Research Paper

Top managers' managerial ties, supply chain integration, and firm performance in China: A social capital perspective☆

Meng Chen, Hefu Liu*, Shaobo Wei, Jibao Gu

School of Management, University of Science and Technology of China, Jinzhai Road 96, Hefei, Anhui, China

ARTICLE INFO

ABSTRACT

Firms are attempting to integrate with their supply chain partners to achieve superior firm performance. This study draws on social capital theory and supply chain literature to investigate how top managers' managerial ties influence supply chain integration, which consequently improves firm performance. This study further examines how the relationship between top managers' managerial ties and supply chain integration is moderated by market turbulence. By using triple-respondent, matched data of 176 Chinese manufacturing firms, we find that top managers' business ties are positively related to supply chain integration, whereas their political ties are not. Supplier and customer integration contribute to firm performance. Furthermore, market turbulence negatively moderates the business ties–supply chain integration relationship, but it positively moderates the political ties–supply chain integration linkage.

1. Introduction

As Chinese firms are becoming important for global supply chain, the low degree of supply chain integration (SCI) among Chinese firms or between international and Chinese firms impedes the efficiency of global supply chain management (SCM) (Liu, Ke, Wei, Gu, & Chen, 2010; Liu, Ke, Wei, & Hua, 2015; Zhao, Huo, Flynn, & Yeung, 2008). SCI reflects the extent to which a firm cooperates with key suppliers and customers to manage inter-firm business processes (Frohlich & Westbrook, 2001; Jayaram, Tan, & Nachiappan, 2010; Wiengarten, Humphreys, Gimenez, & McIvor, 2016). This integration enables firms to facilitate the flow of information, materials, products, and services across the supply chain at the operational level (Schoenherr & Swink, 2012; Wiengarten et al., 2016). Therefore, the literature widely regards SCI as an effective way to improve firm performance (Flynn, Huo, & Zhao, 2010; Huo, Ye, Zhao, & Shou, 2016; Wong, Boon-itt & Wong, 2011; Zhao, Feng, & Wang, 2015). The benefits of SCI have been acknowledged theoretically (Van der Vaart & van Donk, 2008), but firms are still struggling with its development (Cao, Huo, Li, & Zhao, 2015; Huo et al., 2016; Zhao et al., 2008). The SCM literature indicates that full integration with key suppliers and customers is rare and difficult to achieve (Huo et al., 2016) because of potential organizational, political, and resource-related challenges (Cao et al., 2015; Wiengarten, Pagell, Ahmed, & Gimenez, 2014). Under this condition, managers, especially those in Chinese firms, are left with minimal guidance on how to

proceed with SCI (Van der Vaart & van Donk, 2008). Therefore, the examination of SCI drivers in China is imperative and useful to practitioners and academics.

Scholars show increasing interest in the role of informal personal ties of top managers, namely, managerial ties, in SCM, especially in the Chinese context (Chen, Huang, & Sternquist, 2011; Shou, Zheng, & Zhu, 2016; Wang, Childerhouse, Kang, Huo, & Mathrani, 2016; Wang, Ye, & Tan, 2014). Scholars believe that firms may rely on top managers' managerial ties to develop and sustain supply chain relationships (Shou et al., 2016; Wang et al., 2016). For example, Cai, Jun, and Yang (2010) proposed that guanxi is positively related to information sharing with suppliers. Top managers' managerial ties have been widely categorized into business and political ties (Luo, Huang, & Wang, 2012; Peng & Luo, 2000). Business ties reflect the informal personal ties of the top managers of a firm with the top managers of other firms, whereas political ties refer to the informal personal ties of top managers with government officials (Sheng, Zhou, & Li, 2011). Both top managers' business and political ties have been proposed as important factors for firm competitive advantage in China (Luo et al., 2012; Peng & Luo, 2000). However, few SCM studies have empirically investigated the relationship between top managers' managerial ties and SCI.

China is experiencing massive changes in its economic, social, and legal institutions as the country undergoes the process of economic liberation and market transition (Sheng et al., 2011). These changes indicate the needs to consider the roles of business and political ties in

---

SCM. Specifically, "China does not have sufficiently strong institutional structures that support free markets" (Liu et al., 2015, p. 72). This makes firms in China face the challenges of underdeveloped factor markets, weak legal systems, lack of market intermediaries, and frequent changes in industrial regulations (Zhou, Li, Sheng, & Shao, 2014). Meanwhile, Chinese governments still maintain their macro-level influence on firms' actions by allocating scarce resource, regulating industry structure, and developing inclination policies, while decreasing direct micro-level involvement in firms' businesses (Bai, Sheng, & Li, 2016; Li & Zhang, 2007; Peng & Luo, 2000; Sheng et al., 2011). Under this condition, both top managers' business and political ties serve as effective informal social mechanisms to address the constraints of weak institutional structures (Berger, Herstein, Silbiger, & Barnes, 2015; Sheng et al., 2011). However, few studies have empirically differentiated the various roles of business and political ties in SCM (Cai et al., 2010), particularly in SCI.

The literature further indicates that the importance of top managers' managerial ties for a firm may depend on the market conditions the firm faces (Wang et al., 2014). Market turbulence varies among firms and enables top managers to apply managerial ties in various ways. A number of studies have explored the moderating effects of market turbulence on the role of managerial ties, but their findings are mixed (Chen & Wu, 2011; Li & Sheng, 2011; Sheng et al., 2011). For example, Li and Sheng (2011) showed that demand uncertainty weakens the relationship between managerial ties and financial performance. Wang, Jiang, Yuan, and Yi (2013) further argued that environmental turbulence could moderate the relationship between business ties and resource acquisition capability in a nonlinear manner, but it could negatively leverage the association between political ties and resource acquisition. China is transitioning to a market economy and lacks experience with market forces (Li & Sheng, 2011); thus, how market environment shapes the role of managerial ties in SCI should be examined. Unfortunately, few studies have empirically tested the potential various moderating effects of market turbulence on the influence of top managers' business and political ties on SCI.

To address these research gaps, the current study draws on social capital theory to investigate the impacts of top managers' business and political ties on SCI and, ultimately, firm performance. Specifically, we categorize SCI into supplier and customer integration because the literature indicates that these two factors have different developing mechanisms and varied impacts on firm performance (Frohlich & Westbrook, 2001; Zhao et al., 2008; Zhao, Huo, Selen, & Yeung, 2011). Lumping supplier and customer integration together may bias the examination of the relationship among managerial ties, SCI, and firm performance. We also suggest that market turbulence presents a negative moderating effect on the association between business ties and SCI and a positive moderating effect on the association between political ties and SCI. To test the research model, we collect data from matched triple respondent of 176 Chinese manufacturing firms. The results provide considerable support for the model.

2. Theoretical background and hypothesis development

2.1. Social capital theory and top managers' managerial ties

According to social capital theory, social capital could provide access to critical information and legitimacy that can be leveraged to realize positive outcomes (Luk et al., 2008; Luo et al., 2012). Specifically, social capital reflects "the ability of actors to extract benefits from their social structures, networks and memberships" (Davidsson & Honig, 2003, p. 307). In this view, the literature acknowledges the significance of social capital among individuals and organizations and suggests that social capital can facilitate individual and organizational actions (Adler & Kwon, 2002; Luk et al., 2008; Luo et al., 2012). For example, Adler and Kwon (2002) indicate that social capital could help firms acquire broad sources of accurate and timely information and

legitimacy from their partners. Therefore, social capital theory has been widely applied to explore the important role of social capital in bringing productive resources and favors from partners (Gu, Hung, & Tse, 2008; Luk et al., 2008).

