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**The Effects of Culture and Structure on Strategic Flexibility during Business  
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# **The Effects of Culture and Structure on Strategic Flexibility during Business Model Innovation**

## **ABSTRACT**

This study uses responses from 107 multinational firms to reveal CEO perceptions of the drivers of strategic flexibility during business model innovation. While the positive effect of creative culture is confirmed, partner reliance reduces strategic flexibility during business model innovation. Further, structural change is disaggregated into efforts that either focus managerial attention on core activities or reconfigure existing activities. CEOs perceive that structural flexibility requires structural simplification while retaining control of non-core functions. We find that the relative magnitude of business model innovation effort moderates the effect of reconfiguration on strategic flexibility. The implications for theories of organizational design and dynamic capabilities are discussed.

*Keywords:* business model innovation, capabilities, CEO, global, strategic flexibility, structure

## INTRODUCTION

Organizations aspire to achieve strategic flexibility, most often defined as the ability to identify innovation opportunities, commit resources to new courses of action, or reverse unproductive resource deployment (Sanchez, 1995; Shimizu and Hitt, 2004; Uhlenbruck, 2003; Worren, Moore, and Cardona, 2002). Senior executives direct organizational attention to exogenous change that affects competitive positioning (Ocasio, 1997), adjusting firm characteristics to ensure continued success (Davis, Eisenhardt, and Bingham, 2009; Glick et al., 1990). Since rapid adaptation improves performance in complex and dynamic environments (Nadkarni and Narayanan, 2007), it is important to examine what CEOs perceive as enabling strategic flexibility in large firms.

Both organizational structure and dynamic capabilities are theorized as influencing strategic flexibility, but these theoretical streams have evolved as independent literatures. In the capabilities-based framework, responsiveness arises from the flexibility of underlying resources and managerial practices (Hayes and Pisano, 1994; Zhou and Wu, 2010). Industry-specific studies find that managerial attention, asset and network flexibility improve the firm's ability to respond rapidly and effectively (Filatotchev, 2003; Matusik and Hill, 1998). Studies on organizational design, however, attribute flexibility to structures that facilitate managerial focus and control (Ethiraj, Levinthal, and Roy, 2008; Lee and Makhija, 2009; Puranam, Singh, and Zollo, 2006; Sanchez and Mahoney, 1996), where flexibility comes from minimizing coordination costs of adaptation. Structural theories of flexibility, supported by simulation (Siggelkow and Levinthal, 2003) and models of adaptation (Brouthers, 2008), focus primarily on modularity in organizational structures (Sanchez and Mahoney, 1996; Worren et al., 2002).

Gaps nevertheless exist in understanding how firms attain strategic flexibility. First, it is unclear whether strategic flexibility is better predicted by capabilities, structures, or both.

Second, process models of flexibility examine modularity independent of organization-wide innovation efforts (Filatotchev, 2003; Lakshman, 2007; Lee and Makhija, 2009). This is relevant when firms innovate business models, because managerial attention is directed outwards to novel opportunities while balancing coordination and control costs (Johnson, Christensen, and Kagermann, 2008). Third, although studies have generated interesting results from specific industries (Nadkarni and Herrmann, 2010) or geographies (Nadkarni and Narayanan, 2007), there is a paucity of global, multi-industry studies addressing antecedents of strategic flexibility.

This study analyzes archival data from in-depth interviews of 107 CEOs of large companies enacting business model innovation. The full dataset includes 449 additional firms that emphasize product and process innovation, enabling data validity and robustness checks, including endogeneity testing. Our study is the first large-scale, global, empirical effort to address two novel questions about structure and strategic flexibility in the context of firm-level innovation: *How do culture and structure affect strategic flexibility during business model innovation? How does business model innovation effort moderate those relationships?*

We identify key drivers of business model innovation and structural change processes implemented by business model innovators, and their influence on strategic flexibility. We find that CEO perceptions of structural simplification are linked to strategic flexibility during business model innovation, but the relationship is more nuanced than previously understood. Decentralized decision-making via delegation is positively associated with strategic flexibility, but consolidating to core functions is not. A creative organizational culture is associated with outcomes of strategic flexibility, while reliance on partners is not. Finally, the relative amount of effort for business model innovation positively moderates the relationship between reconfiguration and strategic flexibility. These findings inform an important area of managerial practice and present opportunities for future research.

## THEORY

### *Flexibility via structures and capabilities*

Strategic flexibility involves firm responsiveness to pressures (Young-Ybarra and Wiersema, 1999) and a proactive rather than reactive attitude. Early studies of strategic flexibility relied on observations of implemented organizational change, such as transitioning from one industry to another (Harrigan, 1980). Measuring strategic options *ex post*, however, only distinguishes between flexible firms that adapt and inflexible firms that fail. Shifting this observation from *ex post* implementation to *ex ante* agility, can reframe strategic flexibility as an embedded, organizational capability.

A well-examined firm characteristic associated with flexibility is its formal structure. Loose coupling of routines and functions associated with modular manufacturing design limits the cost of change (Sanchez and Mahoney, 1996), and improves responsiveness to environmental shifts (Kotabe, Parente, and Murray, 2007; Worren et al., 2002). Similarly, modular forms improve performance in local search and efficient reconfiguration processes (Schilling and Steensma, 2001; Siggelkow and Levinthal, 2003). Structural mechanisms such as alliances may affect strategic flexibility via information and resource access (Heimeriks, 2007; Lee and Park, 2008).

From a resource-based perspective, flexibility is determined by the nature and adaptability of firm resources and allocation of managerial attention (Sanchez and Mahoney, 1996; Hitt, 1998). Although some studies of flexibility rely on measures of slack resources (George, 2005), these do not account for managerial attention required to exploit these fungible assets. Studies suggest that agile leaders and effective knowledge management are essential antecedents of strategic flexibility (Lakshman, 2007; Uhlenbruck, 2003). Further, heterogeneous risk-reward preferences and knowledge sets may create distinct flexibility profiles among similarly-resourced firms (Evans, 1991; Chang, 1998). Consequently, we

refer to strategic flexibility as the firm's *ex ante* ability to rapidly reallocate and reconfigure resources and processes (Sanchez, 1995; Eisenhardt and Martin, 2000).

### *Business model innovation*

Research on strategic flexibility has assessed its antecedents and effects during crises (Grewal and Tansuhaj, 2001), modularization (Sanchez and Mahoney, 1996), and industry emergence (Nadkarni and Herrmann, 2010). Although strategic flexibility has been studied in the context of product and process innovation (Kotabe 2007; Worren et al., 2002), there is less empirical research in the context of firm's seeking flexibility so as to explore new opportunities. Business model innovation is a type of organizational innovation in which firms identify and adopt novel opportunity portfolios (Teece, 2010). Despite, or perhaps due to the breadth of the literature on business models, definitions for the construct have not converged to consistent use (George and Bock, 2011). Business models have been equated to revenue models (Afuah, 2003), boundary-spanning transactive structures (Amit and Zott, 2001), value creation systems (Osterwalder, Pigneur, and Tucci, 2005), organizational expectations (Downing, 2005), narratives of success (Magretta, 2002), and routinized activity sets (Winter and Szulanski, 2001).

Recent studies reframe business models as design of organizational structures (Baden-Fuller and Morgan, 2010). Managers change structures to initiate innovation (Hall and Saias, 1980) and address novel opportunities (Gulati and Puranam, 2009). However, these managers are limited by the scope of their control and access to resources, both of which are directly linked to attention (Ocasio, 1997). This suggests a complex relationship between control and attention in encouraging explorative and adaptive behavior. We examine these changes associated with business model innovation and their impact on strategic flexibility. Specifically, we argue that outcomes of strategic flexibility are associated with (1) creative culture that reduces resistance to change, and (2) reduction in structural complexity that

facilitates attention to new opportunities.

### *Creative culture*

Culture is a critical aspect of the firm's informal structure (Barnard, 1938), and influences innovativeness (Teece, 1996; Tellis, Prabhu, and Chandy, 2009). Creative culture facilitates innovative solutions to competitive threats (Amabile and Khaire, 2008) especially as environmental turbulence increases (Goodstein, Boeker, and Stephan, 1996). Studies show that creativity may support adaptation through improvisation (Vera and Crossan, 2004: 733), and creative culture represents an important prerequisite capability to innovate (Nadkarni and Narayanan, 2007; Plambeck and Weber, 2009). Gulati and Puranam (2009) argued that a strong informal organization helps create stability during fundamental re-organization. Since business model innovation may realign activities, firms with a culture that encourages creativity are more likely to embrace structural change and resource reconfiguration. We expect that a creative, organizational culture improves strategic flexibility during business model innovation by ensuring that feedback from structural change is not suppressed by bureaucratic procedures, resistance to organizational identity change, or entrenched political coalitions. We expect that a creative organizational culture underpins the firm's dynamic capability to change and adapt resources and activities; consequently, when firms focus on business model innovation we posit that:

*Hypothesis 1: Creative culture is positively related to strategic flexibility.*

### *Structural change*

The link between structure and strategy is well-established (Chandler, 1962; Davis et al., 2009), however, the relationship between structural change and responsiveness during business model innovation remains unexplored. For our purposes, structure refers to the macro-level functional systems employed by the firm to organize value creating and



capturing activities (Ouchi, 1977). Regardless of the size and business unit scope, structural change may reflect simplification, expansion, or reconfiguration. Because innovation efforts require attention (Ocasio, 1997), we seek to explore the implications for managerial attention during business model innovation.

