Proceedings of the International Conference on Industrial Engineering and Operations Management

Publisher: IEOM Society International, USA DOI: 10.46254/SA07.20260099
Published: August 4, 2026

Transparency and Power Dynamics: A Game-Theoretic Analysis of Supply Chain Due Diligence Regulations

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Abstract

Due diligence regulations such as the EU's Corporate Sustainability Due Diligence Directive and France's Duty of Vigilance Law hold downstream buyers legally responsible for sustainability violations in their supply chains, even though the compliance actions needed to prevent violations are chosen by upstream suppliers whose practices are hard to verify. This paper develops a game-theoretic model of a buyer-supplier relationship in which the supplier privately chooses a true compliance level, the buyer invests in a due-diligence capability that determines whether compliance becomes recognized in bargaining, and the parties negotiate a wholesale price based on the resulting recognized compliance score, while regulatory penalties depend on true compliance. Because commercial terms condition only on recognized compliance, a wedge opens between the information governing the relationship and the information governing enforcement. Under a complete-contracting benchmark, bargaining power redistributes surplus but leaves compliance undistorted. Once recognition is incomplete, the supplier appropriates only a partial share of the value created, generating underinvestment relative to the efficient benchmark. We show that stronger buyer bargaining power erodes supplier compliance by shrinking the supplier's appropriable share of recognized value, that greater due-diligence capability strengthens compliance by making true compliance more likely to be rewarded, and that harsher penalties can have a non-monotone effect, since they raise the value of closing the compliance gap while compressing the surplus from which the supplier is paid. The results imply that effective policy must jointly consider buyer liability, bargaining structure, and the audit systems that determine whether supplier compliance is economically recognized.

Keywords
Supply Chain Due Diligence, Game Theory, Bargaining Power, Sustainability Compliance and Audit Capability.

Biographies
Sara Rezaee Vessal is an Associate Professor in the Information Systems, Data Analytics and Operations Department at ESSEC Business School, France. She holds a doctorate in Operations Management from HEC Paris. Her research examines collaboration in decentralized supply chains, incentive design for new product development, and sustainable supply chain management, with publications in journals including Production and Operations Management, the European Journal of Operational Research, and the International Journal of Production Economics. She joined ESSEC as an Assistant Professor in 2017 and was promoted to Associate Professor in 2024.

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