According to social capital theory, scholars proposed that top managers' managerial ties can produce social capital to the firm, which is represented by these managers (Chen & Wu, 2011; Luo, 2003; Luo et al., 2012). It is suggested that top managers' managerial ties reflect their informal personal ties with their counterparts in external entities (Peng & Luo, 2000), which would further facilitate them to exchange favors with partners for the objectives of their firms (Park & Luo, 2001; Peng & Luo, 2000). These ties have been widely categorized into business and political ties (Peng & Luo, 2000; Sheng et al., 2011). Business ties are the informal personal relationships between the focal firm's top managers and those of other firms, such as customers, suppliers, competitors, and other market collaborators (Peng & Luo, 2000; Sheng et al., 2011), whereas political ties refer to a firm's top managers' informal personal interactions with various government officials, such as those in industrial bureaus, regulatory agencies of state banks and tax bureaus (Peng & Luo, 2000). As suggested by social capital theory, these ties can provide access to valuable information and legitimacy to facilitate organizational actions (Luk et al., 2008; Luo et al., 2012). Sheng et al. (2011) further argued that these two forms of ties should depend on informal personal mechanisms, rather than on arm's length transactions or formal contracts, to facilitate effect on organizational actions.

The SCM scholars increasingly realize that top managers' managerial ties can be capitalized to improve supply chain relationships (Chen et al., 2011; Wang et al., 2014; Wang et al., 2016). For example, Gu et al. (2008) argued that guanxi can significantly influence channel governance in the supply chain. Chen et al. (2011) proposed that a supplier's guanxi practice contributes to the economic satisfaction of its retailers during the stage of relationship maintenance. Wang et al. (2014) further presented the positive relationship between managerial ties and information sharing with supplier. However, most studies mainly presented managerial ties as one concept or only focused on the role of business ties in the supply chain (Chen & Wu, 2011; Gu et al., 2008; Wang et al., 2014). Meanwhile, certain scholars have questioned the importance of top managers' political ties in China as the country advances toward market-based economic systems (Chung, Wang, Huang, & Yang, 2016; Zhou et al., 2014).

However, Shi, Markoczy, and Stan (2014) argued that top managers' political ties remain significant for the success of firms in China. Indeed, Chinese governments have made immense effort to promote the management of supply chain by allocating scarce resources, regulating industry structure and developing inclination policy (Bai et al., 2016; Li & Zhang, 2007). Scholars then argued that firms normally acquire different information and legitimacy values from top managers' business and political ties (Chen & Wu, 2011; Luk et al., 2008), which indicate that these two ties may vary in terms of the patterns that influence SCI (Li, Chen, Liu, & Peng, 2014). For example, top managers' business ties may affect SCI by providing market-related information (Li, Chen, et al., 2014) and network legitimacy, namely, the degree to which their firm is perceived as desirable, proper, or appropriate in the network (Dacin, Oliver, & Roy, 2007; Sheng et al., 2011; Zhou et al., 2014). By contrast, top managers' political ties could influence SCI by offering information on government policy (Li, Chen, et al., 2014) and political legitimacy, namely, the extent to which firm actions are assumed as desirable and proper by government officials (Luk et al., 2008; Sheng et al., 2011).

2.2. Top managers' managerial ties and supply chain integration

Supplier and customer integration have been defined as the two fundamental dimensions of SCI (Frohlich & Westbrook, 2001; Wiengarten et al., 2016). Supplier integration refers to the

collaboration with key suppliers in managing inter-firm operation processes, such as strategic partnership, information sharing, collaborative planning, and joint product/service development (Wong, Boon-itt, & Wong, 2011). Customer integration reflects information sharing and close collaboration with key customers, which provide firms with insight into market demands and opportunities (Wong et al., 2011). The literature indicated that firms can leverage supplier and customer integration as a manner of improving firm performance (Flynn et al., 2010; Frohlich & Westbrook, 2001).

Recently, a number of scholars have applied social capital theory to examine the influence of social capital on SCM (Horn, Scheffler, & Schiele, 2014; Li, Ye, & Sheu, 2014; Min, Kim, & Chen, 2008; Wu, 2008; Yim & Leem, 2013). Yim and Leem (2013) presented that supply chain social capital significantly influences SCI. Horn et al. (2014) further argued that relational capital with suppliers contributes to supplier integration. However, these studies mainly focus on the firm level social capital, rather the social capital derived from the informal interpersonal ties of top managers. Indeed, an increased number of scholars have recognized the importance of top managers' informal personal ties in building and developing supply chain relationships (Chen et al., 2011; Shou et al., 2016; Wang et al., 2014; Wang et al., 2016). The literature has presented the role of such ties in affecting arm's length relationships in the supply chain (e.g., Chen et al., 2011; Shou et al., 2016; Wang et al., 2014) or information integration with suppliers (e.g., Cai et al., 2010). However, empirical evidence of how top managers' managerial ties, considering both business and political ties, play as social capital to influence SCI, including both supplier and customer integration, remains limited.

2.2.1. Top managers' business ties and SCI

According to social capital theory, top managers' business ties may promote the SCI of their firms because of benefits, such as potential information and network legitimacy. Specifically, top managers' business ties provide the firm with effective means to obtain information (Adler & Kwon, 2002). For example, ties with key suppliers' or customers' managers would enable top managers to acquire specific and tacit information about the business processes, technical and market knowledge, and management and strategic guidelines of suppliers and customers (Yang, Zhu, & Santoro, 2015). This information could enrich the firm's understanding of the capabilities and constraints of key suppliers and the expectations of key customers, which facilitates their SCI (Schoenherr & Swink, 2012). Ties with managers of other partners and competitors could help the firm acquire valuable information about the market and successful SCI experience (Huo et al., 2016). This information could facilitate firm's understanding of SCM and effectively manage communication and cooperation with suppliers and customers (Huo et al., 2016).

The literature also indicates that the top managers' business ties could benefit firms with network legitimacy, that is, social judgment of desirability, appropriateness, and acceptance within their network (Dacin et al., 2007; Zhou et al., 2014). Network legitimacy would facilitate the firm to achieve key suppliers' and customers' trust, which makes it easy to promote cooperation with suppliers and customers (Sheng et al., 2011). Network legitimacy could also provide firms with opportunities to obtain exclusive resources to develop SCI and avoid the opportunistic behaviors of their partners during integration (Wang et al., 2013). That means, with network legitimacy derived from business ties, a firm's suppliers and customers are likely to share information and collaborate with the firm (Shou et al., 2016).

H1. a. Top managers' business ties are positively associated with a firm's supplier integration.

b. Top managers' business ties are positively associated with a firm's customer integration.

2.2.2. Top managers' political ties and SCI

According to social capital theory, top managers' political ties could promote SCI because of policy information benefit and political legitimacy. First, top managers' political ties enable firms to access private and sensitive information about planned changes in government policies, policy intents, and industry reforms (Gu et al., 2008). This information could help the firm understand the value of SCI and promote investment on such integration. Meanwhile, the information could be applied to encourage key suppliers and customers and convince them of the value of SCI, thereby promoting key suppliers and customers to improve supply chain responsiveness to changing institutional and market environments (Cai et al., 2010). Therefore, top managers' political ties can improve SCI by facilitating information exchange and collaboration.

Second, top managers' political ties could assist their firm in gaining political legitimacy, which reflects "the extent to which government officials or agencies assume that the focal firm's actions are desirable and proper" (Sheng et al., 2011, p. 3). According to Cai et al. (2010), the Chinese government often implements policies that induce active collaboration and even directly participates in developing long-term and collaborative supply chain relationships. Under this condition, political legitimacy derived from political ties helps firms obtain assistance from the government to directly encourage key suppliers and customers to provide information and collaborate (Shou et al., 2016). Additionally, political legitimacy that stems from top managers' political ties would support firms to gain exclusive policy support from the government, such as low-interest loans from state banks, land use with reduced fees, and human resources (Li & Sheng, 2011; Zhou et al., 2014). These firms can use these direct resources or offer key suppliers and customers shared access to resources, such as dedicated human resources, information systems, and specific machines and apparatuses for information sharing, joint planning, and new product/service development (Huo et al., 2016; Wiengarten et al., 2014).