Structural design changes that reduce coordination costs and enhance cooperation among organizational units may increase the firm's ability to balance exploration and exploitation (Mom, van den Bosch, and Volberda, 2009). In line with prior research, we refer to structural simplification as processes that decrease the functions or business units overseen by management via consolidation, elimination, or delegation. Simplification can focus managerial attention on solving problems and identifying opportunities arising from changing environments (Ocasio, 1997; Rothaermel, Hitt, and Jobe, 2006). During business model innovation, we expect that reducing design complexity enhances attention and augments strategic flexibility:

*Hypothesis 2a: Simplifying firm structures is positively related to strategic flexibility.*

An alternative mechanism to reduce attention requirements is reconfiguration of existing structures and activities to address new opportunities with core products or managerial capabilities (Prahalad and Hamel, 1990). We define reconfiguration as the process of re-aligning existing activities without significant change to the number or scope of functions directly managed. This most directly corresponds to modularization, as firm processes are re-organized to increase fungibility while retaining the key functionality of low-level activities. Research linking modularization to strategic flexibility focuses primarily on product development and flexibility of resources (e.g. Sanchez 1996). In other words, modularization supports flexibility within a known competitive context. Much less is known about the benefits of reconfiguration during market-oriented opportunity exploitation, when

the firm must develop entirely new sources of advantage (Kohli and Jaworski, 1990).

Although reconfiguration could improve operational performance at the division, unit, or firm-level (Huckman and Zinner, 2008), it is unlikely to yield flexibility in changing tasks, products, or markets (Kekre and Srinivasan, 1990). When the firm seeks to develop novel portfolios of opportunities, the benefits of ambidextrous management could be lost via internally-focused reconfiguration. If business model innovators are responding to macro-level changes, radical threats, or industry turbulence, strategic focus on current sources of advantage might hinder strategic flexibility. Therefore, we posit that when firms primarily focus on business model innovation:

*Hypothesis 2b: Reconfiguring activities is negatively related to strategic flexibility.*

#### *Partner reliance*

An important attribute of formal organization is the firm's connectedness to other organizations. Collaboration with external partners represents a tool for exploration. When firms operate in turbulent environments, access to knowledge potentially improves the accuracy of managers' strategic decisions (Combs, 1999). In fact, exogenous uncertainty tends to increase collaborative activities with similar and familiar partners (Podolny, 1994) and network and collaboration effects generally improve innovation and performance (Gulati and Sytch, 2007). This knowledge-based framework suggests that access to options via alliances improves strategic flexibility (Heimeriks, 2007; Lee and Park, 2008).

Nevertheless, structural design changes during business model innovation present a unique context for collaboration. Exploration in turbulent environments exposes the firm to unfamiliar and unforeseeable elements. Under these conditions, the elements of cooperative partnering that create mutual value, such as trust, transparency, and governance mechanisms (Nooteboom, 1996) induce unpredictable or unknowable costs. Relying on partners for access

to information or novel opportunities increases the firm's exposure to coordination costs and asset specificity. This reduces the expected benefit of collaboration when shared investment and complementarities are inhibited by uncertainty and lack of market knowledge ( De Luca and Atuahene-Gima, 2007; Dyer and Singh, 1998). Because strategic flexibility may be associated with investment in unique resources, research suggests that hierarchy rather than market contracting improves strategic flexibility (Brouthers, 2008). The complex alignment of managerial goals associated with partner dependence may increase coordination problems (Harrigan and Newman, 1990), and result in survival-based learning that reduces flexibility (Denrell, 2003). Therefore, we expect that:

*Hypothesis 3: Partner reliance is negatively related to strategic flexibility.*

#### *Moderating effects of business model innovation effort*

Business model innovation is described as an outward-facing, highly creative exploratory process (Johnson et al 2008). Focusing firm efforts on opportunity exploration and discontinuous, rather than incremental product or process innovation, should interact positively with creative culture and the flexibility to reconfigure and redirect resources (Grewal and Tansuhaj, 2001). We would expect that firms enacting higher levels of business model innovation effort would see reinforcement of the positive relationship between creative culture and strategic flexibility. Therefore, we hypothesize that:

*Hypothesis 4a: Business model innovation effort positively moderates the relationship between creative culture and strategic flexibility.*

Previous studies on modular structures suggest that the benefits of modularization derive from loosening large-scale structural coupling while tightening coupling at the group or activity level. The reduced cost of reconfiguring large structures facilitates broad redeployment of resources without disrupting underlying functions. These effects, however,

have been developed in the context of process- and product-centric innovation (Kotabe 2007; Worren et al. 2002). As business model innovation effort increases relative to product and process innovation, firms direct more attention outwards to identify and exploit opportunities that will extend the enterprise. This reinforces the benefits of simplification by ensuring that large structures do not lock the firm into costly, short-term resource investments. Consequently, we hypothesize that:

*Hypothesis 4b: Business model innovation effort positively moderates the relationship between simplifying structures and strategic flexibility.*

In contrast, reconfiguration is hypothesized to counter-indicate strategic flexibility because the firm focuses attention inwards towards efficiency and resource leverage. Simulations of modularization show accelerated learning (Siggelkow and Levinthal, 2003), but do not account for limitations on managerial attention. Increase in the business model innovation effort while reconfiguring structure creates an attention bottleneck because value creation outcomes are not obvious (and Amit and Zott, 2001). When opportunities are further from the firm's extant knowledge base, structural reconfiguration becomes less likely to facilitate the capability development required for flexibility. Therefore, we expect that:

*Hypothesis 4c: Business model innovation effort negatively moderates the relationship between reconfiguration of resources and strategic flexibility.*

Finally, we consider the moderating effect of business model innovation effort on partner reliance. Partnering activities present access to new resources, but also increases the costs of coordination and decision-making across firm boundaries (Harrigan and Newman, 1990). As value of knowledge increases as knowledge search becomes more extensive and distant (George, Kotha and Zheng, 2008), one would expect that increased reliance on a partner with different skills and operating in complementary markets during business model innovation will help the focal firm to access new knowledge, skills and capabilities required

for change (Chesbrough and Rosenbloom, 2002; Combs, 1999). With experienced partners, coordination costs are likely to be lower (Podolny, 1994). This suggests that business model effort could decrease the expected negative effect of partner reliance on strategic flexibility. Additionally, during business model innovation, partners could be seen as useful tools to help the firm pursue new opportunities. Consequently, we expect a mitigation of the negative effect of partner reliance on strategic flexibility. In contrast, business model innovation could also require unlearning partner-specific routines which could act as inertial impediments to flexibility. However, in sum, we expect that the positive benefits of partners as complementary resources and enablers of change outweigh any potential negative effects of routinization and coordination costs. Therefore, we hypothesize that:

*Hypothesis 4d: Business model innovation effort positively moderates the relationship between partner reliance and strategic flexibility.*

## **DATA AND METHOD**

We analyzed archival data from the 2006 IBM Global CEO Survey. The intent of the IBM survey was to study the benefits of organization-wide innovation and collaboration. The data are semi-structured interviews with CEOs of large, multinational firms from a wide array of industries and countries. The business model innovator sample includes 107 firms where CEOs identified business model innovation as the primary type of innovation effort. The full sample includes 449 additional CEO interviews at firms that emphasize product and process innovation. Both the full and business model innovator samples present broad diversity across geographies, sectors, and firm size, but oversamples large firms. Table I presents the full and business model innovator sample profiles by geography, sector, and size.

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### *Survey design and administration*

The survey was rigorously designed and administered to report on organizational

innovation and business-technology integration (Giesen, Berman, Bell, and Blitz, 2007). The design was created by professional researchers and incorporated mechanisms to ensure data fidelity. Multiple question types reduce common item bias effects, and the inclusion of open-ended questions facilitated identification of both innovation processes and outcomes. The survey was administered by two interviewers, thereby enabling simultaneous administration and coding. The combination of open-ended questions with dual-interviewers facilitated discriminatory coding. Strategic flexibility, for example, was distinguished from focus/specialization, faster time to market, access to skills/product, access to markets/customers, and moving from fixed to variable costs. Interviewers received extensive guidelines and training as well as centralized support. Data were uploaded to a central location for processing and analysis. The survey provides a rich and rigorously developed dataset to test our hypotheses and provides appropriate variables to control for other forms of innovation, organizational attributes, and environmental characteristics.

#### *Primary regression analysis*

The primary regression analysis focuses on the 107 firms enacting business model innovation. We test the hypothesized main effects on strategic flexibility and the moderating effect of business model innovation effort on these relationships. The survey segregated firms by their primary innovation effort, where respondents assessed the relative importance of innovation activities at their organization by distributing 100 points among three innovation types: product/service/market, business model, and process/operational. Participants responded to additional questions with reference to their innovation focus.

Strategic Flexibility. The dependent variable is a binary measure that captures CEO perception of whether the organization achieved strategic flexibility through its business model innovation efforts. The measure was coded based on open-ended response by the CEO to identify benefits of innovation efforts. Though such a binary measure is less granular than

a continuous measure, it does represent the CEO's perception of whether flexibility as an outcome was achieved. Given that strategic flexibility outcomes are highly contextual (Grewal and Tansuhaj, 2001), capturing the CEO's direct perception is of value. Further elaboration on validity and checks for coding reliability are discussed in detail below.

