How Business Model Designs Influence Firm Growth in a Transforming Economy: A Configurational Perspective

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ABSTRACT This study adopts a configurational perspective to examine how business model designs and contextual factors in transforming economies combine to create value. We investigate configurations of efficiency-centered and novelty-centered business model designs, corporate ownership, development stage, and external regulatory volatility associated with high growth in a transforming economy. Using a fuzzy-set qualitative comparative analysis of Chinese firms, we find five solutions associated with superior growth, suggesting that the effective configurations of business model designs vary in different contexts. Our study offers a holistic understanding of the relationship between business model designs and firm growth, and yields useful insights for business model designs for practitioners.

KEYWORDS efficiency-centered business model design, fsQCA, novelty-centered business model design, regulatory volatility

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INTRODUCTION

Business model (BM) design concerns how a BM is represented, including the configuration of the design elements and the extent to which they are arranged and connected by different themes (Amit & Zott, 2001; Schindehutte & Morris, 2009). Previous studies have identified the two most influential business model designs: efficiency-centered and novelty-centered BM designs (Amit & Zott, 2001; Chesbrough & Rosenbloom, 2002). The former refers to 'the measures that firms may take to achieve transaction efficiency, aiming at reducing transaction costs for all transaction participants', while the latter includes 'new ways of conducting economic exchanges among various participants' (Amit & Zott, 2001; Zott & Amit, 2007).

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BM design is necessary but insufficient for firm growth, as the relationship between BM design and growth remains subject to contingent factors. Previous studies have emphasized the importance of fit among BM designs and contextual factors and have recognized the boundary conditions such as firms' resource munificence (Zott & Amit, 2007) and relationship-specific investments (Brettel, Strese, & Flatten, 2012). Despite fascinating and unique contexts in transforming economies, few studies have examined how BM designs enhance firm growth in the contexts of transforming economies. In transforming economies such as China, regulations change frequently and create environmental dynamism and uncertainty (Luo & Peng, 1999). Firms with different ownership (e.g., state-owned vs. private-owned) and at different developmental stages (e.g., new ventures vs. mature firms) have different resource endowments and vary significantly in BM designs. Identifying how these regulatory and organizational factors shape the relationship between BM designs and firm growth in transforming economies represents an important research agenda.

Moreover, as the Chinese government boosted mass entrepreneurship and innovation in recent years, new and complex BM designs blossomed in China. Firms began to adopt a hybrid BM design (i.e., a BM design combining efficiency and novelty attributes) rather than a single BM design (Pati, Nandakumar, Ghobadian, Ireland, & O'Regan, 2018). Whether or not these two fundamentally different BM designs should be deployed simultaneously is a matter of debate among scholars. Whereas some studies find that hybrid designs harm firm performance (Gronum, Steen, & Verreynne, 2016; Zott & Amit, 2007), others argue for a positive relationship between portfolio BM designs and firm performance (e.g., Pati et al., 2018). How these two BM designs work simultaneously to facilitate firm growth in a transforming economy still needs to be investigated.

This study attempts to examine how BM designs and multiple contextual factors in transforming economies combine to influence firm growth. Specifically, we consider corporate ownership, developmental stage, and regulatory volatility as representative contextual factors. To holistically consider the complex configurations of multiple factors, we use a fuzzy-set qualitative comparative analysis (fsQCA) (Ragin, 2006), which is a well-structured methodology in management literature for identifying the configurations of multiple conditions in explaining an outcome (Fiss, 2011; Schneider & Wagemann, 2012).

Our analysis of 277 enterprises from China reveals five configurations of efficiency-centered, novelty-centered BM designs, and contingent factors facilitating firm growth. Our findings suggest that effective BM designs vary among different contexts. Specifically, a hybrid BM design leads to high growth for mature firms or state-owned firms under a stable regulatory environment. Under an environment with high regulatory volatility, a success recipe for early-stage private firms achieving high growth is an either-or BM design (i.e., either an efficiency-centered BM design or a novelty-centered BM design). For state-owned mature firms under high regulatory volatility, an efficiency-centered BM design is sufficient for high growth.

This study contributes to the literature in three ways. First, through considering corporate ownership, developmental stage, and regulatory volatility as organizational and environmental conditions, we develop and extend the literature with a deeper understanding of BM designs in transforming economies. Second, we contribute to the BM literature by revealing different BM patterns and the relationships between efficiency- and novelty-centered BM designs. Third, instead of examining the independent effect of each BM design, this study adopts a holistic perspective through fsQCA to empirically examine the configurations of BM designs and contextual factors on firm growth.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Business Model Designs and Performance

Efficiency-centered and novelty-centered BM designs are the two main types of BM designs that have been widely accepted and followed by researchers (Gronum et al., 2016; Hu, 2014). Efficiency and novelty reflect entrepreneurs' basic alternatives to creating value under uncertainty (Miller, 1996; Zott & Amit, 2007), and their functioning logics are different. An efficiency-centered BM design is anchored in transaction-cost economics (Williamson, 1981), which improves transaction efficiency by reducing information asymmetry, transaction risks, and coordination costs (Clemons & Row, 1991; Milgrom & Roberts, 1992). It benefits firm performance by reducing customers' search and bargaining costs (Brynjolfsson, Hitt, & Yang, 2002). The logic of a novelty-centered BM design is anchored in Schumpeterian economics, which emphasizes the novel combinations of resources (and the services they provide) as the foundations of new products and production methods (Zott & Amit, 2007). A novelty-centered BMD positively influences firm performance by developing brand awareness and reputation, and creating switching costs for customers (Amit & Zott, 2001).

Previous research has recognized several external and internal contextual factors on the link between BM designs and firm performance. The external environment could potentially impact the BM design-firm performance relationship by offering opportunities and challenges (Ahlstrom & Bruton, 2006). For example, Zott and Amit (2007) discussed how BM designs create value under varying conditions of environmental munificence; Pati et al. (2018) found that environmental dynamism and munificence moderate the relationship between BM designs and firm performance. Internal contingent factors, such as firms' capabilities (Carr, Haggard, Hmieleski, & Zahra, 2010), resources, rigidity, etc., vary across different stages and influence the relationship between BM designs and performance. For example, an efficiency-centered BM design is of great benefit to mature firms (Brettel et al., 2012; Pati et al., 2018), while a novelty-centered design offers more advantages for younger SMEs compared to mature SMEs (Pati et al., 2018). Tables 1 and 2 summarize key conceptual and empirical studies on BM designs.

Table 1. Summary of key conceptual/theoretical studies on business model design

Authors	Key content	Theoretical findings
Amit & Zott (2001)	Business model design is defined to support the strategic development of firms, in particular to identify opportunities and create sustainable competitive advantages	Four potential sources of value creation through business models are proposed: (1) novelty, (2) lock-in, (3) complementarities, and (4) efficiency.
Afuah (2004)	Business model is designed to help a firm to build and use its resources to offer its customers better value and to make money in doing so.	A strategic framework is introduced in which the business model is conceptualized through a set of components that corresponds to the determinants of firm profitability.
Keen & Qureshi (2006)	How business models can be represented and how the application of business models has transformed organizations.	An effective business model is rigorous in its value logic. Business models must be simple in their statement and help to mobilize relevant stakeholders.
Zott & Amit (2007)	How to design an organization's set of boundary-spanning transactions—business model design and how business model design affects the performance of entrepreneurial firms.	Novelty-centered business model design matters to the performance of entrepreneurial firms, and this positive relationship is remarkably stable across time, even under varying environmental regimes. Incorporating both efficiency- and novelty-centered design elements into their business models may be counterproductive.

Business Model Configuration

More interestingly, studies find that companies do not necessarily confine themselves to one BM and may conduct two or more BM designs simultaneously (Kim & Min, 2015). In the context of a transforming economy, the institutional environment is full of uncertainty, so companies are more likely to respond with complex BM designs. Scholars have emphasized the need to improve our understanding of the impact of the simultaneous deployment of several BM designs on performance (Gronum et al., 2016; Zott & Amit, 2007, 2008), but a contradiction remains in the relationship between a dual BM design and firm performance.

