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Structural differentiation and corporate venturing: The moderating role of formal and informal integration mechanisms ☆

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ABSTRACT

Research has suggested that corporate venturing is crucial to strategic renewal and firm performance, yet scholars still debate the appropriate organizational configurations to facilitate the creation of new businesses in existing organizations. Our study investigates the effectiveness of combining structural differentiation with formal and informal organizational as well as top management team integration mechanisms in establishing an appropriate context for venturing activities. Our findings suggest that structural differentiation has a positive effect on corporate venturing. In addition, our study indicates that a shared vision has a positive effect on venturing in a structurally differentiated context. Socially integrated senior teams and cross-functional interfaces, however, are ineffective integration mechanisms for establishing linkages across differentiated units and for successfully pursuing corporate venturing.

1. Executive summary

Corporate venturing refers to the development of new businesses within existing organizations. Although essential for future firm growth and profitability, successfully managing corporate ventures within existing firms is a complex process. Venturing activities require different ways of working, rewards, and organizational structures compared to mainstream activities. As such, prior literatures have argued that corporate ventures should be separated from existing businesses to protect them from organizational inertia. Providing autonomy through structural differentiation creates the necessary freedom for ventures to explore knowledge, whilst protecting ventures from business pressures to show quick results. However, such an approach may inhibit ventures from sharing knowledge and resources with mainstream units. Although the integration of ventures with the parent organization may help to overcome these barriers, scholars have argued that it makes ventures susceptible to inertial pressures. Interestingly, prior venturing literature has viewed this differentiation-integration debate as a trade-off and focused on either differentiation or integration mechanisms. Drawing on insights from organizational learning and ambidexterity literatures, we set out to investigate the *joint effects* of structural differentiation and specific integration mechanisms on corporate venturing. We argue that providing particular integrative linkages across ventures and mainstream units strengthens the positive effect of structural differentiation on corporate venturing.

Scholars have pointed out the distinct effects of formal and informal organizational as well as top management team integration mechanisms in connecting mainstream units. Whereas organizational integration mechanisms facilitate the transfer of knowledge and resources, top management team integration mechanisms impact resource allocation and the strategic coherence

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across differentiated organizational units. We argue that because of the limited interdependency between venturing and mainstream units, integration mechanisms may have differential effects on corporate venturing. We suggest that integration mechanisms facilitating the establishment of tight-loose linkages across structurally differentiated venturing and mainstream units will likely enhance a firm's corporate venturing activities.

Based on survey research on 240 Dutch companies, our findings support our contention that structural differentiation has a positive effect on corporate venturing. However, we find that this direct effect is contingent upon specific organizational and top management team integration mechanisms. Formal cross-functional interfaces, for instance, are conducive to transferring existing knowledge sources, but we show that they negatively moderate the relationship between structural differentiation and corporate venturing. Because the need for existing knowledge to venturing activities is likely to be rather limited, corporate ventures incur these costly and complex integrative mechanisms without reaping their benefits. Our study also indicates that organizations combining structural differentiation with a shared organizational vision are able to increase their corporate venturing activities. Such informal organizational integration across structurally differentiated venturing and mainstream units promotes strategic coherence and knowledge exchange through shared values and a common language. Regarding top management team integration, we find no evidence that TMT group contingency rewards enable venturing across differentiated units. Our findings do show, however, that top management team social integration has a significantly negative moderating effect on the relationship between structural differentiation and corporate venturing. This indicates that socially integrated top management teams may suffer from groupthink, which does not allow for the deviating and autonomous behaviors of differentiated ventures.

The implications of our findings are that structural differentiation should be combined with particular integration mechanisms when trying to enhance corporate venturing activities. The mix of differentiation and integration mechanisms should be carefully chosen, as failing to do so can have detrimental effects on corporate venturing activities in established firms.

2. Introduction

Research has increasingly acknowledged that corporate venturing facilitates strategic renewal and increases organizational growth and performance (Burgelman, 1983; Zahra and Covin, 1995). Corporate venturing refers to the creation of new businesses within existing firms (Sharma and Chrisman, 1999), and involves the creation of new competencies and capabilities underlying new products and services (Block and MacMillan, 1993; Zahra et al., 1999). Despite these beneficial outcomes, scholars have argued that it is very complex and difficult to successfully manage venturing activities in incumbent firms (Burgelman and Valikangas, 2005; Hill and Birkinshaw, 2008). Venturing creates paradoxical challenges within organizations, as the explorative processes underlying venturing are at odds with ongoing business operations. However, corporate ventures may also benefit from leveraging knowledge and resources available within mainstream businesses (Covin and Miles, 2007). Although prior research has started to uncover appropriate contexts for venturing through differentiation or integration, our understanding of how organizations may reconcile this paradox to effectively pursue corporate venturing is far from complete.