H2. a. Top managers' political ties are positively associated with a firm's supplier integration.

b. Top managers' political ties are positively associated with a firm's customer integration.

2.3. SCI and firm performance

Supplier and customer integration are widely considered as vital driving forces of firm performance (Flynn et al., 2010; Wong et al., 2011). Frohlich and Westbrook (2001) reported that strong supplier and customer integration can lead to high market share and profitability. Supplier integration assists firms in developing production plans, offering products and services timely, and consequently enhancing delivery speed (Flynn et al., 2010), which, in turn, improve firm performance. Supplier integration can cut down purchase cost by building close relationships with suppliers, which also contributes to firm performance (Zhao et al., 2015). Through customer integration, firms can leverage information embedded in collaborative processes, which enables them to comprehensively understand market expectations and opportunities (Flynn et al., 2010; Zhao et al., 2015). Hence, firms can accurately and rapidly respond to customer needs and requirements, improve service level for customer needs, and decrease stock-holding cost, thereby improving firm profitability (Swink, Narasimhan, & Wang, 2007). Droge, Jayaram, and Vickery (2004) found that customer integration can improve firm market share and financial performance. Thus, we propose that:

H3. a. Supplier integration is positively associated with firm performance.

b. Customer integration is positively associated with firm performance.

2.4. Moderating role of market turbulence

Market turbulence reflects frequent changes of customer composition and continuous changing preferences and demands (Wilden & Gudergan, 2015). Market turbulence could lead to irregular purchase, short product life cycle, and high rate of innovation, which induce uncertainty in the downstream and upstream supply chain (Boon-itt & Wong, 2011). The literature has tried to investigate the moderating effect of market turbulence on the role of top managers' managerial ties, but their findings are mixed (Li, Poppo, & Zhou, 2008; Li & Sheng, 2011; Wang et al., 2013). Some scholars suggested that such ties are desirable in a turbulent market (e.g., Li et al., 2008; Luo, 2003; Wang et al., 2013), whereas others indicated that market uncertainty dampens the effects of top managers' managerial ties (e.g., Gu et al., 2008; Li & Sheng, 2011). SCM researchers have documented that the effect of market turbulence matters on the development of SCI (Flynn, Koufteros, & Lu, 2016; Stonebraker & Liao, 2006; Wong & Boon-itt, 2008). These studies suggest the importance of investigating the moderating role of market turbulence in interpreting the influence of top managers' managerial ties.

In the current study, we propose that market turbulence will decrease the positive relationship between top managers' business ties and SCI. As Flynn et al. (2016) argued, market turbulence increases the complexity and uncertainty associated with SCI. For example, market turbulence could greatly change the value of existing supply chain relationship and make such value unpredictable (Flynn et al., 2016; Stonebraker & Liao, 2006). Indeed, market turbulence may cause collective blindness within a network connected by business ties (Chen & Wu, 2011). As Gu et al. (2008) argued, "the ties that bind may turn into the ties that blind" (p. 18). Top managers' business ties would limit the flow of new ideas into the network (Li & Sheng, 2011) and the focal firm's understanding of the value of SCI. This condition will increase the difficulty for a firm to understand the value of SCI through the business ties of top managers, which would also raise concern about the risk of SCI. As such, in a turbulent market, top managers' business ties would offer limited understanding on designing specific mechanisms of information sharing and collaboration with suppliers and customers to manage the flows of products and materials (Cheng, Chaudhuri, Farooq, & Wagner, 2016).

The literature indicates that the more turbulent the market, the more unstable the network legitimacy (Kumar & Das, 2007). Given this unstable context, network legitimacy that stems from top managers' business ties requires increased efforts to establish and function. When the market rapidly changes and destabilizes, parties in the business ties each would be likely to have their own agenda and anticipate to leverage the business ties for their own benefits (Shou et al., 2016). Under this condition, the members in the supply chain would be difficult to reach the mutual acknowledge that SCI is proper through top managers' business ties. Therefore, the role of top managers' business ties in promoting SCI would be limited in the turbulent market because of unstable network legitimacy.

H4. a. The relationship between top managers' business ties and supplier integration is weaker when market turbulence is high.

b. The relationship between top managers' business ties and customer integration is weaker when market turbulence is high.

By contrast, market turbulence may strengthen the effects of top managers' political ties on SCI. Specifically, political ties in a turbulent market can provide valuable information and guidelines to deal with unexpected changes (Luk et al., 2008). In China, the government would actively and directly intertwine the market to ensure the stability of planned economic development. For example, the government may increase their interference on the market through industry policy guidance when the market becomes turbulent (Li & Zhang, 2007). Thus, top managers' political ties would play an important role in providing firms with access to and correctly interpreting sensitive information on

industry reforms (Chung et al., 2016; Li & Zhang, 2007). Therefore, firms can share these policy information with key suppliers and customers to cope with challenges related to supply chain uncertainty, which effectively promotes integration across the firm's supply chain (Zhao et al., 2011).

A further turbulent market prioritizes political legitimacy. In a turbulent market, firms may encounter difficulty obtaining financial and human capital resources to develop SCI, because these resources become relatively limited and unreachable (Wang et al., 2013). Thus, top managers' political ties will be further important because political legitimacy facilitate firms to gain critical resource from the government (Luo, 2003). Evaluating the value of SCI using market information will be difficult in a turbulent market because of chaos and potential opportunism (Flynn et al., 2016; Stonebraker & Liao, 2006). Top managers' political ties will help the focal firm to promote SCI because political legitimacy will convince suppliers and customers that the focal firm's SCI is desirable and proper. Meanwhile, in a turbulent market, top managers' political ties will be further effective in preventing the focal firm's suppliers and customers opportunism behavior in the supply chain because of political legitimacy (Shou et al., 2016). Consequently, the value of top managers' political ties on supplier and customer integration are amplified in a turbulent market.

H4. c. The relationship between top managers' political ties and supplier integration is stronger when market turbulence is high.

d. The relationship between top managers' political ties and customer integration is stronger when market turbulence is high.

3. Method

3.1. Sample and data

To test our hypotheses, data were collected from firms in China's Yangtze River delta in 2016. To acquire a representative sample, we collaborated with a local administrative institution to conduct the survey. The institution is responsible for investigating industry development and informationization for the government. We obtained a sample pool of 1200 domestic firms by collaborating with this institution. The officials in this institution provided us the contact information of these firms. Initially, the officials followed our guidelines to issue a formal notification inviting firms to voluntarily participate in this research. We then invited senior managers to answer our online questionnaire. Although we only involved the institution to issue a notification and controlled the whole data collection process, the background of the institution could potentially cause biases toward questions of political ties. Therefore, to alleviate respondents' concerns and potential biases, the academic purpose of the research was emphasized in the online questionnaire's cover letter. We also mentioned that the confidentiality of individual respondent's response would be ensured and only the summary report would be submitted to the institution.

Given that our study focused on the effects of managerial ties in SCM, respondents were required to be members of top management teams and they must possess specific SCM knowledge. We identified three top managers (i.e., executive manager, production manager, and marketing manager) as key informants from each firm. Three separate questionnaires were developed for the research. Executive managers were required to finish the questionnaire used to examine the managerial ties of top managers and firm performance. Executive managers in China are appropriate respondents because they are specifically in charge of the day-to-day operations and the reception of government officials and top managers of business partners. Production managers finished the questionnaire designed to study supplier integration because they are responsible for the procurement and collaborations with suppliers. Marketing managers completed the questionnaire designed to study customer integration and market turbulence because they are accountable for these market-related issues. Therefore, utilizing the

M. Chen et al.

Table 1
Profile of samples (N = 176).

