



Department of Digital Business

**Journal of Artificial Intelligence and Digital Business (RIGGS)**

Homepage: <https://journal.ilmudata.co.id/index.php/RIGGS>

Vol. 5 No. 1 (2026) pp: 4613-4620

P-ISSN: 2963-9298, e-ISSN: 2963-914X

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## Supplier Collaboration in ESG Implementation in the Automotive Industry in Purwakarta Regency

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### **Abstract**

*The implementation of Environmental, Social, and Governance (ESG) principles has become increasingly important in the automotive industry due to rising sustainability demands from regulators, global principals, and stakeholders. This study examines the role of supplier collaboration in supporting ESG implementation within the automotive industry in Purwakarta Regency, Indonesia, a region known for its growing manufacturing activities and integration into global supply chains. Using a qualitative research approach, data were collected through in-depth interviews with five informants representing automotive manufacturers and supplier companies. The analysis focuses on how collaborative practices shape ESG adoption at the operational level. The findings show that supplier collaboration is a key mechanism for translating ESG commitments into concrete practices, particularly through shared standards, joint audits, knowledge exchange, and capacity-building initiatives aimed at improving environmental performance and governance compliance. Long-term relationships and mutual trust were found to strengthen supplier engagement in environmental management, occupational safety, and ethical business practices. However, the study also identifies significant challenges, including uneven ESG awareness, financial constraints, and limited technical capacity among smaller suppliers, which can slow the pace of implementation. These challenges suggest that ESG adoption cannot rely solely on compliance-driven approaches but requires adaptive partnerships and continuous support from lead firms. This study contributes to the sustainable supply chain management literature by providing contextual insights from a regional automotive cluster in an emerging economy and offers practical implications for firms and policymakers seeking to enhance ESG performance through collaborative supplier engagement strategies.*

*Keywords: Automotive Industry; ESG; Supplier Collaboration; Sustainable Supply Chain*

### **1. Introduction**

The automotive industry is widely recognized as one of the most complex and resource-intensive manufacturing sectors, characterized by extensive supply chains, high energy consumption, and significant environmental and social impacts [1], [2]. In recent years, increasing global attention to sustainability has driven firms to move beyond traditional profit-oriented strategies toward more responsible business practices [3], [4]. Within this context, Environmental, Social, and Governance (ESG) principles have emerged as an important framework for guiding corporate behavior, integrating environmental protection, social responsibility, and ethical governance into business operations. For the automotive industry, ESG implementation is no longer optional but has become a strategic necessity to ensure long-term competitiveness, regulatory compliance, and stakeholder trust [5], [6].

The growing emphasis on ESG within the automotive sector is also closely linked to shifts in global supply chain governance, where manufacturers are increasingly required to demonstrate responsible sourcing and sustainable production practices. International partners, investors, and consumers now expect transparency not only from core manufacturers but also from their entire supplier networks, placing additional pressure on firms to integrate ESG standards throughout the value chain. As a result, automotive companies are adopting more comprehensive sustainability strategies that involve supplier engagement, environmental performance monitoring, and governance mechanisms designed to manage risks while enhancing long-term organizational resilience and reputation in a highly competitive global market [3], [4], [6].

One of the critical challenges in implementing ESG practices in the automotive sector lies in the structure of its supply chain. Automotive manufacturers rely heavily on a wide network of suppliers, ranging from large tier-one suppliers to small and medium-sized enterprises providing components, raw materials, and supporting services

[7], [8]. As a result, the effectiveness of ESG implementation is highly dependent on the ability of manufacturers to collaborate with their suppliers. Environmental initiatives such as emission reduction, waste management, and energy efficiency, as well as social issues including labor standards, workplace safety, and community engagement, cannot be fully achieved without active supplier involvement [9]. This highlights supplier collaboration as a central mechanism in translating ESG commitments into practical and measurable actions across the supply chain [10].

