Empirical Research on Business Model Innovation Alignment with Social Relationship Affect Firm Performance

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ABSTRACT

The effects of business model innovations alignment with social relationship affect firm performance bear important implication for firms. However, previous literature offers little insight on this question. We know little about how to align business model innovations with social relationship to promote firm performance. Addressing on these gaps, this study builds theoretical model based on business ecosystem theory and social capital theory to investigate how does business model innovation alignment with social relationship affect firm performance. This study further empirical examines theoretical model with data from 174 Chinese firms. The empirical results support our theoretical model. We find that both incremental business model innovation and radical business model innovation have positive effects on firm performance. More importantly, this study finds that two types of social relationships have different moderating effects on business model innovation and firm performance. This study contributes to extant literature by identifying the specific effects of alignment of business model innovation and social relationship, and enriching the empirical evidence. Our findings indicate that firms should align business model innovation with social relationship to promote firm performance.

Keywords: ICEB, Business model innovation; Firm performance; Social relationship.

INSTRUCTIONS

Over the past two decades, with popularity of information and communication technology, the Internet and e-commerce have progressively spread into all industries, providing a new available way of organizing business activity (DaSilva and Trkman, 2014). The notion of the business model has received increasing attention in the literature and in practice to think about "What is the new logic of value creation and value capture?" The increasing consensus that business model innovation is key to firm performance (e.g., Ireland et al., 2001; IBM Global Business Services, 2006; Chesbrough, 2007; Zott and Amit, 2007, 2008; Johnson et al., 2008). Firms may compete through business models (Casadesus-Masanell and Ricart, 2007). Changing the logic of firms and replacing the conventional way of doing transaction things to novel business models become the fashion of entrepreneurs (Magretta, 2002). For example, within the Internet industry, many firms which have innovated diversity of new business models, such as social networks, electronic business platforms, online games and mobile Internet applications, that achieve great business success.

The process of innovating a business model might differ for different organizations in different competitive landscapes. Business model innovation may be conceptualized as a transaction activity system which depicting the rationale of how a firm create, deliver, and capture value in relationship with a network of exchange partners (Afuah and Tucci, 2001; Osterwalder et al., 2005; Zott et al., 2011). Just identifying business logic behind the business model is insufficient to assure competitive advantage (Teece, 2010). Kim and Min (2015) find that firms run similar business model innovation reveal wide performance variation. There are more firms failed to achieve growth by means of new business models behind the successful firms. The reason often is the business model failed to match environment each other. Business model innovation often requires resource re-configuration of spanning the traditional boundaries of the firm. It should be clarify that how does the business model innovation fit with social relationship outside firms jointly impact on firm performance.

However, how does business model innovation (e.g. radical business model innovation and incremental business model innovation) align with social relationship outside firms to jointly impact firm performance? Particularly different business models may define different value propositions for firms and the ways to capture value. In spite of the increasing salient of this question, researchers have mainly rely on conceptual or cases studies to argue that (Kim and Min, 2015), a firm should innovate fit business model to adapt with social relationship. Since confined to a single or few companies, these studies are difficult to abstract to the general theory. In order to better examine the business model innovation impact on firm performance, it still need large sample empirical analysis. Essentially, business model innovation focuses on the whole business logic for value creation (Wei et al. 2014). Until now, extant literature offers few specific answers to the question on how different types of business model innovations fit with social relationship outside firms to jointly impact firm performance.

Addressing this gap, based on business model literature and social capital theory, this research investigates the effects of radical business model innovation and incremental business model innovation on firm performance and also the moderating effects of intraindustry social relationship and extraindustry social relationship. Our results indicate that a alignment outside relationship is needed to leverage radical business model innovation or incremental business model innovation for firm performance.

This research contributes to both business model innovation literature and social capital literature. First, this study extends the business model innovation perspective of firm performance. This research finds that two type of business model innovation

should align with social relationship outside firm to improve firm performance. Second, this research also extends social capital literature. We clearly distinguish contingency conditions required between different types of business model innovation, social relationship should attach more attention to the type of business model innovation. Empirically, this research used a sample of 174 firms examine the theoretical models and empirical assumptions, also provides more general empirical evidence on the interactive effects between business model innovation and social relationship.

