

The Differential Impact of Supplier and Customer Concentration on Open Innovation: A study Based on Resource Dependence Theory and Knowledge-Based View

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Abstract

To sustain competitive advantage, firms increasingly adopt open innovation (OI), leveraging external collaborations to acquire knowledge and resources. While existing literature demonstrates the importance of supply chain relationships on innovation and its outcomes, the role of OI willingness is largely neglected. Grounded in Resource Dependence Theory (RDT) and the Knowledge-Based View (KBV), this study investigates how supplier concentration (SC) and customer concentration (CC) differentially influence focal firms' OI adoption, while also examining the moderating effects of main business uniqueness (MBU) and supply network betweenness centrality (BC). Using panel data from Chinese listed manufacturing firms from 2013 to 2022, we empirically test these relationships and further validate the findings through K-means cluster analysis. The results reveal three key insights: (1) SC exhibits a significantly negative relationship with OI, whereas CC has a positive effect; (2) MBU strengthens the positive link between CC and OI, while high BC amplifies SC's negative effect and attenuates CC's positive effect; and (3) cluster analysis demonstrates that SC's influence on OI outweighs CC's across all configurations. Moreover, MBU's moderating role is significant only in low SC-high CC clusters, whereas BC exhibits varying moderating effects depending on the SC-CC configuration (e.g., high SC-high CC vs. low SC-low CC). These findings advance the understanding of how supply chain structures shape OI strategies, offering practical insights for firms navigating diverse supply chain dependencies. OI has received increasing attention because it can help resource-deficient firms rapidly enhance their innovation capabilities. Accordingly, this study offers critical insights for engineering management practices by demonstrating how supply chain dependencies influence OI. First, firms must proactively mitigate supplier dependence risks, as high SC consistently hinders OI, even in customer-centric clusters. Managers

should regularly assess key suppliers' knowledge contributions and diversify sourcing strategies to avoid over-reliance. Second, firms in central network positions (high BC) should guard against complacency, as their dominance amplifies SC's OI-limiting effects. Periodic reviews of knowledge sources and diversified procurement are recommended to sustain OI. Low-CC and high-SC firms must also safeguard their own market knowledge through tighter partner contracts. Finally, firms with high MBU can leverage customer dependence to drive OI. By tailoring services to customer needs, they can transform MBU into a catalyst for external knowledge search and collaboration. These findings equip managers with strategies to navigate supply chain dependencies while fostering innovation.

Keywords

Open innovation, Supplier concentration, Customer concentration, Main business uniqueness, Betweenness centrality

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