

Social ties – The missing link between innovation and bribery? ST-AIMS 2 Innovation et développement

Abstract: Social ties have been found to be facilitators of innovation because of their network benefits. However, these benefits are often accompanied by potential costs and risks. Bribe payments are considered the negative consequences of social capital. Therefore, we argue that social ties serve as a missing link between innovation and bribery. Adopting a social capital perspective, we explain the various positive effects that social capital is believed to have on innovation process. On one hand, transition economy firms enjoy the benefits of social capital from political ties and business ties to support innovation process. The benefits of social capital compensate for the weak legal framework's inability to generate and protect innovation in transition economies. On the other hand, social capital exposes the firm to higher risks of bribery. This research found that innovation increases the scope of both political ties and business ties. At the same time, political ties drive bribery propensity and intensity, whereas business ties raise bribery propensity rather than intensity. Further, the results show that business ties enlarge the scope of political ties and thus indirectly increase rates of bribery. This result contributes to the knowledge of how innovation is linked to bribery through social ties. This research also provides an explanation of why firms pay bribes: innovators accept and offer bribes to support innovation.

Keywords: Social ties, political ties, business ties, bribery, innovation.

1. INTRODUCTION

The success of an innovation often relies on firms' social ties such as networks (Knudsen, 2007; Lawson, Petersen, Cousins & Handfield, 2009; Rindfleisch & Moorman, 2001), 'openness' (Laursen & Salter, 2014), contracting (Gilson, Sabel & Scott, 2009; Bocquet, 2011) and informal relationships (Tsai, 2001; Wu, 2011). Social ties promote sharing, transferring and accessing knowledge and resources, thus increasing innovation levels. However, these positive effects of social ties should not be studied separately from the negative consequences. For instance, many studies on innovation have emphasised the importance of collaboration with external actors in supporting firms to innovate (Chesbrough, 2003; Chesbrough, Vanhaverbeke & West, 2006). At the same time, there are also substantial risks derived from external collaborations that need to be considered (Gans & Stern, 2003; Shane, 2003; Chesbrough et al., 2006; Laursen & Salter, 2014).

In transitional economies, firms tend to rely heavily on relationship-based strategies to achieve their business goals (Luo & Chen, 1997; Peng & Luo, 2000; Park & Luo, 2001). Social relationships are an effective way for firms to access services that support innovation process. However, such a vision immediately raises concerns about the consequences on the innovation process, including unethical ones. In this respect, bribery is a good example of what we will call the 'dark side' of the innovation process.

The literature on innovation, especially in developing countries, reports that innovators are often required to pay more bribes than non-innovators (Ayyagari, Demirgüç-Kunt & Maksimovic, 2014). Authors have long acknowledged this relationship. The reasons for this include increased likelihood of acquiring public goods/services, business advantages, speeding up authorisation of innovations (Murphy, Shleifer & Vishny, 1993; Krammer, 2017) and reducing uncertainty, time and transaction costs of new product introductions (Krammer, 2017). However, researchers are discontented with the current models, as they are considered too simplistic (see Ayyagari et al., 2014). Likewise, the modelling approaches do not allow for clear discriminations between competing interpretations. Therefore, while social science researchers, especially in economics, have provided particularly relevant insights, much still needs to be learned about the process whereby innovators are led to engage in informal payments and bribery.

In this paper, our main argument is that social ties could be considered a missing link between innovation and bribery. Our aim is indeed to explain how innovation transforms into bribery through the social networks of firms. To explore this view, we adopt a social capital perspective through which we develop a set of hypotheses. One assumption lies in the pivotal role of social ties, which are hypothesised to have a mediating effect between innovation and bribery. We build on this assumption by explaining the various positive effects that social capital is believed to have on the innovation process. However, social capital also exposes the firm to higher risks of bribery.

2. THEORETICAL FRAMEWORK AND HYPOTHESIS

2.1. INNOVATION AND BRIBERY

Bribery is defined as ‘the act of dishonestly persuading someone to act in one’s favour by a payment or other inducement as gifts, loans, fees, rewards and other advantage’ (DFID, 2015) or as a ‘greasing payment’ to public officials ‘to get things done’ (World Bank, 2009). Firm-specific rationales of bribery, thus, show that many firms use bribery as a strategy to overcome ‘bottlenecks’ (De Jong, Phan & Van Ees, 2012).

Additionally, innovation activities are typically risky and long-term, which lengthens the time that innovators are vulnerable to rent-seekers who use their discretionary power for bribery demands (Murphy et al., 1993). Also, cumbersome and dishonest bureaucracies tend to delay the distribution of permits and licenses, thereby slowing down the process by which technological advances become embodied in new equipment or new productive processes (North, 1990). In this context, bribery manifests as gifts of informal payments to public officials to acquire an advantage or expedite authorisation of new products or innovations (Krammer, 2017), thus the more innovations the firms introduce, the higher the bribe the firms are required. Emerging market firms especially employ bribery to help firms introduce new products (Li & Atuahene-Gima, 2001; Danneels, 2002). For instance, bribery is used to reduce transaction costs related to the introduction of new products (Ahlin & Bose, 2007), as well as the uncertainty, time and arbitrary penalties that affect product introductions (Krammer, 2017). These studies provide some noteworthy insights on why innovators use bribery. However, the literature remains scant on a management approach to understand this link, especially related to the diffusion of innovation. Therefore, in this research, we propose

that the existence of social ties could further explain the relationship between innovation and bribery.

2.2. SOCIAL CAPITAL AND INNOVATION

2.2.1. Social ties and innovation

The formal institutional systems of transitional economies are often immature (Luk, Yau, Sin, Alan, Chow & Lee, 2008). A weak institutional environment creates many institutional uncertainties in the innovation process (Zhang, Tan & Wong, 2015). However, several studies have argued that informal personal relationships are an important social capital that firms in transitional economies exploit to achieve their business goals (Luo & Chen, 1997; Peng & Luo, 2000; Park & Luo, 2001). For instance, previous research in China - a prominent transitional economy - showed that Chinese firms tend to 'rely more heavily on the cultivation of personal relationships to cope with the exigencies of their situation' (Child, 1994: 150). The rationale is that under-established institutional frameworks in transitional economies often '[create] an uncertain and risky environment that generates low trusts among people' (Atuahene-Gima & Li, 2002: 65). However, the information shared through social ties 'may be more trustworthy, richer and more useful than information gained by other means' (Luo, 2003: 1317). Thus, social ties in a transition economy serve as social capital to substitute for insufficient institutional infrastructure (Xin & Pearce, 1996).

However, along with these benefits of social capital, scholars also warned about the potential dark sides of social capital (Adler & Kwon, 2002). For instance, firms are required to invest money, time and effort to build and maintain relationships with public officials (Zhang et al., 2015). Consequently, firms get involved with unethical or even illegitimate activities, especially bribery.