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THEORY AND HYPHOTHESES

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Model Construction

Schumpeterian innovation theory proposed firms can achieve endogenous growth by means of five type of innovation: products, processes, materials, marketing and organization, that firms create value through a unique combination of resources (Schumpeter, 1934). However, resources per se do not bring any value to firms and its' customer. Although product innovation is important, Teece (1986) finds product innovation unable to guarantee the success in business by itself. Firms need to jump out of the boundary of the enterprise looking for complementary conditions to profit (Teece, 1986). Teece (2010) constructs a value capture framework to explain why some innovation leaderships eventually do not benefit from innovation, that product innovation should jointly create value together with the way of value chain organized, value capture system and complementary assets orientation. Firms improve performance when firm aligns complementary assets with new business model (Kim and Min, 2015). Spanning-boundary competition incubated by Internet has lead more practitioners and scholars began to rethink the nature of value creation process. The success of firms depend on business ecosystem (Moore, 1996) in which the core firms interdependently perform activities and cooperate with competitors, customers, complementors, and other stakeholders through collaborative or competitive networks (Adner and Kapoor, 2010; Zott and Amit, 2010). Under highly interconnected market environment, social division restructuring driven by complex resource structure, which reshapes the existing business model of various industrial. More and more scholars realize that the traditional value chain has been unable to portray the entire contents of value creation (Zott et al., 2011; Zott and Amit, 2013). A core firm needs to adopt a system spanning-boundary perspective and manage relationships at different levels to generate the idea of value creation and value capture (Wei et al. 2014).

The essence of business model is how to do business in novel ways (Magretta, 2002). Based on analyzing the characteristics of value creation in Internet circumstance, Amit and Zott (2001) formally proposed the concept of the business model, scholars recognize that the business model is a 'system level concept, centered on activities and focusing on value' (Zott et al., 2011), and they consider the business model itself becomes a source of value creation. Zott and Amit (2007) proposed business model is a combination of transaction content, structure, and governance elements. Business model innovation refers to the search for new logics of the firm, new ways to create and capture value for its stakeholders, and focuses primarily on finding new ways to generate revenues and to define value propositions for customers, suppliers, and partners (Amit and Zott 2001; Magretta 2002; Zott and Amit 2007, 2008; Casadesus-Masanell and Ricart 2010). Amit and Zott (2001) differentiate business model innovation with four type of interlinked business model value themes: novelty, lock-in, complementarities, and efficiency. However, that research is limited to e-commerce background. Zott and Amit (2007) expand the research context out of e-commerce to the start-ups, that scholars study the effects of business model innovation on firm performance, and also moderating effects of the environment through empirical work. Firms can adopt two types of business model innovation based on sources which is original or imitative (e.g., Zott and Amit, 2007; Cavalcante et al., 2011; Kim and Min, 2015). In addition, diversity perspective of business model innovations typology are continuously identified and developed to articulate firms' existing or desired business model, such perspective as the radicality of innovation, the reach of innovation and the complexity of innovation (Taran et al., 2015). Based on previous literature, this study will differentiate business model innovation to radical business model innovation and incremental business models innovation according to the novelty of innovation. Incremental business model innovation is to improve the existing business model through imitation, that firms articulate existing business model by reducing information asymmetry, decreasing the complexity of transactions, and reducing transaction errors and other differences. Radical business model innovation proposes new value proposition and design a new business model, for example, making connection with new trading entity, adopting new ways to carry out transactions with existing partners, designing new trading mechanism, pricing models and profit models.