Exploratory processes in corporate venturing result from search, variation, and experimentation and have been associated with autonomy and structural differentiation, i.e. "the segmentation of the organizational system into subsystems" (Lawrence and Lorsch, 1967: 3–4). The latter serves as a mechanism for decoupling new venturing activities from mainstream businesses to enhance flexibility and local adaptation in venturing units. Studies addressed the importance of structural differentiation in terms of New Venture Divisions (Fast, 1979), skunk works (Peters and Waterman, 1982) or independent business units (O'Reilly and Tushman, 2004) to facilitate corporate venturing. Leveraging existing competencies, however, requires refinement, efficiency, and improvement, which succeeds by reducing variance, increasing control, and integrating the venture and the parent firm (Benner and Tushman, 2003; March, 1991). Integration refers to "the process of achieving unity of effort among various subsystems in the accomplishment of the organization's tasks" (Lawrence and Lorsch, 1967: 4), and reflects specific mechanisms through which organizational units are coordinated and facilitated to work together.

Previous studies on venturing have tended to focus on the organizational structure as the appropriate way by which organizations may either facilitate differentiation or integration (Heller, 1999). Lawrence and Lorsch (1967), however, viewed differentiation and integration as complementary instead of a trade-off. In addition, ambidextrous approaches (Tushman and O'Reilly, 1996) have suggested that loose-tight coupled designs create permeability across differentiated units and enable organizations to establish strategic coherence through integrative linkages (Orton and Weick, 1990; Westerman et al., 2006). Ambidexterity and organizational learning literatures pointed to several mechanisms that may achieve integration in more informal ways, such as establishing a shared organizational vision or inducing top management team social integration (Tsai and Ghoshal, 1998; O'Reilly and Tushman, 2004). Such approaches allow for solving the paradox by developing specific configurations of differentiation and integration mechanisms. There is, however, little systematic evidence about the differential effects of configurations of structural differentiation and integration mechanisms, in particular in the context of corporate venturing.

By addressing this research gap, our study contributes to prior literatures in at least three ways. First, our study not only examines the logic that structural differentiation facilitates corporate venturing, but also explores how structural differentiation *combined with* certain integration mechanisms contributes to corporate venturing. Previous studies have largely ignored the importance of establishing autonomous yet integrated designs to facilitate corporate venturing (Westerman et al., 2006) by focusing either on differentiation (Burgelman, 1985; Fast, 1979) or integration mechanisms (Chesbrough, 2000; Thornhill and Amit, 2001). Based on the ideas of Lawrence and Lorsch (1967), we argue that organizations need to establish both structural differentiation and integration to address multiple conflicting demands. By exploring these contingencies, we provide new insights into how

organizations may establish structurally differentiated yet integrated designs capable of enhancing venturing activities within established businesses.

Second, we simultaneously consider the effectiveness of various integration mechanisms in establishing loose-tight coupling to enable corporate venturing. Whereas some scholars have focused on the role of corporate management (Burgelman, 1985; O'Reilly and Tushman, 2004), others have pointed to organizational integration mechanisms (Brown and Eisenhardt, 1997) to increase corporate venturing in differentiated units. Others have differentiated between formal and informal mechanisms in coordinating and integrating business activities (Gupta and Govindarajan, 2000; Tsai, 2002). To deepen our understanding of how organizations may successfully manage interdependencies across differentiated venturing and mainstream units, several authors pled for a simultaneous assessment of multiple integration mechanisms (Collins and Smith, 2006; Westerman et al., 2006). As such, we classify *four types of integration mechanisms* along two aspects: (1) organizational and top management team, and (2) formal and informal integration mechanisms. We examine the moderating effects of organizational-level (i.e. formally through cross-functional interfaces and informally through a shared vision) and TMT-level (formally through group contingency rewards and informally through social integration) integration mechanisms on the relationship between structural differentiation and corporate venturing.

Third, although integration mechanisms establish interactions across mainstream units (Gupta and Govindarajan, 2000), we suggest that certain combinations of differentiation and integration mechanisms may lead to rigid and detrimental conditions for corporate venturing. Although prior studies have highlighted the benefits of integration mechanisms for establishing cooperation and interaction across highly interdependent units, we assert that integration mechanisms could also have negative outcomes for more independent units such as corporate ventures. In this sense, we deliver new insights concerning the establishment of a proper organizational context that is conducive to host differentiated yet partly integrated venturing and mainstream units (e.g. Gibson and Birkinshaw, 2004; Tushman and O'Reilly, 1996).

The paper proceeds as follows. The next section contains the literature review and hypotheses. Next we discuss the research methodology and generation as well as validation of our measures, followed by our empirical findings. We conclude with a discussion of our findings, implications for both scholars and practitioners, and future research issues.