Creative culture. Prior studies have linked elements of informal structure to strategic flexibility in which creativity serves as a complementary capability to strategic planning (Tellis et al., 2009). Respondents were asked whether a climate for creativity existed within their organizations on a five-point Likert scale, ranging from "limited" to "very strong."

Internal structural changes. Formal structural change is a direct mode of adaptation available to managers enacting business model innovation. The interviews included indicators for structural change, including spin-offs, major project-based contracting, major strategic partnerships, offshore and onshore outsourcing, organizational structural changes, shared services, and use of third-party operating utilities. Binary indicators for each were coded based on open-ended response to identify structural initiatives adopted as part of the business model innovation effort. The eight binary structural change mechanisms were explored with a factor analysis discussed in the Results section.

Partner reliance. Reliance upon partners increases the time and coordination cost of innovation, representing a source of organizational inflexibility (Anthony, 2007; Hoetker and Mellewigt, 2009). The survey instrument included a question on the importance of collaboration and partnering with a five-point Likert scale. The minimum value on the scale identified partnering as "of no importance" and the maximum to "of critical importance".

Business model innovation effort. The survey asked CEOs to assign 100 points across three types of innovation: product/service/market innovation, business model innovation, and process/operational innovation. Business model innovation effort is the numerical value (0-100) assigned by the CEO to reflect the relative proportion of the firm's innovation effort

associated with business model innovation. Because business model innovation is a relatively new construct, the qualitative data collected in the interviews was reviewed and compared against business model and strategy construct definitions to confirm construct validity.

Data collected both during the surveys as well as via separate, secondary investigation provides an extensive set of control variables associated with exogenous drivers of innovation, firm characteristics, leadership, change difficulty, and learning.

Survey source. The survey was designed by IBM's Institute for Business Value and was administered by both IBM representatives as well as representatives of an independent research organization, the Economist Intelligence Unit or EIU. To account for any bias due to survey administrator, we included a dummy variable if the survey was administered to a given respondent by an EIU representative.

CEO formally responsible for business model innovation. Research has demonstrated the links between senior leadership involvement and innovation adoption and the role of managerial leadership in structural changes associated with strategic flexibility (Goodstein et al., 1996). To control for the CEO's direct oversight, we use a binary indicator variable of whether or not the CEO was formally responsible for business model innovation efforts.

Technological integration. Given IBM's interest in information technology adoption, the non-random sample may associate innovation with efforts to improve integration of technology with business processes. We control for the importance of technology integration and business processes using a five-point Likert scale variable of the importance of technological integration with business processes where 1 is "of no importance" and 5 is "of critical importance."

External forces. The survey contained binary variables related to external forces likely to impact respondents' organizations in the next two years. This enabled us to control for specific exogenous drivers including market forces, globalization, macroeconomic forces,



geopolitical issues, and environmental issues.

Discontinuous change. While firms often enact continuous or incremental change (Brown and Eisenhardt, 1997), discontinuous change associated with business model innovation represents one possible endogenous response to exogenous disruptions. We control for perceived need of discontinuous change by a five-point Likert response to a question on the level of change needed to implement key elements of innovation strategy, where 1 is “no change” and 5 is “extensive change.”

Prior success with change effort. A possible driver of organizational innovation is prior success with managing fundamental change. We control for this type of learning effect with a question on the success of managing fundamental change in the past with a five-point Likert scale, where 1 is “unsuccessful” and 5 is “very successful.”

Sector. The respondents were drawn from a variety of industrial sectors presenting potentially distinct exogenous drivers of change and varying industry life cycle issues associated with innovation efforts. We control for industry sector by including a set of binary variables.

Organization size. Organization size may affect innovation efforts (Damanpour, 1992). We define size by the number of employees. Due to survey confidentiality requirements, we received aggregations of size in six categories of 5,000 employee increments: firms with fewer than 5,000 employees were assigned a value of 1, and those with greater than 25,000 were assigned a value of 6.

Global firm. Multinational firms span geographic and sector boundaries potentially accessing opportunities not available to organizations that operate solely within a national or regional market. We constructed a binary variable if the firm had a multinational reach.

EU firm. Organizations with headquarters within the European Union (EU) operate in a common market but with socio-culturally diverse facilities. The unusual institutional nature

of nationally-disparate but economically-linked states creates the potential for unique structural and cultural features that could affect innovation and change. We included a binary variable if the firm's headquarters is inside the EU.

Latent marker variable. Common method variance may be present in single source data. We utilized a latent marker variable to test for the presence of common method variance (Richardson, Simmering, and Sturman, 2009; Williams, Hartman, and Cavazotte, 2010). The results of the common method variance tests are discussed in detail in the Results section.

#### *Validating survey administration coding*

We took steps to validate that the participants understood the questions and that the responses were coded appropriately. The key constructs for validation are strategic flexibility and business model innovation. These represent high-level constructs that, at times, have been addressed with non-convergent definitions in the literature. It would be unrealistic to expect practitioners to adhere to exact, unstated definitions, but it is essential that the responses demonstrate fidelity, relevance, and consistency with prior research. For instance, studies have used composite measures for strategic flexibility based on information sharing across business activities, strategy and structure change in response to environment change, exploiting opportunities emerging from environmental variability, flexibility in managing exogenous risks, and versatility in human resource allocations (Grewal and Tansuhaj, 2001; Nadkarni and Herrmann, 2010).

Review of the responses to open-ended questions in the survey confirms both consistency and specificity of CEO perceptions of strategic flexibility. First, CEOs relate strategic flexibility to a competitive context of product and service positioning, often with reference to leveraging the firm's extant resource base: "There is tremendous strategic flexibility in introducing new products and services to ride on the existing infrastructure." Strategic flexibility is an outcome, related to but not strictly equivalent to, capturing

opportunities. It is the continued capability to address those opportunities: “The firm's solutions for the construction industry, the healthcare sector, the food and nutrition business have all been driven by this integrated approach. Future opportunities will also be captured in the same manner. The implications for revenue growth and strategic flexibility are enormous.” CEOs distinguish between levels of responsiveness by contrasting “Flexibility in corporate strategy and internal systems”. Strategic flexibility is clearly associated with responsiveness: “It is relatively easier for [the firm] to scale up its operations because of the high extent of technology absorption. This provides strategic speed and flexibility.” But CEOs distinguish between strategic flexibility and firm activity velocity in general, as shown in these comments: “Operations [are] not yet getting secondary benefits - speed and strategic flexibility to come” and “Overall speed, strategic flexibility - by next year will increase.” The interview comments validate that CEO understanding of strategic flexibility was distinct from related constructs; these responses are consistent with Grewal and Tansuhaj (2001). In addition, we re-coded 75 qualitative responses in the dataset to test the consistency of rater assessment. The results of the re-coding yielded a Cohen’s Kappa of 0.643 (95% confidence interval: 0.442 - 0.843). The re-coding process is limited by inconsistencies in interviewer note-taking practices, but the relatively good reliability (Landis and Koch, 1977) suggests that the binary variable is substantively capturing CEO intent.

Business model innovation has not been clearly defined in prior studies, but use in practice is relatively consistent (Baden-Fuller and Morgan, 2010; Teece, 2010; George and Bock, 2011). This consistency is confirmed via examination of some of the interview notes of CEO remarks. For example business model innovation is not perceived as a better way to address the current market: “[The] market cannot be changed. We need [a] new business model to survive.” And it is not simply product innovation either: “We are at the critical point. After 30 years of our efforts, use of [our product] is now very practical. In this sense,

we are at the point where we should transform our business model itself.”

Although it may begin with, or include adaptation of market-facing activities (Amit and Zott, 2001), CEOs that identify business model innovation as the primary effort clearly intend more significant change: “[Our industry] is crying out for a new sales/marketing model that is more efficient. ‘Armies of sales representatives’ are not the best – [We] are on the edge of trying something very different... [as well as] more product sharing with other companies.” Business model innovation is understood to represent a significant and possibly discontinuous change: “Everything starts when breaking with and deny[ing] the status quo.” CEOs perceive that these change efforts are system-wide and comprehensive: “Our business model has to be changed to be competitive - completely. We need all new processes, responsibilities and accountability.” CEOs see business model innovation as shorthand for change across multiple dimensions: “Business model is the core of the firm's growth strategy - this includes new distribution models, new partnerships, new revenue models, etc.”

The common theme to business model innovation in practice addresses new opportunities: “If the [new] opportunity has to be exploited in an exponential fashion, the only way to do it is by introducing fundamentally different business models. Product innovation will continue to remain important, but at some level, this is driven top-down. The potential to achieve exponential growth through this route is limited in the [new sector].” Previously examined consistency in perceptions of business models and business model innovation in practice are confirmed in this data. CEOs see business models as high-level representations of the firm’s business. Business model innovation is perceived as a fundamental rethink of the firm’s value proposition in the context of new opportunities. The responses demonstrate consistency in participant understanding of the key constructs. To ensure consistency within the dataset, the innovator mode data was re-coded based on available qualitative responses. The dataset included 132 qualitative responses to the points-

based assessment of innovation effort. Cohen's Kappa for the match between classification by the coder and the CEO was 0.72 (95% confidence interval: 0.606 - 0.828), which is considered good or very good (Landis and Koch, 1977).

## RESULTS

First, we examine the structural change processes associated with business model innovation. Second, we present the probit regression which tests the hypotheses on the business model innovator dataset. Third, we review the results of the robustness two-stage selection model regression which checks the robustness of the primary regression and controls for endogeneity effects. Finally, we assess the potential for common method variance in the data and report the results of tests for its detection.