Characteristics	Samples	Percent (%)
Industry		
Metal, mechanical, and engineering	73	41.5
Pharmaceutical	13	7.4
Petrochemicals and chemicals	24	13.6
Electrical and electronics	16	9.1
Automobile	10	5.7
Food, alcohol, and beverage	20	11.4
Other manufacturing (e.g., wood and furniture, publishing, and printing, textiles and apparel)	20	11.4
Employee		
1–99	54	30.7
100–299	79	44.9
300–499	30	17.0
500–999	13	7.4
Firm age		
< 5 years	23	13.1
5–9 years	66	37.5
10–24 years	84	47.7
> 25 years	3	1.7

triple-respondent matched data can reduce the threat of common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

To increase response rate, we employed two research assistants to make follow-up phone calls to facilitate the data collection process. Finally, 622 firms responded to the online survey. After merging the surveys from executive, marketing, and production managers, 176 samples were used in the final analysis, which represents a response rate of 14.67%. The demographic data of these samples are shown in Table 1.

Although we collected data through triple-respondent matching, we further examined common method bias through Harman's one-factor test (Podsakoff et al., 2003). The result presented that 6 factors were extracted with eigenvalues higher than 1.0, accounting for 74.05% of the variance, and the first factor accounted for 15.50% of the variance. Additionally, we assessed the common method bias by comparing the fit between the one-factor model and the measurement model. The one-factor model showed a poor fit (χ^2 (df) = 2661.81(275)), and was inferior to (p < 0.01) the fit of measurement model ((χ^2 (df) = 518.7(260)). Therefore, common method bias was not a serious concern in this study.

Considering potential non-response bias, we compared the early and late groups of the survey (Armstrong & Overton, 1977). The sample was divided into two batches grounded on return time (early 25% and late 25%), and the two batches presented no significant differences on firm age, size, and industry type. The results indicated that non-response bias was not a major problem in this study.

3.2. Measurement

To develop the structured questionnaire, we draw on previously validated measures for related variables. As our research was conducted in the Chinese context, the draft versions of the questionnaire was translated and back-translated to improve the accuracy of translation. Four academic researchers with specialty in marketing and SCM reviewed the initial questionnaire and provided feedback. Afterwards, the revised Chinese questionnaire was pilot tested, and 30 potential respondents were interviewed to ensure that measures are comprehensible in the Chinese context. The items were measured by a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The measures are shown in Appendix A.

The items for top managers' business and political ties were adapted from Sheng et al. (2011), which measured top managers' overall social capital with managers at business partners and government officials. The measures of supplier and customer integration were adapted from

Wong et al. (2011). Market turbulence was measured using the items adapted from Wilden and Gudergan (2015). We adopted items from Sheng et al. (2011) to measure firm performance. Acquiring reliable and complete objective performance data in China is difficult (Luo et al., 2012). Prior studies have suggested that subjective and objective measures of firm performance are often positively related to each other (Wall et al., 2004). Therefore, we chose to adopt the subjective measure.

Three factors that may influence firm performance and SCI were controlled. First, firm industry was measured using industry dummies: Ind1 for metal, mechanical, and engineering industry; Ind2 for pharmaceutical and medical industry; Ind3 for petrochemicals and chemicals industry; Ind4 for electrical and electronics industry; Ind5 for automobile industry; and Ind6 for food, alcohol, and beverage industry. Second, firm size was measured by the number of employees, which ranged from 1 for < 100 employees to 4 for 500–999 employees. Firm age was measured by the operating years of the firm when managers respond to the survey, ranging from 1 for < 5 years to 4 for > 25 years. The details are shown in Table 1.

4. Results

4.1. Measurement model

We employed confirmatory factor analysis to test the validity of measures. The results are presented in Table 2 and Appendix A. The reliability of the measures was examined. The composite reliability values and Cronbach's α values all exceeded the criteria of 0.7, which indicated good reliability (Hair, Anderson, Babin, & Black, 2010). The convergent validity of the measures was also evaluated. All item loadings were higher than 0.60, as presented in Appendix A. The average variance extracted (AVE) scores were all higher than 0.50 (Hair et al., 2010). These results confirm the convergent validity of our measures. To further examine discriminant validity, we compared the square roots of AVEs for any two constructs with the correlations between constructs. As presented in Table 3, the square roots of AVEs are all higher than the correlations, which confirm the discriminant validity of our measures (Fornell & Larcker, 1981).

Given that the correlation between business ties and firm performance in Table 3 is slightly greater than the criteria of 0.60, multicollinearity test was conducted. Results indicated that the highest VIF was 2.31, suggesting that multicollinearity was not a serious concern.

4.2. Structural model

After examining the reliability and validity of measures, we further analyzed the main model by structural equation modeling using the SmartPLS software (2.0.M3 version) (Ringle, 2005). This study used SmartPLS for two major reasons. First, SmartPLS is ideally suitable for exploratory research and theory development, and has been extensively adopted in marketing and operations management research (Hair, Sarstedt, Ringle, & Mena, 2012; Roberts, Thatcher, & Grover, 2010). Second, SmartPLS is further advantageous with small sample sizes (Hair et al., 2012) and is recommended when the sample size is < 250 (Reinartz, Haenlein, & Henseler, 2009). Therefore, in this study, we

Table 2
Construct reliability and validity analyses.

	Cronbach's α	Composite reliability	AVE
Business ties	0.92	0.95	0.78
Political ties	0.90	0.94	0.84
Supplier integration	0.91	0.93	0.73
Customer integration	0.85	0.90	0.65
Market turbulence	0.71	0.83	0.54
Firm performance	0.92	0.95	0.87

M. Chen et al.

Table 3
Correlation matrix, means, and standard deviations.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Business ties	**0.88**													
2. Political ties	0.49**	**0.92**												
3. Supplier integration	0.43**	0.18*	**0.85**											
4. Customer integration	0.45**	0.23**	0.46**	**0.81**										
5. Market turbulence	0.19*	0.08	0.40**	0.43**	**0.73**									
6. Firm performance	0.64**	0.29**	0.35**	0.37**	0.19*	**0.93**								
7. Firm size	−0.11	0.05	−0.02	−0.04	0.02	−0.17*	n.a.							
8. Firm age	−0.10	0.09	−0.12	−0.12	−0.16	−0.18*	0.11	n.a.						
9. Ind1	0.03	0.03	0.04	0.16	0.06	0.00	−0.09	0.00	n.a.					
10. Ind2	0.09	−0.04	0.02	0.05	−0.04	0.07	0.02	0.09	−0.24**	n.a.				
11. Ind3	0.06	0.10	0.00	−0.10	−0.09	0.02	−0.14	0.11	−0.33**	−0.11	n.a.			
12. Ind4	−0.07	0.01	−0.08	−0.12	−0.05	−0.11	0.09	−0.06	−0.27**	−0.09	−0.13	n.a.		
13. Ind5	−0.06	0.01	−0.02	0.07	−0.13	−0.05	0.02	0.17*	−0.21**	−0.07	−0.10	−0.08	n.a.	
14. Ind6	0.03	0.03	0.01	−0.04	0.14	0.13	0.02	−0.16*	−0.30**	−0.10	−0.14	−0.11	−0.09	n.a.
Mean	4.41	4.17	4.15	4.24	3.75	4.10								
S.D.	0.54	0.68	0.54	0.53	0.56	0.65								