To sum up, social ties act as a means of exchanging and combining resources to promote innovations, but social ties with public officials also require the paying of bribes to reciprocate within the relationship or to maintain on-going relationships. We, thus, argue that social ties (including political ties and business ties) play a mediating role in the relationship between innovation and bribery. In sum, we propose a framework to examine the link between innovation and bribery, with a particular focus on the mediating role of social ties (see Figure 1).

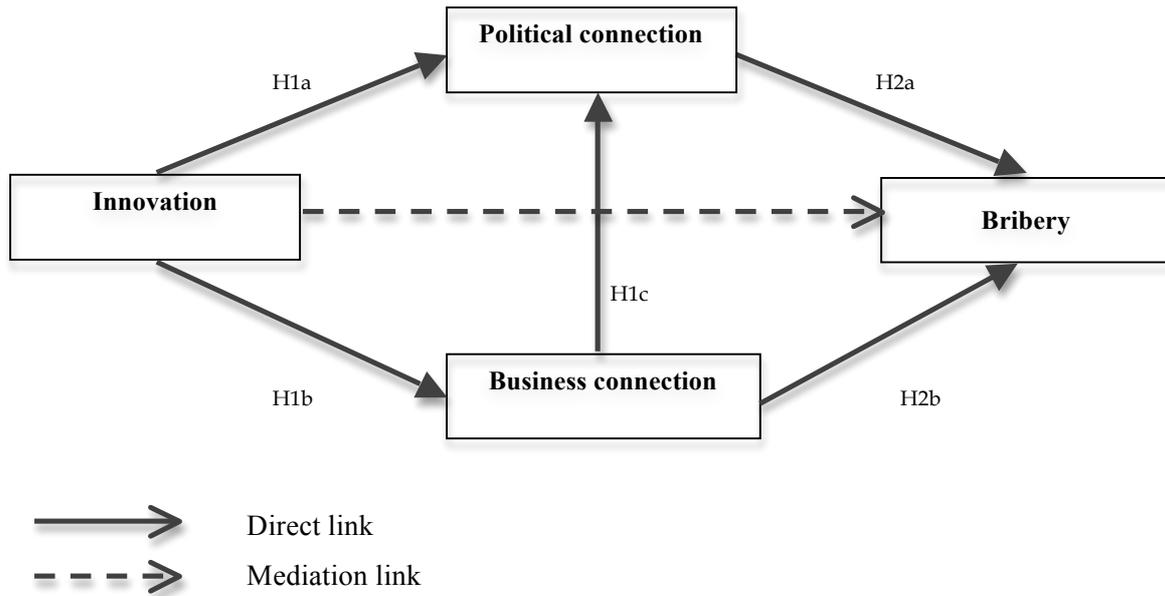


Figure 1: Research framework

2.2.2. Social capital and innovation

Social ties are known as a manifestation of the structural dimension of social capital (Sparrowe, Liden, Wayne & Kraimer, 2001). The fundamental proposition of social capital theory is that ‘social actors create and mobilise their network connection within and between organisations to gain access to others social actors’ resources’ (Knoke, 1999: 18). Social capital embodied in various relations constitutes channels of exchanging information and accessing valuable resources to mobilise for purposive actions (Burt, 1997; Coleman, 1988). Some researchers have argued for a positive association between social capital (social ties) and innovation. For instance, social ties facilitate learning (Yli-Renko, Autio & Sapienza, 2001) and improve firms’ capabilities (Molina-Morales & Martínez-Fernández, 2009), thus supporting the diffusion of innovation (Tsai & Ghoshal, 1998).

Several studies in transitional economies have discussed the positive effects of social ties for innovation generation (e.g. Luk et al., 2008; Wu, 2011; Shu, Page, Gao & Jiang, 2012). However, at the individual level, social capital plays an important role for both rent generation and appropriation (Blyler & Coff, 2003). At the firm level, a recent study about China explored the importance of social ties for innovation generation and appropriation (Xie et al., 2014). However, evidence of how social ties affect innovation in transition economy firms remains scant.

Benefits of social capital and innovation

Strategic management research in transitional economies distinguishes between relations with public officials (political ties) and relations with managers at other business firms (business ties). We follow Adler and Kwon (2002) and Luk et al. (2008) to analyse the benefits of social capital embedded in these social ties for innovation.

Information benefits. At the firm level, social capital encourages innovation by facilitating the flow of information (Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998). Social capital in both political ties and business ties brings information benefits. However, the information benefits of political ties often encourage only administrative innovation. At the same time, the benefits of business ties are more likely to support product-related innovation (Luk et al., 2008), such as sharing market information (Sheng, Zhou & Li, 2011) or new technologies/product innovations (Luk et al., 2008).

Power/influence benefits. Firms could enjoy the ‘power benefit’ of social capital (Adler & Kwon, 2002) from political ties to get things done and achieve its goals, but this is not the case with business ties. Specifically, the lack of well-developed institutional frameworks in transition economies results in an unstable environment and generates institutional voids. In turn, these voids cause entrepreneurs in transition environments to face more uncertainty and risk within the business environment (Webb, Kistruck, Ireland & Ketchen, 2010; Chadee & Toxas, 2013; Mair, Marti & Ventresca, 2012). At the same time, public officials in immature institutional environments seem to have considerable discretionary power in policy preference, regulation enforcement, legitimacy establishment and institutional support (Li, Poppo & Zhou, 2008). Thus, a cohesive political tie would help firms take advantage of the flexible application of regulations (Peng & Luo, 2000). Apart from this power benefit, connections between political actors seem to compensate for inadequate legal frameworks and dysfunctional market systems (Keupp et al., 2010; Li et al., 2008). Political connections thus allow innovating firms to operate in benign operational environments that weaken misappropriation risks for new products and enable them to profit from innovation investment (Xie et al., 2014).

Solidarity benefits. A trustworthy network can transfer and share more sensitive and ‘richer’ information because of the solidarity it generates (Krackhardt & Hanson, 1993). Members of business ties often have the same benefits, so solidarity benefits from business ties could play an important role in innovation. The rationale is that social capital is a ‘club

good' that serves to maintain the status and privileges of club members (Field, 2003). Benefits given from one member to another allow for increased cohesion (Gabbay, 1997). As such, the existence and development of solidarity benefit leads to increased information benefits of social capital. Specifically, in this case, information benefits of social capital support innovation.

Hypothesis 1a: Political ties increase with firms' innovativeness.

Hypothesis 1b: Business ties increase with firms' innovativeness.

The link of business ties–political ties. Social capital includes two main components based on the nature of social relations in a network: bonding social capital and bridging social capital (Putnam, 2000). Networking in homogeneous groups known as bonding relationships while bridging relations is referred to as connecting between heterogeneous groups (Putnam, 2000). Business ties can connect with other business partners but may also act as a bridge between network members and unconnected government officials (Uzzi, 1997) who can support firms to quickly and effectively solve problems related to support innovations. This benefit is more important in a transition economy environment where formal institutional constraints such as laws and regulations are weak. Therefore, business ties act as a bridge between focal firms and other unconnected public officials.

Hypothesis 1c: Business ties are more likely to broaden the scope of political ties.