Moreover, the increasing complexity of multi-tier supply chains makes coordination and information sharing between manufacturers and suppliers essential for effective ESG implementation. Differences in organizational capacity, technological readiness, and resource availability often create gaps in sustainability performance across suppliers, particularly among small and medium-sized firms. Collaborative mechanisms such as joint training, performance monitoring, and shared sustainability guidelines can help bridge these gaps by fostering mutual understanding and continuous improvement. By strengthening collaboration, manufacturers can ensure that ESG principles are consistently applied throughout the supply chain, thereby enhancing operational alignment, reducing sustainability risks, and improving overall supply chain resilience [20], [21], [23].

In developing countries, including Indonesia, ESG implementation in manufacturing industries faces unique challenges. Regulatory frameworks related to environmental protection and labor standards are evolving, but enforcement and monitoring remain uneven. At the same time, many suppliers, particularly small and medium-scale firms, often face limitations in financial resources, technological capability, and ESG awareness [9], [11]. These constraints can hinder the adoption of ESG practices, even when manufacturers have established sustainability policies. Consequently, collaborative approaches—such as knowledge sharing, capacity building, and joint monitoring—become essential to bridge the gap between ESG standards and actual supplier practices.

In addition, institutional and cultural factors in emerging economies can influence how ESG principles are interpreted and implemented at the operational level. Variations in regulatory clarity, access to sustainability training, and industry support programs often result in uneven adoption across firms and regions, creating challenges for manufacturers seeking to standardize ESG practices throughout their supply chains. Under such conditions, collaborative governance models that emphasize partnership, gradual improvement, and mutual learning become increasingly relevant, as they allow suppliers to adapt ESG requirements according to their capabilities while still progressing toward shared sustainability goals. Strengthening collaboration between industry actors, local governments, and supporting institutions can therefore play a crucial role in accelerating ESG integration within developing-country manufacturing ecosystems [12], [17], [21].

Purwakarta Regency represents a relevant and strategic context for examining ESG implementation in the automotive industry. As one of Indonesia's major industrial areas, Purwakarta hosts numerous automotive manufacturing plants and supplier clusters that contribute significantly to regional economic growth and employment. The concentration of automotive activities in this region also intensifies environmental pressures, including industrial waste, energy use, and emissions, as well as social concerns related to labor conditions and community welfare. These conditions make Purwakarta an important case for understanding how ESG principles are operationalized at the local level through interactions between manufacturers and suppliers.

Furthermore, the presence of interconnected manufacturers and suppliers within a single regional cluster creates a unique environment for observing how ESG practices evolve through daily operational interactions. Industrial clusters such as Purwakarta often facilitate closer communication, faster knowledge transfer, and stronger relational ties between firms, which can accelerate the diffusion of sustainability standards across the supply chain. At the same time, the high concentration of industrial activities amplifies public scrutiny and regulatory attention, encouraging companies to adopt more structured environmental management and governance practices. These dynamics position Purwakarta as a valuable setting for exploring how local industrial ecosystems shape collaborative ESG implementation in emerging economies.

Despite the growing importance of ESG in the automotive sector, existing studies have largely emphasized quantitative assessments, corporate disclosures, and firm-level performance indicators, leaving limited attention to qualitative, process-oriented analyses that examine how ESG implementation unfolds through everyday interactions between firms and their suppliers, particularly in regional and emerging-economy contexts. Empirical evidence on supplier collaboration in ESG implementation at the regency or industrial-cluster level also remains scarce, constraining a deeper understanding of the practical dynamics, challenges, and enabling factors shaping ESG adoption along the supply chain. Addressing this gap, the present study aims to explore supplier collaboration

in ESG implementation within the automotive industry in Purwakarta Regency through a qualitative approach, drawing on in-depth insights from five key informants representing manufacturers and suppliers to capture how collaborative practices are formed, how ESG principles are interpreted and applied at the operational level, and what challenges and opportunities emerge in the process. The findings are expected to enrich the literature on sustainable supply chain management and ESG implementation while offering practical implications for industry practitioners and policymakers seeking to strengthen sustainability performance in regional manufacturing ecosystems.