3. Literature review and hypotheses

Studies on venturing have emphasized that corporate ventures are different from mainstream businesses (Burgelman, 1983; Sykes and Block, 1989). Prior research has therefore argued that venturing activities should be differentiated in autonomous units (Block and MacMillan, 1993; Burgelman, 1985; Fast, 1979) that allows for managing and rewarding ventures and mainstream businesses in different ways (Kanter, 1985). Besides pointing out the differences between venturing and ongoing business activities, scholars have also addressed the importance of available resources and complementary knowledge sources within firms (Chesbrough, 2000; Dushnitsky and Lenox, 2006; Shrader and Simon, 1997; Thornhill and Amit, 2001). Van de Ven (1986) argued that overcoming these paradoxical demands is central to the management of innovations, and suggested that managing part-whole relationships across differentiated units is essential for innovation and venturing. Corporate venturing does "not occur in abstraction from current abilities" (Kogut and Zander, 1992: 391) and involves both reusing existing knowledge and exploring new knowledge (Covin and Miles, 2007; Hill and Birkinshaw, 2008; Katila and Ahuja, 2002). Structurally differentiating venturing activities in autonomous units may inhibit venture-parent organizational learning (Birkinshaw et al., 2002; Scarbrough et al., 2004) and decrease synergies among units (Tushman and O'Reilly, 1996).

The combination of structural differentiation and integration creates a loosely coupled system, in which structural differentiation facilitates local adaptability and exploration of novel businesses, and integrative mechanisms facilitate strategic coherence and knowledge transfer between structurally differentiated organizational units (Gilbert, 2006; O'Reilly and Tushman, 2004; Weick, 1982). In this sense, integration mechanisms contribute to the effectiveness of structural differentiation in facilitating venturing and innovation. Structurally differentiated corporate ventures, however, are relatively independent of other organizational units with a limited need for knowledge exchange and combination (Burgelman, 1985; Tushman and Nadler, 1978). We argue therefore that only specific combinations of structural differentiation and integration contribute to the pursuit of corporate venturing in established organizations.

3.1. Structural differentiation and corporate venturing

Structural differentiation refers to "differences among subunits with respect to goal orientation, time orientation, and interpersonal orientation" (Golden and Ma, 2003: 485). It creates "pragmatic boundaries" (Carlile, 2004) that safeguard venturing activities from dominant managerial cognitions and inertia present in the parent's mainstream activities (Benner and Tushman, 2003; Gilbert, 2005). Structural differentiation provides ventures with a sense of freedom and ownership over their activities. Such spatial separation leads to higher creativity (Amabile et al., 1996) and allows for adaptation to local demands. It facilitates within-venture learning and increases knowledge creation at different venturing locations within organizations (Fiol, 1995; Scarbrough et al., 2004). Establishing local 'thought-worlds' through differentiation leads to creative breakthroughs and more opportunities to venture (Fiol, 1995). Furthermore, it keeps ventures away from reporting and annual budgeting policies (Burgelman, 1985), and protects them from perverse pressures to grow fast (Burgelman and Valikangas, 2005). Moreover, through structural differentiation, venturing units can adopt working methods that are better suited for their exploratory processes. Therefore, we argue that structural differentiation has a positive effect on corporate venturing.

Hypothesis 1. Structural differentiation will be positively related to corporate venturing.

3.2. The moderating role of integration mechanisms

Prior literature has distinguished between formal and informal integration mechanisms, and have shown that both types of mechanisms differentially impact important organizational outcomes such as knowledge sharing, exploration, and venturing (Tsai, 2002; Jansen et al., 2006). Zahra and George (2002: 194), for instance, argued that "informal mechanisms are useful in exchanging ideas, but formal mechanisms have the advantage of being more systematic." In this sense, formal integration mechanisms provide less flexibility in knowledge exchange and are mostly associated with exploitative learning outcomes, while informal mechanisms lead to more explorative learning (Daft and Lengel, 1986; Zahra and George, 2002). Scholars have argued that ventures involve both exploitative and explorative learning (Hill and Birkinshaw, 2008), suggesting that ventures could potentially benefit from both formal and informal integration. Therefore, we take both formal and informal integration mechanisms into account.

Scholars have also pointed at the distinct role of organizational and TMT integration mechanisms. Organizational integration mechanisms have primarily been linked to knowledge transfer (cf. Gupta and Govindarajan, 2000; Tsai and Ghoshal, 1998), whereas top management team integration has been associated with achieving strategic coherence and facilitating the allocation and combination of resources (O'Reilly and Tushman, 2004). Given the importance of both transferring knowledge as well as achieving synergies, we take into account both organizational and TMT integration mechanisms. Therefore, we classify four types of integration mechanisms along two aspects: (1) formal and informal, and (2) organizational and TMT integration mechanisms (see Fig. 1).

Following Galbraith (1973), Gupta and Govindarajan (2000) argued that cross-functional interfaces are formal organizational integration mechanisms that generate horizontal linkages between units. Cross-functional interfaces provide formal channels of communication and information processing mechanisms and have been associated with cross-functional teams, task forces, and liaison positions (Gupta and Govindarajan, 2000). In addition to more formal organizational integration (i.e. cross-functional interfaces), organizations may also establish informal integration mechanisms to minimize divergent perspectives and enhance a sense of mutual interests (Nohria and Ghoshal, 1994). Informal integration mechanisms refer to collective goals and interests captured by a shared organizational vision (Tsai and Ghoshal, 1998). A shared organizational vision generates alignment of goals and values that result into increased access to and interaction between differentiated organizational units (Gupta and Govindarajan, 2000). In line with these prior literatures, we distinguish between (1) cross-functional interfaces and (2) shared vision to uncover the importance of organizational integration mechanisms.