Negative consequence of social capital - Social ties and bribery

Sociologists and strategy scholars (e.g. Porte & Sensenbrenner, 1993; Adler & Kwon, 2002; Uzzi, 1997) have warned about the potential dark side of social capital.

Political ties. Managers could cultivate and manipulate political ties to achieve their business goals such as assembling vital resources or obtaining government approval (Adler & Kwon, 2002) (as bright side of social capital). However, such cultivation also requires firms to invest a considerable amount of time, effort and substantial cost (Chen & Wu, 2011; Li & Atuahene-Gima, 2001; Warren, Dunfee & Li, 2004) because social ties often stipulate that 'favours and gifts are exchange' (Adler & Kwon, 2002: 18). This reciprocal exchange is also required when pursuing risky activities like innovation process (Zhang et al., 2015). More often, as a result of an implicit reciprocity norm of social relationships, firms are required to accommodate or yield to the requests of government officials by offering gifts, lavish

entertainment or even money (Chen & Wu, 2011; Li & Atuahene-Gima, 2001). Such practices of political ties might result in the firm becoming involved in unethical behaviours such as bribery. When more resources are controlled and allocated by political centres and there is a lack of adequate constraints on the behaviours of public officials, the threat of moral hazards and bribery is greater (Adler & Kwon, 2002). Firms pay bribes to manipulate business functions by garnering favourable regulation decisions, obtaining public services and contracts and other government or policy determinations (Martin, Cullen, Johnson & Parboteeah, 2007).

Business ties. Business ties can provide its members with information about how to obtain preferential treatment. In addition, the underdeveloped legal system results in the prevalence of unlawful behaviours and corruption. In this context, firms tend to rely on informal personal networks instead inadequate legal frameworks to clinch deals and protect their interests (Luk et al., 2008). Besides, in an economy where widespread corruption cannot be avoided, the weakness of institutional systems can be exploited for personal benefit, resulting in the existence of many ‘implicit rules’ that are often more effective than formal laws (Hart, 2006). These implicit rules exist because government officials exploit complex administrative procedures and flexibly interpret regulations to create ‘implicit rules’ to collect personal benefits. Such informal rules allow firms to easily comply with regulations, even if they do not meet some requirements. In return, public officials require compensation for this exchange.

Hypothesis 2a: Political ties mediate the relationship between innovation and bribery.

Hypothesis 2b: Business ties mediate the relationship between innovation and bribery.

3. EMPIRICAL METHODOLOGY

3.1. DATA SET DESCRIPTION

This research utilises data from an SME survey conducted in Vietnam conducted in 2011, 2013 and 2015 that cover information of two years immediately prior (2009–2010, 2011–2012 and 2013–2014). It is part of a long running panel survey that has been conducted every two years since 2005. Just over 2,500 SMEs operating in the manufacturing sector were interviewed in ten cities and provinces of Vietnam. The sample includes information about the enterprises that have been interviewed since 2005 and new enterprises that were added to

replace those that exited the survey. The survey has been carried out by United Nation University World Institute for Development Economics Research (UNU-WIDER) in collaboration with the Institute of Labour Science and Social Affairs (ILSSA) of the Ministry of Labour, Invalids and Social Affairs (MOLISA), the Department of Economics (DoE) of the University of Copenhagen and the Central Institute of Economic Management (CIEM). The data from the three surveys mentioned above were merged, and firms with incomplete information were excluded. The data set from the surveys in 2011, 2013 and 2015 are excluded firms with incomplete information. A final sample of 5,219 observations remains, of which 2,213 observations reported paying bribes.

3.2. MEASUREMENT

3.2.1. Dependent variables

Among the literature on determinants of bribery, several studies captured bribery with dummy variables (e.g. Collins, Uhlenbruck & Rodriguez, 2009; De Jong et al., 2010) or categorical variables for the degree to which firms engage in bribery activities (Martin et al., 2007) or the amount of bribe payments; for instance, the percentage of a sale paid to corrupt officials (Ayyagari et al., 2014) and the bribe amount per employee (Svensson, 2003). However, measuring bribery through a dummy alone might lead to misinterpretations because a bribery dummy cannot distinguish between the firms who pay a tiny informal payment (normal communication fees or management fees that all firms need to pay to government officials) and the firms who offer enormous bribe payments to obtain institutional advantages. Therefore, this research captures bribery in two sub-dimensions: bribery propensity (using a dummy) and bribery intensity (using a continuous variable).

Bribery propensity: As a measurement of bribery, we construct the first variable, bribery propensity, with a dummy variable that equals 1 if the firms report that they paid informal fees to public officials and 0 otherwise.

Bribery intensity: We capture bribery intensity based on total bribe payments that the firms offered (in logarithm).

Table 1: Definition of variables

Variable	Definition
Bribery propensity	Dummy = 1 if the firms report paying informal payments to public officials
Bribery intensity	The total informal payment in logarithm
Innovation	Dummy = 1 if firm had any innovation activity including product innovation, improvement of current products and process innovation
Political ties	The number of regular contacts with politicians and civil servants in logarithm
Business ties	The number of regular contacts with managers of other firms (including in the same and different industries) in logarithm
R&D amount	Total investments of firms on R&D activities in logarithm
Lack of infrastructure	A composite categorical variable including basic infrastructure that the firms do not have access to, such as main roads, rail, port systems, public electricity grids and publicly provided water systems
Public interference	Dummy =1 if the firm experienced too much interference by local officials or uncertainty of related government policies or difficulties obtaining licenses/permission from authorities
Firm size	The sales per employee in logarithm
Firm age	Logarithm of (survey year – established year)
Legal status	Form of ownership/legal status <ul style="list-style-type: none"> - Dummy =1 if household establishment/business - Dummy =2 if private (sole proprietorship) - Dummy =3 if partnership and collective/cooperative - Dummy =4 if limited liability company - Dummy =5 if joint stock company without state capital
Industry	Dummies reflect the manufacturing sector of firms
Time	Dummy variables for survey waves <ul style="list-style-type: none"> - Dummy =1 if the survey in 2011 - Dummy =2 if the survey in 2013 - Dummy =3 if the survey in 2015

3.2.2. Independent variables

Innovation: Innovation is often captured by both a dummy variable for occurrence of innovation activities and the amount of the innovation investment. However, this research focuses on determine whether innovation activities will be a trigger for bribe payment rather than analysing the level of innovation on bribery, as in the research of Ayyagari et al. (2014). Thus, innovation in this study is captured only by a dummy variable that equals 1 if the firm reports any innovation activities and 0 otherwise.

Political ties: Political ties are often measured by the level of connection between managers' firms and public officials in various levels of the government, in industrial bureaus or in regulatory and supporting organisations such as tax bureaus, state banks and commercial

administration bureaus (Peng & Luo, 2000; Park & Luo, 2001; Wang & Chung, 2013). This research thus captures the level of connection with government officials through the number of contacts (in logarithm) with politicians and civil servants for the purpose of assisting business operations. This factor is captured based on answers to the question, ‘Approximately how many politicians and civil servants do you currently (presently) have regular contact with?’; firms are required to contact an official at least once every three months, which the firms find useful for their business operations.