Whenever a firm employs a particular business model, just developing a business model is insufficient to assure competitive advantage if business model configuration is not properly adapted to the competitive environment (Teece, 2010). Business model represents a specific combination of boundary-spanning resources which through transactions exchange with stakeholders and generate value for the company and its customers (Zott et al., 2011; Zott and Amit, 2013; DaSilva and Trkman, 2014). Firms carry out business model innovation to improve performance, which is great challenge for boundary-spanning resources available. A novel business model innovation need to consume abundant resources. Especially, resources are important constraints for entrepreneurial companies, because its infancy often lack resources invested. Social capital theory suggests that firms may exploit resources embedded in external relationship in addition to internal resources. Nahapiet and Ghshal (1998) conceptualize social capital consist of relationship, cognitive and structure. Under the transition context, relationship networks is important channel by which Chinese firms get access to knowledge, technology, information and other resources. Peng and Luo (2000) find that the managerial ties can prompt firm access to resources outside its boundary through empirical study. Because of incumbent firms embedded in a intraindustry network, it is difficult to obtain enough knowledge

from extraindustry and break the established business logic, so that incumbent firms often failed competition with new entry of small businesses (Christensen, 1997). Geletkanycz and Hambrick (1997) differentiate effect of intraindustry and extraindustry information on strategic choices, and find that the more top management team obtain knowledge and information by means of intraindustry relationship, the more established strategic choice is reinforced. In contrast, knowledge and information obtained through extraindustry relations, which help firm to choose different strategy from other peer frims. Stam and Elrfing (2008) find that the knowledge and resources come from intraindustry and extraindustry relationship which have different effects on the development of entrepreneurial opportunities. Boso et al. (2013) also find that intraindustry and extraindustry relationship have different effects on entrepreneurial process. Based on these studies, this research differentiate the relationship from intraindustry relationship and extraindustry relationship. The former refers to the relationship between company and partner, customers, distributors, suppliers. The latter refers to the relationship between company and universities, research institutes, government departments, media and customers from other industry.

Based on the above theoretical analysis, we construct a theoretical model (Figure 1) to propose that although business model innovation may be key drivers for firm performance, its effect may depend on whether alignment of social relationship really exists. Specifically, radical business model innovation and incremental business innovation affect firm performance. However, their effects may be moderated by extra- and intra-industry social relationship.
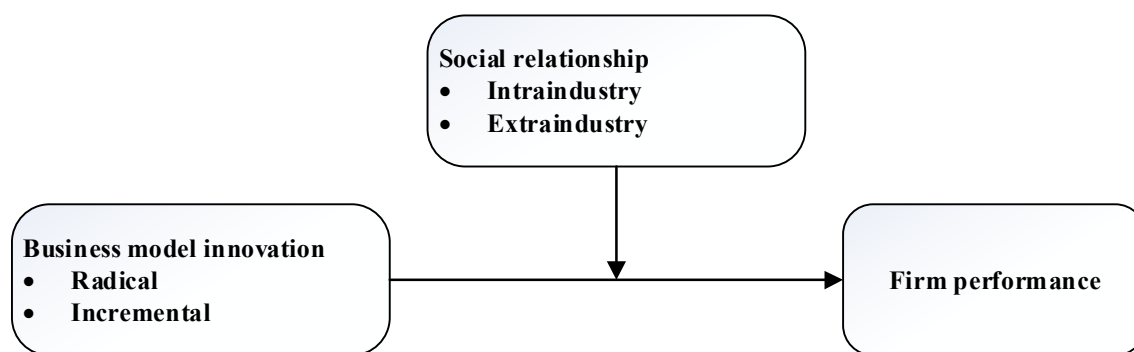

Figure 1: Theoretical model

Business Model Innovation and Firm Performance

Extant literatures offer that there is an important direct relationship between the design of transactions and firm performance (e.g., Milgrom and Roberts, 1992; Poppo and Zenger, 1998). Incremental business model innovation aims to reduce transaction cost, decrease transaction errors, and increase transaction efficiency through information sharing and operational process improvement based on established transaction structure (Zott and Amit, 2007). This reduction can derive from the attenuation of uncertainty, complexity, or information asymmetry (Williamson, 1975), as well as reduction of coordination costs and transaction risk (Clemons and Row 1992).

Furthermore, since the inherent advantages of the Internet and e-business which have a dramatic reduction of transaction cost, the sophisticated technology have progressively spread into all industries as a suitable way of organizing business activity (DaSilva and Trkman, 2014). Even if traditional brick-and-mortar companies can run incremental business innovation, which further explore new products, and improve established product-centered business models, so that firm may improve Schumpeter Rents which can help firm win more market opportunities (Zott and Amit, 2013). For example, bio-pharmaceutical companies more like to explore new drugs and new therapies by increasing R&D investment, meantime the company apply information technology on limited improvement of established business model under the Internet environment. The stability of the business model provide a stable environment for market expansion, which can help firms reduce marketing risk.