Note: Elements along diagonal (in bold) are square roots of AVE. n.a. = not applicable.
  * $p < 0.05$.
  ** $p < 0.01$.
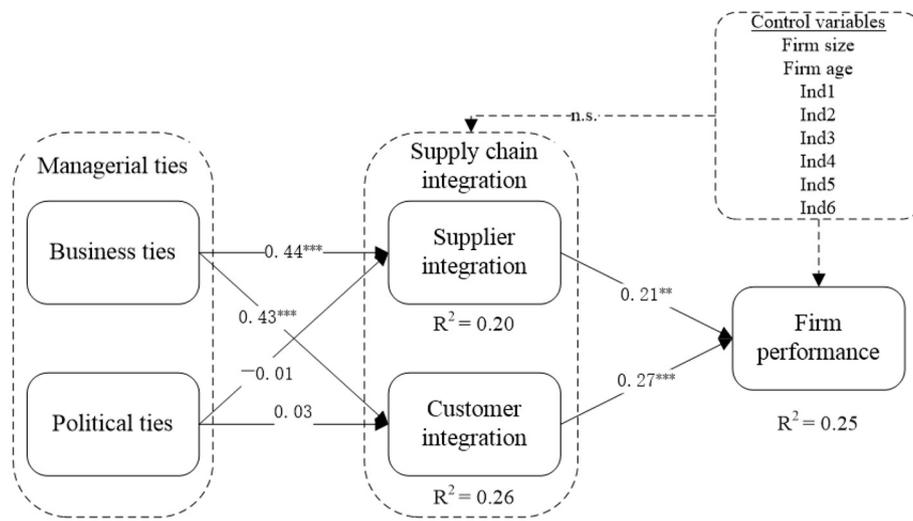
Note: ** $p<0.01$; *** $p<0.001$.

Fig. 1. Results of the main model.

deemed that SmartPLS is appropriate for data analysis. Fig. 1 presents the path coefficients of the model, and the model explains 20%–26% of the variance, thereby indicating its good predictive power. Specifically, business ties are significantly related to both supplier ($\beta = 0.44$, $p < 0.001$) and customer integration ($\beta = 0.43$, $p < 0.001$), which support H1a and H1b. Political ties are unrelated to both supplier ($\beta = -0.01$, $t = -0.15$) and customer integration ($\beta = 0.03$, $t = 0.34$), which reject H2a and H2b. As anticipated in H3a and H3b, the results indicate that both supplier ($\beta = 0.21$, $p < 0.01$) and customer integration ($\beta = 0.27$, $p < 0.001$) are significantly associated with firm performance. Additionally, regarding the control variables' effects on SCI and firm performance, the results indicate that except for the significant relationship between firm size and firm performance ($\beta = -0.15$, $p < 0.05$), the controls are not significantly related to SCI and firm performance.

4.3. Moderation analyses

Before conducting moderating effect analysis, we mean-centralized the scale used to construct the interaction terms. Table 4 shows that

market turbulence has a significant negative moderating effect on the association between business ties and supplier integration ($\beta = -0.24$, $p < 0.05$), which supports H4a. In addition, market turbulence negatively moderates the linkage between business ties and customer integration ($\beta = -0.24$, $p < 0.01$), which supports H4b. Furthermore, results show that market turbulence has a positive moderating effect on the association between political ties and supplier integration ($\beta = 0.25$, $p < 0.01$). Hence, H4c is supported. In addition, market turbulence can strengthen the association between political ties and customer integration ($\beta = 0.20$, $p < 0.05$), which supports H4d.

To clearly present the moderating effects, this study follows Dawson (2014) and plots the interaction effects. Fig. 2a and b illustrate that business ties are significantly positively associated with supplier ($\beta_{high} = 0.21$, $p < 0.05$) and customer integration ($\beta_{high} = 0.20$, $p < 0.05$), respectively, when market turbulence is at a high level. When market turbulence is at a low level, the effect of business ties on supplier ($\beta_{low} = 0.56$, $p < 0.001$) and customer integration ($\beta_{low} = 0.54$, $p < 0.001$) are all significant. Fig. 2c and d illustrate that the effects of political ties on supplier integration ($\beta_{high} = 0.18$, $t = 1.65$) are not significant, but their effects on customer integration

Table 4
Standardized regression estimates: moderating test results.

	Supplier integration				Customer integration			
	Model 1	Model 2	Model 3	Model4	Model 5	Model 6	Model 7	Model 8
Controls								
Firm size	0.01	0.04	0.03	0.02	0.00	0.03	0.01	0.01
Firm age	−0.14	−0.09	−0.05	−0.05	−0.17	−0.12	−0.08	−0.08
Ind1	0.06	−0.01	0.00	0.01	0.23	0.15	0.15	0.17
Ind2	0.05	−0.02	0.00	−0.01	0.13	0.05	0.08	0.07
Ind3	0.04	−0.02	0.01	0.02	0.03	−0.05	−0.01	0.00
Ind4	−0.06	−0.06	−0.04	−0.03	−0.04	−0.06	−0.03	−0.01
Ind5	0.03	0.01	0.05	0.06	0.16	0.14	0.19*	0.19*
Ind6	0.01	−0.03	−0.06	−0.05	0.03	−0.02	−0.05	−0.04
Direct effect variables								
Business ties		0.44***	0.38***	0.38***		0.42***	0.36***	0.37***
Political ties		−0.02	−0.03	−0.03		0.04	0.03	0.04
Market turbulence			0.34***	0.35***			0.37***	0.38***
Interactions								
Business ties × Market turbulence				−0.24*				−0.24**
Political ties × Market turbulence				0.25**				0.20*
R^2 value	0.02	0.20	0.30	0.33	0.08	0.26	0.38	0.41
Adjusted R^2 value	−0.02	0.15	0.26	0.28	0.03	0.22	0.34	0.36
F change	0.52	17.94***	24.23***	3.91*	1.69	21.00***	32.26***	3.57*
F value	0.52	4.09***	6.45***	6.25***	1.69	5.88***	9.29***	8.65***

* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

($\beta_{high} = 0.20$, $p < 0.05$) are significant when the market turbulence is at a high level. When the market turbulence is at a low level, the effects of political ties on supplier integration ($\beta_{low} = −0.23$, $p < 0.05$) are significant, but their effects on customer integration ($\beta_{low} = −0.13$, $t = −1.22$) are not significant.

5. Discussion and implications

Achieving superior firm performance by developing SCI is a core and serious challenge for every firm (Frohlich & Westbrook, 2001; Jayaram et al., 2010; Wiengarten et al., 2016). The present study aims

a

b

c

d
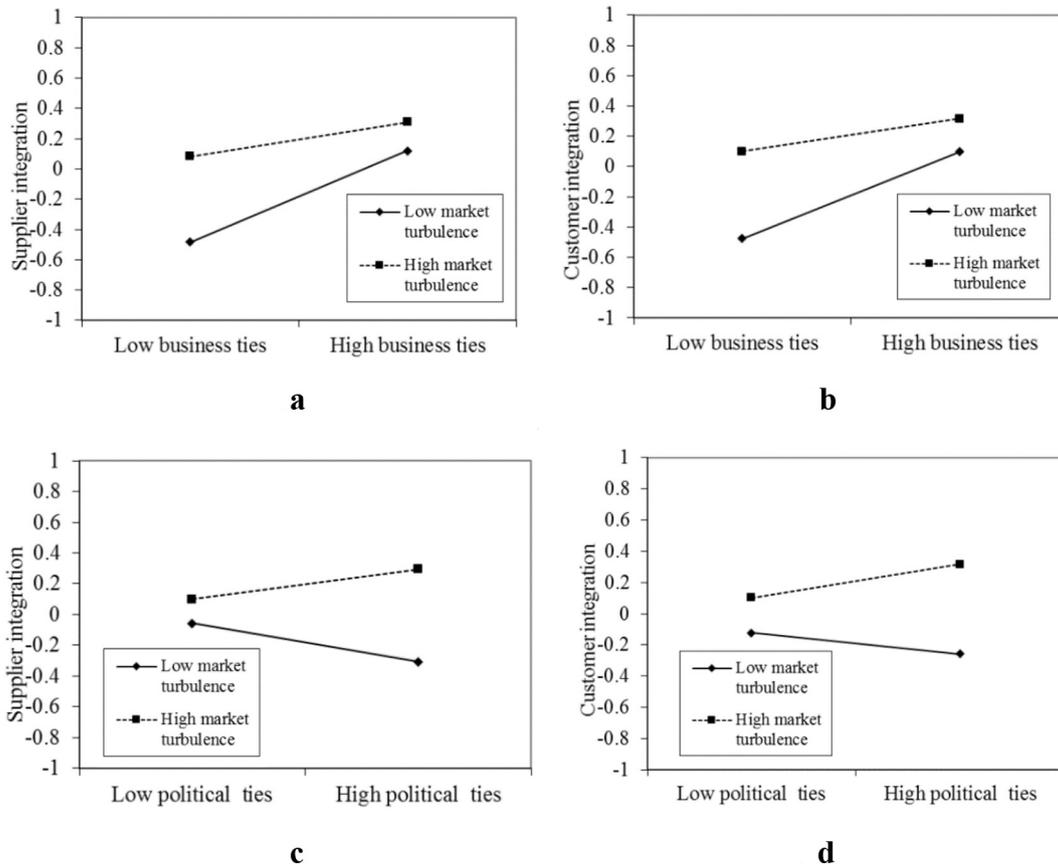
Fig. 2. The moderating effect of market turbulence on the relationship between managerial ties and supply chain integration.