Business ties: This social relation is often measured through the level of strength connection with other companies (such as buyers, suppliers, competitors, etc.) for business operations (Peng & Luo, 2000; Park & Luo, 2001; Luo et al., 2008; Wang & Chung, 2013). Ties with managers at other firms are captured by answers to the question, ‘Approximately how many other business people do you currently (presently) have regular contact with?’; other firms can operate in the same sector and in different sectors.

3.3. EMPIRICAL METHODOLOGY

We examine the effect of innovation activities on the probability of paying bribes and the amount of bribe payment with the assumption that a portion of these effects might be mediated through political ties and business ties. To test mediating affects on the relationship between innovation and bribery (including both bribery propensity and bribery intensity) in a traditional multiple mediation analysis, the model analysed multiple mediators by applying a seemingly unrelated regression (SUR estimation as described in Preacher and Hayes [2008]) or a structural-equations model (SEM estimation as described in Barron and Kenny [1986]). SEM was chosen because the response variable in this research is not continuous and SEM requires that both response outcomes and mediators are continuous. In this case, the dependent variable is a binary (pay bribes or not), thus an extension of the SEM model - Generalised SEM (GSEM) - is applied (Rabe-Hesketh, Skrondal & Pickles, 2004). In GSEM, response outcomes are not restricted to continuous variables, but they allow for different types of response processes including continuous, censored, grouped, ordinal and dichotomous and automatically accommodate missing data (Rabe-Hesketh et al., 2004).

The response variables in the model include *Bribe propensity*, *Bribery intensity*, *Political ties* and *Business ties*. *Political ties* and *Business ties* are continuous variables and its equation is linear, but *Bribe propensity* is binary and thus its equation is a probit

regression, while *Bribe intensity*'s equation is a logit regression. This method allows us to set up and test a plausible path model through which innovation activities encourage firms to pay more bribes: we test whether the presence of innovation partly requires firms to have more contacts with government officials for business operations (see Figure 1).

First, to test the mediating effect for the relation between innovation and bribery propensity as a robustness check, we apply the Sobel-Goodman mediation to test whether mediators (political ties and business ties) carry the influence of innovativeness to bribery propensity. The Sobel test is a more direct test of the mediation hypothesis because it examines the combined effects of the path between a dependent variable and a moderator and the path between the moderator and an independent variable (Sobel, 1982). Then, we introduce the result of indirect effect using the SUR and GSEM estimations for the link of innovation–bribery propensity.

Second, to test the existence of mediation in the link of innovation and bribery intensity, we apply the same procedure. However, due to the insignificance of the mediator (business ties), we keep only political ties as the mediator and use just the GSEM estimation. To test whether political ties carry the effect of innovation to bribery intensity, we examine the effect of innovation activities on bribery intensity using statistical tests. Testing the hypothesis with a parameter for an innovation variable on the bribery equation allows for verification of the direct effect of innovation on bribery. The indirect effect through political ties is verified using a Wald test (z statistic). The null hypothesis assumes that both the coefficient for innovation in the mediation equation and the coefficient for political ties in the bribery equation equal 0. The indirect effect of innovation on bribery through political ties is verified using the Wald test for coefficients included in the political ties path. Finally, the Wald test for all indicated coefficients is applied to examine the total (direct and indirect) effect of innovation on bribery.

3.4. ECONOMETRIC RESULTS

This research was limited to analysing the mediating effect of political ties and business ties on the relationship between innovation and bribery in a sample of SMEs in a transitional country. We propose that hypothesis H1a assumes a positive linkage between innovativeness and the connection level with public officials. Hypothesis H1b suggests a positive link between innovation and business ties, and hypothesis H1c argues that business

networks also expand firms' political contacts. Due to the effect of innovation on social ties and the link between these social ties and bribery behaviours, hypothesis H2a proposes a positive relationship between innovation and bribery through the mediating effect of political connection. Additionally, hypothesis H2b suggests that business ties also play a mediating effect on the relation between innovativeness and bribery.

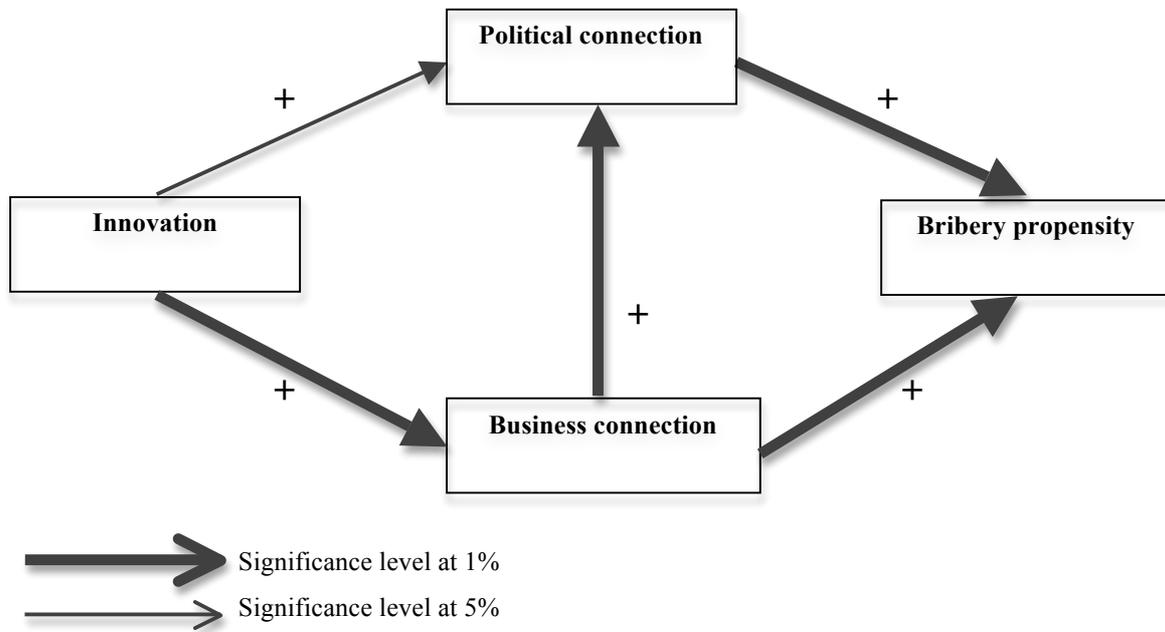


Figure 2: The final results (Innovation—Bribery propensity)