In addition to organizational integration mechanisms, theory has brought forward the importance of top management teams in strategically integrating structurally differentiated venturing and exploitative units (Gilbert, 2006; O'Reilly and Tushman, 2004; Smith and Tushman, 2005). Top management teams need to allow departure from existing knowledge in venturing units, yet establish cross-fertilization and synergies with ongoing businesses. Following previous literature, we distinguish between formal and informal TMT integration mechanisms that have been associated with managing these inconsistencies and synergies: (1) group contingency rewards and (2) social integration (cf. O'Reilly et al., 1989; Shaw et al., 2001; Siegel and Hambrick, 2005; Smith et al., 1994). TMT group contingency rewards are an important formal TMT integration mechanism that creates outcome interdependency across TMT members and provides incentive for cooperation across venturing and mainstream units (Harrison et al., 2002).

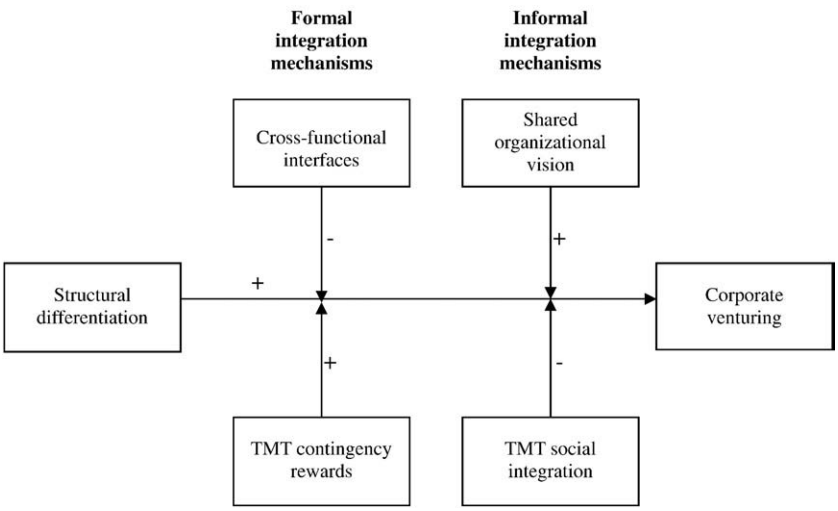

Fig. 1. Research framework: structural differentiation, formal and informal integration and corporate venturing.

TMT social integration establishes informal intrinsic values among top management team members to discuss and to motivate cooperation across differentiated units. Both group contingency rewards and social integration are therefore important TMT integration mechanisms for fostering collaboration across differentiated organizational units.

3.2.1. Cross-functional interfaces

Prior studies have shown that establishing formal communication channels is beneficial to exchanging and integrating existing knowledge between highly interdependent units (Daft and Lengel, 1986; Gupta and Govindarajan, 1991). However, given that applying cross-functional interfaces is costly and increases complexity, Tushman and Nadler (1978) argued such mechanisms may have detrimental effects in cases of units with low levels of interdependence. The costs and complexity associated with cross-functional interfaces place an unnecessary burden on venturing activities and hinder the coexistence of multiple time frames across differentiated units by imposing a formal integrative architecture (Mintzberg, 1979; Repenning and Sterman, 2002). Consequently, formal organizational integration might lead to role conflicts between short-term oriented mainstream units and long-term oriented ventures (Burgelman, 1985; Floyd and Lane, 2000) and lessen the contributive natures of structural differentiation on corporate venturing. By reducing the flexibility and the variance of underlying knowledge sources, cross-functional interfaces result in more local search (Benner and Tushman, 2002; Repenning and Sterman, 2002; Zahra and George, 2002). This hinders organizations to venture into new territories (Burgelman, 2002; Gatignon et al., 2002) as corporate ventures are overwhelmed by forces of business-as-usual (O'Reilly and Tushman, 2004). O'Reilly and Tushman (2004) indicated that connecting differentiated units through formal organizational integration mechanisms led to the development of less breakthrough products. Volberda (1998) argued that cross-functional interfaces reduce the autonomy of differentiated units and inhibit their exploration activities. He suggested that increased integration led to a more vulnerable system, as "disturbances in one part were reproduced throughout the organization" (Volberda, 1998: 157). Because of their exploratory nature, ventures are likely to cause such disturbing effects (Block and MacMillan, 1993). In other words, formal cross-functional interfaces diminish the positive effect of structural differentiation on corporate venturing.

Hypothesis 2. Cross-functional interfaces will have a negative effect on the relationship between structural differentiation and corporate venturing.