Although Zott and Amit (2007) indicated that a given BM could be efficiency- and novelty-centered concurrently, they argued that embracing both efficiency and novelty simultaneously might increase cost and suboptimal resource allocation, eventually harming firm performance. In a similar vein, Gronum et al. (2016) suggested that a potential trade-off exists between efficiency- and novelty-centered BM designs. However, other studies have drawn the opposite conclusion. For example, a case study by Sabatier, Craig-Kennard, and Mangematin (2012) found a positive relationship between complex BM designs and firm performance, which was later supported by large-scale empirical research (Pati et al., 2018).

These inconsistent findings may originate from the fact that most existing studies investigate different contextual factors in isolation. In fact, BM innovation

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Table 2. Summary of key empirical studies on business model design

Author (Year)	Main relationship	Contingency factors	Hybrid BM design and performance	Samples	Main findings
Zott & Amit (2007)	Efficiency/novelty BM and performance	Resource munificence	Negative	190 young entrepreneurial firms	Efficiency/Novelty BM design is positively related to firm performance. The main relationship is moderated by resource munificence. Emphasizing both efficiency and novelty in the design of a business model is not positively related to performance.
Zott & Amit (2008)	Efficiency/novelty BM and performance	Differentiation; cost leadership; market entry timing	-	170 firms (from IPO prospectuses)	Novelty-centered business models coupled with product market strategies that emphasize differentiation, cost leadership, or early market entry can enhance firm performance. However, the expected positive interaction between an efficiency-centered business model and cost leadership strategy is not supported by data.
Yang & Li (2009)	Novelty BM and performance	-	-	IKEA	Novelty-centered business models can satisfy the demands of both enterprises and customers to improve business performances effectively and ultimately obtain a sustainable competitive advantage.
Sabatier, Mangematin, & Rousselle (2010)	BM portfolios and value creation	-	Positive	4 Biotech firms	Operating a portfolio of BMs enhances firms' medium-term viability and future development.
Brettel et al. (2012)	Efficiency/novelty BM and performance	Life cycle stage; relationship-specific investments	-	234 firms in German-speaking countries	Efficiency/Novelty BM design is positively related to firm performance. The relationship between BM design and firm performance is moderated by the life cycle stage and relationship-specific investments.

Table 2. Continued

Author (Year)	Main relationship	Contingency factors	Hybrid BM design and performance	Samples	Main findings
Gronum et al. (2016)	Innovation and performance		Negative (trade-off)	331 Australian firms	User simplicity/Efficiency/Novelty business model design themes mediate the relationship between innovation and firm performance.
Wei, Song, & Wang (2017)	Manufacturing flexibility-BM designs-firm performance	Competitive intensity; demand heterogeneity	-	186 Chinese manufacturing firms	Manufacturing flexibility promotes both efficiency- and novelty-centered business model designs and subsequent firm performance. The main relationship is moderated by competitive intensity and demand heterogeneity.
Pati et al. (2018)	Efficiency/novelty BM and performance	Firm age; munificence	Positive	241 Indian SMEs	BM novelty was of greater benefit to younger SMEs, while BM efficiency was of greater benefit to mature SMEs. The environmental dynamism positively moderated the relationship between BM novelty and performance but negatively moderated the relationship between BM efficiency and performance. Emphasizing both efficiency and novelty in the design of a business model is positively related to SME performance.

and operation are accompanied by complex interactions between the internal and external factors of the enterprise. A holistic approach may help enhance our understanding of how their configurations produce superior firm performance.

Business Model Designs in Transforming Economies

Transforming economies refer to the economies of countries, such as China, which are going through an economic and social transformation from a planned economy to a market economy in recent decades. They provide unique contexts for us to observe how companies develop new business models and achieve good performance. In this study, we focus on three typical contextual factors: regulatory volatility, corporate ownership, and development stage.

Regulatory volatility represents the regulatory dimension of the institutional environment, which captures the rapid and unexpected changes in laws and government policies that create uncertainty in this institutional facet (Buckberg, 1997; Chelariu, Bello, & Gilliland, 2006). Such volatility is a key indicator of transforming economies. For example, in China, government management can be described as central planning at the pinnacle of party-state control. In recent years, the extent of government management has dramatically declined and has become fragmented with the push for corporatization. The fragmentation of regulatory structures (Harris & Eisner, 1994) introduces a series of problems. The formal division of regulatory authority is unclear and is often the subject of dispute because lines of authority are poorly delineated (Pearson, 2005). 'Regulatory grab' or 'responsibility shirk' might be generated among government offices when new issues require regulation. In addition, reforms frequently transfer authority from one agency to another. Moreover, formal institutional constraints, such as laws, judicial decisions, and economic contracts, are comparatively weak. These problems lead to confusion, thereby creating greater regulatory volatility (Child & Tsai, 2005; Peng & Luo, 2000). In such an institutional environment, firms face greater institutional dynamics. The BM design and its impact may differ from those in a stable institutional environment (Chelariu et al., 2006).

Corporate ownership, another key indicator of transforming economies, may have a significant effect on the relationship between BM design and its growth. Firms with different ownerships, namely, state-owned or controlled enterprises (SOEs) and private-owned firms (POEs), have different resource endowments (Arnoldi, Villadsen, Chen, & Na, 2018; Liang, Marler, & Cui, 2012; Meyer, 2015). They also face different business and economic conditions; thus, these firms have distinct types of ownership advantages (Li, Xia, Long, & Tan, 2012; Narula, 2015). Particularly, SOEs enjoy privileged access to strategic resources, such as the political support and capital of state-owned banks, while POEs have the advantages of flexible strategies and quick decisions (Amighini, Rabellotti, & Sanfilippo, 2013). Therefore, SOEs and POEs could have distinct preferences for certain BM designs (Song, Yang, & Zhang, 2011). Investigating the impact

of company ownership is of great significance for determining how a BM design affects a firm's performance in the context of transforming economies.

Based on the organizational life cycle perspective (Dodge, Fullerton, & Robbins, 1994), firms' different developmental stages reflect different patterns of structural and contextual dimensions (Lu, Liang, Shan, & Liang, 2015). Accordingly, we could expect BM designs to differ between young and mature firms. For example, studies argue that start-ups are associated with the liability of newness (Gruber, 2006), while mature enterprises benefit from legitimacy (Brettel et al., 2012). New firms are more flexible, while mature firms are more constrained by organizational rigidity (Stinchcombe, 1965). Therefore, we propose that the development stage acts as an important contextual factor for the effectiveness of BM designs.

Research Framework

In short, how business model designs yield high growth effectively in a transforming economy is a complex issue. This study seeks to adopt a holistic approach to understand better how the configurations of BM design and contextual factors produce firm growth. Specifically, we examine how two critical themes of BM designs, i.e., efficiency- and novelty-centered BM, as well as corporate ownership, development stage, and regulatory volatility, combine to create high growth. We use fsQCA (Ragin, 2008), an inductive, theory-building approach used to identify the configurations of the conditions associated with an outcome (Fiss, 2007). This methodology depicts the complex relationships among multiple factors (Schneider &Wagemann, 2012) and is appropriate for this research.

METHODS

Data and Sample

Our empirical data were collected in China, which represents one of the largest transforming economies (Peng & Luo, 2000). The firms were mainly located in Beijing, Shanghai, Guangdong, Zhejiang, and Sichuan provinces. These regions represent rapid development in economic growth, where firms' BM designs and innovation practices are common and active.

The data collection was conducted from December 2014 to October 2016. First, we randomly generated a list of 2,000 firms from the Federation of Industry and Commerce in each region. Then, we collected contact information of senior managers (e.g., chief executive officers, vice presidents, senior marketing managers, and senior financial managers) of these firms. We trained 10 research assistants to contact the companies; explain the purpose, procedures, and key constructs of the questionnaire; and ask for their participation. To increase the response rate, we promised to provide the executives with a detailed report of our analysis. We sent the online questionnaire via e-mail.

We received 473 responses, yielding a response rate of 23.7%. After careful checks by three researchers, we excluded several questionnaires due to missing critical information or false information (e.g., most or all scores in the questionnaire were the same). We ultimately obtained a valid sample of 277 companies. We tested the response bias by comparing the differences in firm size, firm industry, and development stage between the responded sample and nonresponse sample. The t-test showed no significant difference between the two batches ($p > 0.05$), suggesting low nonresponse bias.