However, note that these strategies are often difficult to work within a dynamic and heterogeneity of environment. Within ever-changing customer needs and transaction entities of environment, transaction process has become a major source of organizational inertia, which is original contributing to the success of enterprises (Christensen, 1997). For Chinese companies, it is increasingly more difficult, that firms enhance competitive advantage by dedicated to the incremental improvement of the established business model. The more firms dedicated to the incremental business model innovation, the more firms will emphasize consistency and standardization against transaction processes, which lead the company's business behavior to be firmly solidified in the current activity system. Such stable structure cause that it is difficult for firm to adapt to the dynamic changing environment, thus precludes the firm improving the firm performance. Therefore, the study hypothesize:

Hypothesis 1: Incremental business model innovation has a positive effect on firm performance.

Radical business model innovation aims to find novel alternative value proposition through designing a boundary-spanning transactions pattern that a focal firm does transaction with customers, partners, vendors, and other stakeholders (Zott and Amit,

2007; Teece, 2010). Radical business model innovation ether creates novel value proposition and innovates transactions for current market or enter into new market and industry (Zott and Amit, 2007). With the popularity of the new generation of network technology, fully recombination of resources and information sharing have broken established social resources structure, so that original solidified resources are flowing. Firms can find new opportunities to reconfigure resources and capabilities and obtain fast growth (Zott and Amit, 2013). For example, Shaanxi Blower Group regains rapid growth through re-positioning value proposition to service-oriented business model. NVC-lighting redefines the market value of lighting products, find a new profitable channel which beautify light environment. Moreover, radical business model innovation enable firms to break organizational inertia and institutional rigidity, so that, firms can adapt to dynamic environment. Therefore, the study hypothesize:

Hypothesis 2: Radical business model innovation has a positive effect on firm performance.

Business Model Innovation and Social Relationship

Since Chinese unique culture and regime, social relationship play an important role in business activities. Social relationship act as informal mechanisms which to get, apply and configure resource, help firms to reorganize resources according to requirement of business model innovation. However, it is quite different that the resources intraindustry and extraindustry relationship brought to firm (Geletkanycz and Hambrick, 1997). Intraindustry relationship may bring to firm resources which are often closely linked to the existing business model. In contrast, extraindustry relationship may bring more heterogeneity of resources to firm (Stam and Elfring, 2008). Social capital theory also point out that it is often opportunity which social relationships bring to firms. Social capital is only a potential resource. Firm can obtain resources through social relationship, even though it may not be used. The two type of social relationship might have different effect of business model innovation on firm performance.

Incremental business model innovation dedicated to improve profitability through reconfigure the established business model. During business model improvement, incremental business model innovation needs more resources attached existing business models. Intraindustry relationships are often embedded within the established value network. The closer intraindustry relationships are, the more companies are able to get resources from these partners. Cognitive overlap generated from closer relationship networks also guides enterprises to consolidate existing partnership, transaction process and product to carry out business activities (Christensen, 1997; Christensen and Raynor, 2003). Therefore, the more closely intraindustry relationship, the more successful incremental business innovation progress.

The extraindustry relationship can help companies acquire new resources without influenced by past experiences. Extraindustry relationship often bring more heterogeneous resources, it is difficult to directly be used to improve or consolidate the existing business model. These heterogeneous resources difficult to integrate, more importantly, it is difficult to blending with the existing resource base. Therefore, for incremental business model innovation, the value of extraindustry relationship resources is smaller and the integration risk is greater. Therefore, the study hypothesize:

Hypothesis 3a: Intraindustry relationship enhance the positive effect of incremental business model innovation on firm performance.

Hypothesis 3b: Extraindustry relationship weaken the positive effect of incremental business model innovation on firm performance.