3.2.2. Shared organizational vision

A shared organizational vision may overcome the pragmatic boundaries between venturing and mainstream units by creating a common language and mutual understanding (Tsai and Ghoshal, 1998). A shared language is vital for effective communication (Cohen and Levinthal, 1990), and facilitates knowledge exchange and combination (Nahapiet and Ghoshal, 1998). A shared vision can therefore help corporate ventures to recognize the value of potential organizational knowledge sources (Sinkula et al., 1997). Dougherty (1992) argued that shared understanding is essential to bring forward innovations in firms comprised of separated units with disparate thought worlds. A shared vision increases the willingness of organizational members to consider and incorporate opposing views and facilitates the legitimacy of local venturing activities throughout the organization (Subramaniam and Youndt, 2005). This enables the acceptance of contrasting work methods of differentiated corporate ventures and mainstream businesses (Ashforth and Mael, 1989). In such cases of high ambiguity between units, a shared set of goals will be the only effective way to establish coordination and control (Ouchi, 1980). It leads to a consistent corporate culture that allows employees to coordinate activities and economize on communication costs across unit boundaries (Camerer and Vepsalainen, 1988). We argue therefore that the configuration of structural differentiation and a shared organizational vision significantly increases corporate venturing.

Hypothesis 3. A shared organizational vision will have a positive effect on the relationship between structural differentiation and corporate venturing.

3.2.3. TMT group contingency rewards

A key issue for top management teams coordinating structurally differentiated units is to achieve strategic coherence and synergies without losing local adaptability. TMT group contingency rewards compensate TMT members for the overall firm performance instead of rewarding members for their individual performance (Collins and Clark, 2003). By rewarding group outcomes, TMT group contingency rewards foster collaboration and create commitment to organizational goals (Bloom, 1999). They have been shown to increase communication, knowledge sharing and cooperation across TMT members, and motivate them to transcend their unit's direct interests (Collins and Smith, 2006; Shaw et al., 2001). TMT group contingency rewards are particularly important to structurally differentiated venturing units, as the potentially disruptive nature of venturing activities may increase role conflict within top management teams (Siegel and Hambrick, 2005). Group contingency rewards reduce interpersonal competition and facilitate mutual adjustment between managers of differentiated venturing and mainstream units (Pfeffer, 1995). Hence, TMT group contingency rewards cause top management team members to direct attention and corresponding behavior to achieving integrative value across differentiated venturing and exploitative units (Smith and Tushman, 2005). Whereas organizational members located at structurally differentiated units may have difficulty seeing beyond their unit's interests, TMT members are in a much better position to oversee all units (Gilbert, 2006). They are able to identify opportunities to share resources and to establish balanced resource allocation to facilitate the coexistence of venturing and exploitative units. Accordingly, we argue that TMT group contingency rewards positively moderate the relationship between structural differentiation and corporate venturing.

Hypothesis 4. TMT group contingency rewards will have a positive effect on the relationship between structural differentiation and corporate venturing.

3.2.4. TMT social integration

Social integration within TMTs increases negotiation, compromise, and collaboration between organizational units (Michel and Hambrick, 1992). However, social integration may result into groupthink within top management teams, which leads to selective perception of opportunities for knowledge and resource integration across differentiated units (Janis, 1982). Meta-analytic findings suggest that socially integrated teams are therefore only beneficial to highly interdependent organizational units (Beal et al., 2003). TMT social integration decreases the ability of ventures to break away from existing knowledge sources and competences. Because of the rather low to moderate interdependency between venturing and mainstream units, we argue that Tripsas and Gavetti (2000) and Burgelman (2002) showed that top managers discouraged search activities that were not consistent with the existing business model. Moreover, TMT social integration decreases the willingness of TMT members to discuss conflicting demands and force the confrontation of competing goals of venturing and mainstream units. In such cases the minority opinion of the structurally differentiated venture is often not taken into account (Smith and Tushman, 2005). In other words, the more structurally differentiated a venture is, the less likely a socially integrated TMT is to allocate the required resources to the venture. Conversely, if venturing activities are part of a mainstream business unit, i.e. low level of structural differentiation, they may receive the necessary resources through routine allocation processes associated with mainstream units. We argue therefore that TMT social integration decreases the positive relationship between structural differentiation and corporate venturing.

Hypothesis 5. TMT social integration will have a negative effect on the relationship between structural differentiation and corporate venturing.

4. Methods

4.1. Data collection

Using the Reach database, we randomly identified a sample of 4000 firms in the Netherlands that covered a broad range of industries. Reach is the most comprehensive company database in the Netherlands. It provides basic company and financial information for all companies registered at the Dutch Chamber of Commerce. To deal with potential common method bias, we collected data for the independent and dependent variables at *two different points in time* (Podsakoff et al., 2003). In 2005, a survey assessing structural differentiation and integration mechanisms was administered to the executive directors of the 4000 firms. To ensure confidentiality, we agreed not to reveal the name of the executive director and asked for the questionnaire to be returned directly to the research team. This reduces the possibility of social desirability bias (Podsakoff et al., 2003). Executive directors from 452 firms returned their questionnaire, representing a response rate of 11.3%. In 2006, approximately ten months after the first survey, a second survey was mailed to the same 452 executive directors to assess their firm's corporate venturing activities. We received 240 completed surveys, representing an effective response rate of 53.1%. Compared to the original sample, our final response rate of 6% is not uncommon in empirical studies targeting executives (cf. Koch and McGrath, 1996; Lepak et al., 2003; Ozgen and Baron, 2007; Simons et al., 1999). The average size of the firms was 495.39 (SD = 3098.15) full-time employees and the average firm age was 40.56 years (SD = 34.97). The firms were operating in several industries covering manufacturing (52%), construction (17%), trade (6%), transportation (5%), financial services (7%), and professional services (12%). The respondents of these 240 firms had an average company tenure of 13.57 years (SD = 10.17).