## **2. Literature Review**

### **2.1 Environmental, Social, and Governance (ESG) Concept**

Environmental, Social, and Governance (ESG) refers to non-financial criteria used to evaluate the sustainability and ethical impact of business activities, covering environmental management, social responsibility, and governance structures [12], [13]. In manufacturing industries, particularly the automotive sector, the environmental dimension relates to resource use, emissions, waste, and pollution control, positioning environmental management not only as a compliance requirement but also as a source of operational efficiency and long-term value [14], [15]. The social dimension focuses on relationships with stakeholders such as employees, suppliers, customers, and communities, addressing issues including labor rights, occupational health and safety, and community development, with supplier practices playing a critical role in shaping social performance and related risks. Governance provides the institutional framework for decision-making, accountability, and transparency through ethical leadership, compliance, and risk management, enabling the effective integration and consistent implementation of environmental and social commitments across the supply chain [16], [17].

### **2.2 ESG Implementation in the Automotive Industry**

The automotive industry faces growing pressure to adopt ESG principles due to its substantial environmental footprint and complex global supply chains, alongside increasingly stringent regulations on emissions, waste management, and occupational safety, as well as rising demands from investors, customers, and international partners for demonstrable ESG compliance [3], [4]. In response, automotive firms integrate sustainability objectives into production processes, product design, and supply chain management through environmental initiatives such as energy efficiency, waste reduction, and cleaner technologies, social initiatives focused on workplace safety, labor standards, and responsible sourcing, and governance mechanisms including codes of conduct, audit systems, and sustainability reporting [18], [19]. However, ESG implementation remains challenging because manufacturers rely on multi-tier suppliers operating across diverse regulatory and institutional contexts, making consistent ESG enforcement difficult and requiring coordinated collaboration, continuous monitoring, and strong inter-organizational relationships, thereby shifting the focus from firm-level ESG performance toward supply chain-level ESG governance.

### **2.3 Supplier Collaboration and Sustainable Supply Chain Management**

Supplier collaboration refers to cooperative relationships between buyers and suppliers aimed at achieving shared objectives through information sharing, joint decision-making, and mutual problem-solving, and in the context of sustainable supply chain management it is regarded as a key mechanism for enhancing environmental and social performance across the supply chain [20], [21]. Prior studies indicate that collaborative practices facilitate the diffusion of sustainability standards and best practices through training, technical assistance, and joint audits, enabling suppliers to meet ESG requirements that may be difficult to achieve independently while also strengthening trust and long-term commitment [22], [23]. In emerging economies, where suppliers often face resource and capability constraints, collaboration is particularly important as it emphasizes capacity building and continuous improvement rather than strict compliance, allowing manufacturers to progressively improve ESG performance across their supplier base while maintaining supply chain stability and competitiveness.

### **2.4 Research Gap and Conceptual Focus**

While existing literature has widely examined ESG performance and sustainable supply chain management, most studies rely on quantitative methods or focus on large multinational corporations, leaving limited qualitative insight into how ESG implementation is experienced and negotiated through everyday interactions between manufacturers

and suppliers, particularly in regional industrial settings in developing countries. Moreover, research specifically addressing supplier collaboration in ESG implementation at the local or regency level remains scarce, despite the distinct institutional conditions, cultural factors, and resource constraints that characterize such contexts. Addressing this gap, the present study focuses on supplier collaboration as a key mechanism for ESG implementation in the automotive industry in Purwakarta Regency, using a qualitative approach to deepen understanding of the collaborative processes, challenges, and enabling factors shaping ESG practices within a regional automotive supply chain.