Radical business models innovation requires a lot of resources to carry out the exploration (Zott and Amit, 2007) and trial-and-error (Sosna et al., 2010; Tongur and Engwall, 2014). New business models require heterogeneous resources as a support. Excessive closer intraindustry relationship is not only difficult to provide effective resources, but also be the biggest obstacle to oppose innovation (Christensen, 1997; Rosenkopf and Nerkar, 2001). Closely intraindustry relationship causes the company more dependent on existing resource base and business model, which emerged stronger inertia in dynamic environment (Christensen and Raynor, 2003). Excessive closer intraindustry relationships cause embedded relationship, it is so difficult for enterprises to break the shackles of the established relationship network to extend the new network.

Radical business models innovation often means to break existing transaction and cooperation structures, construct new transaction relationship, transaction process and profit model, it often requires a cooperation network different from existing business model. During this innovation process, the resources brought by intraindustry relationship is often difficult to help firm build new business model (Geletkanycz and Hambrick, 1997). Firm need to expand cooperation networks outside the industry they located. The higher the extraindustry relationship resources, the more acquired new resources, which is useful to complete the business model designment.

The extraindustry relationship was less affected by the established investment, which can bring to firms heterogeneous resources, and stimulate top management team creative thinking (Geletkanycz and Hambrick, 1997). Therefore, for radical business innovation, the value of extraindustry relationship resources is higher and it has lower risk. Extraindustry relationship resources

tend to be more easily absorbed and exploited. It is helpful for companies which develop a higher level of extraindustry relationship to get more heterogeneous resources, and to reduce the risk of business model innovation. Therefore, the study hypothesize:

Hypothesis 4a: Intraindustry relationship weaken the positive effect of radical business model innovation on firm performance.

Hypothesis 4b: Extraindustry relationship enhance the positive effect of radical business model innovation on firm performance.

METHDOLOGY

Sample and Data Collection

We used surveys of firms in China to test our hypotheses. China is one of the most important emerging economies, and is being a drastic upgrading of industrial structure. The companies were selected out of the firm list provided by the local governments, which from Suzhou Industrial Park, Qingdao National High-tech Industrial Development Zone, Xi'an Hi-tech Industries Development Zone and Shenzhen High-Tech Industrial Park.

We developed questionnaire based on previous literature review. With the consent of companies, the research personnel meet executives and fill in the questionnaire onsite. In order to avoid influence of common method bias, we invited two executives each sample to attend survey to complete different part of the questionnaire. To ensure that the respondents were knowledgeable, we selected the top managers or department managers as the respondents. We conducted the survey with manager A and B separately, and checked the questionnaire after the managers finished it.

A total of 500 firms were approached and 186 firms participated in the survey. Due to 12 firms failed to complete the questionnaire, our final sample includes 174 firms, which represented a response rate of 34.8%. Among the 174 responding samples, new generation of information technology enterprise were 56, high-end equipment manufacturing enterprises were 38, new materials enterprise were 23, new energy enterprises were 23, bio-pharmaceutical companies were 21, environmental service enterprise were 13.

To check non-response bias, Chi-square test and t-test was performed to compare the responding and non-responding firms along firm attributes such as firm size, age and ownership. The test result shows that responding and non-responding samples were insignificant difference, which indicated low possibility of non-response bias (Armstrong and Overton, 1977).

Measures

This research adopted mature scale to measure firm performance, business model innovation, social relationship and control variables (shown in Table 1).

This study used six indicators measuring firm performance, including: (1) Return on assets; (2) Return on sales; (3) Return On Investment; (4) Average Rate of Profit; (5) Sales growth; (6) Profit growth. In order to test possible bias which are guided subjective, this research also collected objective data of Sales margins, and make correlation analysis on objective and subjective performance. This study find that there is a significant correlation between the objective and subjective performance.

According to some scholars' research (Zott and Amit, 2007; Cavalcante et al., 2011), this study used six indicators measuring the incremental business model innovation, and used seven indicators measuring radical business model innovation (shown in Table 1).

Based on relevant research (Geletkanycz and Hambrick, 1997; Stam and Elfring, 2008; Boso et al., 2013), this study measured 11 relationships about companies between customers, suppliers, distributors, peers, government, industry associations, universities, research institutions, the media, executives of companies come from other industrials and other social organizations which are outside of company. This study adopted 11 indicators to measure whether companies have established a good relationship with these outside entity.