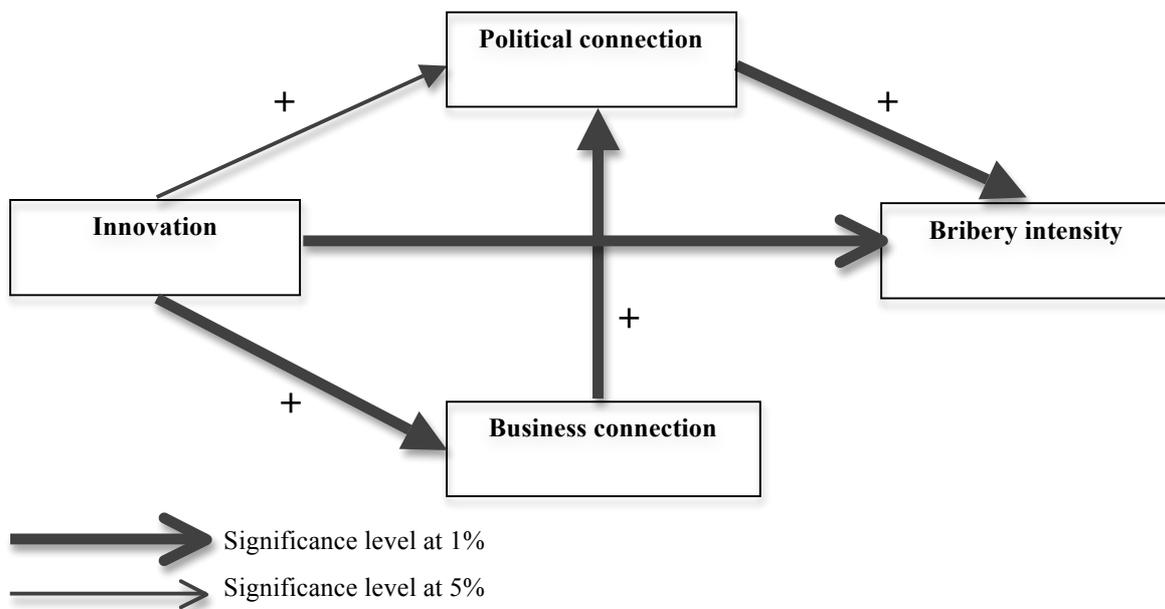


Figure 2: The final results (Innovation - Bribery intensity)

Table 2: Summary statistics

Variables	Mean	Std.Dve	Bribery propensity	Bribery intensity	Innovation	Political ties	Business ties	R&D	Lack of infrastructure	Political interference	Firm size	Firm age
Bribery propensity	0.463	0.499	1.0000									
Bribery intensity	7.971	1.127		1.0000								
Innovation	0.347	0.476	0.0476*	0.1214*	1.0000							
Political ties	0.718	0.626	0.1675*	0.1432*	0.0466*	1.0000						
Business ties	1.642	0.886	0.1467*	0.0933*	0.0642*	0.3025*	1.0000					
R&D	0.024	0.344	0.0382*	0.0662*	0.0593*	0.0256	0.0227	1.0000				
Lack of infrastructure	22.056	8.798	0.1404*	0.1307*	0.0587*	0.0925*	0.0669*	0.0107	1.0000			
Political interference	0.026	0.159	0.0627*	-0.0054	0.0070	0.0065	0.0036	-0.0116	0.0480*	1.0000		
Firm size	5.309	0.647	0.1636*	0.2806*	0.0646*	0.1165*	0.0994*	0.0378*	0.1283*	0.0038	1.0000	
Firm age	2.504	0.509	-0.1278*	-0.1098*	-0.0433*	-0.0062	-0.0569*	-0.0187	-0.0798*	0.0234	-0.0645*	1.0000

Table 2 reports the means, standard deviation and correlations of all variables. Table 3 displays the results of the estimation of SUR/GSEM parameters for the mediators of political ties and business ties on the relationship between innovation and bribery in which the equation for mediators–social ties is introduced in Models (2) and (3). Model (1) reports the mediating effect of social ties on the relationship between innovativeness and bribery propensity. The results of these parameters using SUR estimation or GSEM estimation are similar.

Table 3: Innovation and Bribery propensity

VARIABLES	SUR estimation/GSEM estimation		
	(1)	(2)	(3)
	Bribery dummy	Political ties	Business ties
Innovation	0.003 (0.0139)	0.042** (0.0176)	0.101*** (0.0262)
Political ties	0.0641*** (0.0109)		
Business ties	0.0355*** (0.0076)	0.195*** (0.0093)	
R&D (in log)	0.0254 (0.0185)	0.0188 (0.0235)	0.0299 (0.0350)
Lack of infrastructure	0.0028*** (0.0007)		
Political interference	0.1633*** (0.0400)		
Firm size (in log)	0.0514*** (0.0105)	0.049*** (0.0132)	0.0816*** (0.0197)
Firm age (in log)	-0.0326** (0.0136)	0.047*** (0.0171)	-0.0113 (0.0256)
Industry, legal, time dummies	Yes	Yes	Yes
Constant	-0.0597 (0.0659)	-0.1518* (0.0825)	1.0403*** (0.1219)
Observations	5,219	5,219	5,219

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The results of the statistical tests for the verification of indirect effects of innovation on bribery appear in Table 4.

Table 4: Results of indirect effect through political ties and business ties (innovation and bribery propensity – SUR and GSEM estimation)

	Coefficient	Std.err	Z statistic
Indirect effect via political ties	0.0027**	0.0012	2.23
Indirect effect via business ties	0.0036***	0.0012	2.98
Total indirect effect	0.0063***	0.0016	3.81
Ratio of indirect to direct	2.0715		
<i>Proportion of total effect that is mediated:</i>	<i>0.6744</i>		
No obs	5,219		

*** p<0.01, ** p<0.05, * p<0.1

Table 5: Innovation and Bribery intensity

VARIABLES	SUR estimation/GSEM estimation			GSEM estimation	
	(1) Bribery	(2) Political ties	(3) Business	(4) Bribery intensity	(5) Political
Innovation	0.1879*** (0.0450)	0.0424** (0.0176)	0.101*** (0.0262)	0.1879*** (0.0450)	0.0424** (0.0176)
Political ties	0.1089*** (0.0331)			0.1089*** (0.0331)	
Business ties	0.0124 (0.0228)	0.195*** (0.0105)		0.0124 (0.0228)	0.195*** (0.0105)
R&D (in log)	0.0782* (0.0437)	0.0188 (0.0277)	0.0299 (0.0350)	0.0782* (0.0437)	0.0188 (0.0277)
Lack of infrastructure	0.0047* (0.0026)			0.0047* (0.0026)	
Political interference	-0.0784 (0.1191)			-0.0784 (0.1191)	
Firm size (in log)	0.3076*** (0.0327)	0.0491*** (0.0134)	0.0816*** (0.0197)	0.3076*** (0.0327)	0.0491** (0.0134)
Firm age (in log)	-0.0068** (0.0447)	0.047*** (0.0171)	-0.0113 (0.0256)	-0.0068** (0.0447)	0.047*** (0.0171)
Industry, legal status and time dummies	Yes	Yes	Yes	Yes	Yes
Constant	5.4017*** (0.2152)	-0.1518* (0.0842)	1.0403*** (0.1219)	5.4017*** (0.2152)	-0.1518* (0.0842)
Observations	5,219	5,219	5,219	5,219	5,219

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5 reports the results of the estimation of SUR/GSEM parameters for the mediators (both political ties and business ties) on the relationship between innovation and bribery intensity in which the equations for the mediators are introduced in Models (2) and (3). Model (1) shows the mediating effect of social ties on the relationship between innovativeness and bribery intensity. Similarly, Models (4) and (5) introduce the results for the mediating effect of political ties only. The statistical tests for the verification of direct and indirect effects of innovation on bribery intensity are shown in Table 6.