4.2. Validation of method

Although partly explained by the separated measurements of our independent and dependent variables, the low final response rate may increase concerns about nonresponse bias, as unobserved determinants of the decision to respond to the questionnaire could have an effect on our study variables (Huselid, 1995). In such cases of potential nonrandom exclusion of observations a sample selection bias correction technique is warranted (Berk, 1983). We therefore tested for nonresponse bias by examining differences between respondents and nonrespondents in three different ways.

First, we compared sample characteristics of (a) the 452 respondents of 2005 vs. initial sample of 4000 firms, (b) the 240 respondents of 2006 vs. the initial sample of 4000 firms, and (c) the 240 respondents of 2006 vs. the 452 respondents in 2005. T-tests showed no significant differences based on the number of full-time employees, firm age, and revenue in all three comparisons. Second, we compared early and late respondents in terms of demographic characteristics and model variables. These comparisons did not reveal any significant differences ($p < .05$), indicating that nonresponse bias was not a problem. Third, we formally controlled for possible nonresponse bias by applying a sample selection bias correction technique known as the Heckman procedure (cf. Berk, 1983; Huselid, 1995; Koch and McGrath, 1996; Lepak et al., 2003). The first step of the procedure is obtaining a probit estimation to estimate whether the sample is biased. The dependent is a dummy gauging whether the firm has participated in the survey or not. The explanatory variables are firm size (number of employees), firm age (in years of existence) and industry membership (1-digit SIC-code). The predicted values of the probit estimation are multiplied by −1.0, and then used to calculate the inverse Mill's ratio[1] (Berk, 1983;

[1] Inverse Mill's ratio$_i = f(z_i) / (1 - \hat{F}(z_i))$ where (z_i) is the negative of the predicted value, $f(z_i)$ is the density value, and $F(z_i)$ is the distribution value.

Koch and McGrath, 1996). As a second step, the inverse Mill's ratio is plugged into the regression analyses as a control variable to correct for possible bias due to nonresponse. If the significance levels and betas of our hypothesized variables would change, this indicates that nonresponse bias is influencing our findings.[2] As shown in the Results section, our empirical findings remained the same after including the inverse Mill's ratio, indicating that nonresponse bias was not a concern in our study.

To address potential single-informant bias (Venkatraman and Grant, 1986), we surveyed an additional top management team member in each responding firm for both the 2005 and the 2006 sample. In 2005 the follow-up survey resulted in 36 responses from the 240 firms in our final sample, and in 2006 we received 57 responses from additional top management team members. To statistically demonstrate how consensual raters are within a single organizational context, we calculated the average r_{wg} for each organization (Kozlowski and Hults, 1987). The r_{wg} for organizations ranged from .72 to .99 with a median of .92 (mean .92) for the independent variables survey, and ranged from .78 to .99 with a median of .96 (mean of .95) for the dependent variables survey. Following the procedure of James et al. (1984) we also calculated the average r_{wg} per variable for differentiation (.89), cross-functional integration (.91), shared vision (.93), TMT social integration (.94), TMT group contingency rewards (.86), and venturing (.94). Overall, the r_{wg} values indicate sufficient agreement within organizations for both the independent and dependent variables.

4.3. Measurement and validation of constructs

This study used existing multi-item scales that were verified through various analyses (items of constructs are provided in the Appendix A).

4.3.1. Dependent variable

Corporate venturing was measured through five items ($\alpha = .82$) adapted from Zahra (1996). The measure captured the extent to which firms enter into new business fields by creating new ventures. To validate the measure for corporate venturing, we related the scores on the dependent variable to a separate overall four-item scale of innovativeness ($\alpha = .82$) based on Bell (2005). We expect that the extent to which firms create new ventures will be related to the extent to which they pursue innovations and are leading in the market regarding new products and services. Our expectation that corporate venturing would be related to the overall measure of innovativeness was corroborated by significant positive correlations ($r = .40$, $p < .001$). We also related the score on corporate venturing to the R&D investments as a percentage of annual sales ($r = .28$, $p < .001$) and to the percentage of revenues in the last 3 years that is attributable to new products and services ($r = .33$, $p < .001$). Both significant and positive correlations provide additional evidence for the validity of our measure of corporate venturing.