We took several steps to evaluate the magnitude of common-method bias (Chang, van Witteloostuijn, & Eden, 2010; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). First, we used the unrotated principal component factor solution of Harman's one-factor test. The results showed that the first factor accounted for 30.99%, suggesting that neither a single factor nor a general factor accounts for the majority of the emerging covariance. Second, a confirmatory factor analysis (CFA) was performed to test the common-method variance (CMV). When a model linked all items of the core variables into one factor (i.e., regulatory volatility, efficiency-centered BM design, novelty-centered BM design, and growth), the results showed a poor fit with the data (i.e., $\chi^2 = 4478.837$; df = 435; χ^2/df = 10.30; CFI = 0.537; TLI = 0.503; and RMSEA = 0.129). Third, we adopted Podsakoff et al. 's (2003) 'single common method factor approach' to test for CMB. Our proposed model showed a good fit (i.e., $\chi^2 = 737.103$; df = 374; χ^2/df = 1.97; CFI = 0.91; TLI = 0.90; and RMSEA = 0.059), while the indicators did not significantly improve after adding a latent method factor (i.e., $\chi^2 = 737.988$; df = 376; χ^2/df = 1.96; CFI = 0.91; TLI = 0.90; and RMSEA = 0.059). Overall, these results suggested that concerns related to common method bias are substantially alleviated in the current study.

Measurements

We used measures in the literature that have been validated in empirical studies to ensure the reliability of our measurements. A 5-point Likert-type scale (from 1 'strongly disagree' to 5 'strongly agree') was utilized to measure the indicators of firm growth, BM designs, and regulatory volatility. Detail items and scales are included in the Appendix.

The measurements of firm growth are consistent with Wiklund and Shepherd (2005) and Van Doorn, Jansen, Van den Bosch, and Volberda (2013). This measure comprises the profit growth rate, sales growth rate, and market share growth rate (Cronbach's $\alpha = 0.81$; composite reliability (CR) = 0.82; average variance extracted (AVE) = 0.60).

We used the scales from Zott and Amit (2007) to measure efficiency-centered and novelty-centered BM designs. We carefully checked each question in the variable localization process and modified the questions for the executives to understand. In both the efficiency-centered BM design ($\alpha = 0.89$; CR = 0.89; AVE =

Table 3. Descriptive statistics and correlations

Variable	Mean	s.d.	1	2	3	4	5	6
1. Corporate ownership	0.19	0.39	1					
2. Development stage	0.29	0.46	0.25*	1				
3. Regulatory volatility	3.22	0.95	0.16*	0.09	1			
4. Efficiency-centered BM design	3.49	0.63	0.02	0.11	0.11	1		
5. Novelty-centered BM design	3.57	0.62	−0.01	−0.02	0.07	0.62*	1	
6. Growth	3.35	0.73	0.05	0.04	0.04	0.30*	0.36*	1

Notes: N = 277, *p < 0.05

0.41) and the novelty-centered BM design ($\alpha = 0.90$; CR $= 0.90$; AVE $= 0.43$) scales, 12 items were retained after localization. The measurement of regulatory volatility was derived from Chelariu, Bello, and Gilliland (2006), asking how the CEOs feel about the regulatory environment ($\alpha = 0.88$; CR $= 0.89$; AVE $= 0.72$).

The Cronbach's α values of all 5-point Likert-type scale variables are above 0.7, indicating high reliability and consistency. The CR values of all variables are greater than 0.7, showing that the consistency of internal variation is acceptable (Hair, Black, Babin, Anderson, & Tatham, 1998). The convergent validity of each variable is greater than 0.4, indicating that the latent variable measurement has ideal convergent validity (Ford, MacCallum, & Tait, 1986).

The firm developmental stage was captured with a self-classification scheme based on Sharma and Salvato (2011). Following previous studies, early-stage firms include firms in the introduction and growth stages, and mature firms include firms in the maturity stage (Brettel et al., 2012; Sharma & Salvato, 2011). The corporate ownership type was classified into state-owned and private firms. Table 3 shows the descriptive statistics and correlations of the five conditions and growth.

fsQCA and Results

Calibration. Before performing the fsQCA, all raw data had to be calibrated into sets. In this study, we used two approaches to calibrate the data. The variables with 5-point Likert-type scores were transformed into fuzzy-set membership scores ranging from 0.0 to 1.0 (Ragin, 2008). Specifically, we used 5 as a value for full membership and 1 for full non-membership, with 3 (i.e., the 'neutral' Likert-scale value) for the 0.5 threshold. Then, we employed the transformation function in the fs/QCA 2.0 software package (Ragin, 2006) using the log odds of full membership to transform our original interval scale variables into continuous fuzzy membership scores (Fiss, 2011; Ragin, 2008).

The variables in binary were calibrated into crisp sets. Specifically, the early-stage firms were calibrated into 0, and the mature-stage firms into 1; the state-owned firms were calibrated into 1, and the private firms into 0.

Table 4. Necessary analysis of each individual condition for high firm growth

	High Growth		Non-High Growth	
	Consistency	Coverage	Consistency	Coverage
Corporate ownership (state-owned)	0.23	0.63	0.19	0.37
Development stage (mature)	0.35	0.63	0.29	0.37
Regulatory volatility	0.80	0.79	0.83	0.56
Novelty-centered BM design	0.81	0.89	0.82	0.57
Efficiency-centered BM design	0.77	0.88	0.81	0.59

Necessary analysis. The necessary analysis determines whether any individual conditions can be regarded as necessary for causing the outcome (Ragin, 2008). A condition is usually considered necessary if its consistency score exceeds 0.90 (Schneider & Wagemann, 2010).

According to the fsQCA procedures (Schneider & Wagemann, 2013), we tested whether any BM designs or contextual factors were individually *necessary* for high growth. As shown in Table 4, the consistency scores are all below 0.90. Therefore, we conclude that no single cause constitutes a *necessary* condition for high growth.

Constructing and analyzing the truth table and sufficient analysis. We constructed a truth table based on the set membership data. As there were five condition factors (i.e., corporate ownership, development stage, regulatory volatility, efficiency-centered BM design, and novelty-centered BM design), we obtained a truth table with 32 (2^5) rows. Then, we set the frequency and consistency thresholds to reduce the initial truth table (Ragin, 2008). Frequency refers to the number of cases in each row. As we had a sample of 227 firms, we set the frequency threshold to 2, which included cases above the threshold of 80% suggested by Rihoux and Ragin (2008). The consistency threshold was selected to distinguish the causal combinations that are subsets of the outcome from those that are not. We set the consistency threshold to 0.85 for high growth, which is consistent with the literature (Ragin, 2006; Sun, Garrett, Phau, & Zheng, 2018; Woodside, 2015). We also set the PRI consistency, which allowed us to identify the truth table rows likely to be associated with both the outcome and its absence, to 0.50 to render our truth table more rigorous.

RESULTS

Configurations for High Growth

The sufficiency analysis reports the results with a complex solution, a parsimonious solution, and an intermediate solution (Ragin, 2006). Following prior studies (e.g., An, Rüling, Zheng, & Zhang, 2019), we use intermediate configurations as our final solutions.[1] Table 5 summarizes the 5 solutions that were identified through our analyses.

Table 5. Configurations for firm growth

Conditions	High Growth					Non-High Growth	
	G1	G2	G3	G4	G5	NG1	NG2
Corporate ownership (state-owned)		●	⊗	⊗	●	⊗	●
Development stage (mature)	●		⊗	⊗	●	⊗	⊗
Regulatory volatility		⊗	●	●	●	⊗	●
Novelty-centered BM design	●	●	●			⊗	●
Efficiency-centered BM design	●	●		●	●	⊗	⊗
Consistency	0.85	0.96	0.85	0.86	0.88	0.94	0.93
Raw coverage	0.29	0.11	0.47	0.44	0.10	0.34	0.07
Unique coverage	0.19	0.06	0.02	0.01	0.01	0.34	0.07
Overall solution consistency			0.85			0.94	
Overall solution coverage			0.82			0.41	

Notes: Conditions are represented by ● (presence) and ⊗ (absence). A blank space indicates a 'do not care' situation, indicating that a given condition can be either present or absent.