### *Structural changes enacted during business model innovation*

To create a manageable set of organizational change modes for both modeling and interpretation, we explored the dimensionality of eight binary indicators using a principal component factor analysis. The analysis revealed three factors (Table II), labeled as *delegation*, *consolidation*, and *reconfiguration* of organizational activities.

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INSERT TABLE II ABOUT HERE  
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First, organizations enacting business model innovation may 'delegate' business functions by using third-party operating facilities, establishing shared services agreements, and contracting-out major projects to externalize peripheral functions while maintaining control and access to innovation. Delegation contracts the formal structure of the organization by utilizing boundary-spanning transactions as an alternate lever of control. Second, organizations may 'consolidate' activities by spinning-out or outsourcing activities as well as limiting major strategic partnerships with others. This process eliminates non-core activities and focuses on internal capability development in perceived areas of high value. Third, 'reconfiguration' alters structures without divestitures, outsourcing, or uptake of novel

capabilities, somewhat akin to shuffling and re-dealing a deck of cards without reducing the set. Reconfiguration relies on improved use of technologies or decision-making efficiencies to exploit opportunities and generate advantage.

Whereas reconfiguration matches hypothesis 2b, both delegation and consolidation relate to hypothesis 2a as mechanisms to focus managerial attention by reducing structural design complexity. Although a perfect match between the factor analysis and hypotheses might have been preferable from an *ex ante* theoretical perspective, the distinction between delegation and consolidation enables a fine-grained assessment of the effects of reducing structural complexity.

#### *The effects of culture and structure on strategic flexibility*

Table III reports the pair-wise correlations for business model innovator dataset and the full dataset. The correlations report no particularly strong associations among the variables that would indicate multi-collinearity. Table IV presents the results of the probit regression analysis. Because strategic flexibility is a binary indicator, the probability of achieving strategic flexibility is estimated using a probit estimation technique. Model 1 captures the baseline model with control variables. Model 3 includes the independent variables of interest (i.e., business model innovation effort, creative culture, the three structural variables, and partner reliance). This model enables us to test Hypotheses 1-3. Models 4 through 6 add the moderating effects of business model innovation effort to test Hypotheses 4a-4d. Model 6 is the full model that includes all the variables of interest.

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INSERT TABLES III and IV HERE  
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CEOs perceive that organizations with a creative climate are more likely to achieve strategic flexibility during business model innovation efforts ( $b=0.63$ ,  $p<0.001$ ). Extending previous findings, we find that creative culture is positively associated with strategic flexibility across geographies and sectors. Hypothesis 1 is supported.

Internal structural change to reduce design complexity is disaggregated to reflect two underlying factors: delegation and consolidation. The results of the regression distinguish between the two structural change processes. CEOs perceive that delegation is positively associated with strategic flexibility ( $b=0.39$ ,  $p<0.05$ ). Consolidation, however, does not have a statistically significant effect. Finally, reconfiguration of existing activities are negatively associated with the likelihood of achieving strategic flexibility ( $b=-0.33$ ,  $p<0.05$ ), consistent with our prediction that reconfiguration does not improve managerial focus. Whereas hypothesis 2a receives partial support, hypothesis 2b is supported.

Partner reliance is negatively related to strategic flexibility ( $b=-0.37$ ,  $p<0.05$ ). Although collaboration and network effects are associated with improved performance, business model innovators with partner dependencies are perceived to achieve lower strategic flexibility. Hypothesis 3 is supported.

#### *Moderating Effects*

Estimating and interpreting moderator effects requires careful assessment, especially in the context of probit estimation techniques (Schwens, Eiche, and Kabst, 2011). We found no support for Hypotheses 4a for a positive moderation effect of business model innovation effort on the relationship between culture and strategic flexibility. Similarly, we found no support for Hypotheses 4b, in which we posited a positive moderation of business model innovation effort between structural simplification—either delegation or consolidation-- and strategic flexibility. There is a strong positive and significant ( $b=7.14$ ,  $p<0.001$ ) moderating effect on reconfiguration. Figure 1 illustrates that the level of business model innovation effort affects the relationship between reconfiguration and strategic flexibility. If firms focus their innovation efforts on business models, the negative effect of reconfiguration on the probability of achieving strategic flexibility is turned positive. When firms reconfigure structures, they are at risk becoming inflexible. Increasing business model innovation efforts

mitigates this risk. Hypothesis 4c is strongly supported. There is no significant moderating effect on partner reliance. Hypothesis 4d is not supported.

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INSERT FIGURE 1 ABOUT HERE  
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*Testing for data robustness and endogeneity*

The survey design facilitates the use of a selection model to compare the business model innovator sample with the full dataset. Only 107 firms of the 556 adopted business model innovation as their primary innovation effort. Consequently, we needed to check if our coefficients reported in Table IV were systematically biased. A Heckman two-stage model enables identifies drivers of business model innovation and tests for robustness and endogeneity. This analysis incorporates data from the full dataset of 556 firms, including 449 firms where business model innovation was not the primary innovation effort. The analysis uses two model stages with different numbers of observations. First, a selection model identifies the drivers that determine which firms select to be business model innovators. Drivers include exogenous forces, change difficulty, CEO leadership (described previously) and prior innovation success. All of the variables employed in the main regression of this two-stage selection model are utilized as discussed previously. The new variables incorporated into the Heckman analysis include:

Business model innovator. This is the dependent variable in the selection model. It is coded as a binary indicator variable based on whether the respondents were asked the questions in the subsection specifically related to business model innovation. The choice of subsection depended upon which of the three types of innovation effort was the most important.

Product / Service / Market innovator: Although little research has considered resource and activity trade-offs associated with innovation initiatives, product or process innovation activities could influence business model innovation efforts. To control for this effect, we



created a variable measuring the firm's proportion of non-business model innovation effort associated with product/market innovation. The measure varies from 0, representing no effort directed towards products, services, and market innovation, to 1 representing no effort directed towards operational innovation. Following the selection model, a probit model tests the robustness of the primary analysis using the Heckman correction to account for endogeneity in choice of innovation effort. The second stage estimates strategic flexibility based on creative culture, structural change types, partner dependence, and control variables for the 107 business model innovators.

Table V reports the results of the two-stage regression analysis. Model 1 presents the first-stage selection model, which identifies the drivers of business model innovation as the primary model of organizational innovation. Model 2 presents the results for the two-stage analysis regressing strategic flexibility on the control variables. Finally, Model 3 reports the two-stage analysis that includes the independent variables, including creative culture, structural changes, and partner reliance. The results from the first-stage selection model identify drivers of business model innovation. As shown in Model 1, the analysis reveals that business model innovation is inversely related to product/service/market innovation activities ( $b = -0.90$ ,  $p < 0.01$ ). There is no significant relationship between prior change success and business model innovation efforts, suggesting that learning effects commonly associated with product and process innovation may not be as relevant to business model innovation efforts. Executive leadership is associated with increased business model innovation ( $b = 0.36$ ,  $p < 0.01$ ), supporting the broader literature on the role of leadership in fundamental organizational innovation. Interestingly, global and EU firms are less likely to initiate business model innovation ( $b = -0.37$ ,  $p < 0.05$ ;  $b = -0.37$ ,  $p < 0.01$  respectively). There is marginal support for assertions that business model innovation addresses broader competitive and exogenous challenges than market and economic changes alone. Perceived change

difficulty is positively associated with business model innovation, supporting practice ( $b=0.12$ ,  $p<0.10$ ), and global, geopolitical, and environmental forces are positively and significantly associated with business model innovation, while market and macroeconomic factors are not. To check robustness of earlier hypotheses tests, we refer to Table VI Model 3. Creative culture and delegation are positively associated with strategic flexibility, while reconfiguration and partner reliance are negatively associated with strategic flexibility. As such, the results of the hypotheses tests reported in Table IV are consistent when including the Heckman correction for endogeneity associated with firm choice of innovation effort.

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 INSERT TABLE V ABOUT HERE  
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#### *Common method variance*

When data collection relies on a single source, common method variance (CMV) is a relevant concern. CMV is generally defined as “systematic error variance shared among variables measured with and introduced as a function of the same method and/or source” (Richardson et al., 2009). An extensive literature details the potential problem of biased coefficients associated with common method variance (Podsakoff, 2003; Richardson et al., 2009). Tests for bias due to CMV suggest that: (1) the probability of CMV in the data is low or nonexistent, and (2) to the extent that unidentifiable CMV is present, associated results bias is also low.

Survey design varied questions types, reducing the potential for CMV by de-linking responses and relying on coding of responses to open-ended questions are less likely to generate consistent biases (Podsakoff, 2003). Survey administration used extensive mechanisms to reduce CMV potential. First, the respondents were CEOs, the most reliable assessors of organizational information (Simsek, Veiga, and Lubatkin, 2007). Second, the survey provided exceptional levels of legitimacy and confidentiality, reducing the potential for common rater effects such as interviewer and social bias (Dohrenwend, Colombotos, and

Dohrenwend, 1968). Third, extensive training resources were employed, including a detailed 38-page interview guide with coding instructions. Survey protocol required two interviewers to be present at each interview to separate questioning from coding.