Overall, the results in Table 3 partially support each of the hypotheses. Regarding the relationship between the independent variables (innovation) and the mediators (political ties and business ties), as expected in H1a, we found a strong positive association between the presence of innovation and the number of contacts with public officials ($\beta = .042, p < .05$; $\beta = .101, p < .01$), as shown in Model (2) in Table 3 and Model (2) in Table 5. Consequently, contacts with managers from other firms were also positively related to the level of political connection ($\beta = .195, p < .01$), as shown in Model (2) in Table 3 and Models (2) and (5) in Table 5. Therefore, hypothesis H1b is supported.

We proposed in hypothesis H2a that political ties mediate the relation between innovation and bribery. The results from Model (1) in Table 3 indicate support for this hypothesis through the positive significant coefficients of both mediators (political ties and business ties) ($\beta = .0641, p < .01$; $\beta = .0355, p < .01$, respectively) and the results of the Sobel-Goodman mediation test, shown in Table 7. Additionally, the results in Table 4 suggest that each of the separate indirect effects and the total indirect effect are significant. However, it should be noted that the direct effect of innovation on bribery propensity is still insignificant. As described by Kenny and Judd (2014), the test of this direct effect has relatively low power, especially in comparison to the indirect effect. Because indirect effect via political ties and business ties are strongly significant while direct effects before and after adding mediators are still insignificant, so it is known as a complete mediation (a statistically significant indirect effect but no statistical evidence that X causes Y, as argued by Kenny and Judd [2014]). However, as mentioned in Hayes (2013), one should never make any claim of complete or partial mediation; instead of that, determining the proportion of the total effect that is mediated. Applying in this research, we conclude that the proportion of total effect is mediated through political ties and business ties is 67.44%, as reported in Table 4.

As stated in hypothesis H2b, we expected a mediating effect of business ties on the link of innovation–bribery, but business ties were not statistically significant in the link between innovation and bribe intensity, as reported in Model (1) of Table 5, so hypothesis H2b is not supported. Instead, we included only political ties as mediators in this case, as the results showed that the coefficient of political ties is positive and significant ($\beta = .1089$, $p < .01$).

Table 6 reports the results of direct, indirect and total effect of innovation on bribery intensity through mediators–political ties and business ties. The indirect effects of innovation on bribery intensity are positively significant ($\beta = .1878$, $p < .01$). However, while the indirect effect through political ties is positively significant ($\beta = .0046$, $p < .1$), this is not the case for business ties. When including only political ties as mediators, the total indirect and direct effects of innovation on bribery intensity are significantly positive ($\beta = .1937$, $p < .01$). In other words, although the proportion of total effect mediated through political ties is very small (indirect effect/direct effect = 0.025), this indirect effect is still significant, thus we argue that political connection mediates the effect of innovativeness on bribery intensity.

Table 6: Results of tests for the mediating effect of political ties and business ties on the relation between innovation and bribery intensity (GSEM estimation)

Effects	(1)		(2)	
	Political ties and Business ties		Political ties only	
	<i>Coefficient</i>	<i>Chi-square statistic</i>	<i>Coefficient</i>	<i>Chi-square statistic</i>
Direct	0.1878***	17.39***	0.1878***	17.39***
	<i>Coefficient</i>	<i>z statistic</i>	<i>Coefficient</i>	<i>z statistic</i>
Indirect through political ties	0.0046*	1.95	0.0046*	2.36
Indirect through business ties	0.00126	0.54		
Total indirect and direct	0.1937***	4.31	0.1925***	4.33
Observations	5,219		5,219	

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

In total, innovativeness increases with bribery propensity and intensity but through the mediator – political ties; at the same time, innovativeness also increases bribery propensity through the mediator – business ties, but business ties do not mediate the relationship between innovation and bribery intensity. This result, thus, does not support for hypothesis H2b.

Table 7: Results of Sobel tests for the mediating effect of political ties and business ties on the relation between innovation and bribery propensity

Effects	Political ties			Business ties		
	Coefficient	Std.err	Z statistic	Coefficient	Std.err	Z statistic
a coefficient	0.0613***	0.0182	3.373	0.1194***	0.0257	4.643
b coefficient	0.132***	0.0109	12.129	0.0811***	0.0077	10.519
Indirect effect	0.008***	0.0025	3.250	0.0097***	0.0022	4.248
Direct effect	0.0418**	0.0143	2.923	0.0402***	0.0143	2.798
Total effect	0.0499***	0.0145	3.444	0.0499***	0.0145	3.444
Proportion of total effect that is mediated:		0.162		0.194		
Obs		5,219		5,219		

*** p<0.01, ** p<0.05, * p<0.1

4. DISCUSSION AND CONCLUSION

Deriving from the fact that innovators in transitional economies are more often required to offer informal payments or bribes, this research explores the role of social ties as missing factors in the link between innovation and bribery. It expands upon the work of Ayyagari et al. (2014) about correlations between innovation and bribery. In particular, this study aims to enlighten this relationship with the belief that it is more visible in transitional economies. While prior literature emphasises this link, explanations remain limited. Therefore, we propose the existence of mediating factors to explain how innovation involves bribery.

To this end, we applied a social capital perspective in which a heavier focus on the benefits and risks of social capital explains the effect of innovation on bribery in the context of transition economies. Regarding the benefits of social capital, we demonstrate that social capital from social ties has the benefit of supporting innovation process. Regarding risks of social capital, we found that innovation involves political ties, but these ties increase the likelihood of paying bribes and amount of bribe payments. However, business ties do not entirely follow this mediating pattern. Business ties increase bribery propensity but not intensity. In fact, the effect of business ties is partly transferred through political ties and thus indirectly increases instances of bribery. We, therefore, contribute to the literature in three ways.

Firstly, our study proposes that social ties are missing factors in the link between innovation and bribery as main contribution. Previous studies only proposed a correlation without providing an interpretation. Some proposed the acceleration and facilitation of innovation generation as an explanation (e.g. Murphy et al., 1993; Rand & Tarp, 2012; Krammer, 2017). Our study went a step further by accounting for social capital, permitting us to integrate both positive and negative influences of social ties. Innovators understand how to build connections with public officials and their business partners to gain support for their projects. At the same time, however, those connections are likely to lead them to participate in unethical behaviours. More precisely, bribery is considered a negative facet of social ties in supporting innovation process. The findings of this study partly confirm the ‘pain’ of social ties for innovation process in the context of weak legal systems in transitional countries. This kind of modelling clearly echoes the double-sided nature of social capital.