We also include the scores of consistency and coverage of each configuration and the solutions as a whole. Consistency refers to the degree to which the configuration is a subset of the outcome, while coverage depicts the degree to which the outcome is included in the configuration. As shown in Table 5, all configurations exhibit acceptable consistency levels (≥ 0.80) but display varying degrees of coverage. The overall consistency is also ≥ 0.80, suggesting a relatively high level. The overall coverage of the configurations is 0.82 for high growth, revealing a high explanation power.

Consistent with the equifinality principle of QCA (i.e., a scenario in which alternative configurations can produce the same outcome), our results demonstrate five configurations for high growth. Configuration G1 (mature stage*novelty-centered BM design*efficiency-centered BM design)[2] suggests that a BM design that combines both efficiency and novelty is sufficient for mature firms' high growth regardless of the institutional environment and corporate ownership. Configuration G2 (state-owned firms*~regulatory volatility*novelty-centered BM design*efficiency-centered BM design) demonstrates that a BM design that combines both efficiency and novelty is sufficient for state-owned firms' high growth in a stable institutional environment.

Configurations G3 to G5 indicate the configurations under high regulatory volatility. Specifically, G3 (private firms*early stage*regulatory volatility*novelty-centered BM design) suggests that a novelty-centered BM design is sufficient for early private firms' high growth, while configuration G4 (private firms*early stage*regulatory volatility*efficiency-centered BM design) indicates that an efficiency-centered BM design is sufficient for early private firms' high growth.

Configuration G5 (state-owned firms*mature stage*regulatory volatility*efficiency-centered BM design) demonstrates that an efficiency-centered BM design can generate growth in mature state-owned firms.

Configurations for Non-High Growth

Differing from regression results, fsQCA has a causal asymmetry principle, suggesting that the configurations of the conditions leading to low growth may not negate the configurations leading to high growth. Two configurations are sufficient for non-high growth (i.e., the absence of high growth).

Configuration NG1 (private firms*early stage*~regulatory volatility*~efficiency-centered BM design*~novelty-centered BM design) suggests that in a stable institutional environment, private early-stage firms with no clear BM design have low growth. Configuration NG2 (state-owned firms*early stage* regulatory volatility* novelty-centered BM design*~ efficiency-centered BM design) is a solution for state-owned mature firms' low growth when they deploy a novelty-centered BM design rather than an efficiency-centered BM design.

Robustness Tests

Following the recommendations of prior fsQCA studies (e.g., An et al., 2019; Schiehll, Lewellyn, & Muller-Kahle, 2017; Schneider & Wagemann, 2012), we vary the consistency thresholds, frequency thresholds, and calibration strategies to check the robustness of the results. The results are summarized in Table 6.

For the solutions that lead to high growth, first, we employ both higher consistency thresholds (0.90) and lower thresholds (0.80) in the fsQCA analysis. The results show that with a higher consistency threshold, the overall solution consistency is increased, but the coverage is decreased. In addition, all solutions are the logical subsets of the baseline solutions. Meanwhile, a decrease in the consistency thresholds leads to the same results as the baseline solutions because no new configurations in the truth table are included in the analysis.

Second, we change the calibration anchors of the Likert-type variables. In the baseline analyses, we set the 3-point (i.e., neutral in the items in the questionnaire) in the raw data as the cross-set membership of 0.5. To test the robustness of the results, we recalibrate these variables. When we set the 3.5-point as the set membership of 0.5, there is a great decrease in both coverage and consistency. The configurations are consistent with the baseline solutions but more for mature state-owned firms. When we set the 2.5-point as the set membership of 0.5, the solutions are logical supersets of the baseline solutions.

To assess whether our results are robust with changes to the frequency thresholds, we set frequency thresholds of 3 and 1. The results show that when the frequency threshold is 3, the solution coverage slightly decreases, and the solutions

Table 6. Summary of robustness tests

Outcome	Calibration anchors/ Consistency threshold/ Frequency threshold		Number of configurations	Solution consistency	Solution coverage	Configuration differences
High growth	**Baseline**	3/0.85/2	5	0.85	0.82	
	Changing consistency thresholds	3/0.80/2	5	0.85	0.82	None
		3/0.90/2	6	0.91	0.57	Decrease in coverage; increase in consistency; logical subset of the baseline solution
	Changing calibration anchors	3.5/0.85/2	3	0.83	0.10	Decrease in coverage and consistency; solutions are more related to mature state-owned firms
		2.5/0.85/2	3	0.89	0.92	Increase in consistency and coverage; logical superset of the baseline solution
	Changing frequency thresholds	3/0.85/3	4	0.87	0.79	Slight decrease in coverage; G1 eliminated; logical subset of the baseline solution
		3/0.85/1	5	0.87	0.80	Slight decrease in coverage; one more configuration emerged (state-owned firms*mature stage*regulatory volatility*novelty-centered BM design)
Non-high growth	**Baseline**	3/0.85/2	2	0.94	0.41	
	Changing consistency thresholds	3/0.80/2	2	0.94	0.41	None
		3/0.90/2	2	0.94	0.41	None
	Changing calibration anchors	3.5/0.85/2	6	0.84	0.76	Decrease in consistency; increase in coverage; logical superset of the base-line solution
		2.5/0.85/2		n/a	n/a	No consistent solution available
	Changing frequency thresholds	3/0.85/3	2	0.94	0.41	None
		3/0.85/1	2	0.94	0.41	None

remain logical subsets of the baseline solutions. The setting of the frequency threshold to 1 causes one more configuration.

The robustness checks of non-high growth suggest no solution difference with variation in the consistency thresholds and frequency thresholds. Meanwhile, the results of the various calibration anchors show changes. When setting the 3.5-point in the Likert scale as a set membership of 0.5, the overall solution consistency decreases, but the coverage increases. The solutions are logical supersets of the baseline solutions. However, setting the 2.5-point as a set membership of 0.5 reveals no consistent solution. Overall, none of the robustness tests showed substantial differences from the baseline solutions. We could conclude that our reported findings are highly robust.

DISCUSSION

Through a fsQCA of 277 Chinese firms, we find different combinations of BM designs and contextual factors in transforming economies associated with high growth. Our study reveals that the deployment of one specific BM design or the simultaneous deployment of both novelty- and efficiency-centered BM designs could produce high growth and that such results depend on the specific contexts. This finding suggests that the effectiveness of any BM design requires the consideration of contingent factors in transforming economies, including corporate ownership, developmental stage, and regulatory volatility. As such, our study offers a nuanced overview of BM designs and performance.

Configurational Theorizing of BM Designs for High Growth

A hybrid BM design for mature firms. Configurations G1 and G2 indicate that a combination of efficiency and novelty BM design can generate high growth under specific contexts. Because the firms in these two solutions embrace both efficiency and novelty, we label this BM design *a hybrid BM design*. This result suggests that efficiency and novelty BM designs can complement one another and that their combination can benefit firm growth under particular contexts.

In configuration G1, a firm's developmental stage is the only relevant context. This result suggests that a hybrid BM design is sufficient for mature firms' growth. Generally, firms growing into the maturity stage find it more difficult to sustain high growth. Because of challenges such as organizational inertia (Kelly & Amburgey, 1991), mature firms tend to focus more on exploiting existing products or services rather than capturing new opportunities (Agarwal & Audretsch, 2001). We argue that a hybrid BM design can be an opportunity for mature firms' growth.

The characteristics of a hybrid BM design often deviate from the dominant industry partnership recipe and break the established activity pattern (Berghman, Matthyssens, & Vandenbempt, 2006). Because mature firms usually have established structures among their industry participants, a hybrid BM

design helps them establish new structures by creating new, innovative elements, such as involving new participants or renewing transactional approaches among existing partners. These new elements produce new opportunities that become engines for firm growth. Moreover, a hybrid BM design suggests that new transactional patterns among participants have a high degree of efficiency, which can further strengthen the influence of novelty on firm growth (Zott & Amit, 2007). Therefore, a hybrid BM design is beneficial for enhancing mature firms' high growth.