Previous researches present that firm size, firm age and the competitive environment will directly affect firm performance. In order to avoid bias which caused by right shift of distribution of numerical variables, this study used natural logarithm conversion value of firm age as measure-items, and used natural logarithm conversion value of the staff number of companies to measure firm size. This study used 1-5 Likert scale measures competitive environment: intense competitive within industry.

Reliability, Validity and Common Method Variance (CMV)

This study used Cronbach's α coefficient to test reliability. The result shows that the Cronbach's α coefficient of each scale are greater than 0.7 (shown in Table 1), indicating the scale has good reliability. This study used two indicators of AVE and loading values to test the validity of the scale. The result shows that the loading value of each item are above 0.6, and AVE value are all more than 0.5 (shown in Table 1), indicating the measurement has a better convergent validity, according to Fornell and Larcker

(1981) proposed standards. This study used AVE method to test discriminant validity of each variable. The result shows that the AVE square roots of each variable is greater than the correlation coefficient of the variable with other variables (shown in Table 2), indicating a better discriminant validity between each variable. The common method variance is an important bias in empirical research, Podsakoff et al. (2003) suggested that separate the source of questionnaire on measuring independent variable and dependent variable is the best way to avoid the common method variance. Therefore, this research invites two executives in each sample company, complete different parts of the questionnaire respectively. Questionnaire for measuring business model innovation, social relationship and control variables comes from executives A, and questionnaire for measuring firm performance comes from executive B.

Table 1: Constructs reliability and validity

Factors	Items	Loadings	Reliability/ validity
Firm performance	(1) Return on assets	0.865	α=0.879 AVE=0.631
	(2) Return on sales	0.874	
	(3) Return On Investment	0.813	
	(4) Average Rate of Profit	0.778	
	(5) Sales growth	0.611	
	(6) Profit growth	0.798	
Incremental business model innovation	(1) Reconfigure business model to reduce transaction costs for participants.	0.773	α=0.932 AVE=0.622
	(2) Reconfigure business model to simplify transaction process.	0.746	
	(3) Reconfigure business model to decrease transaction errors.	0.812	
	(4) Reconfigure business model to reduce marketing and sales cost, communication cost.	0.812	
	(5) Reconfigure business model to speed up transaction.	0.744	
	(6) Reconfigure business model to improve transaction efficiency.	0.820	
Radical business model innovation	(1) Design a new business model creative.	0.658	α=0.935 AVE=0.568
	(2) Introduce a lot of new, diverse participant.	0.647	
	(3) Links participant together in novel ways.	0.681	
	(4) Redesign novel profit model.	0.846	
	(5) Creates new sources of revenues.	0.847	
	(6) Adopts new ideas and methods to conduct business.	0.875	
	(7) Overall, the company's business model is novel.	0.878	
Intraindustry relationship	(1) Establish a close personal relationship with end customers.	0.858	α=0.807 AVE=0.668
	(2) Establish a good personal relationship with management staff of supplier.	0.848	
	(3) Establish a good personal relationship with management staff of distributor.	0.848	
	(4) Establish a good personal relationship with management staff of industry.	0.680	
Extraindustry relationship	(1) Maintain a good relationship with all sectors of local government.	0.621	α=0.877 AVE=0.624
	(2) Establish a good relationship with various industry associations.	0.767	
	(3) Establish a good relationship with universities.	0.750	
	(4) Establish a good relationship with research institutions.	0.699	
	(5) Establish a good relationship with media institutions.	0.776	
	(6) Establish a good relationship with top management personnel in other industries.	0.749	
	(7) Establish a good relationship with various social organizations.	0.820	

Analysis and Results

Table 2 presents the basic characterization of variables in our model, and analyzes the correlation between each variable. The results of analysis show that incremental and radical business model innovation, intraindustry and extraindustry relationship, have significant correlation coefficient on firm performance, which lay the basic foundation for the regression analysis. In addition, all correlation coefficient of each variable are less than 0.6, which reduce the threat of multicollinearity (Aiken and West, 1991).

