

A Dynamic Mechanism for Achieving Sustainable Quality Supply

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Abstract

Various leading companies have realized the importance of sustainable quality supply and have initiated several sustainability programs such as the C.A.F.E. Practices by Starbucks. This paper aims to investigate whether these guidelines provide the right incentives and information structure for all parties to participate to achieve the intended long-term goal. To do so, we present a stylized multi-period two-party supply chain model with double-sided asymmetric information and dynamically changing environment. We construct a supply agreement between the two parties which leads to the desired equilibrium. We then compare the key elements of the agreement with the existing industry guidelines to gain insights. We find that some of the elements in our theoretical mechanism are consistent with the industry guidelines, such as a two-part nonlinear tariff payment structure. Yet the other elements are new and not seen in the existing guidelines. One important such element is the probabilistic decision rights when one party quits from the program. We expect this finding to provide a proactive tool to guide the administration of the sustainability programs.

Key words: *Supply chain, sustainability, quality, information asymmetry, mechanism design.*