More importantly, mature firms have the potential to master a hybrid BM design. As stated earlier, employing both efficiency and novelty in a BM design simultaneously can be difficult to balance. Firms need strong capabilities and resources to support the operation of a hybrid BM design (Mezger, 2014; Pati et al., 2018). We argue that mature firms can provide the resources and capabilities needed for a hybrid BM design. In transforming economies, compared to start-ups, mature firms usually have greater experience, more resources, and formal and informal networks to support such a complicated BM design (Pati et al., 2018; Zahra & Filatotchev, 2004). Once deployed and balanced, a hybrid BM design could benefit a firm's growth by building formidable advantages (Casadesus-Masanell & Tarzijan, 2012). Our first proposition is as follows:

Proposition 1: A hybrid BM design is associated with mature firms' high growth.

A hybrid BM design for state-owned firms under low regulatory volatility. Configuration G2 reveals that a hybrid BM design is sufficient for SOEs' growth. The necessary absence of regulatory volatility suggests that a hybrid BM design is effective for SOEs' growth in a relatively stable institutional environment. Prior studies have identified that POEs are more profitable than SOEs in transforming economies such as China (Hovey, Li, & Naughton, 2003; Liang et al., 2012), and our results show that a hybrid BM design could be an approach that enables SOEs to continue to grow.

Under this context, we argue that a hybrid BM design is superior to other designs. On the one hand, SOEs tend to have a more inefficient structure (Choi, Lee, & Williams, 2011). The efficiency design theme of a hybrid BM could benefit SOEs through scale economies, which enhance the return on the novelty design (Schindehutte & Morris, 2009). On the other hand, the novelty design theme of a hybrid BM usually generates new ways to conduct economic exchange by connecting new transactional partners or reconnecting existing transaction partners in novel ways (Zott & Amit, 2007). These innovations produce possible first-mover advantages in the industry. For SOEs in transition economies, these advantages are more difficult to imitate or diffuse. Therefore, by combining both efficiency and novelty as design themes, such firms could generate more value and might achieve higher growth.

Similarly, configuration G2 reveals a resourceful context suitable for conducting a hybrid BM design. In transforming economies, compared to private firms, SOEs have more resources and channels to access resources and face fewer

institutional constraints (Li, Park, & Li, 2004; Nee, 1992). For example, factor resources, such as capital, are allocated more to SOEs than nonstate firms by the Chinese government (Li & Xia, 2008). Therefore, these firms have a better resource base from which to deploy a hybrid BM design. Moreover, a stable regulatory environment ensures the benefits of state-owned firms (Freund, 2001). We offer the following proposition:

> *Proposition 2: A hybrid BM design is associated with high growth among state-owned firms under low regulatory volatility.*

An either-or BM design for early private firms under high regulatory volatility. By combining configurations G3 and G4, we find that either an efficiency-centered or a novelty-centered BM design is at the core. We label the BM design in these two configurations, an *either-or BM design*. In these two solutions, an either-or BM design is sufficient for the high growth of early private firms under high regulatory volatility.

When regulatory volatility is high, the institutional environment is unstable as governments create ambiguous new laws and regulations (Chelariu et al., 2006; Yakovlev, 1996). The rapid and unexpected changes in laws and government policies create great uncertainty (Buckberg, 1997). Compared to state-owned firms such as in China, private firms face more institutional pressures (Li & Xia, 2008; Park, Li, & Tse, 2006). In particular, early private firms face more resource and capability constraints in deploying both efficiency- and novelty-centered BM designs. These firms need to focus on either an efficiency- or novelty-centered BM design. Once one BM design is selected, the other BM design is best avoided. Therefore, we offer the following proposition:

> *Proposition 3: An either-or BM design is associated with high growth among early private firms under high regulatory volatility.*

An efficiency-centered BM design for mature state-owned firms under high regulatory volatility. Configuration G5 suggests that an efficiency-centered BM design could benefit the high growth of mature SOEs under high regulatory volatility. First, efficiency becomes increasingly important for mature firms to sustain their profitability (Quinn & Cameron, 1983), which is especially true for SOEs as SOEs tend to adhere to a formal structure and have standardized and formalized rules and procedures (Choi et al., 2011; Kazanjian, 1988; Stinchcombe, 1965). An efficiency-centered BM design improves the transaction efficiency of focal firms and participants by reducing information asymmetry, transaction risks, and coordination costs (Clemons & Row, 1991; Milgrom & Roberts, 1992). Moreover, an efficiency-centered BM design could benefit firm growth by reducing customers' search and bargaining costs (Brynjolfsson et al., 2002). Second, mature SOEs usually have larger resource stocks and a more established network. An efficiency-centered BM design could generate as many benefits as possible, given

mature SOEs' existing advantages (Steffens, Davidsson, & Fitzsimmons, 2009). Therefore, we propose the following:

> *Proposition 4: An efficiency-centered BM design is associated with high growth among mature state-owned firms under high regulatory volatility.*

Revisiting the Relationship between Efficiency- and Novelty-Centered BM Designs

The findings in the existing studies regarding the relationship between efficiency- and novelty-centered BM designs are inconclusive. One line of reasoning suggests that embracing both design themes adversely affect firm performance because each BM design has distinct characteristics that are difficult to reconcile. Especially for firms with limited resources and capabilities, combining these two design themes becomes an even more challenging task that may lead to less legitimacy or more costs (Zott, 2003; Zott & Amit, 2007). Other scholars acknowledge that efficiency-centered and novelty-centered BM design implementations are not mutually exclusive. The two designs can occur simultaneously or even interact (Brettel et al., 2012; Zott & Amit, 2007). Nevertheless, prior empirical studies have primarily focused on the independent effect of each BM design on performance (e.g., Brettel et al., 2012; Gronum et al., 2016; Hu, 2014; Wei, Yang, Sun, & Gu, 2014; Zott & Amit, 2008), ignoring their joint effects.

Our study provides empirical support regarding the relationship between these two BM designs. By summarizing the five solutions, we identify two possible relationships between efficiency- and novelty-centered BM designs. Configurations G1 and G2 indicate that a combination of high efficiency-centered and high novelty-centered BM designs is sufficient for superior growth, constituting one of our main findings that these two design themes could act as complements within a BM design. This finding is consistent with prior studies arguing that their interactions have a positive effect on performance (Kim & Min, 2015; Sabatier, Mangematin, & Rousselle, 2010). We argue that whether a firm can benefit from such hybrid designs depends on the firm's ability to manage the cost and coordination associated with hybrid BM designs (Pati et al., 2018). Failing to address the significant tensions generated by hybrid designs could be detrimental to firm performance and even lead to failures. In our study, a hybrid BM design can be appropriate for mature firms or SOEs under low regulatory volatility. All these contexts provide a resourceful environment to relieve the tensions between the two BM designs. Furthermore, these firms are usually in an urgent need to refresh themselves in terms of both efficiency and novelty to address their inefficient structures or rigidness.

The other possible relationship is that efficiency- and novelty-centered BM designs work together as substitutes. Configurations G3 and G4 suggests that either an efficiency- or a novelty-centered BM design is enough to produce high growth in certain contexts. These two solutions indicate that under high regulatory volatility

characterized by high uncertainty, young POEs benefit more by focusing on either BM design. Configuration G5 shows a clear presence of an efficiency-centered BM design without emphasis on novelty. This suggests that novelty can be either present or absent in this configuration. Comparing all solutions, we find that efficiency- and novelty centered BM designs are not mutually exclusive from each other.

In summary, our findings suggest that the relationship between efficiency- and novelty-centered BM designs are complex and depend on particular contexts, such as corporate ownership, development stage, and regulatory volatility. We believe that these findings provide novel insights into the current BM design literature.

Contingency Factors in a Transforming Economy

We also find that firms' strategic choices regarding BM designs differ across different contexts. In transforming economies, such as China, corporate ownership, development stage, and external institutional factors of regulatory volatility represent the most typical factors of contextual characteristics. Our results show that different contexts decide whether there is a balance or trade-off between efficiency- and novelty-centered BM designs.