Table 3 reports the four steps of validation of theoretical model. In model 1, the study only examines the role of control variables, which together explain a significant share of the variance. Model 2 verified the effect of incremental and radical business model innovation on firm performance. We find that incremental and radical business model innovation did significantly contribute to firm performance with controlling firm age, size and intensity of competition, and regression coefficient of radical business model innovation on firm performance is very significant. The result indicates that both incremental and radical business model innovation have positive effect on firm performance. Overall, it is more evident that radical business model innovation improves firm performance more effective than incremental business model innovation. Therefore, Hypothesis 1 and Hypothesis 2 are supported.

In model 3-4, we add intraindustry relationship, extraindustry relationship and interaction between business model innovation and social relationship to examine the moderating effect of social relationship. The Model 4 shows that the coefficient of interaction between incremental business model innovation and intraindustry relationship is significantly positive. The result indicates that intraindustry relationship strengthens the positive of incremental business model innovation on firm performance. Therefore, Hypothesis 3a is supported.

Model 4 shows that the coefficient of interaction between radical business model innovation and intraindustry relationship is significantly negative. The result indicates that intraindustry relationship weakens the positive effect of radical business model innovation on firm performance. Therefore, Hypothesis 4a is supported.

Model 4 shows that the coefficient of interaction between incremental business model innovation and extraindustry relationship is significantly negative. The result indicates that extraindustry relationship weakens the positive effect of incremental business model innovation on firm performance. Therefore, Hypothesis 3b is supported.

Model 4 shows that the coefficient of interaction between radical business model innovation and extraindustry relationship is significantly positive. The result indicates that extraindustry relationship strengthens the positive effect of radical business model innovation on firm performance. Therefore, Hypothesis 4b is supported. In summary, Hypothesis Testing Results are shown in Table 4.

Table 2: Means, standard deviations (SDs), and correlations

	Mean	SD	1	2	3	4	5	6	7	8
1.Firm age	2.30	0.79	N/A							
2.Firm size	5.26	1.52	0.25**	N/A						
3. Intense competition	3.80	0.73	0.15*	0.22**	N/A					
4.Incremental business model innovation	3.65	0.65	-0.07	0.02	0.06	0.789				
5.Radical business model innovation	3.59	0.67	-0.07	-0.02	0.07	0.38**	0.754			
6.Intraindustry relationship	3.90	0.70	0.01	0.07	0.15*	0.38**	0.42**	0.817		
7.Extraindustry relationship	3.84	0.69	0.06	0.23**	0.19**	0.47**	0.35**	0.42**	0.790	
8.Firm performance	3.10	0.67	-0.01	0.01	-0.09	0.18**	0.26**	0.14*	0.18**	0.794

Notes: a. + $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$;
b. The diagonal elements are square roots of average variance extracted (SRAVE) for constructs measured with multiple items. N/A refers to this item is not adaptive to analysis.

CONCLUSION AND DISCUSSION

Conclusion

This research aims to answer the question that how business model innovation alignment with social relationship to impact on firm performance. Based on innovation theory, business ecosystem theory and social capital theory, theoretical model was constructed. This study adopts 174 Chinese emerging technology companies as samples, the theoretical model was empirically tested. The testresults basically support the theoretical framework which this research proposed. This study finds that incremental and radical business model innovation all have positive effect on firm performance, and radical business model is more effective. More importantly, this study finds that incremental and radical business model innovation fit with different social relationship to improve firm performance. We find that intraindustry relationship enhances the positive effect of incremental business model innovation whereas weakens the positive effect of radical business model innovation. We also find that extraindustry relationship weakens the positive effect of incremental business model innovation whereas enhances the positive effect of radical business model innovation.