to overcome this challenge by advancing the understanding on the relationship between top managers' managerial ties, SCI, and firm performance. We applied social capital theory to investigate how top managers' business and political ties are related to supplier and customer integration, which are linked to firm performance. We also explored how market turbulence moderates the association between top managers' managerial ties and SCI. Our empirical findings on the effects of managerial ties, SCI, and market turbulence are not only consistent with prior research, but also provide new insights about the association between managerial ties and SCI.

This study enriches SCI research by examining the social capital factors' effects on both supplier and customer integration. Given that top managers' managerial ties are the key social capital, this study reveals that managerial ties are appropriate paradigms for SCI research. The application of top managers' managerial ties in SCI is rather limited, whereas literature in strategy and organizational behavior has already examined managerial ties (Chen & Wu, 2011; Peng & Luo, 2000; Wang et al., 2013; Zhou et al., 2014). Wang et al. (2014) urged scholars to examine SCM issues from the managerial ties' perspective. This study was conducted partly as a response to their call. From the social capital theory's perspective, this study extends our current understanding of the influence of top managers' managerial ties on SCI. Previous studies have observed the impact of top managers' guanxi on supply chain relationships in China (Chen et al., 2011; Shou et al., 2016; Wang et al., 2016); however, minimal attention is given to the effects of top managers' managerial ties, especially political ties on SCI. The findings suggest the notion that "firms are not only economically rational, but also socially rational entities" (Liu et al., 2010, p. 381).

In line with evidence of the relationship between SCI and firm performance, this study has provided empirical evidence of the performance implications of SCI. Consistent with SCI literature, the findings have highlighted the critical role of both supplier and customer integration in achieving superior firm performance (Frohlich & Westbrook, 2001). Meanwhile, the results strongly support the claim that top manager's business ties can help the firm improve supplier and customer integration. Social capital theory suggests that, top managers' informal personal ties with other firms' managers can help achieve information benefit and network legitimacy (Luk et al., 2008; Luo et al., 2012). These findings are consistent with prior studies, which proposed that manager's business ties can help develop integrated supply chain relationships (Chen et al., 2011; Wang et al., 2014). This study responds to SCM scholars who have stressed the importance of empirically studying the relationship between managers' business ties and SCI (Cai et al., 2010; Wang et al., 2014). Our findings highlight the significance of top managers' business ties in developing the firm's supplier and customer integration; thus, we extended literature related to SCI antecedents (Cao et al., 2015; Huo et al., 2016; Wang et al., 2016; Zhao et al., 2008).

However, we obtained surprising findings that top managers' political ties are insignificantly related to both customer and supplier integration. These findings are inconsistent with previous studies that suggest that firms pursue political ties to manage their inter-organizational relationships (Shou et al., 2016). However, these findings partially support some scholars' argument that political ties "tend to be less important in transitional economies when legal and political institutions have been evolving with market liberation and economic reform" (Shu, Page, Gao, & Jiang, 2012, p. 139). These findings must be interpreted with caution and should not be regarded as evidence that top managers' political ties are unimportant for SCI. A plausible explanation for these unexpected results is that the effect of top managers' political ties on SCI is leveraged by contingent factors. China is improving its market systems and institutional structures through economic transition (Zhou et al., 2014). Under this condition, Chinese governments have controlled the direct involvement in business activities, especially in stable markets (Bai et al., 2016; Li & Zhang, 2007; Sheng et al., 2011). Our moderating findings provide empirical evidence.

We found that top managers' political ties are positively associated with customer integration in a turbulent market, rather in a stable market. This finding is consistent with our hypothesis, and reinforces the notion that significant market turbulence makes firms in China heavily rely on policy information and resources in response to the continuous customer changes in demands, in price or cost structures, and in the competition (Lin, Li, & Chen, 2006; Rauch, Wiklund, Lumpkin, & Frese, 2009). That means, market turbulence can push the firm to apply top managers' political ties to acquire policy information and political legitimacy to access to scarce resources, such as low-interest loans from state bank, land use with reduced fees, and human resources (Zhou et al., 2014). Thus, firms may further engage in customer integration.

Our findings indicated that the effects of top managers' political ties on supplier integration were negative (not positive) for firms operating under low turbulence but insignificant for firms operating under high turbulence. Apparently, a stable market facilitates ease in forecasting outcomes and resource acquisition for suppliers. When suppliers' future is certain without significant threat, they may likely prefer market mechanisms (Bai et al., 2016) to integrate with the focal firm. However, the focal firm applies top managers' political ties in promoting such integration, which will present the signal that the focal firm may not collaborate with suppliers totally based on market mechanism. Suppliers may interpret the focal firms' top managers' political ties as the additional managerial controls that suppress them and push their efforts, which cause suppliers resisting to integrate with the focal firm.

Consistent with our expectation, the results depict the moderating effect of market turbulence on the relationship between business ties and SCI. The positive relationships between top managers' business ties and SCI are evident in both high and low turbulent markets, whereas the relationships are stronger for firms operating in low turbulent market than firms operating in high turbulent market. This finding indicates that although developing SCI in turbulent market may be difficult, the effect of top managers' business ties on SCI is equally significant in both high and low turbulent markets. However, the findings further support the notion that market uncertainty can weaken the effect of business ties (Li & Sheng, 2011). Improving SCI through business ties is less efficient in a highly turbulent market, because market turbulence requires openness to new information and hampers firms to obtain legitimacy from business ties.

The present study further provides important guidance for managers. First, top managers must recognize the importance of cultivating and maintaining social networks with business partners, particularly in the transitional economy of China. Our findings indicate that high business ties are accompanied by enhanced supplier and customer integration. This finding suggests that managers should pay focus on social capital in business ties and related SCM practices should be introduced to help top managers build such ties with top managers of other firms. Second, managers should be aware of market turbulence that can influence the roles of top managers' managerial ties in promoting SCI. Our findings indicate that a firm in a stable market could promote SCI by achieving valuable information and network legitimacy from top managers' business ties. However, top managers should be cautious about the negative impact of their political ties on supplier integration in the stable market. By contrast, top managers in a turbulent market can apply their political ties to promote customer integration and use business ties to improve both customer and supplier integration. Top managers should realize that the role of business ties in affecting SCI is weaker in turbulent market than in stable market. However, Adler and Kwon (2002) contended that social capital "may depreciate with non-use (and with abuse)" (p. 22). This finding indicates that mangers should avoid using managerial ties with opportunistic behaviors in the stable and turbulent market, and they should be cautious in cultivating and applying top managers' business and political ties to affect supply chain partners' actions.