The type of firm ownership is a critical context that influences the deployment of BM designs. Even though private firms have become major contributors to transforming economies such as China, SOEs still play an important role in the economy (Arnoldi et al., 2018). One of the main reasons is that SOEs are also undergoing transformations (Li et al., 2012). Our results show that SOEs can either deploy efficiency-centered BM design or combine efficiency with novelty to achieve high growth. Compared to SOEs, POEs usually choose a more flexible either-or BM design to produce high growth. This is partially because POEs are more adaptive to the environment or lack the resources needed for a hybrid BM design.

Another contextual factor in transforming economies is the firm development stage. In transforming economies, such as China, central authorities have made big strides encouraging entrepreneurship. However, many new ventures face resource constraints (An et al., 2019). Our results reveal that young firms could choose an either-or BM design to achieve high growth. While for mature firms, a hybrid BM design or efficiency-centered BM design would be effective for high growth.

In transforming economies, firms need to overcome a variety of challenges associated with the unique institutional context, such as the regulatory environment (Yang, Ru, & Ren, 2015). In transforming economies, the regulatory institution is unstable and uncertain due to new laws and regulations (Scott, 2001). In such a context, the degree of regulatory volatility in a particular industry is crucial as it brings risk to the business environment (Li & Atuahene-Gima, 2002). Our results reveal that when regulatory volatility is low, firms tend to deploy hybrid BM designs to achieve growth. But regulatory volatility is high, and firms need to choose an either-or or efficiency-centered BM design. We provide an overall summary in Table 7 to depict the solutions in different contexts better.

Table 7. Summary of BM designs in different contexts of transforming economies

Context	Characteristics under transforming economies		BM designs for high growth
Corporate ownership	SOEs	More resourceful, scale advantage	Hybrid BM design (G2) or efficiency-centered BM design (G5)	More focus on efficiency as SOEs can have a better scale economy by an efficiency-centered BM design; SOEs also have the resources needed to balance efficiency and novelty in a hybrid BM design to achieve growth.
	POEs	Efficient, flexible, but resource constrained	Either-or BM design (G3 and G4)	POEs are more flexible in adapting their BM designs to achieve growth through an either-or BM design.
Development stage	Early stage	Resource constrained, flexible	Either-or BM design (G3 and G4)	An either-or BM design is more beneficial for early-stage firms' growth as they usually do not have enough resources for a hybrid BM design but are flexible enough for either BM design.
	Mature stage	Difficult to grow, established structure	Hybrid BM design (G1) or efficiency-centered BM design (G5)	Mature firms have the potential to master a hybrid BM design due to the accumulation of resources and capabilities needed; these firms can also achieve growth through the scale economy effect caused by an efficiency-centered BM design.
Regulatory volatility	High regulatory volatility	Uncertain, ambiguity, new laws and regulations	Either-or BM design (G3 and G4), or efficiency-centered BM design (G5)	For firms under high regulatory volatility, an either-or BM design or an efficiency-centered BM design is more adaptive and less resource consuming.
	Low regulatory volatility	Stable institutional environment	Hybrid BM design (G2)	A low regulatory volatility environment is a resourceful context for conducting a hybrid BM design. In addition, a stable institutional environment can enhance and lengthen the benefits of a hybrid BM design.

Theoretical and Practical Contributions

Our study makes several theoretical contributions. First, this study contributes to the understanding of how BM designs influence firm growth in transforming economies. Prior studies have acknowledged the central role of BM and its designs in explaining firm performance (e.g., Aspara, Hietanen, & Tikkanen, 2010). While there is increasing evidence that many firms in developing economies are highly receptive to business model innovation (like Xiaomi in China) (Prashantham, Kumar, & Bhattacharyya, 2019), most current studies concerning BM nonetheless focus on developed countries (Battistella, De Toni, De Zan, & Pessot, 2017) and neglect transforming economies. This study investigates how firms adapt their BM designs to the context of transforming economies to achieve high growth. Particularly, we identify the corporate ownership, development stage, and regulatory volatility as core contextual factors in transforming economies, and explore how BM designs and these factors combine to yield high growth. By doing so, we respond to the call for considering complex contextual boundaries in transforming economies (Meyer, 2015).

Second, we contribute to the literature concerning the relationship between different BM designs. Since Zott and Amit proposed efficiency-centered BM design and novelty-centered BM design as two main BM designs, studies concerning the relationship between these two BM designs are inconclusive. While some studies view these designs as contrasting business designs that can rarely be combined, other studies argue that these designs are not independent and could interact. We reconcile this conflict by providing empirical evidence and identifying the following three patterns of BM designs: efficiency-centered BM design, novelty-centered BM design, and a hybrid BM design. This finding suggests that firms do not necessarily confine themselves to one design theme but rather can either employ one design theme as dominant or use both design themes in one design.

Third, this research contributes to the literature through a holistic understanding of how BM designs, corporate ownership, development stage, and regulatory volatility combine to influence firm growth. Prior research has typically treated BM designs separately and focused on their independent effects on firm performance (e.g., Brettel et al., 2012; Gronum et al., 2016; Hu, 2014; Wei et al., 2014; Zott & Amit, 2008). Certain scholars have suggested that efficiency-centered BM designs and novelty-centered BM designs are occasionally combinable to support positive firm performance. However, knowledge regarding how BM designs work together to affect firms' outcomes is insufficient. We find that multiple success recipes exist for firms to generate superior performance through different BM design patterns in different contexts. Therefore, our results contribute to the literature by providing a fuller picture of the relationship between BM designs and firm growth.

Our study also provides managerial advice regarding BM designs for companies operating in a transforming economy. First, we note that different BM design themes

do not conflict. Companies can pursue different themes simultaneously to achieve good performance. Second, we identify the following three BM design patterns related to good performance: efficiency-centered, novelty-centered, and a hybrid of high efficiency- and novelty-centered BM designs. Companies may not focus on one single design and can consider their combination. Third, more specifically, we offer several solutions based on our fsQCA findings, explaining that a firm can design its BM to achieve high growth by considering its ownership, development stage, and regulatory volatility. According to our suggestions, firms can design their new BM or rethink their current BM to achieve better performance.

Limitations and Future Research Directions

Our research has several limitations that might serve as the starting point for future research. First, although novelty- and efficiency-centered BM designs represent two critical BM design themes, this classification is abstract and simplified compared with reality. The inclusion and consideration of other specific BM designs can further enrich our understanding. Second, we are among the first to identify how a hybrid BM design can lead to high performance via a fsQCA study. Future studies could use richer case studies to elaborate on how various types of firms achieve ambidexterity in BM designs and high performance. Third, we use a cross-sectional research design to investigate the BM designs and contingencies associated with growth. Longitudinal data collection would enhance the validity and provide full-fledged evidence of the relationship. Fourth, we used a self-report scale to measure regulatory volatility. It would be helpful to use more objective measures to reflect the regulatory dimension of the institutional environment that firms face in transforming economies. Finally, we are relatively low in coverage for some configurations. It is common that sufficient relations are sometimes rare from empirical importance, and thus exhibit low coverage. The low coverage indicates that there exist some factors that could increase the relevance of the findings. Future research focusing on business model design could discuss certain characteristics, for example, political ties and changing technology led by the Internet (Shi, Markóczy, & Stan 2014; Wirtz, Schilke, & Ullrich, 2010), to explore the configurational and complex relationships.

NOTES

[1] As we did not specify any counterfactuals or 'directional expectations' about any conditions, the complex and intermediate solutions are the same. We report the intermediate solutions in Table 5.

[2] In Boolean notation, the * signifies set intersections (logical *and*), and ~ denotes a set negation (logical *non-*).

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APPENDIX I

Scales	Items (a 5-point Likert-type scale from 1 'strongly disagree' to 5 'strongly agree')
Firm growth (Source: Wiklund & Shepherd, 2005; Van Doorn et al., 2013)	For each of the following questions, please indicate the responses that most closely describe your firm on growth compared with the competitors: 1. We have a much better profit growth rate than competitors. 2. We have a much better sales growth rate than competitors. 3. We have a much better market share growth rate than competitors.
Efficiency-centered business model design (Source: Zott & Amit, 2007)	For each of the following questions, please indicate the statements that most closely describe your firm over the last year: 1. Inventory costs for participants in the business model were reduced. 2. Transactions were simple from the user's point of view. 3. The business model enabled a low number of errors in the execution of transactions. 4. Costs other than those already mentioned for participants in the business model were reduced (i.e., marketing and sales costs, transaction-processing costs, communication costs, etc.). 5. The business model was scalable (i.e., could handle a small as well as a large number of transactions). 6. The business model enabled participants to make informed decisions. 7. Transactions were transparent: Flows and use of information, services, goods can be verified. 8. As part of transactions, information was provided to participants to reduce asymmetric degree of knowledge amongst them regarding the quality and nature of the goods being exchanged. 9. As part of transactions, information was provided to participants about each other. 10. Access to large range of products, services, information, and other participants was provided. 11. The business model enabled fast transactions. 12. The business model, overall, offered high transaction efficiency.