The Harman one-factor test is a commonly used first step to test for the presence of CMV. Single factor loading of regression variables indicates a higher probability of CMV in the data. The variables used in the primary regression generate 15 factors with the largest factor accounting for 22% of the total variance. Further, we considered a subset of variables that carry CMV components that could potentially bias results. These tests may be more indicative of CMV when multiple common method factors are at work, rather than a single dominant factor. We assessed confirmatory factor tests in which double-factor combinations of variables are regressed (Simsek et al., 2007). The two-factor solution combining the structural change indicators into a single factor and all other indicators into the second factor yielded a Wald  $\chi^2$  of 18.16, while the two-factor solution combining all of the structural indicators (including the structural change indicators, partner dependence, and technology integration) into one factor and the other variables in a second factor generated a Wald  $\chi^2$  of 14.16. As none of these tests were more predictive than the one-factor CFA analysis, the probability of multi-factor common method variance is low.

Current research on detecting and correcting for common method variances uses marker variables to proxy the underlying source of method variation. The preferred method uses a latent variable generated with underlying marker variables uncorrelated with study variables that also capture the sources of common method bias (Williams et al., 2010). Three indicators in the survey meet these criteria: the establishment of metrics and incentives for innovation, incubation structures to support innovation activities, and idea generation for innovation. All three would carry common rater and common item method bias, especially bias associated with social desirability (Podsakoff, 2003). Following Williams (2010), a

latent marker variable was generated using factor analysis of these three variables. Neither the magnitude nor significance of the coefficients of the indicators of interest changed substantively when the latent marker variable is included. The results of these tests suggest that the likelihood of CMV in the data is low.

## **DISCUSSION**

We address a narrow, well-defined relationship between business model innovation and the attainment of strategic flexibility. While the practice literature has encouraged managers to expect that organizational design changes enacted during business model innovation are associated with strategic flexibility, our findings suggest a more subtle relationship between design transformation and improved adaptability. CEOs perceive that structural changes that focus attention without giving up control are associated with flexibility. The study confirms that a culture supporting creativity is associated with strategic flexibility, while dispelling the notion that flexibility can be attained by relying on partners. Finally, business model innovation effort positively moderates the relationship between reconfiguration and strategic flexibility. Taken together, this study makes important contributions to the theory and practice of business model innovation.

Organizational design and structure are critical features of business model innovation, Understanding how business model innovators achieve strategic flexibility requires a nuanced appreciation of the link between structural changes, managerial attention and control. We argued that attempts to reduce design complexity would be associated with increased flexibility. Delegation increases the probability of achieving strategic flexibility from 43% (at one standard deviation below the mean; -1sd) to 80% (+1sd). During structural delegation, managers retain control of structural change while delegating responsibility and costs of coordination to third party service providers via outsourcing and shared services. This has a dual effect of reducing structural design complexity and concomitantly increasing managerial

attention to evolving competitive environments. By delegating activities through use of third-party facilities and shared services, an organization can maintain some degree of control over processes, information flow, and outputs. This delegation allows the firm to rely on the culled activities while reducing burdens on managerial attention and responding with agility to change.

In contrast to delegation, reconfiguration of existing activities has a negative effect on achieving strategic flexibility. Here, managerial attention is constrained by non-core process activities that do not disappear during reconfiguration of activity sets. We find that the probability of achieving strategic flexibility drops from 81% to 51% when reconfiguration increases (-1sd to +1sd); consistent with Nadkarni and Narayanan (2007) who found a negative effect between firms trying to create strategic focus and flexibility. Our results add to this literature by suggesting that reconfiguration at large firms do not necessarily confer the benefits of focused managerial attention during business model innovation. Taken together, our factor analysis shows that the eight common structural change formats used during organizational change reflect commensurate differences in the degree of managerial control exercised and managerial attention or ‘bandwidth’ available. To achieve strategic flexibility, managers must blend issues of control and attention to ensure flexibility to competitive environmental changes.

CEOs perceive that a creative culture is positively associated with achieving strategic flexibility during business model innovation. A two standard deviation increase in the climate for creativity around the mean changes the probability of achieving strategic flexibility from 32% to 88%. While managers tend to focus on adaptation of formal structures, a significant element of achieving flexibility stems from creative informal structure. The magnitude of effect is substantial and bolsters claims for the strategic advantage of informal organization characteristics such as innovative culture (Fiol, 1991; Teece, 1996; Gulati and Puranam,

2009; Tellis et al., 2009) in a global, multi-sector context. Having an innovative culture helps avoid employee resistance to organizational identity changes that arise during transformation processes (Dutton et al., 1994).

Our results show that greater partner reliance in business model innovation (-1sd to +1sd) decreases the probability that firms achieve strategic flexibility from 78% to 47%. This finding runs counter to prescriptive literature that advocate a greater reliance on partnerships to enact business model innovation. Though our data do not allow us to confirm the underlying causal mechanisms, it is possible that reliance on partners for organizational change increases coordination costs and goal alignment problems. Further research can more clearly delineate the underlying reasons for this negative relationship.

The results of the moderating variable analysis were unexpected. None of the positive moderating effects hypothesized for business model innovation effort were significant. The moderating effect of business model innovation effort on the relationship between reconfiguration and strategic flexibility was positive. When firms engage in reconfiguration, high levels of business model innovation effort mitigate the negative effect on strategic flexibility. One possible explanation is that high levels of business model innovation redirect attention and firm activity away from reconfiguration efforts. Alternately, high levels of outward-facing attention may limit lock-in effects of reconfiguration that would otherwise constrain strategic flexibility.

When firms focus on business model innovation, managers actively seek to extend the organization by identifying and exploiting novel opportunities. In this context, reconfiguration negatively impacts strategic flexibility outcomes. In addition, the greater the business model innovation effort, the more reconfiguration appears to hinder strategic flexibility. The large effect sizes are statistically significant and robust across models. This finding suggests that advice in the practice literature on business model innovation as a non-

evolutionary process is accurate. Firms that follow traditional resource-driven reconfiguration, assuming that demonstrated capabilities may be leveraged to novel opportunities, may find themselves unable to find or adapt to novel opportunities. This result is more in line with theories of business model innovation as a dynamic capability rather than a knowledge-driven process.

## **FUTURE DIRECTIONS**

Structure and culture affect strategic flexibility when firms engage in business model innovation. Some of these relationships follow prior theory, such as the positive role of a creative organizational culture. Other effects, dependent in part on the locus of managerial attention, are more subtle. Teasing out these subtleties represents an important step in better understanding change at large firms competing in a complex economic environment. Future research could improve upon theories on innovation and opportunity exploitation as large firms face unprecedented opportunities and compete vigorously to exploit them.

This study reveals that organizational design in large firms which were previously considered to be the result of rigorous planning is now understood to be dynamic and emergent. CEOs are urged to maintain high flexibility to account for uncertainty in markets, products, macroeconomics, and technological change. Managers must optimize extant operations while preparing those same functions for rapid and discontinuous change. Developing the capabilities and structures to facilitate this type of multi-talented organization is therefore crucial. Our study suggests that CEO perceptions of the structural processes that confer strategic flexibility have changed since the formulation of theories of corporate competency and process engineering. CEOs of large firms believe that responsiveness to opportunities requires simplifying structures to reduce managerial attention burdens while simultaneously retaining control of non-core operations. Although the mechanisms have not been fully clarified, the tradeoffs between attention and coordination costs appear relevant.

These large firms face difficult choices that balance leveraging market efficiencies with retaining control of strategic choice and decision-making functions.

Despite the focused nature of this study, the interesting outcomes present a platform for theory development. Future research could link structural change during business model innovation to objective measures of firm performance. The attention-related aspects of innovation and opportunity exploitation at large firms deserve further examination to unravel motivations and actions during radical organizational change. Related research could address how tacit capabilities of executives affect the ability to respond to change when the firm pursues new opportunities.

The unexpected results of the moderating variable analysis bear further testing and refinement. One avenue could be to address whether specific types of innovation effort mediate or moderate the link between organizational structures and strategic flexibility. For example, reconfiguration might be more beneficial with process innovation than business model innovation if improving process efficiency reduces internal managerial attention requirements. An alternate direction could extend prior work on structural antecedents of explore-exploit outcomes (Siggelkow and Levinthal, 2003) by assessing characteristics of managerial attention that balance efficient operations and outward-facing opportunity exploration. Could these factors be potentially separated into “operators” and “explorers,” dedicated to efficiency and exploration respectively? Or are they best enacted by distributed networks of “sentries” that scan environments while maintaining control of local operations?

The global, multi-sector nature of the study helps generalize prior strategic flexibility study results, but leaves many questions unanswered. A useful direction for future research would consider when and how the benefits of strategic flexibility are obtained across different geographies when firms enact traditional or business model innovation efforts. Further, the tradeoffs between idiosyncratic costs of partnerships and information access via



network effects during fundamental innovation activities deserve additional study. When opportunity sets present disparate value profiles based on firms' distinct resource portfolios, which partnership characteristics determine whether information access or attention best expands opportunity horizons? This question effectively compares theories of resource acquisition with transaction cost economics in the context of organizational structures. A related direction could examine how partnership or network characteristics affect strategic flexibility outcomes. While we might expect that diverse and dynamic networks would support flexibility, in the context of business model innovation the outcome is less clear. Would access to diverse networks improve distant search capabilities, or burden the organization with complex coordination costs?

Specific limitations in the data should be considered in the interpretation of the results. First, the binary measure of strategic flexibility is less granular than prior studies. Although the coding of qualitative data suggests consistency in CEO conceptualization of the construct, the variable specification cannot be unpacked to consider the assessed characteristics of strategic flexibility. Further work in this area could consider both strategic flexibility as well as performance outcomes more systematically.