4.3.2. Independent and moderating variables

Structural differentiation was measured with a six-item scale ($\alpha = .79$) based on Jansen et al. (forthcoming). The items captured the extent to which organizations separate innovation and efficiency activities in different autonomous organizational units. Five items were used to measure *cross-functional interfaces* ($\alpha = .73$). Based on Gupta and Govindarajan (2000), we included multiple items that measured the extent to which firms use cross-functional teams, temporary work groups and liaison personnel. The measure for *shared organizational vision* ($\alpha = .87$) was adapted from Sinkula et al. (1997) and refers to the extent to which firms have collective goals and shared aspirations. TMT *group contingency rewards* ($\alpha = .80$) refers to the extent to which top management team incentives, such as bonuses and profit sharing, were tied to overall firm performance. We constructed a four-item measure for TMT group contingency rewards based on Collins and Clark (2003). *TMT social integration* ($\alpha = .85$) was measured by five items adapted from Smith et al. (1994). The items reflected the attraction to the top management team, satisfaction with other top management team members, and the social interaction among team members (O'Reilly et al., 1989).

We assessed the construct validity of all items pertaining to our constructs through exploratory and confirmatory factor analysis (CFA). After deleting several items (see Appendix A), the exploratory factor analysis clearly replicated the intended factor structure. Each item loaded on its intended factor (all factor loadings were .55 or above with no cross-loadings above .30), and all factors had eigenvalues greater than one, supporting the six factor solution. An integrated CFA on all remaining items (with each item constrained to load only on the factor for which it was the proposed indicator) yielded a model that fitted the data well ($\chi^2/df = 1.77$, comparative fit index [CFI] = .90 incremental fit index [IFI] = .90, root-mean-square error of approximation [RMSEA] = .057). Item loadings were as proposed and significant ($p < .01$). Finally, Cronbach alpha's for our constructs all exceeded the commonly used cut-off of .70. These findings provide strong support for the reliability and validity of our measurements.

4.3.3. Control variables

In the empirical study, we controlled for possible confounding effects by including various relevant control variables. As larger firms may have more resources, yet may lack the flexibility to venture, we included the natural logarithm of the number of full-time employees to account for *firm size*. A *firm's age*, measured by the natural logarithm of the number of years since its founding, was also included. Previous studies have argued that inertia may inhibit older firms from developing corporate ventures (cf. Zahra and Hayton, 2008). *Past performance* indicates the degree of slack in a firm, and as such might be an important antecedent to the level of corporate entrepreneurial activities in a firm (cf. Zahra and Hayton, 2008). Past performance was measured with a five-item scale capturing a firm's ROI, sales growth, profit growth, attracting new customers,

[2] For a more detailed description of the procedure we refer to Berk (1983) and Koch and McGrath (1996).

and market share growth ($\alpha = .82$). Based on previous literature, a four-item measure was included that captured *environmental dynamism* (Jansen et al., 2006). The scale for environmental dynamism ($\alpha = .80$) tapped into the rate of change of the competitive environment. Previous studies have shown that dynamism can significantly influence corporate venturing (cf. Zahra, 1993). Finally, to control for additional industry effects, we included seven *industry* dummies: manufacturing, construction, trade, transportation, financial services, professional services, and other industries.

5. Results

Table 1 presents descriptive statistics and correlations for the variables. Table 2 presents the results of the moderated regression analyses for venturing. Prior to the creation of the interaction terms, we mean centered the independent variables. To examine multicollinearity, we calculated variance inflation factors (VIF) for each of the regression equations. The maximum VIF within the models was 2.6, which is well below the rule-of-thumb cut-off of 10. Model 1 contains the moderators and control variables. The model included 6 of the 7 industry dummies, as manufacturing was used as the reference group. Model 2 introduces the effect of structural differentiation on corporate venturing (Hypothesis 1) and model 3 examines the moderating effects of the formal and informal integration mechanisms (Hypothesis 2–5). Model 4 added the inverse Mill's ratio to correct for potential nonresponse biases. The results show that nonresponse bias was not of concern in our analysis, as the inverse Mill's ratio was non-significant and the effect sizes and significance of our model variables did not seem to be effected by adding the inverse Mill's ratio. The models showed significant increases in explanatory power. Regarding the control variables we can observe that past performance ($\beta = .306$, $p < .001$) and environmental dynamism ($\beta = .137$, $p < .05$) have a positive effect on venturing (see Table 2). The identified formal and informal integration mechanisms do not seem to have a direct effect on corporate venturing. Model 2 in Table 2 confirmed Hypothesis 1 that structural differentiation has a positive effect on corporate venturing ($\beta = .160$, $p < .05$). The increase in explanatory power compared to model 1 was significant ($p < .05$).

The interaction terms in model 3 were all significant except the interaction of TMT group contingency rewards and structural differentiation (see Table 2). The increase in explanatory power was significant compared to model 2 ($p < .05$). The interaction term of cross-functional integration was significantly negative ($\beta = -.145$, $p < .05$) and confirms Hypothesis 2. The positive effect of structural differentiation on venturing turns slightly negative when managers use cross-functional interfaces (see Fig. 2A). For firms that make very limitedly use of cross-functional interfaces, the effect of structural differentiation on corporate venturing becomes much stronger. If managers want to increase the level of venturing in an organization, they should combine low levels of formal organizational integration with high degrees of structural differentiation (see Fig. 2A).