Novelty-centered business model design
(Source: Zott & Amit, 2007)

For each of the following questions, please indicate the statements that most closely describe your firm over the last year:
1. The business model offered new combinations of products, services, and information.
2. The business model brought together new participants.
3. Incentives offered to participants in transactions were novel.
4. The business model gave access to an unprecedented variety and number of participants and/or goods.
5. The business model linked participants to transactions in novel ways.
6. The richness (i.e., quality and depth) of some of the links between participants was novel.
7. The business model relied on trade secrets and/or copyrights.
8. The focal firm claimed to be a pioneer with its business model.
9. The focal firm had continuously introduced innovations in its business model.
10. There were competing business models with the potential to leapfrog the firm's business model.
11. There were other important aspects of the business model that made it novel.
12. Overall, the company's business model was novel.

Regulatory Volatility (Source: Chelariu et al., 2006)

For each of the following questions, please indicate the statements that most closely describe the environment of your firm over the last year:
1. Business people often had to cope with unexpected changes in laws, rules or policies.
2. Unpredictability of laws and regulations presented problems for many business operations.
3. The legal system in our country was volatile and unstable.

REFERENCES

Afuah, A., & Tucci, C. L. 2003. *Internet business models and strategies*. New York, NY: McGraw-Hill/Irwin.

Agarwal, R., & Audretsch, D. B. 2001. Does entry size matter? The impact of the life cycle and technology on firm survival. *Journal of Industrial Economics*, 49(1): 21–43.

Ahlstrom, D., & Bruton, G. D. 2006. Venture capital in emerging economies: Networks and institutional change. *Entrepreneurship Theory and Practice*, 30(2): 299–320.

Amighini, A. A., Rabellotti, R., & Sanfilippo, M. 2013. Do Chinese state-owned and private enterprises differ in their internationalization strategies? *China Economic Review*, 27: 312–325.

Amit, R., & Zott, C. 2001. Value creation in E-business. *Strategic Management Journal*, 22(6–7): 493–520.

An, W., Rüling, C. C., Zheng, X., & Zhang, J. 2019. Configurations of effectuation, causation, and bricolage: Implications for firm growth paths. *Small Business Economics*, 54(3): 843–864.

Arnoldi, J., Villadsen, A. R., Chen, X., & Na, C. 2018. Multi-level state capitalism: Chinese state-owned business groups. *Management and Organization Review*, 15(1): 55–79.

Aspara, J., Hietanen, J., & Tikkanen, H. 2010. Business model innovation vs replication: Financial performance implications of strategic emphases. *Journal of Strategic Marketing*, 18(1): 39–56.

Battistella, C., De Toni, A. F., De Zan, G., & Pessot, E. 2017. Cultivating business model agility through focused capabilities: A multiple case study. *Journal of Business Research*, 73: 65–82.

Berghman, L., Matthyssens, P., & Vandenbempt, K. 2006. Building competences for new customer value creation: An exploratory study. *Industrial Marketing Management*, 35(8): 961–973.

Brettel, M., Strese, S., & Flatten, T. C. 2012. Improving the performance of business models with relationship marketing efforts – An entrepreneurial perspective. *European Management Journal*, 30(2): 85–98.

Brynjolfsson, E., Hitt, L. M., & Yang, S. 2002. Intangible assets: Computers and organizational capital. *Brookings Papers on Economic Activity*, 2002(1): 137–198.

Buckberg, E. K. 1997. *Legal and institutional obstacles to growth and business in Russia*. Washington, DC: International Monetary Fund, European II Department.

Carr, J. C., Haggard, K. S., Hmieleski, K. M., & Zahra, S. A. 2010. A study of the moderating effects of firm age at internationalization on firm survival and short-term growth. *Strategic Entrepreneurship Journal*, 4(2): 183–192.

Casadesus-Masanell, R., & Tarzijan, J. 2012. When one business model isn't enough. *Harvard Business Review*, 90: 132–137.

Chang, S. J., van Witteloostuijn, A., & Eden, L. 2010. From the editors: Common method variance in International business research. *Journal of International Business Studies*, 41(2): 178–184.

Chelariu, C., Bello, D. C., & Gilliland, D. I. 2006. Institutional antecedents and performance consequences of influence strategies in export channels to Eastern European transitional economies. *Journal of Business Research*, 59(5): 525–534.

Chesbrough, H., & Rosenbloom, R. S. 2002. The role of the business model in capturing value from innovation: Evidence from Xerox corporation's technology spin-off companies. *Industrial and Corporate Change*, 11(3): 529–555.

Child, J., & Tsai, T. 2005. The dynamic between firms' environmental strategies and institutional constraints in emerging economies: Evidence from China and Taiwan. *Journal of Management Studies*, 42(1): 95–125.

Choi, S. B., Lee, S. H., & Williams, C. 2011. Ownership and firm innovation in a transition economy: Evidence from China. *Research Policy*, 40(3): 441–452.

Clemons, E. K., & Row, M. C. 1991. Sustaining IT advantage: The role of structural differences. *MIS Quarterly*, 15(3): 275–292.

Dodge, H. R., Fullerton, S., & Robbins, J. E. 1994. Stage of the organizational life cycle and competition as mediators of problem perception for small businesses. *Strategic Management Journal*, 15(2): 121–134.

Fiss, P. C. 2007. A set-theoretic approach to organizational configurations. *Academy of Management Review*, 32(4): 1180–1198.

Fiss, P. C. 2011. Building better causal theories: A fuzzy set approach to typologies in organization research. *Academy of Management Journal*, 54(2): 393–420.

Ford, J. K., MacCallum, R. C., & Tait, M. 1986. The application of exploratory factor analysis in applied psychology: A critical review and analysis. *Personnel Psychology*, 39(2): 291–314.

Freund, E. M. 2001. FIZZ, FROTH, FLAT: The challenge of converting China's SOEs into share-holding corporations. *Review of Policy Research*, 18(1): 96–111.

Gronum, S., Steen, J., & Verreynne, M.-L. 2016. Business model design and innovation: Unlocking the performance benefits of innovation. *Australian Journal of Management*, 41(3): 585–605.

Gruber, M. 2006. New ventures based on open innovation an empirical analysis of start-up firms in embedded linux. *International Journal of Technology Management*, 33(4): 356–372.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. 1998. *Multivariate data analysis*. Upper Saddle River, NJ: Prentice Hall.

Harris, R. A., & Eisner, M. A. 1994. Regulatory politics in transition. *American Political Science Review*, 88(2): 468–469.

Hovey, M., L. Li, & Naughton, T., 2003. The relationship between valuation and ownership of listed firms in China, corporate governance: *An International Review*, 11(2): 112–122

Hu, B. 2014. Linking business models with technological innovation performance through organizational learning. *European Management Journal*, 32(4): 587–595.

Kazanjian, R. K. 1988. Relation of dominant problems to stages growth in technology-based new ventures. *Academy of Management Journal*, 31(2): 257–279.

Keen, P., & Qureshi, S. 2006. Organizational transformation through business models: A framework for business model design. *Proceedings of the 39th Annual Hawaii International Conference on System Sciences* (HICSS'06).

Kelly, D., & Amburgey, T. L. 1991. Organizational inertia and momentum: A dynamic model of strategic change. *Academy of Management Journal*, 34(3): 591–612.

Kim, S. K., & Min, S. 2015. Business model innovation performance: When does adding a new business model benefit an incumbent? *Strategic Entrepreneurship Journal*, 9(1): 34–57.

