Do resource differences between manufacturers and suppliers help or hinder product innovation of manufacturers? The moderating role of trust and contracts

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ABSTRACT

It is a common practice of manufacturers to involve suppliers in new product development (NPD). Extant literature indicates that supplier integration has mixed effects on manufacturers’ NPD and the contradicting findings result from either the external contingent factors or the tactical integration practices. We argue instead that the mixed effects are rooted in resource differences between manufacturers and suppliers. Further, we examine the functions of trust and contracts as the resource integration and coordination mechanisms to manage the effects of resource differences on product innovation of manufacturers. Based on a survey among 189 manufacturing firms, our research shows that resource differences follow an inverted U-shaped effect on product innovation of manufacturers and that trust strengthens while contract complexity attenuates the curvilinear relationship. As such, our research extends the existing body of literature to account for the divergent outcomes of supplier integration from the perspective of resource differences. Moreover, it demonstrates the double-edged effects of trust and contracts as devices of resource integration and coordination. Our research offers useful research and managerial implications.

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1. Introduction

Product innovations, the hallmark of value creation (Cooper, 2011), build on a variety of firm resources. Integrating suppliers’ resources is a common approach adopted by manufacturers to develop innovations (Song & Di Benedetto, 2008). As manufacturers routinely involve suppliers in new product development (NPD), extant literature has observed increasing research attentions to this popular strategy in supply chain. Some studies report an array of benefits accruing from extensive collaboration with the right suppliers, which facilitates manufacturers to shorten NPD time and reduce costs, and improve new product quality and performance (Handfield, Ragatz, Petersen, & Monczka, 1999; Petersen, Handfield, & Ragatz, 2003; Song & Di Benedetto, 2008; Wynstra, van Wheele, & Weggemann, 2001). However, others uncover either relatively little influence or even a negative effect of supplier involvement, thus questioning the unconditional benefits of involving suppliers in NPD of manufacturers (Das, Narasimhan, & Talluri, 2006; Eisenhardt & Tabrizi, 1995; Koufteros, Cheng, & Lai, 2007; Primo & Amundson, 2002).

To resolve the inconsistent findings, scholars propose the contingency approach and explore a set of contingent factors to account for the differential effects of supplier integration, such as technological uncertainty, supplier integration modes, costs of integration practices, and internal integration of manufacturers (Das et al., 2006; Koufteros, Vonderembse, & Jayaram, 2005; Koufteros et al., 2007; Perols, Zimmermann, & Kortmann, 2013; Petersen, Handfield, & Ragatz, 2005; Primo & Amundson, 2002; Wagner & Hoegl, 2006). While prior research yields rich insights that help us better understand the functions of supplier integration and the conditions of its success, several closely related, important strategic issues remain to be solved.

First, resource differences constitute the source of a tension in supplier integration that influences the outcomes of involving suppliers. On the one hand, manufacturers must integrate complementary resources of suppliers in order to create value. But, resource complementarity requires adequate resource differences between alliance partners in the first place (Das & Teng, 2000; Kim & Finkelstein, 2009). On the other hand, resource differences foment conflict and create impediment to value creation in alliances (Lavie, Haunschild, & Khanna, 2012; Parke, 1991). For example, the differences in organizational system, structure, and culture between GM and Toyota prevented the former from transferring and implementing the lean manufacturing system, structure, and culture between GM and Toyota prevented the former from transferring and implementing the lean manufacturing system, structure, and culture between GM and Toyota prevented the former from transferring and implementing the lean manufacturing system, structure, and culture between GM and Toyota prevented the former from transferring and implementing the lean manufacturing

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system of the latter (Inkpen, 2005). The mixed role of resource differences in value creation creates a trade-off in integrating suppliers, which could possibly account for the divergent impacts of supplier involvement. However, extant literature primarily focuses on those contingent variables that are either external to supply chain transactions (e.g. technological uncertainty) or occur ex post from the transactions (e.g. integration practices); relatively little attentions have been directed to the intrinsic forces of resource differences that exist ex ante but can affect the effectiveness of integrating suppliers in manufacturers’ NPD. This gap raises our first research question: Do resource differences between manufacturers and their suppliers help or hinder manufacturers’ product innovation?