Secondly, this study also offers a fine-grained approach to the mediating mechanism by distinguishing between political and business ties. We considered that political ties compensate for weak institutional environment in transitional economies because firms take advantage of the influence/power benefits of social capital in political ties to support their innovations. In addition, business ties often support product-related innovations in developed countries (Luk et al., 2008). However, business ties are also shown to serve as a bridge between network members and public officials. Business ties, therefore, indirectly increase bribery propensity. However, these effects of business ties still require more consideration in other contexts and a more detailed examination of bribery intensity.

Thirdly, this study offers a model that applies to transition economies. The literature tends to overlook the role of bribery in innovation studies. This leads to two sub-comments. On the one hand, it is possible to wonder whether the literature on innovation, which aims to develop theories in Western countries, is biased in the context of developing countries. Theories developed within the context of Western countries miss the link between bribery and innovation. However, in developing countries, the government plays an extremely important role in managing and distributing resources (Park & Luo, 2001), so the existence of bribery sometimes cannot be avoided in developing countries. The application of these theories to developing country firms might lead to something to be missed. Thus, in order to be globally applicable, theories on innovation must account for the role of bribery in innovation. Therefore, future research should provide more theoretical and empirical aspects of corruption when comparing innovation processes between developed and developing countries. On the other hand, we may also wonder whether the literature is biased toward the bright side of innovation. Authors almost unanimously emphasise the benefits of innovation. Implicitly, studies that try to set a light on the factors facilitating innovation also stem from the bribery vision of innovation. Our approach is to develop a more nuanced, complex vision of the innovation process. Much remains to be learned about innovation in developing countries, but our findings suggest that paying bribes is a negative consequence of innovation.

Finally, this study contributes to explain controversial economic concerns regarding the relationship between innovation and bribery according to the management approach. We found that the management approach is useful for understanding this linkage. These findings may be specific to the examined context, so further studies should consider innovation in other environments.

4.1. MANAGERIAL CONTRIBUTION

Given the idealised discourse on innovation that transpires from media, governmental programmes and even management books on innovation, innovation is also considered a trigger for bad behaviours such as bribery in developing countries (e.g. Ayyagari et al., 2014). Bribe payment is known to maintain political connections and acquire benefits from public officials. However, this does not mean that managers should be taught to bribe officials, because bribery is an illegal and unethical behaviour.

Some socio-economic approaches consider bribery, to a certain extent, as a solution for institutional problems. In the context of weak institutional environments in transitional economies, bribery is sometimes used in this manner and may even be pervasive. However, it is necessary to weigh these benefits against the cost of bribery and its potential long-term risks such as effects on reputation, legal penalties and reliance on bribery. The majority also asserted that the direct and indirect negative effects of bribery are obvious, regardless of the ‘benefits’ that it may bring. Further, innovation might create a competitive advantage for firms, but innovation that relies on bribing officials in power is not a sustainable advantage. Instead, policy makers should account for this phenomenon and develop significant formal and informal reforms to better control corruption by reducing the opportunities for public officials to misuse their public authority.

4.2. LIMITATION

We would also like to highlight some limitations that should be considered when interpreting our findings. First, it should be noted that, following bargaining theory (Svensson, 2003), the probabilities of paying bribes and bribe payments are determined based on firms’ ‘ability to pay’. However, our study has not accounted for factors of ‘ability to pay’, (such as operating profits) in driving bribery propensity and intensity. More research is needed to investigate the effect of other measurements capturing the ‘ability to pay’ bribes. Second, our sample is limited to Vietnamese SMEs, so it remains an open question whether our findings can be generalised to developing economies where systems are considerably different. Lastly, there may be other factors related to culture (collectivism or individualism), consequences of Vietnamese history that impact the behaviour of Vietnamese people. Thus, future research on this issue should capture these factors (for instance, the location of firms in the South/North, urban/rural; the personal characteristics of managers; etc.) to more accurately explore the link between innovation and bribery.

REFERENCE

- Adler, P. S., & Kwon, S. W. (2002). Social capital: Prospects for a new concept. *Academy of management review*, 27(1), 17-40
- Ahlin, C., & Bose, P. (2007). Bribery, inefficiency, and bureaucratic delay. *Journal of Development Economics*, 84(1), 465-486.
- Atuahene-Gima, K., & Li, H. (2002). When does trust matter? Antecedents and contingent effects of supervisee trust on performance in selling new products in China and the United States. *Journal of Marketing*, 66(3), 61-81.
- Ayyagari, M., Demirgüç-Kunt, A., & Maksimovic, V. (2014). Bribe Payments and Innovation in Developing Countries: Are Innovating Firms Disproportionately Affected? *Journal of Financial and Quantitative Analysis*, 49(01), 51-75.
- Barron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and social Psychology*, 51(6), 1173-1182.
- Blyler, M., & Coff, R. W. (2003). Dynamic capabilities, social capital, and rent appropriation: Ties that split pies. *Strategic management journal*, 24(7), 677-686.
- Bocquet, R. (2011). Product and process innovations in subcontracting: empirical evidence from the French "Sillon Alpin". *Industry and Innovation*, 18(7), 649-668.
- Burt, R. S. (1997). A note on social capital and network content. *Social networks*, 19(4), 355-373.
- Chadee, D., & Roxas, B. (2013). Institutional environment, innovation capacity and firm performance in Russia. *Critical perspectives on international business*, 9(1/2), 19-39.
- Chen, X., & Wu, J. (2011). Do different guanxi types affect capability building differently? A contingency view. *Industrial Marketing Management*, 40(4), 581-592.
- Chesbrough, H. (2003). *Open innovation*. Harvard Business School Press.
- Chesbrough, H., Vanhaverbeke, W., & West, J. (Eds.). (2006). *Open innovation: Researching a new paradigm*. Oxford University Press on Demand.
- Child J. (1994). *Management in China during the Age of Reform*. Cambridge University Press: Cambridge, U.K.
- Coleman, J. S. (1988). Free riders and zealots: The role of social networks. *Sociological Theory*, 6(1), 52-57.
- Collins, J. D., Uhlenbruck, K., & Rodriguez, P. (2009). Why firms engage in corruption: A top management perspective. *Journal of Business Ethics*, 87(1), 89-108.
- Danneels, E. (2002). The dynamics of product innovation and firm competences. *Strategic management journal*, 23(12), 1095-1121.
- De Jong, G., Tu, P. A., & van Ees, H. (2012). Which entrepreneurs bribe and what do they get from it? Exploratory evidence from Vietnam. *Entrepreneurship Theory and Practice*, 36(2), 323-345.
- DFID - Department for International Development – UK aid.(2015) Why corruption matters: understanding causes, effects and how to address them. Evidence paper on Corruption
- Field, J. (2003). Civic engagement and lifelong learning: Survey findings on social capital and attitudes towards learning. *Studies in the Education of Adults*, 35(2), 142-156.
- Fréchet, M., & Martin, A. (2011). Protecting innovation: the exclusive and combined use of protection methods by French firms. *M@n@gement*, 14(3), 120.
- Gabbay, S. M. (1997). Social capital in the creation of financial capital: *The case of network marketing*. Stipes.
- Gans, J. S., & Stern, S. (2003). The product market and the market for "ideas": commercialization strategies for technology entrepreneurs. *Research policy*, 32(2), 333-350.
- Gilson, R. J., Sabel, C. F., & Scott, R. E. (2009). Contracting for innovation: vertical disintegration and interfirm collaboration. *Colum. L. Rev.*, 109, 431.
- Hart, K. (2006). Bureaucratic form and the informal economy. *Linking the formal and informal economy: Concepts and policies*, 21-35.

