policy should integrate incentives, technical support, and buyer accountability—ensuring enforcement translates into compliance routines and lower disruption risk (Asif, 2020; Roehrich et al., 2024).

7.4 Limitations of the Study

This study has several limitations that should be considered when interpreting the findings. First, the study uses a cross-sectional survey design, which limits causal inference and does not capture how compliance and risk reduction evolve over time. Saunders et al. (2019) noted that cross-sectional designs are appropriate for theory testing but cannot fully represent dynamic capability development and time-lagged effects. Since supplier compliance routines may take time to mature, longitudinal evidence would strengthen causal interpretation (Ivanov & Dolgui, 2020; Roehrich et al., 2024).

Second, the study relies on perceptual measures from managerial respondents, which may introduce common method bias or social desirability bias—particularly in ethical sourcing contexts where compliance is politically and reputationally sensitive. Creswell and Creswell (2018) highlighted that survey-based designs require careful procedural and statistical controls to reduce bias risks. Bangladesh-focused compliance research also shows that compliance narratives can be shaped by stakeholder pressures, which may affect survey responses (Kabeer et al., 2020; Alamgir & Banerjee, 2019).

Third, the study is context-specific to Bangladesh-related sourcing dynamics. While this is a strength for relevance, it may limit generalizability to other institutional contexts. Rahman and Rahman (2020) argued that Bangladesh has distinctive compliance governance arrangements and supplier constraints, meaning effect sizes and relationships may differ in other sourcing hubs. Finally, the model focuses on a set of governance dimensions and does not explicitly incorporate moderating conditions such as power asymmetry, supplier capability maturity, buyer commitment, or external shocks. Asif (2020) argued that governance effectiveness varies under cost pressure and crisis conditions; including moderators could explain when governance is more or less effective in producing compliance and risk reduction.

7.5 Future Research Directions

Future research can build on this study in several ways. First, researchers should adopt longitudinal or panel designs to examine how SRM routines, enforcement mechanisms, and compliance capabilities develop over time and how they affect risk trajectories. Ivanov and Dolgui (2020) emphasized that resilience and risk capabilities are dynamic, meaning time-based designs are essential for stronger theory testing.

Second, future work should integrate objective risk indicators (e.g., disruption frequency, delivery variability, audit failure rates, incident records) alongside perceptual measures to strengthen validity. Roehrich et al. (2024) argued that governance effectiveness should be evaluated through outcomes that capture real operational and sustainability risk exposure. Combining survey and archival data would reduce bias and improve interpretive robustness (Saunders et al., 2019).

Third, researchers should extend the model to multi-tier supply chains, especially because ethical sourcing risk often originates upstream beyond tier-1 suppliers. Kabeer et al. (2020) and Alamgir and Banerjee (2019) highlighted that subcontracting and informal production complicate compliance, suggesting that tiered governance and traceability mechanisms are critical for risk reduction. Testing the model in multi-tier datasets would provide stronger external validity.

Fourth, future research should test moderators such as buyer power, supplier capability, relational history, and crisis intensity. Asif (2020) argued that governance can fail under structural cost pressure, implying that compliance and risk outcomes depend on economic and relational conditions. Moderated mediation models could explain why governance works in some buyer–supplier relationships but not others (Chowdhury & Quaddus, 2021; Roehrich et al., 2024).

Finally, comparative studies across sourcing countries (e.g., Bangladesh vs. Vietnam or India) could clarify institutional influences on the governance–compliance–risk mechanism. Rahman and Rahman (2020) suggested that governance arrangements vary across contexts; cross-country comparisons would strengthen theoretical generalization and help policymakers identify which governance interventions travel well across institutional environments.

7.6 Conclusion

This study examined how SRM and ethical sourcing practices reduce supply chain risk reduction, and whether supplier compliance mediates these relationships. The results show that ethical compliance enforcement and supplier collaboration reduce risk directly, while agreement governance and transparency reduce risk primarily through supplier compliance. Supplier compliance itself is a strong predictor of supply chain risk reduction and acts as a central mechanism converting governance practices into risk outcomes.

The study contributes to supply chain governance theory by empirically validating compliance as the "bridge" between governance practices and risk reduction outcomes (Chowdhury & Quaddus, 2021; Roehrich et al., 2024). In Bangladesh's ethically sensitive sourcing context, these insights are practically important: risk reduction is achievable not merely by adding governance structures, but by ensuring those structures create real supplier compliance behavior (Asif, 2020; Rahman & Rahman, 2020).

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