The nature of the firm sample restricts interpretation of results to a specific, but highly interesting population of large, technology-intensive firms worldwide. The data are cross-sectional, thereby limiting our ability to infer causality or temporal effects. Common method variance in the data is possible, though careful study design and administration strongly reduce the likelihood of significant effects, and rigorous testing did not detect the presence of common method bias.

Limitations aside, this is the first, systematic empirical study of CEOs that compares capability and structural drivers of strategic flexibility in the context of business model innovation. Our findings highlight the relevance of both structural changes and flexible

capabilities during renewal and re-organization as well as implications for organizational adaptation to environmental change. Business model innovation appears to differ fundamentally from product and process innovation. Firms that adopt modularization and reconfiguration during business model innovation risk significant reductions in strategic flexibility. The roles of control and managerial attention when firms adopt new opportunity sets improves theories of organizational design and capabilities, and holds promise for normative theory on the practice of business model innovation.

## REFERENCES

- Afuah, A. (2003). *Business Models: A Strategic Management Approach*. New York: McGraw-Hill.
- Amabile, T. M. and Khaire, M. (2008). 'Creativity and the role of the leader'. *Harvard Business Review*, **86(10)**, 100-109.
- Amit, R. and Zott, C. (2001). 'Value creation in e-business'. *Strategic Management Journal*, **22(6-7)**, 493-520.
- Anthony, G. (2007). 'Alliance networks and firm performance: The impact of repeated partnerships'. *Strategic Management Journal*, **28(5)**, 487-509.
- Baden-Fuller, C. and Morgan, M. S. (2010). 'Business Models as Models'. *Long Range Planning*, **43(2-3)**, 156-171.
- Barnard, C. I. (1938). *The Functions of the Executive*: Harvard University Press.
- Brouthers, K. D. (2008). 'Real options, international entry mode choice and performance'. *Journal of Management Studies*, **45(5)**, 936.
- Brown, S. L. and Eisenhardt, K. M. (1997). 'The art of continuous change: Linking complexity theory and time-paced evolution in relentlessly shifting organizations'. *Administrative Science Quarterly*, **42(1)**, 1-34.
- Burgelman, R. A. (1983). 'Corporate entrepreneurship and strategic management - Insights from a process study'. *Management Science*, **29(12)**, 1349-1364.
- Chandler, A. (1962). *Strategy and Structure: Chapters in the History of American Industrial Enterprise*. Cambridge, MA: MIT Press.
- Chang, M. H. (1998). 'Product switching cost and strategic flexibility'. *Journal of Economics & Management Strategy*, **7(3)**, 461-488.
- Chesbrough, H., and Rosenbloom, RS. (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.
- Combs, J. G. (1999). 'Explaining interfirm cooperation and performance: toward a reconciliation of predictions from the resource-based view and organizational economics'. *Strategic Management Journal*, **20(9)**, 867.
- Damanpour, F. (1992). 'Organizational size and innovation'. *Organization Studies*, **13(3)**, 375-402.
- Davis, J. P., Eisenhardt, K. M. and Bingham, C. B. (2009). 'Optimal Structure, Market Dynamism, and the Strategy of Simple Rules'. *Administrative Science Quarterly*, **54(3)**, 413-452.

- De Luca, L. M. and Atuahene-Gima, K. (2007). 'Market knowledge dimensions and cross-functional collaboration: Examining the different routes to product innovation performance'. *Journal of Marketing*, **71(1)**, 95-112.
- Denrell, J. (2003). 'Vicarious Learning, Undersampling of Failure, and the Myths of Management'. *Organization Science*, **14(3)**, 227-243.
- Dohrenwend, B. S., Colombotos, J. and Dohrenwend, B. P. (1968). 'Social Distance and Interviewer Effects'. *The Public Opinion Quarterly*, **32(3)**, 410-422.
- Downing, S. (2005). 'The Social Construction of Entrepreneurship: Narrative and Dramatic Processes in the Coproduction of Organizations and Identities'. *Entrepreneurship: Theory & Practice*, **29(2)**, 185-204.
- Dutton, J. E., Dukerich, J. M. and Harquail, C. V. (1994). Organizational images and member identification. *Administrative Science Quarterly*, **39(2)**, 239-263.
- Dyer, J. H. and Singh, H. (1998). 'The relational view: Cooperative strategy and sources of interorganizational competitive advantage'. *Academy of Management Review*, **23(4)**, 660-679.
- Eisenhardt, K. M. and Martin, J. A. (2000). 'Dynamic capabilities: What are they?' *Strategic Management Journal*, **21(10-11)**, 1105-1121.
- Ethiraj, S. K., Levinthal, D. and Roy, R. R. (2008). 'The dual role of modularity: Innovation and imitation'. *Management Science*, **54(5)**, 939-955.
- Evans, J. S. (1991). 'Strategic flexibility for high technology maneuvers - A conceptual framework'. *Journal of Management Studies*, **28(1)**, 69-89.
- Filatotchev, I. (2003). 'Corporate Governance, Strategy and Survival in a Declining Industry: A Study of UK Cotton Textile Companies'. *Journal of Management Studies*, **40(4)**, 895.
- Fiol, C. M. (1991). 'Managing culture as a competitive resource - An identity-based view of sustainable competitive advantage'. *Journal of Management*, **17(1)**, 191-211.
- Fosfuri, A. and Ronde, T. (2009). 'Leveraging resistance to change and the skunk works model of innovation'. *Journal of Economic Behavior & Organization*, **72(1)**, 274-289.
- George, G. (2005). 'Slack resources and the performance of privately held firms'. *Academy of Management Journal*, **48(4)**, 661-676.
- George, G. and Bock, A. J. (2011). 'The business model in practice and its implications for entrepreneurship research'. *Entrepreneurship Theory and Practice*, **35(1)**, 83-111.
- George, G., Kotha, R. and Zheng, Y. 2008. 'The puzzle of insular domains: a longitudinal study of knowledge structuration and innovation in biotechnology firms'. *Journal of Management Studies*, **45**, 1448 - 1474.

Giesen, E., Berman, S., Bell, R. and Blitz, A. (2007). *Paths to success: Three ways to innovate your business model*. IBM Institute for Business Value, G510-6630-01.

Glick, W. H., Huber, G. P., Miller, C. C., Doty, D. H. and Sutcliffe, K. M. (1990). 'Studying Changes in Organizational Design and Effectiveness: Retrospective Event Histories and Periodic Assessments'. *Organization Science*, **1**(3), 293-312.

Goodstein, J., Boeker, W. and Stephan, J. (1996). 'Professional interests and strategic flexibility: A political perspective on organizational contracting'. *Strategic Management Journal*, **17**(7), 577-586.

Grewal, R., and Tansuhaj, P. (2001). Building organizational capabilities for managing economic crisis: The role of market orientation and strategic flexibility. *Journal of Marketing*, 65(2): 67-80.

Gulati, R. and Puranam, P. (2009). 'Renewal through reorganization: The value of inconsistencies between formal and informal organization'. *Organization Science*, **20**(2), 422-440.

Gulati, R. and Sytch, M. (2007). 'Dependence asymmetry and joint dependence in interorganizational relationships: Effects of embeddedness on a manufacturer's performance in procurement relationships'. *Administrative Science Quarterly*, **52**(1), 32-69.

Hall, D. J. and Saias, M. A. (1980). 'Strategy follows structure!' *Strategic Management Journal*, **1**(2), 149.

Harrigan, K. R. (1980). 'The effects of exit barriers upon strategic flexibility'. *Strategic Management Journal*, **1**(2), 165-176.

Harrigan, K. R. and Newman, W. H. (1990). 'Bases of interorganization co-operation: Propensity, power, persistence'. *Journal of Management Studies*, **27**(4), 417-434.

Hayes, R. H. and Pisano, G. P. (1994). 'Beyond world-class - The new manufacturing strategy'. *Harvard Business Review*, **72**(1), 77-86.

Heckman, J. J. (1979). 'Sample selection bias as a specification error'. *Econometrica*, **47**(1), 153-161.

Heimeriks, K. H. (2007). 'Alliance capability as a mediator between experience and alliance performance: An empirical investigation into the alliance capability development process'. *Journal of Management Studies*, **44**(1), 25.

Hitt, M. A. (1998). 'Navigating in the new competitive landscape: Building strategic flexibility and competitive advantage in the 21st century'. *Academy of Management Executive*, **12**(4), 22.

Hoetker, G. and Mellewigt, T. (2009). 'Choice and performance of governance mechanisms: Matching alliance governance to asset type'. *Strategic Management Journal*, **30**(10), 1025-1044.