6. Limitations and future research

We acknowledge several limitations of this research, which may provide some avenues for future research. First, the current study tested the hypotheses based on the cross-sectional data. Given that the relationship between top managers' managerial ties and SCI may develop as a gradual process, a longitudinal study could deserve further examination to test their possible causal relationships. The present study applied the data collected in the Yangtze River delta in China to test the hypotheses. This region is one of the populated and most economically developed region in China and has become an important part of global supply chain. However, the market, economic, and institutional mechanisms in this region are specific. Thus, the demographic information from the samples may limit the generalizability of our findings. For example, the role of government and the outcome of political ties, such as resource access, may differ in various regions and countries. Therefore, a research on the role of managerial ties in various regions in China and other countries may bring insightful understanding.

Second, the measure of managerial ties in this study is holistic and may not capture their nature and content. We adopted these measures from existing literature and applied strict operationalization to improve the validity and compatibility of indicators. However, the measures did not reflect the content of the relationships. For example, the measures of political ties did not test government support (e.g., policy information benefit and political legitimacy) related to political ties. Therefore, future research could develop indicators to conceptualize and measure the content and nature of top managers' managerial ties.

Finally, other institutional or environmental factors may leverage the relationship between top managers' managerial ties and SCI. Future studies may extend the scope of the current study by investigating the moderating effects of technological turbulence, general government support, competition, and market development on the relationship between managerial ties and SCI. Future studies can also examine the potential mediating mechanisms of the actual benefits derived from managerial ties on the relationship between managerial ties and SCI.

Appendix A. Measures

Constructs and measures	Loading
Business ties	
The top managers at our firm have built good connections with managers at	
1.Supplier firms	0.95
2.Customer firms	0.90
3.Competitor firms	0.70
4.Marketing-based collaborators	0.92
5.Technological collaborators	0.94
Political ties	
1. The top managers at our firm have maintained good personal relationships with officials in various levels of government.	0.94
2. The top managers at our firm developed good connections with officials in regulatory and supporting organizations such as tax bureaus, state banks, and commercial administration bureaus.	0.93
3. So far, our firm's relationship with regional government officials has been in a good shape.	0.88
Supplier integration	
1. We share information to our major suppliers through information technologies.	0.83
2. We have a high degree of strategic partnership with suppliers.	0.81
3. We have a high degree of joint planning to obtain rapid response ordering process (inbound) with suppliers.	0.90
4. Our suppliers provide information to us in the production and procurement processes.	0.90
5. Our suppliers are involved in our product development processes.	0.85
Customer integration	
1. We have a high level of information sharing with major customers about market information.	0.85
2. We share information to major customers through information technologies.	0.87
3. We have a high degree of joint planning and forecasting with major customers to anticipate demand visibility.	0.80
4. Our customers provide information to us in the procurement and production processes.	0.76
5. Our customers are involved in our product development processes.	0.73
Market turbulence	
1. In our kind of business, customers' product preferences change quite a bit over time.	0.80
2. We are witnessing demand for our products and services from customers who have never bought them before.	0.74
3. We cater to many of the same customers that we used to in the past.	0.66
4. It is very difficult to predict any changes in this marketplace.	0.73
Firm performance	
Our firm's overall performance compared with major competitors over the past year on	
1. Sales growth rate	0.95
2. Market share growth	0.96
3. Growth rate of profit	0.88

Reference

Adler, P. S., & Kwon, S.-W. (2002). Social capital: Prospects for a new concept. *Academy of Management Review, 27*(1), 17–40.
Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research, 14*(3), 396–402.

Bai, X., Sheng, S., & Li, J. J. (2016). Contract governance and buyer–supplier conflict: The moderating role of institutions. *Journal of Operations Management, 41*, 12–24.
Berger, R., Herstein, R., Silbiger, A., & Barnes, B. R. (2015). Can guanxi be created in Sino–Western relationships? An assessment of western firms trading with China using the GRX scale. *Industrial Marketing Management, 47*, 166–174.
Boon-itt, S., & Wong, C. Y. (2011). The moderating effects of technological and demand uncertainties on the relationship between supply chain integration and customer

delivery performance. *International Journal of Physical Distribution & Logistics Management, 41*(3), 253–276.

Cai, S., Jun, M., & Yang, Z. (2010). Implementing supply chain information integration in China: The role of institutional forces and trust. *Journal of Operations Management, 28*(3), 257–268.

Cao, Z., Huo, B., Li, Y., & Zhao, X. (2015). The impact of organizational culture on supply chain integration: A contingency and configuration approach. *Supply Chain Management: An International Journal, 20*(1), 24–41.

Chen, X., & Wu, J. (2011). Do different guanxi types affect capability building differently? A contingency view. *Industrial Marketing Management, 40*(4), 581–592.

Chen, Z., Huang, Y., & Sternquist, B. (2011). Guanxi practice and Chinese buyer–supplier relationships: The buyer's perspective. *Industrial Marketing Management, 40*(4), 569–580.

Cheng, Y., Chaudhuri, A., Farooq, S., & Wagner, B. (2016). Interplant coordination, supply chain integration, and operational performance of a plant in a manufacturing network: A mediation analysis. *Supply Chain Management: An International Journal, 21*(5).

Chung, H. F. L., Wang, C. L., Huang, P.-h., & Yang, Z. (2016). Organizational capabilities and business performance: When and how does the dark side of managerial ties matter? *Industrial Marketing Management, 55*, 70–82.

Dacin, M. T., Oliver, C., & Roy, J. P. (2007). The legitimacy of strategic alliances: An institutional perspective. *Strategic Management Journal, 28*(2), 169–187.

Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing, 18*(3), 301–331.

Dawson, J. F. (2014). Moderation in management research: What, why, when, and how. *Journal of Business and Psychology, 29*(1), 1–19.

Droge, C., Jayaram, J., & Vickery, S. K. (2004). The effects of internal versus external integration practices on time-based performance and overall firm performance. *Journal of Operations Management, 22*(6), 557–573.

Flynn, B. B., Huo, B., & Zhao, X. (2010). The impact of supply chain integration on performance: A contingency and configuration approach. *Journal of Operations Management, 28*(1), 58–71.

Flynn, B. B., Koufteros, X., & Lu, G. (2016). On theory in supply chain uncertainty and its implications for supply chain integration. *Journal of Supply Chain Management, 52*(3), 3–27.

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research,* 382–388.

Frohlich, M. T., & Westbrook, R. (2001). Arcs of integration: An international study of supply chain strategies. *Journal of Operations Management, 19*(2), 185–200.

Gu, F. F., Hung, K., & Tse, D. K. (2008). When does guanxi matter? Issues of capitalization and its dark sides. *Journal of Marketing, 72*(4), 12–28.

Hair, J. F., Anderson, R. E., Babin, B. J., & Black, W. C. (2010). *Multivariate data analysis* (7th ed.). Englewood Cliffs: Prentice-Hall.

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science, 40*(3), 414–433.

Horn, P., Scheffler, P., & Schiele, H. (2014). Internal integration as a pre-condition for external integration in global sourcing: A social capital perspective. *International Journal of Production Economics, 153*, 54–65.

Huo, B., Ye, Y., Zhao, X., & Shou, Y. (2016). The impact of human capital on supply chain integration and competitive performance. *International Journal of Production Economics, 178*, 132–143.

Jayaram, J., Tan, K.-C., & Nachiappan, S. P. (2010). Examining the interrelationships between supply chain integration scope and supply chain management efforts. *International Journal of Production Research, 48*(22), 6837–6857.

Kumar, R., & Das, T. (2007). Interpartner legitimacy in the alliance development process. *Journal of Management Studies, 44*(8), 1425–1453.

Lin, B.-W., Li, P.-C., & Chen, J.-S. (2006). Social capital, capabilities, and entrepreneurial strategies: A study of Taiwanese high-tech new ventures. *Technological Forecasting and Social Change, 73*(2), 168–181.