### **3. Research Methods**

#### **3.1 Research Design**

This study adopts a qualitative research design to explore supplier collaboration in the implementation of Environmental, Social, and Governance (ESG) principles within the automotive industry in Purwakarta Regency, as such an approach is suitable for understanding the processes, interactions, and meanings underlying ESG implementation rather than testing hypotheses or examining causal relationships. By emphasizing participants' experiences and perspectives, the exploratory design enables an in-depth examination of how ESG practices are interpreted, negotiated, and applied through collaboration between automotive manufacturers and their suppliers, while the flexibility of qualitative inquiry allows the study to capture real-world practices, contextual dynamics, and emerging themes related to collaboration mechanisms, challenges, and enabling factors that may not be evident through quantitative methods.

#### **3.2 Research Setting and Context**

The research was conducted in Purwakarta Regency, West Java, Indonesia, an important automotive and manufacturing hub that hosts several automotive manufacturers along with a network of supporting suppliers involved in component production, logistics, and related services. As an emerging industrial region, Purwakarta combines rapid manufacturing-driven economic growth with varying levels of regulatory enforcement and supplier capabilities, making it a relevant setting for examining ESG implementation at the local level. This context provides a meaningful environment to explore how supplier collaboration supports environmental management, labor practices, and governance structures under practical and institutional constraints.

#### **3.3 Informants and Sampling Technique**

The study involved five informants selected through purposive sampling to ensure that participants possessed direct experience and sufficient knowledge of ESG practices and supplier collaboration in the automotive industry in Purwakarta Regency. The informants comprised representatives from automotive manufacturing companies and key supplier firms, selected based on criteria including active involvement in supply chain or sustainability-related activities, familiarity with ESG policies or practices within their organizations, and experience in inter-organizational collaboration between manufacturers and suppliers. By including informants from both sides of the supply chain, the study sought to capture diverse perspectives on ESG implementation and collaborative dynamics.

#### **3.4 Data Collection Methods**

Primary data were collected through in-depth, semi-structured interviews, which allowed informants to express their views freely while keeping discussions focused on key themes such as ESG understanding, forms of supplier collaboration, implementation practices, and encountered challenges. An interview guide was used to structure the discussions with flexibility to explore emerging issues, and interviews were conducted either face-to-face or via online communication platforms depending on informant availability, each lasting approximately 45–60 minutes. With informant consent, all interviews were audio-recorded and transcribed verbatim for analysis, while secondary data including company documents, sustainability guidelines, and publicly available reports were also reviewed to enhance contextual understanding and support data triangulation.

#### **3.5 Data Analysis Technique**

The data were analyzed using thematic analysis, which involves identifying, analyzing, and interpreting patterns within qualitative data. The process began with data familiarization through repeated reading of interview

transcripts, followed by initial coding to label meaningful text segments related to ESG implementation and supplier collaboration. These codes were then grouped into broader categories and themes, such as forms of collaboration, perceived benefits, implementation challenges, and governance mechanisms, using constant comparison to identify similarities and differences across informants, with the final themes refined and interpreted in line with the research objectives and existing literature on ESG and sustainable supply chain management.

## **4. Results and Discussion**

### **4.1 Understanding and Interpretation of ESG among Manufacturers and Suppliers**

The findings indicate that automotive manufacturers generally perceive ESG as an integrated framework that goes beyond regulatory compliance and is closely linked to long-term business sustainability and corporate responsibility, particularly in maintaining relationships with global principals and investors. As one manufacturing informant explained, *“ESG is no longer just about complying with environmental regulations; it has become a requirement from principals and the global market. If suppliers do not follow, it will also affect us.”* This view reflects how manufacturers position ESG as a strategic necessity rather than merely an operational obligation.

In contrast, suppliers—especially small and medium-sized firms—tend to interpret ESG in a more practical and compliance-oriented manner, associating it mainly with environmental permits, occupational safety requirements, and audit results from manufacturers. As stated by a supplier informant, *“When it comes to ESG, what we understand is mostly about waste management, occupational health and safety, and audits from the factory. As long as those are in order, we consider ourselves compliant.”* This difference in interpretation highlights the importance of supplier collaboration, as manufacturers play a key role in translating broader ESG concepts into operational requirements that suppliers can realistically implement.

