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研究課題名（和文）Managing Competition and Cooperation in Supply Network for Buyer Innovation: A Social Network Perspective

研究課題名（英文）Managing Competition and Cooperation in Supply Network for Buyer Innovation: A Social Network Perspective

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研究成果の概要（和文）：本研究の目的は、供給者ネットワークにおける水平的なS-S競争と協力が、買い手の革新に与える影響を調査することである。S-S競争の結果は強力ではないが、負の二項回帰は、S-S競争と協力が買い手の革新に逆U字型の効果を与えることを示す。さらに、S-S競争が、S-S協力和買い手の革新の関係において、緩和効果を持ち得ることを示している。S-S競争とS-S協力の相互作用に関しては、供給者の間で適度な協力和穏やかな競争を同時に維持することが、買い手の革新にとって最善の選択であり、一方で、供給者の間での激しい競争と協力を同時に維持することもまた、買い手の革新にとって意外な効果をもたらす。

研究成果の学術的意義や社会的意義

This study contributes by linking the dyadic analysis of vertical relationships to the network analysis of supplier-supplier relations. It also provides insights to manufacturers' policymakers on how to strategically manage their supplier networks for improve their innovation performance.

研究成果の概要（英文）：This study has investigated the influence of horizontal S-S competition and cooperation in the supplier network on the ego manufacturer's innovation. It takes the ego manufacturer's supplier network as the analysis unit with data of 130 listed Japanese manufacturers and their supplier networks in 2016. The results indicate that S-S cooperation have inverted U-shaped effects on manufacturer's innovation and S-S competition can play a moderating role in the relationship between S-S cooperation and manufacturer's innovation. It also shows simultaneously maintaining low competition and moderate cooperation among suppliers is the best choice for manufacturer's innovation, but when there is high S-S competition, motivating high cooperation among suppliers is also a way to enhance manufacturer's innovation.

研究分野：strategic management

キーワード：innovation inter-firm relationship competition cooperation supplier network

様式 C - 19、F - 19 - 1、Z - 19 (共通)

1 . 研究開始当初の背景

Manufacturers have recognized that the way upstream suppliers work with each other is important for product innovation and the production of low-cost, high-quality goods (Wilhelm and Sydow, 2018; Wilhelm, 2011). As a contracting entity, a manufacturer can always play the “hub firm” role in its supplier network and manage the relationship among its suppliers. This forms a manufacturer-centered ego network with the “hub” manufacturer as the ego and its suppliers as the spokes or alters (Wilhelm and Sydow, 2018; Wu et al., 2010; Yang et al., 2017). One salient characteristic is that the manufacturer can encourage its suppliers to cooperate in product development and intentionally introduce competition among suppliers by playing them against each other (Pathak et al., 2014; Wilhelm and Kohlbacher, 2011). In addition to several obvious operational benefits such as maintaining inventory efficiency and obtaining low-cost, high-quality supplies (Liao et al., 2010), a firm’s supplier network is now increasingly viewed as an important innovation source (Bellamy et al., 2014; Narasimhan and Narayanan, 2013; Pillai and Bindroo, 2020). The focal firm can frequently absorb knowledge from suppliers within its supplier network, which acts as a “water source” (Pathak et al., 2019; Potter and Paulraj, 2021). Various supplier–supplier (S-S) cooperative and competitive relations affect knowledge activities in the supplier network, such as sharing, spillover, acquisition, and creation (Bengtsson and Kock, 2014; Potter and Paulraj, 2021; Wilhelm and Sydow, 2018; Wilhelm, 2011; Wilhelm and Kohlbacher, 2011). Thus, recognizing the importance of S-S relations in the supplier network for firm innovation, this study explores how S-S cooperation and competition in the supplier network affect the focal manufacturer’s innovation.

2 . 研究の目的

The study focuses on the horizontal competition among suppliers and vertical buyer-supplier relations in whole supplier network. Since the competition and cooperation in the supplier network would change the structure of the ego network for the focal buyer, according to the social network theory. Thus, the social network analysis is applied to go beyond dyadic- and triadic-level analyses to investigate how network-level S-S competition and cooperation in the supplier network affect a focal manufacturer’s innovation from the perspective of an ego network.

3 . 研究の方法

The study takes the ego manufacturer’s supplier network as the analysis unit, with data from 130 listed Japanese manufacturers and their supplier networks in 2016. The study takes a whole supplier network as the research object, using the panel data of the listed Japanese buyers in manufacturing industries and their networks of first-tier suppliers. The buyer’s information, supplier lists, supplier’s

information and partner lists can be collected from Nikkei Value Search and Osiris. The buyer's patents and coauthor patents among suppliers can be found from J-PlatPat and Trademark Office (USPTO) database. The study is about to be analyzed by Negative Binomial Regression, because of many zero-valued observations in the data set as using the joint patents as an independent variable.

Variables are mainly measured based on the social network analysis. Independent variables: (1) intensity of competition (the supplier-supplier competitive relations can be judged based on if the four-digit US SIC of suppliers are same, calculated in the supplier-supplier matrix); (2) intensity of cooperation (the supplier-supplier cooperative relations can be judged based on if they have partnerships or coauthor patents, calculated in the supplier-supplier matrix). Dependent variable: buyer innovation performance (the number of patents next year)

4 . 研究成果

The results indicate that S-S cooperation has inverted U-shaped effects on manufacturers' innovation, and S-S competition can play a moderating role in the relationship between S-S cooperation and the manufacturer's innovation. Under high or low competition scenarios, the level of cooperation was examined to identify where the manufacturer's innovation would be maximized. The results show that simultaneously maintaining low and moderate cooperation among suppliers is the best choice for manufacturer innovation, but when there is high S-S competition, motivating high cooperation among suppliers is also a way to enhance manufacturers' innovation. This study contributes by linking the dyadic analysis of vertical relationships to the network analysis of horizontal S-S relations. It also provides insights to manufacturers' policymakers on how to strategically manage their supplier networks and S-S relations and improve their innovation performance.

5. 主な発表論文等

〔雑誌論文〕 計1件（うち査読付論文 1件 / うち国際共著 0件 / うちオープンアクセス 0件）

1. 著者名 Yang Xiaotian	4. 巻 8
2. 論文標題 Coopetition for innovation in R&D consortia: Moderating roles of size disparity and formal interaction	5. 発行年 2020年
3. 雑誌名 Asia Pacific Journal of Management	6. 最初と最後の頁 1-24
掲載論文のDOI（デジタルオブジェクト識別子） 10.1007/s10490-020-09733-x	査読の有無 有
オープンアクセス オープンアクセスではない、又はオープンアクセスが困難	国際共著 -

〔学会発表〕 計1件（うち招待講演 0件 / うち国際学会 1件）

1. 発表者名 Xiaotian Yang
2. 発表標題 Effects of Competition and Cooperation in Supplier Network on Buyer Innovation: An Ego Network View
3. 学会等名 Academy of Management（国際学会）
4. 発表年 2021年

〔図書〕 計0件

〔産業財産権〕

〔その他〕

6. 研究組織

氏名 （ローマ字氏名） （研究者番号）	所属研究機関・部局・職 （機関番号）	備考
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7. 科研費を使用して開催した国際研究集会

〔国際研究集会〕 計0件

8. 本研究に関連して実施した国際共同研究の実施状況

共同研究相手国	相手方研究機関
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