Second, successful supplier integration requires governance mechanisms that structure a quality relationship and manage the transaction between manufacturers and suppliers (Burkert, Ivens, & Shan, 2012; Liker & Choi, 2004; Monczka, Handfield, Scannell, Ragatz, & Frayer, 2000; Wynstra et al., 2001). Trust and contracts are the regularly used mechanisms representing the informal and the formal approaches respectively to counteract opportunism and minimize transaction costs (e.g. Dyer & Chu, 2003; Lui & Ngo, 2004; Poppo & Zenger, 2002). Extending this traditional view, an emerging research stream brings attentions to functions of trust and contracts in resource exchange between buyers and suppliers (Cousins & Menguc, 2006; Mellewigt, Madhok, & Weibel, 2007; Villena, Revilla, & Choi, 2011; Zhou, Zhang, Sheng, Xie, & Bao, 2014). For example, while previous studies emphasized the benefits of trust in facilitating resource sharing (Kale, Singh, & Perlmutter, 2000; Uzzi, 1997), Zhou et al. (2014) argued that a high level of trust reduces buyers’ incentive and cognitive capabilities to search and process useful information from suppliers. Also, Mellewigt et al. (2007) theorized that contracts serve as a coordination device to integrate resources for value creation across organizational boundaries, whereas Faems, Janssens, Madhok, and Van (2008) found in a case study that complex contracts resulted in strict task division that limits inter-firm resource sharing.

Therefore, the evidence is not quite so clear as to whether trust and contracts are instrumental or detrimental for manufacturers to manage the resource differences with their suppliers in value creation. Extant literature with a narrowed focus on the tactical integration approaches respectively to counteract opportunism and minimize transaction costs (e.g. Dyer & Chu, 2003; Lui & Ngo, 2004; Poppo & Zenger, 2002). Extending this traditional view, an emerging research stream brings attentions to functions of trust and contracts in resource exchange between buyers and suppliers (Cousins & Menguc, 2006; Mellewigt, Madhok, & Weibel, 2007; Villena, Revilla, & Choi, 2011; Zhou, Zhang, Sheng, Xie, & Bao, 2014). For example, while previous studies emphasized the benefits of trust in facilitating resource sharing (Kale, Singh, & Perlmutter, 2000; Uzzi, 1997), Zhou et al. (2014) argued that a high level of trust reduces buyers’ incentive and cognitive capabilities to search and process useful information from suppliers. Also, Mellewigt et al. (2007) theorized that contracts serve as a coordination device to integrate resources for value creation across organizational boundaries, whereas Faems, Janssens, Madhok, and Van (2008) found in a case study that complex contracts resulted in strict task division that limits inter-firm resource sharing.

This paper seeks to address these questions and advance knowledge regarding the relationships between resource differences, trust and contracts, and value creation in supply chain. Our study contributes to extant literature in two major ways. First, we find that resource differences between suppliers and manufacturers follow an inverted U-shaped effect on product innovation of manufacturers, suggesting that resource differences have differential impacts on the effectiveness of involving suppliers in manufacturers’ NPD. In this sense, our research weighs in on current debate about supplier integration and account for the divergent outcomes of integrating suppliers from the perspective of resource differences. Second, we find that trust magnifies whereas contract complexity attenuates the inverted U effect of resource differences on product innovations, revealing the boundary conditions for the curvilinear effect of resource differences and demonstrating the double-edged role of trust and contracts in managing resource differences for value creation.

1 It is worth noting that our study does not focus on the specific practices of supplier involvement per se or examine how the level of supplier involvement influences manufacturers’ product innovation. Instead, this paper focuses on the effects of resource differences between the two parties given that suppliers are involved in the manufacturers’ NPD.
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