### **4.2 Forms of Supplier Collaboration in ESG Implementation**

The results show that supplier collaboration in ESG implementation takes multiple forms, ranging from formal mechanisms to more informal relational practices. One of the most common forms is the establishment of shared standards and guidelines, where manufacturers provide suppliers with codes of conduct, environmental standards, and occupational safety requirements that must be followed. As one informant noted, *“We already have environmental and social standards that suppliers must comply with. However, we do not just send documents; we also explain them through meetings and ongoing assistance.”* This indicates that standard setting is accompanied by active communication and support to facilitate implementation.

In addition to standard setting, regular audits and evaluations function as collaborative tools rather than purely control mechanisms. Although audits are used to monitor compliance, they also serve as learning opportunities that help suppliers identify gaps and areas for improvement. As a supplier informant explained, *“Audits can be stressful, but they help us understand where our weaknesses are. Usually, after an audit, we receive quite detailed feedback.”* This suggests that audits play a dual role in both oversight and capability development.

Knowledge sharing and capacity building further emerge as important collaborative practices in ESG implementation. Manufacturers often provide training on waste management, occupational health and safety, and basic governance practices, which is particularly valuable for suppliers with limited technical capacity. As one informant stated, *“Small suppliers are actually willing to comply, but they often do not know how. That is why we support them through training and by sharing simple, practical practices first.”* Overall, these findings highlight that ESG collaboration extends beyond enforcement and relies on continuous interaction, mutual learning, and shared responsibility between manufacturers and suppliers.

### **4.3 Role of Trust and Long-Term Relationships**

Trust and long-term relationships are identified as critical enablers of effective ESG collaboration, as informants emphasized that ESG requirements are more easily implemented when relationships between manufacturers and suppliers are stable and grounded in mutual trust. As one manufacturer noted, *“When suppliers have worked with us for a long time, communication becomes more open. If environmental or social issues arise, they can be discussed and addressed together.”* This highlights how trust facilitates open communication and joint problem-solving in ESG implementation.

Suppliers also acknowledged that trust and relationship continuity influence their willingness to invest in ESG-related improvements. When suppliers perceive collaboration as long term, they are more likely to commit resources to meet ESG expectations, such as investing in safety equipment or waste treatment systems. As one supplier explained, *“If the collaboration is long term, we are willing to invest, for example in safety equipment or waste management. If the contract is short, we think twice.”* These findings are consistent with sustainable supply chain literature, which underscores relational governance and long-term orientation as key drivers of sustainability performance.

#### 4.4 Challenges in Collaborative ESG Implementation

Despite the positive role of collaboration, several challenges were identified in the implementation of ESG across the supply chain. One major challenge is the uneven level of ESG capability among suppliers, particularly smaller firms that face financial and technical constraints, making full compliance with ESG standards difficult. As one informant stated, *“The main issue is cost. Upgrading equipment or environmental systems is expensive, while our margins are limited.”* This highlights how resource limitations can restrict suppliers’ ability to invest in ESG-related improvements.

Another challenge relates to differing levels of ESG awareness and commitment among suppliers. Some suppliers still perceive ESG as an additional administrative burden rather than a strategic opportunity for long-term sustainability. This perception can weaken their motivation to engage proactively in ESG initiatives. As a manufacturer informant explained, *“There are still suppliers who see ESG as merely a formality. So we have to continuously remind them that it is important for our shared sustainability.”* Such attitudes create barriers to deeper collaboration and alignment of sustainability goals.

Governance-related issues also emerge, particularly in the areas of monitoring, documentation, and reporting. Limited administrative capacity among suppliers can affect their ability to provide consistent and reliable ESG documentation, which in turn complicates evaluation and follow-up by manufacturers. These challenges suggest that while collaboration is essential, it must be supported by clear governance structures, capacity-building efforts, and realistic implementation strategies to ensure effective ESG outcomes.