- Huckman, R. S. and Zinner, D. E. (2008). 'Does focus improve operational performance? Lessons from the management of clinical trials'. *Strategic Management Journal*, **29(2)**, 173-193.
- Johnson, M. W., Christensen, C. M. and Kagermann, H. (2008). 'Reinventing your business model'. *Harvard Business Review*, **86(12)**, 50-59.
- Kekre, S. and Srinivasan, K. (1990). 'Broader product line - A necessity to achieve success'. *Management Science*, **36(10)**, 1216-1231.
- Kohli, A.K., and Jaworski, B. (1990). Market orientation -- the construct, research propositions and future research. *Journal of Marketing*, **54(2)**: 1 - 18.
- Kotabe, M., Parente, R. and Murray, J. Y. (2007). Antecedents and outcomes of modular production in the Brazilian automobile industry: a grounded theory approach;. *Journal of International Business Studies*, **38(1)**, 84-106.
- Lakshman, C. (2007). 'Supplier-focused knowledge management in the automobile industry and its implications for product performance'. *Journal of Management Studies*, **45(2)**, 317.
- Landis, J. R. and Koch, G. G. (1977). 'The measurement of observer agreement for categorical data'. *Biometrics*, **33(1)**, 159-174.
- Lee, H. U. and Park, J.-H. (2008). 'The influence of top management team international exposure on international alliance formation'. *Journal of Management Studies*, **45(5)**, 961.
- Lee, S. H. and Makhija, M. (2009). 'Flexibility in internationalization: Is it valuable during an economic crisis?' *Strategic Management Journal*, **30(5)**, 537-555.
- Magretta, J. (2002). 'Why Business Models Matter'. *Harvard Business Review*, **80(5)**, 86-92.
- Matusik, S. F. and Hill, C. W. L. (1998). 'The utilization of contingent work, knowledge creation, and competitive advantage'. *Academy of Management Review*, **23(4)**, 680-697.
- McKendrick, D. G., Wade, J. B. and Jaffee, J. (2009). 'A good riddance? Spin-offs and the technological performance of parent firms'. *Organization Science*, **20(6)**, 979-992.
- Mom, T. J. M., van den Bosch, F. A. J. and Volberda, H. W. (2009). 'Understanding variation in managers' ambidexterity: Investigating direct and interaction effects of formal structural and personal coordination mechanisms'. *Organization Science*, **20(4)**, 812-828.
- Nadkarni, S. and Herrmann, P. (2010). 'CEO personality, strategic flexibility, and firm performance: The case of the Indian business process outsourcing industry'. *Academy of Management Journal*, **53(5)**, 1050-1073.
- Nadkarni, S. and Narayanan, V. K. (2007). 'Strategic schemas, strategic flexibility, and firm performance: The moderating role of industry clockspeed'. *Strategic Management Journal*, **28(3)**, 243-270.

- Nooteboom, B. (1996). 'Trust, opportunism and governance: A process and control model'. *Organization Studies*, **17**(6), 985-1010.
- Ocasio, W. (1997). 'Towards an attention-based view of the firm'. *Strategic Management Journal*, **18**, 187-206.
- Osterwalder, A., Pigneur, Y. and Tucci, C. L. (2005). 'Clarifying business models: Origins, present and future of the concept'. *Communications of the Association for Information Science (CAIS)*, **16** (Article 1), 1-25.
- Ouchi, W. G. (1977). 'The Relationship Between Organizational Structure and Organizational Control'. *Administrative Science Quarterly*, **22**(1), 95-113.
- Plambeck, N. and Weber, K. (2009). 'CEO ambivalence and responses to strategic issues'. *Organization Science*, **20**(6), 993-1010.
- Podolny, J. M. (1994). 'Market uncertainty and the social character of economic exchange'. *Administrative Science Quarterly*, **39**(3), 458-483.
- Podsakoff, P. M. (2003). 'Common method biases in behavioral research: A critical review of the literature and recommended remedies'. *Journal of applied psychology*, **88**(5), 879.
- Prahalad, C. K. and Hamel, G. (1990). 'The core competence of the corporation'. *Harvard Business Review*, **68**(3), 79-91.
- Puranam, P., Singh, H. and Chaudhuri, S. (2009). 'Integrating acquired capabilities: When structural integration is (un)necessary'. *Organization Science*, **20**(2), 313-328.
- Puranam, P., Singh, H. and Zollo, M. (2006). 'Organizing for innovation: Managing the coordination-autonomy dilemma in technology acquisitions'. *Academy of Management Journal*, **49**(2), 263-280.
- Richardson, H. A., Simmering, M. J. and Sturman, M. C. (2009). 'A Tale of Three Perspectives'. *Organizational Research Methods*, **12**(4), 762-800.
- Rothaermel, F. T., Hitt, M. A. and Jobe, L. A. (2006). 'Balancing vertical integration and strategic outsourcing: Effects on product portfolio, product success, and firm performance'. *Strategic Management Journal*, **27**(11), 1033-1056.
- Sanchez, R. (1995). 'Strategic Flexibility in Product Competition'. *Strategic Management Journal*, **16**, 135-159.
- Sanchez, R. and Mahoney, J. T. (1996). 'Modularity, flexibility, and knowledge management in product and organization design'. *Strategic Management Journal*, **17**, 63-76.
- Schilling, M. A. and Steensma, H. K. (2001). 'The use of modular organizational forms: An industry-level analysis'. *Academy of Management Journal*, **44**(6), 1149-1168.

- Schwens, C., Eiche, J. and Kabst, R. (2011). 'The moderating impact of informal institutional distance and formal institutional risk on SME entry mode choice'. *Journal of Management Studies*, **48(2)**, 330-351.
- Shaver, J. M. (1998). 'Accounting for endogeneity when assessing strategy performance: Does entry mode choice affect FDI survival?' *Management Science*, **44(4)**, 571-585.
- Shimizu, K. and Hitt, M. A. (2004). 'Strategic flexibility: Organizational preparedness to reverse ineffective strategic decisions'. *Academy of Management Executive*, **18(4)**, 44-59.
- Siggelkow, N. and Levinthal, D. A. (2003). 'Temporarily divide to conquer: Centralized, decentralized, and reintegrated organizational approaches to exploration and adaptation'. *Organization Science*, **14(6)**, 650-669.
- Simsek, Z., Veiga, J. F. and Lubatkin, M. H. (2007). 'The impact of managerial environmental perceptions on corporate entrepreneurship: Towards understanding discretionary slack's pivotal role'. *Journal of Management Studies*, **44(8)**, 1398-1424.
- Teece, D. J. (1996). 'Firm organization, industrial structure, and technological innovation'. *Journal of Economic Behavior & Organization*, **31(2)**, 193-224.
- Teece, D. J. (2010). 'Business models, business strategy and innovation'. *Long Range Planning*, **43(2-3)**, 172-194.
- Tellis, G. J., Prabhu, J. C. and Chandy, R. K. (2009). 'Radical innovation across nations: The preeminence of corporate culture'. *Journal of Marketing*, **73(1)**, 3-23.
- Uhlenbruck, K. (2003). 'Organizational transformation in transition economies: resource-based and organizational learning perspectives'. *Journal of Management Studies*, **40(2)**, 257.
- Vera, D. and Crossan, M. (2004). 'Theatrical improvisation: Lessons for organizations'. *Organization Studies*, **25(5)**, 727-749.
- Williams, L. J., Hartman, N. and Cavazotte, F. (2010). 'Method variance and marker variables: A review and comprehensive CFA marker technique'. *Organizational Research Methods*, **13(3)**, 477-514.
- Winter, S. G. and Szulanski, G. (2001). 'Replication as strategy'. *Organization Science*, **12(6)**, 730-743.
- Worren, N., Moore, K. and Cardona, P. (2002). 'Modularity, strategic flexibility, and firm performance: A study of the home appliance industry'. *Strategic Management Journal*, **23(12)**, 1123-1140.
- Young-Ybarra, C. and Wiersema, M. (1999). 'Strategic flexibility in information technology alliances: The influence of transaction cost economics and social exchange theory'. *Organization Science*, **10(4)**, 439-459.
- Zhou, K. and Wu, K. (2010). 'Technological capability, strategic flexibility, and product innovation'. *Strategic Management Journal*, **31**, 547-561.



**Table I**  
**Dataset comparison**

Variable	Full Sample N=556		Business Model Innovators N=107	
	Firms	%	Firms	%
Sector	Communications	86 15%	14 13%	
	Distribution	179 32%	35 33%	
	Financial services	129 23%	26 24%	
	Industrial	162 29%	32 30%	
Size in employees	0 - 5,000	192 35%	35 33%	
	5,001 - 10,000	105 19%	22 21%	
	10,001 - 15,000	79 14%	13 12%	
	15,001 - 20,000	81 15%	16 15%	
	20,001 - 25,000	48 9%	12 11%	
	25,000+	51 9%	9 8%	
Geography	Americas	137 25%	31 29%	
	Europe	201 36%	30 28%	
	Japan	67 12%	20 19%	
	China	49 9%	6 6%	
	India	38 7%	7 7%	
	Other Asia	64 12%	13 12%	

**Table II**  
**Factor analysis of internal structural change vehicles**

Variable	Internal structural changes		
	Delegation	Consolidation	Reconfiguration
Use of third-party operating utility	<b>0.7339</b>		
Onshore outsourcing	<b>0.6990</b>		0.3190
Shared services	<b>0.4795</b>		
Major project-based contracting	<b>0.4651</b>		
Offshore outsourcing	0.3078	<b>0.5022</b>	-0.3355
Spin-offs		<b>0.7399</b>	
Major strategic partnerships		<b>-0.6314</b>	-0.3842
Organizational structural changes			<b>0.8503</b>
Proportion of variance accounted for	0.20	0.15	0.14
Cumulative proportion	0.20	0.35	0.50