Li, H., & Atuahene-Gima, K. 2002. Product innovation strategy and the performance of new technology ventures in China. *Academy of Management Journal*, 44(6): 1123–1134.

Li, S., Park, S. H., & Li, S. 2004. The great leap forward. *Organizational Dynamics*, 33(1): 63–78.

Li, S., & Xia, J. 2008. The roles and performance of state firms and non-state firms in China's economic transition. *World Development*, 36(1): 39–54.

Li, S., Xia, J., Long, C. X., & Tan, J. 2012. Control modes and outcomes of transformed state-owned enterprises in China: An empirical test. *Management and Organization Review*, 8(2): 283–309.

Liang, X., Marler, J. H., & Cui, Z. 2012. Strategic human resource management in China: East meets West. *Academy of Management Perspectives*, 26(2): 55–70.

Lu, J. W., Liang, X., Shan M., & Liang X. 2015. Internationalization and performance of Chinese family firms: The moderating role of corporate governance. *Management and Organization Review*, 11(4): 645–678.

Luo, Y., & Peng, M. W. 1999. Learning to compete in a transition economy: Experience, environment, and performance. *Journal of International Business Studies*, 30(2): 269–295.

Meyer, K. E. 2015. Context in management research in emerging economies. *Management and Organization Review*, 11(3): 369–377.

Mezger, F. 2014. Toward a capability-based conceptualization of business model innovation: Insights from an explorative study. *R&D Management*, 44(5): 429–449.

Milgrom, P. R., & Roberts, J. 1992. *Economics, organization and management*. Englewood Cliffs, NJ: Prentice-Hall.

Miller, D. 1996. Configurations revisited. *Strategic Management Journal*, 17(7): 505–512.

Narula, R. 2015. The viability of sustained growth by India's MNEs: India's dual economy and constraints from location assets. *Management International Review*, 55(2): 191–205.

Nee, V. 1992. Organizational dynamics of market transition: Hybrid forms, property rights, and mixed economy in China. *Administrative Science Quarterly*, 37(1): 1–27.

Park, S. H., Li, S., & Tse, D. K. 2006. Market liberalization and firm performance during China's economic transition. *Journal of International Business Studies*, 37(1): 127–147.

Pati, R. K., Nandakumar, M. K., Ghobadian, A., Ireland, R. D., & O'Regan, N. 2018. Business model design–performance relationship under external and internal contingencies: Evidence from SMEs in an emerging economy. *Long Range Planning*, 51(5): 750–769.

Pearson, M. M. 2005. The business of governing business in China: Institutions and norms of the emerging regulatory state. *World Politics*, 57(2): 296–322.

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

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. 2003. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5): 879–903.

Prashantham, S., Kumar, K., & Bhattacharyya, S. 2019. International new ventures from emerging economies: Network connectivity and legitimacy building. *Management and Organization Review*, 15(3): 615–641.

Quinn, R. E., & Cameron, K. 1983. Organizational life cycles and shifting criteria of effectiveness: Some preliminary evidence. *Management Science*, 29(1): 33–51.

Ragin, C. C. 2006. Set relations in social research: Evaluating their consistency and coverage. *Political Analysis*, 14(3): 291–310.

Ragin, C. C. 2008. *Redesigning social inquiry: Fuzzy sets and beyond*. Chicago, IL: University of Chicago Press.

Rihoux, B., & Ragin, C. C. 2008. *Configurational comparative methods: Qualitative comparative analysis (QCA) and related techniques*. Thousand Oaks, CA: SAGE Publications.

Sabatier, V., Craig-Kennard, A., & Mangematin, V. 2012. When technological discontinuities and disruptive business models challenge dominant industry logics: Insights from the drugs industry. *Technological Forecasting and Social Change*, 79(5): 949–962.

Sabatier, V., Mangematin, V., & Rousselle, T. 2010. From recipe to dinner: Business model portfolios in the European biopharmaceutical industry. *Long Range Planning*, 43(2–3): 431–447.

Schiehll, E., Lewellyn, K. B., & Muller-Kahle, M. I. 2017. Pilot, pivot and advisory boards: The role of governance configurations in innovation commitment. *Organization Studies*, 39(10): 1449–1472.

Schindehutte, M., & Morris, M. H. 2009. Advancing strategic entrepreneurship research: The role of complexity science in shifting the paradigm. *Entrepreneurship Theory and Practice*, 33(1): 241–276.

Schneider, C. Q., & Wagemann, C. 2010. Standards of good practice in qualitative comparative analysis (QCA) and fuzzy-sets. *Comparative Sociology*, 9(3): 397–418.

Schneider, C. Q., & Wagemann, C. 2012. *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge, MA: Cambridge University Press.

Schneider, C. Q., & Wagemann, C. 2013. Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis. *International Journal of Social Research Methodology*, 16(2): 165–166.

Scott, W. R. 2001. *Institutions and organizations* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Sharma, P., & Salvato, C. 2011. Commentary: Exploiting and exploring new opportunities over life cycle stages of family firms. *Entrepreneurship Theory and Practice*, 35(6): 1199–1205.

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

Song, L., Yang, J., & Zhang, Y. 2011. State-owned enterprises' outward investment and the structural reform in China. *China & World Economy*, 19(4): 38–53.

Steffens, P., Davidsson, P., & Fitzsimmons, J. 2009. Performance configurations over time: Implications for growth- and profit-oriented strategies. *Entrepreneurship Theory and Practice*, 33(1): 125–148.

Stinchcombe, A. L. 1965. Organizations and social structure. In J. P. March (Ed.), *Handbook of organizations*: 142–193. Chicago, IL: Rand McNally.

Sun, Y., Garrett, T. C., Phau, I., & Zheng, B. 2018. Case-based models of customer-perceived sustainable marketing and its effect on perceived customer equity. *Journal of Business Research*, 117: 615–622.

Van Doorn, S., Jansen, J. J. P., Van den Bosch, F. A. J., & Volberda, H. W. 2013. Entrepreneurial orientation and firm performance: Drawing attention to the senior team. *Journal of Product Innovation Management*, 30(5): 821–836.

Wei, Z., Song, X., & Wang, D. 2017. Manufacturing flexibility, business model design, and firm performance. *International Journal of Production Economics*, 193: 87–97.

Wei, Z., Yang, D., Sun, B., & Gu, M. 2014. The fit between technological innovation and business model design for firm growth: Evidence from China. *R&D Management*, 44(3): 288–305.

Wiklund, J., & Shepherd, D. 2005. Entrepreneurial orientation and small business performance: A configurational approach. *Journal of Business Venturing*, 20(1): 71–91.

Williamson, O. E. 1981. The economics of organization: The transaction cost approach. *American Journal of Sociology*, 87(3): 548–577.

Wirtz, B. W., Schilke, O., & Ullrich, S. 2010. Strategic development of business models. *Long Range Planning*, 43(2–3): 272–290.

Woodside, A. G. 2015. The good practices manifesto: Overcoming bad practices pervasive in current research in business. *Journal of Business Research*, 69(2): 365–381.

Yakovlev, A. M. 1996. *Striving for law in a lawless land: Memoirs of a Russian reformer*. Armonk, NY: M.E. Sharpe.

Yang, H., Ru, J., & Ren, T. 2015. Ownership and M&A performance in a transitional economy: The case of the Chinese real estate industry. *Management and Organization Review*, 11(4): 715–737.

Yang, Y., & Li, S. 2009 A study on novelty-centered business model based on value co-creation of IKEA. International Conference on E-Business and Information System Security. doi: 10.1109/EBISS.2009.5137903.

Zahra, S. A., & Filatotchev, I. 2004. Governance of the entrepreneurial threshold firm: A knowledge-based perspective. *Journal of Management Studies*, 41(5): 885–897.

Zott, C. 2003. Dynamic capabilities and the emergence of intraindustry differential firm performance: Insights from a simulation study. *Strategic Management Journal*, 24(2): 97–125.

Zott, C., & Amit, R. 2007. Business model design and the performance of entrepreneurial firms. *Organization Science*, 18(2): 181–199.

Zott, C., & Amit, R. 2008. The fit between product market strategy and business model: Implications for firm performance. *Strategic Management Journal*, 29(1): 1–26.

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