Table 3: Regression results

Variables	Dependent variable: firm performance			
	Model 1	**Model 2**	**Model 3**	**Model4**
Control variables				
1.Firm age	-0.125+	-0.138+	-0.151+	-0.147+
2. Firm size	0.115	0.113	0.125	0.101
3. Intense competition	-0.159**	-0.165***	-0.149***	-0.089
Independent variable				
4.Incremental business model innovation		0.139**	0.147**	0.145**
5.Radical business model innovation		0.181***	0.178***	0.179**
Moderators and Interactions				
6.Intraindustry relationship			0.118*	0.121*
7.Extraindustry relationship			0.167**	0.163**
8.Intraindustry relationship*incremental business model innovation				0.141**
9.Intraindustry relationship*radical business model innovation				-0.187**
10.Extraindustry relationship*incremental business model innovation				-0.266**
11.Extraindustry relationship*radical business model innovation				0.209**
R square	0.196	0.294	0.387	0.496
Ajusted R square	0.105	0.196	0.294	0.387
R square change		0.098***	0.093***	0.109***
F value	2.154**	2.267***	2.272***	2.213***

Notes: +, * Represent significance level; + $P < 0.1$; * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$, all tests are two tailed.

Table 4: Hypothesis Testing Results

Hypothesis	Content	Test Result
H1	Incremental business model innovation has a positive effect on firm performance	True
H2	Radical business model innovation has a positive effect on firm performance	True
H3a	Intraindustry relationship enhance the positive effect of incremental business model innovation on firm performance	True
H3b	Extraindustry relationship weaken the positive effect of incremental business model innovation on firm performance	True
H4a	Intraindustry relationship weaken the positive effect of radical business model innovation on firm performance	True
H4b	Extraindustry relationship enhance the positive effect of radical business model innovation on firm performance	True

Theoretical Contributions

This research contributes to both business model innovation and social capital literature. First, this study explores different type of business model innovation impact on firm performance with novelty perspective. We find that radical business model innovation has higher effect on firm performance. More importantly, this study further analyzed the moderating effect of social relationships, we find that although Chinese companies attach great importance to social relationship, the role of different types of social relationships have been obviously neglected. Firms can't benefit from all social relationship, because of different business model innovation requires different social relations to improve firm performance. The study identified contingency conditions which different social relationship has different moderating effect on business model innovation. Second, the study enriches large samples of empirical evidence on how business model innovation impact upon firm performance. Previous studies often were confined to case studies of individual company, which did not provide more empirical evidence, because of limitation of research content and context. This study used a large sample of 174 Chinese emerging technology companies to examine theoretical model, which improves universality and applicability of the conclusions.

Managerial Implications

This research also bears important managerial implications. First, firms should take more attention to organizational inertia in order to avoid traps during firms innovate or replicate a new business model. According to our finding, intraindustry relationship may stimulate incremental business model innovation forming or strengthening organizational inertia because of path-dependence, which ultimately lead companies failed in market competition and cause resources loss. Especially for firms in emerging economy such as China, firms often face such traps with industrial structure upgrading. Because of the weak technological base, Chinese companies should invest more resources on innovation strategies to develop new market or grasp market opportunity.

Second, firms need to build different types of social relationships according to different business model innovation strategies. Firms need to notice that not all types of social relationships are helpful to business model innovation. The results show that the radical business model innovation can create more values, and extraindustry relationship is more effective than intraindustry relationship. Firms need to span out of familiar relationship such as customers, suppliers, peers, to create closer relationship with universities, governments, and customers come from other industry, to enhance the promotion of business model innovation on firm performance.

Limitation and future directions

This study has limitation that need to deal with in future research. First, business model innovation typology can be defined from multiple dimension in addition to novelty used this research. For example, Taran et al. (2015) proposed a business model innovation typology which consist of three dimension including "Radicality", "Reach" and "Complexity". Firms can combine different type of business model innovation to improve firm performance, according to what resources and capabilities they have and environment around them. Therefore, future research needs to study ether different type of business model innovation alignment with environment affect firm performance or the role of combination of different type of business model innovation.

Second, this research only considered external social capital without internal social capital. Given business model is a combination of boundary-spanning resources through which create and deliver value to customer, business model innovation should be related to the internal resources reconstruction. Therefore, internal social capital is also potential impact firm performance. Business model innovation may require different types of social capital to match. This research only concerns the impact of external social capital, future research may continue to study the moderating effect of internal social capital on firm performance.

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APPENDIX