Li, H., & Zhang, Y. (2007). The role of managers' political networking and functional experience in new venture performance: Evidence from China's transition economy. *Strategic Management Journal, 28*(8), 791–804.

Li, J. J., Poppo, L., & Zhou, K. Z. (2008). Do managerial ties in China always produce value? Competition, uncertainty, and domestic vs. foreign firms. *Strategic Management Journal, 29*(4), 383–400.

Li, J. J., & Sheng, S. (2011). When does guanxi bolster or damage firm profitability? The contingent effects of firm-and market-level characteristics. *Industrial Marketing Management, 40*(4), 561–568.

Li, Y., Chen, H., Liu, Y., & Peng, M. W. (2014). Managerial ties, organizational learning, and opportunity capture: A social capital perspective. *Asia Pacific Journal of Management, 31*(1), 271–291.

Li, Y., Ye, F., & Sheu, C. (2014). Social capital, information sharing and performance: Evidence from China. *International Journal of Operations & Production Management, 34*(11), 1440–1462.

Liu, H., Ke, W., Wei, K. K., Gu, J., & Chen, H. (2010). The role of institutional pressures and organizational culture in the firm's intention to adopt internet-enabled supply chain management systems. *Journal of Operations Management, 28*(5), 372–384.

Liu, H., Ke, W., Wei, K. K., & Hua, Z. (2015). Influence of power and trust on the intention to adopt electronic supply chain management in China. *International Journal of Production Research, 53*(1), 70–87.

Luk, C.-L., Yau, O. H. M., Sin, L. Y. M., Tse, A. C. B., Chow, R. P. M., & Lee, J. S. Y. (2008). The effects of social capital and organizational innovativeness in different institutional contexts. *Journal of International Business Studies, 39*(4), 589–612.

Luo, Y. (2003). Industrial dynamics and managerial networking in an emerging market: The case of China. *Strategic Management Journal, 24*(13), 1315–1327.

Luo, Y., Huang, Y., & Wang, S. L. (2012). Guanxi and organizational performance: A meta-

analysis. *Management and Organization Review, 8*(1), 139–172.

Min, S., Kim, S. K., & Chen, H. (2008). Developing social identity and social capital for supply chain management. *Journal of Business Logistics, 29*(1), 283–304.

Park, S. H., & Luo, Y. (2001). Guanxi and organizational dynamics: Organizational networking in Chinese firms. *Strategic Management Journal, 22*(5), 455–477.

Peng, M. W., & Luo, Y. (2000). Managerial ties and firm performance in a transition economy: The nature of a micro-macro link. *Academy of Management Journal, 43*(3), 486–501.

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879.

Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship Theory and Practice, 33*(3), 761–787.

Reinartz, W., Haenlein, M., & Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. *International Journal of Research in Marketing, 26*(4), 332–344.

Ringle, C. M. (2005). SmartPLS 2.0 (M3). http://www.smartpls.de.

Roberts, N., Thatcher, J. B., & Grover, V. (2010). Advancing operations management theory using exploratory structural equation modelling techniques. *International Journal of Production Research, 48*(15), 4329–4353.

Schoenherr, T., & Swink, M. (2012). Revisiting the arcs of integration: Cross-validations and extensions. *Journal of Operations Management, 30*(1–2), 99–115.

Sheng, S., Zhou, K. Z., & Li, J. J. (2011). The effects of business and political ties on firm performance: Evidence from China. *Journal of Marketing, 75*(1), 1–15.

Shi, W., Markoczy, L., & Stan, C. V. (2014). The Continuing importance of political ties in China. *Academy of Management Perspectives, 28*(1), 57–75.

Shou, Z., Zheng, X., & Zhu, W. (2016). Contract ineffectiveness in emerging markets: An institutional theory perspective. *Journal of Operations Management, 46*, 38–54.

Shu, C., Page, A. L., Gao, S., & Jiang, X. (2012). Managerial ties and firm innovation: Is knowledge creation a missing link? *Journal of Product Innovation Management, 29*(1), 125–143.

Stonebraker, P. W., & Liao, J. (2006). Supply chain integration: Exploring product and environmental contingencies. *Supply Chain Management: An International Journal, 11*(1), 34–43.

Swink, M., Narasimhan, R., & Wang, C. (2007). Managing beyond the factory walls: Effects of four types of strategic integration on manufacturing plant performance. *Journal of Operations Management, 25*(1), 148–164.

Van der Vaart, T., & van Donk, D. P. (2008). A critical review of survey-based research in supply chain integration. International Journal of Production Economics, 111(1), 42–55.

Wang, B., Childerhouse, P., Kang, Y., Huo, B., & Mathrani, S. (2016). Enablers of supply chain integration: Interpersonal and interorganizational relationship perspectives. *Industrial Management & Data Systems, 116*(4), 838–855.

Wang, G., Jiang, X., Yuan, C.-H., & Yi, Y.-Q. (2013). Managerial ties and firm performance in an emerging economy: Tests of the mediating and moderating effects. *Asia Pacific Journal of Management, 30*(2), 537–559.

Wang, Z., Ye, F., & Tan, K. H. (2014). Effects of managerial ties and trust on supply chain information sharing and supplier opportunism. *International Journal of Production Research, 52*(23), 1–16.

Wiengarten, F., Humphreys, P., Gimenez, C., & McIvor, R. (2016). Risk, risk management practices, and the success of supply chain integration. *International Journal of Production Economics, 171*(Part 3), 361–370.

Wiengarten, F., Pagell, M., Ahmed, M. U., & Gimenez, C. (2014). Do a country's logistical capabilities moderate the external integration performance relationship? *Journal of Operations Management, 32*(1–2), 51–63.

Wilden, R., & Gudergan, S. P. (2015). The impact of dynamic capabilities on operational marketing and technological capabilities: Investigating the role of environmental turbulence. *Journal of the Academy of Marketing Science, 43*(2), 181–199.

Wall, T. D., Michie, J., Patterson, M., Wood, S. J., Sheehan, M., Clegg, C. W., & West, M. (2004). On the validity of subjective measures of company performance. *Personnel Psychology, 57*(1), 95–118.

Wong, C. Y., & Boon-itt, S. (2008). The influence of institutional norms and environmental uncertainty on supply chain integration in the Thai automotive industry. *International Journal of Production Economics, 115*(2), 400–410.

Wong, C. Y., Boon-itt, S., & Wong, C. W. Y. (2011). The contingency effects of environmental uncertainty on the relationship between supply chain integration and operational performance. *Journal of Operations Management, 29*(6), 604–615.

Wu, W.-p. (2008). Dimensions of social capital and firm competitiveness improvement: The mediating role of information sharing. *Journal of Management Studies, 45*(1), 122–146.

Yang, K., Zhu, J., & Santoro, M. D. (2015). *Do inter-firm managerial social ties matter?* The mediating effect of strategic alliances on innovation performance. doihttp://dx.doi.org/10.2139/ssrn.2628979.

Yim, B., & Leem, B. (2013). The effect of the supply chain social capital. *Industrial Management & Data Systems, 113*(3), 324–349.

Zhao, G., Feng, T., & Wang, D. (2015). Is more supply chain integration always beneficial to financial performance? *Industrial Marketing Management, 45*, 162–172.

Zhao, X., Huo, B., Flynn, B., & Yeung, J. (2008). The impact of power and relationship commitment on the integration between manufacturers and customers in a supply chain. *Journal of Operations Management, 26*(3), 368–388.

Zhao, X., Huo, B., Selen, W., & Yeung, J. H. Y. (2011). The impact of internal integration and relationship commitment on external integration. *Journal of Operations Management, 29*(1–2), 17–32.

Zhou, K. Z., Li, J. J., Sheng, S., & Shao, A. T. (2014). The evolving role of managerial ties and firm capabilities in an emerging economy: Evidence from China. *Journal of the Academy of Marketing Science, 42*(6), 1–15.