#### Discussion

The findings of this study reinforce the argument that ESG implementation in the automotive industry is fundamentally a supply chain-level process rather than an isolated firm-level initiative. As highlighted in the literature, ESG frameworks integrate environmental protection, social responsibility, and governance structures into business operations, requiring coordination across multiple actors within the value chain [12], [13]. The results show that manufacturers in Purwakarta Regency interpret ESG as a strategic requirement driven by global principals and market expectations, which aligns with prior studies emphasizing that ESG adoption in manufacturing industries is increasingly linked to competitiveness and long-term sustainability rather than mere regulatory compliance [14], [15].

Supplier collaboration emerged as a central mechanism for translating ESG commitments into operational practices, confirming the perspective of sustainable supply chain management literature that collaborative relationships facilitate the diffusion of standards, knowledge, and sustainability practices across organizational boundaries [20], [21]. Shared standards, audits, and training activities identified in this study reflect collaborative governance practices that enable manufacturers to extend ESG expectations beyond their internal operations. This supports earlier findings that collaborative supplier engagement enhances innovation capability, improves operational alignment, and strengthens supply chain resilience [20], [22].

The role of trust and long-term relationships identified in this research further validates relational governance theory within sustainable supply chains. Informants emphasized that suppliers are more willing to invest in ESG-related improvements when partnerships are stable and future-oriented, which resonates with previous studies highlighting that long-term collaboration reduces uncertainty and encourages joint problem-solving between manufacturers and suppliers [22], [23]. In emerging economies, where suppliers often face financial and technical constraints, relational trust becomes a key factor in ensuring continuous improvement rather than short-term compliance.

However, the challenges identified in this study—particularly uneven ESG awareness, limited financial resources, and technical capability gaps—reflect structural issues frequently reported in ESG adoption within developing-country contexts. Prior literature indicates that ESG implementation in emerging markets often requires adaptive collaboration models that emphasize capacity building and gradual improvement rather than strict enforcement mechanisms [9], [11]. The findings from Purwakarta Regency confirm this perspective, showing that manufacturers must balance control mechanisms such as audits with supportive initiatives like training and knowledge sharing to achieve meaningful ESG outcomes.

Overall, the study contributes to the growing body of research on ESG and sustainable supply chain management by providing qualitative insights into how collaboration shapes ESG implementation at the regional cluster level. While previous studies have largely focused on firm performance indicators or disclosure practices, this research highlights the micro-level interactions that enable ESG practices to become operational realities within the automotive supply chain. The results suggest that strengthening collaborative governance, enhancing supplier capabilities, and fostering long-term relational partnerships are critical strategies for advancing ESG implementation in regional manufacturing ecosystems.

## 5. Conclusion

This study concludes that supplier collaboration plays a crucial role in the effective implementation of ESG principles in the automotive industry in Purwakarta Regency. ESG practices in this context are not implemented in isolation at the firm level but are shaped through continuous interaction between manufacturers and suppliers. Collaborative mechanisms such as shared standards, regular audits, knowledge transfer, and capacity-building initiatives enable suppliers to gradually align their operational practices with environmental, social, and governance expectations. The presence of long-term relationships and trust further strengthens supplier commitment to ESG improvements. Nevertheless, the findings also reveal persistent challenges, particularly among small and medium-sized suppliers, including limited financial resources, technical capability, and varying levels of ESG awareness. These constraints highlight the need for flexible and supportive collaboration models rather than purely compliance-based approaches. Overall, this study suggests that strengthening supplier collaboration can enhance ESG performance across the automotive supply chain, contributing to regional sustainability and industrial resilience. Future research may expand the number of informants or adopt comparative approaches across regions or industries to deepen understanding of collaborative ESG implementation in emerging economies.

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