Note: Loadings above 0.3 or below -0.3 are shown

**Table III. Pair-wise correlations (N = 107)**

Variables	Pair-wise correlation																
	Mean (s.d.)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Strategic flexibility	0.56 (.50) 0.00																
2 Latent marker variable	(.63) 0.12	0.11															
3 Survey source	(.33) 2.77	0.16	0.37														
4 Organization size (employees)	(1.69) 0.32	0.15	-0.19	-0.14													
5 Global firm	(.47) 0.22	0.16	-0.08	-0.19	0.35												
6 EU firm	(.42) 4.06	0.11	0.00	-0.06	0.07	0.26											
7 Degree of change difficulty	(.96) 0.45	-0.03	0.08	-0.17	0.19	0.07	-0.08										
8 CEO responsible for innovation	(.50) 3.51	-0.07	-0.03	-0.28	-0.19	0.11	0.10	0.07									
9 Prior success with change effort	(.89) 0.54	0.11	0.19	-0.02	-0.08	-0.17	0.12	-0.17	0.09								
10 Product / Service / Market innovator	(.14) 4.21	-0.08	0.03	-0.10	-0.07	-0.01	-0.11	-0.07	-0.09	0.10							
11 Technology integration needs	(.80) 0.00	0.18	-0.13	-0.20	0.34	0.13	0.11	0.19	0.00	0.09	-0.04						
12 Business Model Innovation effort	(.11) 0.00	-0.03	0.23	0.14	-0.03	-0.04	-0.10	0.23	0.09	0.07	-0.03	0.06					
13 Creative culture	(1.04) 0.00	0.34	0.34	0.14	-0.16	-0.03	0.09	0.01	0.05	0.44	0.10	0.06	0.03				
14 Factor 1: Delegation	(1.05) 0.00	0.16	-0.10	0.14	0.10	0.03	0.12	-0.31	-0.28	0.07	-0.15	0.11	-0.16	-0.14			
15 Factor 2: Consolidation	(.98) 0.00	0.07	0.12	0.08	0.11	0.09	-0.01	0.05	0.00	-0.08	0.02	-0.06	0.08	0.02	-0.07		
16 Factor 3: Reconfiguration	(.99) 0.00	-0.15	0.03	0.06	-0.08	-0.20	0.03	0.13	-0.13	-0.01	-0.07	-0.01	-0.12	0.02	-0.03	0.00	
17 Partner reliance	(1.15)	-0.04	0.13	0.01	-0.15	-0.07	0.06	-0.04	-0.02	0.20	-0.18	0.12	0.17	0.20	0.12	-0.34	-0.16

**Table IV: Probit Regression Estimates of Strategic Flexibility**

<b>Variables</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6</b>
Constant	-2.65† (1.46)	-3.24* (1.45)	-1.98 (1.75)	-1.98 (1.75)	-1.75 (2.08)	-1.60 (2.07)
Latent marker variable	0.18 (0.28)	0.22 (0.28)	0.10 (0.31)	0.10 (0.31)	0.22 (0.34)	0.26 (0.34)
Survey source	1.16* (0.53)	1.41** (0.55)	1.15† (0.62)	1.14† (0.61)	0.83 (0.64)	0.83 (0.64)
<i>Sector dummies</i>	incl.	incl.	incl.	incl.	incl.	incl.
<b>External forces</b>						
Market forces	0.24 (0.35)	0.20 (0.35)	0.09 (0.39)	0.10 (0.39)	0.07 (0.41)	0.08 (0.41)
Globalization	0.83** (0.32)	0.90** (0.34)	0.97** (0.33)	0.97** (0.33)	1.28*** (0.37)	1.27*** (0.38)
Macroeconomic forces	0.79* (0.37)	0.87* (0.39)	0.54 (0.43)	0.54 (0.43)	0.56 (0.47)	0.63 (0.49)
Geopolitical issues	0.76 (0.61)	0.81 (0.63)	1.15 (0.72)	1.15 (0.72)	1.86* (0.89)	1.89* (0.90)
Environmental issues	0.29 (0.38)	0.27 (0.39)	0.19 (0.36)	0.19 (0.36)	0.19 (0.38)	0.19 (0.38)
<b>Firm attributes</b>						
Size (employees)	0.07 (0.10)	0.07 (0.10)	0.11 (0.10)	0.10 (0.10)	0.16 (0.10)	0.16 (0.10)
Global	0.36 (0.36)	0.35 (0.37)	0.14 (0.41)	0.14 (0.41)	-0.16 (0.46)	-0.20 (0.48)
EU headquarter	0.10 (0.35)	0.06 (0.36)	0.04 (0.40)	0.04 (0.40)	-0.05 (0.44)	-0.02 (0.44)
Degree of change difficulty	-0.08 (0.17)	-0.03 (0.18)	0.08 (0.19)	0.08 (0.19)	0.00 (0.20)	-0.02 (0.20)
CEO responsible for innovation	-0.03 (0.31)	0.06 (0.30)	-0.11 (0.35)	-0.11 (0.35)	-0.07 (0.40)	-0.09 (0.41)
Prior success with change efforts	0.23 (0.17)	0.27 (0.17)	0.13 (0.19)	0.13 (0.20)	-0.02 (0.20)	-0.04 (0.20)
Product / Service / Market innovator	-0.42 (1.11)	-0.23 (1.02)	-1.08 (1.17)	-1.09 (1.17)	0.14 (1.29)	0.29 (1.31)
Technology integration needs	0.28 (0.21)	0.30 (0.21)	0.25 (0.25)	0.25 (0.25)	0.21 (0.29)	0.19 (0.29)
<b>Main effects</b>						
Business model innovation effort □		-2.34† (1.24)	-1.62 (1.36)	-1.63 (1.37)	-1.73 (1.60)	-2.35 (1.73)
Innovative culture □			0.63*** (0.17)	0.63*** (0.17)	0.79*** (0.20)	0.80*** (0.20)
Structural change: Delegation			0.39* (0.18)	0.39* (0.19)	0.49* (0.23)	0.48* (0.22)
Structural change: Consolidation			0.01 (0.16)	0.02 (0.16)	0.09 (0.17)	0.08 (0.17)
Structural change: Reconfiguration			-0.33* (0.16)	-0.33* (0.16)	-0.39* (0.18)	-0.43* (0.20)
Inter-organizational dependence			-0.37* (0.15)	-0.37* (0.15)	-0.36* (0.16)	-0.38* (0.16)
<b>Interaction effects</b>						
Innovative culture x				-0.20 (1.25)	-2.30 (1.78)	-2.35 (1.74)
Delegation x					-1.16 (1.49)	-1.36 (1.47)
Consolidation x					-1.82 (1.82)	-1.58 (1.85)
Reconfiguration x					6.38*** (1.88)	7.14*** (2.21)
Inter-organizational dependence x						1.36 (1.38)
Business model innovation effort						
N	107	107	107	107	107	107
Wald $\chi^2$	22.98	24.19	55.39***	55.64***	68.61***	67.53***
Wald $\chi^2$ -change	22.98	3.59†	6.23*	0.03	11.86**	0.96

**Table V: Robustness Check with Two-stage Heckman Regression**

Variables		Model 1	Model 2	Model 3
Organizations' engagement in BMI (0/1)	Constant	-0.94† (0.50)	-0.99† (0.57)	-0.94* (0.47)
	Survey source	-0.47** (0.18)	-0.47** (0.18)	-0.48** (0.18)
	<i>Sector dummies</i>			
	Distribution sector	-0.06 (0.17)	-0.06 (0.17)	-0.10 (0.16)
	Financial services sector	0.01 (0.20)	0.00 (0.19)	-0.03 (0.19)
	Communications sector	-0.15 (0.22)	-0.13 (0.26)	-0.12 (0.21)
	<i>External forces</i>			
	Market forces	0.23 (0.16)	0.24 (0.17)	0.22 (0.15)
	Globalization	0.34* (0.16)	0.36† (0.21)	0.38** (0.15)
	Macroeconomic forces	0.10 (0.15)	0.13 (0.23)	0.14 (0.15)
	Geopolitical issues	0.40† (0.24)	0.43 (0.29)	0.51* (0.23)
	Environmental issues	0.40* (0.19)	0.40* (0.19)	0.38* (0.19)
	<i>Firm attributes</i>			
	Size (employees)	0.05 (0.04)	0.05 (0.04)	0.06 (0.04)
	Global	-0.37* (0.16)	-0.36† (0.18)	-0.34* (0.16)
	EU headquarter	-0.37** (0.15)	-0.36* (0.16)	-0.33* (0.15)
	Degree of change difficulty	0.12† (0.07)	0.12† (0.07)	0.12† (0.07)
	CEO responsible for innovation	0.36** (0.14)	0.37** (0.14)	0.36** (0.14)
	Prior success with change effort	-0.05 (0.07)	-0.05 (0.08)	-0.05 (0.07)
	Product / Service / Market innovator	-0.90** (0.31)	-0.90** (0.31)	-0.94*** (0.30)
Strategic flexibility (0/1)	Creative culture			0.49*** (0.15)
	<i>Internal structural changes</i>			
	Delegation			0.31* (0.12)
	Consolidation			-0.01 (0.12)
	Reconfiguration			-0.25* (0.12)
	Partner reliance			-0.24* (0.11)
	Technology integration needs		0.36 (0.18)	0.27 (0.18)
	CEO responsible for innovation		-0.11 (0.35)	-0.27 (0.23)
	Survey source		0.79 (0.51)	0.64 (0.45)
	Latent marker variable		0.14 (0.22)	0.05 (0.21)
	Constant		-1.10 (1.83)	-0.89 (1.16)
	N - first stage	556	556	556
	N - second stage		107	107
	Wald $\chi^2$	50.23***	7.81†	22.69**

**Figure 1**  
**Business model innovation effort, reconfiguration, and strategic flexibility**