- Hayes, A. F. (2013). Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. New York: Guilford Press.
- Kenny, D. A., & Judd, C. M. (2014). Power anomalies in testing mediation. *Psychological Science*, 25(2), 334-339.
- Keupp, M. M., Beckenbauer, A., & Gassmann, O. (2010). Enforcing intellectual property rights in weak appropriability regimes. *Management International Review*, 50(1), 109-130.
- Knoke, D. (1999). Organizational networks and corporate social capital. In *Corporate social capital and liability* (pp. 17-42). Springer, Boston, MA.
- Knudsen, M. P. (2007). The relative importance of interfirm relationships and knowledge transfer for new product development success. *Journal of Product Innovation Management*, 24(2), 117-138.
- Krackhardt, D., & Hanson, J. R. (1993). Informal networks: The company behind the chart. *Harvard Business Review*, 71(4): 104-111.
- Krammer, S. M. (2017). Greasing the wheels of change: Bribery, institutions, and new product introductions in Emerging Markets. *Journal of Management*, 0149206317736588.
- Laursen, K., & Salter, A. J. (2014). The paradox of openness: Appropriability, external search and collaboration. *Research Policy*, 43(5), 867-878.
- Lawson, B., Petersen, K. J., Cousins, P. D., & Handfield, R. B. (2009). Knowledge sharing in interorganizational product development teams: The effect of formal and informal socialization mechanisms. *Journal of Product Innovation Management*, 26(2), 156-172.
- Li, H., & Atuahene-Gima, K. (2001). Product innovation strategy and the performance of new technology ventures in China. *Academy of management Journal*, 44(6), 1123-1134.
- 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.
- Luk, C. L., Yau, O. H., Sin, L. Y., Alan, C. B., Chow, R. P., & Lee, J. S. (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., & Chen, M. (1997). Does guanxi influence firm performance?. *Asia Pacific Journal of Management*, 14(1), 1-16.
- Mair, J., Martí, I., & Ventresca, M. J. (2012). Building inclusive markets in rural Bangladesh: How intermediaries work institutional voids. *Academy of Management Journal*, 55(4), 819-850.
- Martin, K. D., Cullen, J. B., Johnson, J. L., & Parboteeah, K. P. (2007). Deciding to bribe: A cross-level analysis of firm and home country influences on bribery activity. *Academy of Management Journal*, 50(6), 1401-1422.
- Molina-Morales, F. X., & Martínez-Fernández, M. T. (2009). Too much love in the neighborhood can hurt: How an excess of intensity and trust in relationships may produce negative effects on firms. *Strategic Management Journal*, 30(9), 1013-1023.
- Murphy, K. M., Shleifer, A., & Vishny, R. W. (1993). Why is rent-seeking so costly to growth?. *The American Economic Review*, 83(2), 409-414.
- Nahapiet, J., & Ghoshal, S. (2000). Social capital, intellectual capital, and the organizational advantage. In *Knowledge and social capital* (pp. 119-157).
- North, D. C. (1990). A transaction cost theory of politics. *Journal of theoretical politics*, 2(4), 355-367.
- 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.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior research methods*, 40(3), 879-891.

- Putnam, R. D. (2000). Bowling alone: America's declining social capital. *In Culture and politics* (pp. 223-234). Palgrave Macmillan, New York.
- Rabe-Hesketh, S., Skrondal, A., & Pickles, A. (2004). Generalized multilevel structural equation modeling. *Psychometrika*, 69(2), 167-190.
- Rand, J., & Tarp, F. (2012). Firm-level corruption in Vietnam. *Economic Development and Cultural Change*, 60(3), 571-595.
- Rindfleisch, A., & Moorman, C. (2001). The acquisition and utilization of information in new product alliances: A strength-of-ties perspective. *Journal of marketing*, 65(2), 1-18.
- Shane, S. A. (2003). *A general theory of entrepreneurship: The individual-opportunity nexus*. Edward Elgar Publishing.
- 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.
- Shleifer, A., & Vishny, R. W. (1993). Corruption. *The quarterly journal of economics*, 108(3), 599-617.
- 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.
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. *Sociological methodology*, 13, 290-312.
- Sparrowe R.T., Liden R.C., Wayne S.J., Kraimer M.L. (2001). Social networks and the performance of individuals and groups. *Academy of Management Journal* 44(2), 316-325.
- Svensson, J. (2003). Who must pay bribes and how much? Evidence from a cross section of firms. *The Quarterly Journal of Economics*, 118(1), 207-230.
- Tsai, W. (2001). Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. *Academy of management journal*, 44(5), 996-1004.
- Tsai, W., & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks. *Academy of management Journal*, 41(4), 464-476.
- Uzzi, B. (1997). Social structure and competition in interfirm networks: The paradox of embeddedness. *Administrative science quarterly*, 35-67.
- Wang, C. L., & Chung, H. F. (2013). The moderating role of managerial ties in market orientation and innovation: An Asian perspective. *Journal of Business Research*, 66(12), 2431-2437.
- Warren, D. E., Dunfee, T. W., & Li, N. (2004). Social exchange in China: The double-edged sword of guanxi. *Journal of Business Ethics*, 55(4), 353-370.
- Webb, J. W., Kistruck, G. M., Ireland, R. D., & Ketchen Jr, D. J. (2010). The entrepreneurship process in base of the pyramid markets: The case of multinational enterprise/nongovernment organization alliances. *Entrepreneurship Theory and Practice*, 34(3), 555-581.
- World Bank. 2009. World Bank Enterprise Survey. Retrieved from <http://enterprisesurveys.org/~media/FPDKM/EnterpriseSurveys/Documents/Profiles/English/vietnam-2009.pdf>
- Wu, J. (2011). Asymmetric roles of business ties and political ties in product innovation. *Journal of Business Research*, 64(11), 1151-1156.
- Xie, Y., Liu, H., & Gao, S. (2014). Innovation generation and appropriation: the dual roles of political ties in Chinese firms' new product development. *International Journal of Technology Management*, 65(1-4), 215-239.
- Xin, K. K., & Pearce, J. L. (1996). Guanxi: Connections as substitutes for formal institutional support. *Academy of management journal*, 39(6), 1641-1658.
- Yli-Renko, H., Autio, E., & Sapienza, H. J. (2001). Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms. *Strategic management journal*, 22(6-7), 587-613.
- Zhang, J., Tan, J., & Wong, P. K. (2015). When does investment in political ties improve firm performance? The contingent effect of innovation activities. *Asia Pacific Journal of Management*, 32(2), 363-387.