Table 1
Means, standard deviations, and correlations[a].

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Corporate venturing	3.72	1.23	(.82)															
Structural differentiation	4.17	1.24	.24**	(.79)														
Cross-functional interfaces	4.22	1.19	.20**	.36**	(.73)													
Shared organizational vision	5.37	.93	.18**	.11	.46**	(.87)												
TMT group contingency rewards	4.35	1.56	.19**	.39**	.31**	.16*	(.80)											
TMT social integration	5.36	.91	.08	.14*	.25**	.51**	.12	(.85)										
Dynamism	4.37	1.26	.22**	.16*	.16*	.08	.24**	.02	(.80)									
Firm size[b]	4.47	1.25	.01	.22**	.19**	.00	.37**	−.01	.05	–								
Firm age[c]	3.35	.93	−.07	−.03	.02	−.04	−.06	.04	−.16*	.14*	–							
Past performance	4.62	.93	.29**	.08	.20**	.32**	.19**	.19**	.04	.01	.00	(.82)						
Construction	.18	.38	−.18**	−.10	−.12	−.06	−.21**	−.02	−.03	−.20**	.08	−.15*	–					
Trade	.06	.24	.05	−.01	.03	.02	−.04	.10	−.07	−.10	.01	.00	−.12	–				
Transportation	.05	.21	−.16*	−.06	−.08	−.03	−.09	−.06	−.18**	.00	.02	−.05	−.10	−.06	–			
Financial services	.08	.26	.07	.10	.01	.07	.04	.03	.12	.11	−.16*	.05	−.13*	−.07	−.06	–		
Professional services	.11	.31	.17**	.08	.10	−.03	.09	−.03	.18**	.02	−.30**	−.08	−.16*	−.09	−.08	−.10	–	
Manufacturing	.53	.50	.04	.01	.09	.03	.13*	−.00	−.04	.14*	.21**	.16*	−.49**	−.27**	−.23**	−.30**	−.37**	–
Other industries	.00	.06	.00	.02	−.13*	−.01	.04	−.03	.01	−.07	−.11	−.04	−.03	−.02	−.01	−.02	−.02	−.07-

**. Correlation is significant at the .01 level (2-tailed). *. Correlation is significant at the .05 level (2-tailed).
[a] $N = 240$. Numbers in parentheses on the diagonal are Cronbach alphas of the composite scales.
[b] Log number of full-time employees.
[c] Log of years since founding.

Table 2
Moderated regression results for corporate venturing [a].

	Model 1	Model 2	Model 3	Model 4
Controls				
Industry dummies [b]				
– Construction	−.339	−.348	−.325	−.375
	(.211)	(.209)	(.208)	(.219)
– Trade	.282	.265	.178	.119
	(.314)	(.311)	(.308)	.(318)
– Transportation	−.631	−.634	−.623	−.717
	(.364)	(.360)	(.356)	(.378)
– Financial services	.214	.152	.119	−.027
	(.296)	(.294)	(.289)	(.350)
– Professional services	.587*	.569*	.575*	.441
	(.263)	(.260)	(.257)	(.314)
– Other industries	.387	.228	.044	−.178
	(1.164)	(1.154)	(1.138)	(1.177)
Environmental dynamism	.137*	.132*	.158*	.162**
	(.062)	(.062)	(.061)	(.062)
Log organizational size	−.064	−.074	−.074	−.097
	(.067)	(.066)	(.065)	(.072)
Log organizational age	.039	.039	.064	.015
	(.088)	(.087)	(.086)	(.109)
Past performance	.306***	.308***	.318***	.320***
	(.086)	(.085)	(.086)	(.086)
Moderating variables				
Cross-functional interfaces	.082	.035	−.011	−.012
	(.072)	(.074)	(.076)	(.076)
Shared organizational vision	.083	.103	.139	.135
	(.101)	(.100)	(.100)	(.101)
TMT group contingency rewards	.051	.016	.009	.010
	(.055)	(.057)	(.056)	(.056)
TMT social integration	−.058	−.077	−.087	−.087
	(.095)	(.094)	(.096)	(.096)
Main effect				
Structural differentiation		.160*	.141*	.143*
		(.067)	(.068)	(.068)
Interaction effects				
Structural differentiation* cross-functional interfaces			−.145*	−.146*
			(.057)	(.057)
Structural differentiation*shared organizational vision			.238**	.239**
			(.081)	(.081)
Structural differentiation*TMT group contingency rewards			.034	.035
			(.040)	(.040)
Structural differentiation*TMT social integration			−.171*	−.174*
			(.074)	(.075)
Sample selection correction				
Inverse Mill's ratio				−3.528
				(4.750)
R^2	.199	.219	.260	.262
F-value for change in R^2		5.658*	3.057*	.552

*$p<.05$; **$p<.01$; ***$p<.001$.
[a] $N=240$; unstandardized coefficients are reported; standard errors in parentheses.
[b] Manufacturing served as reference group in regression analyses.

A shared organizational vision significantly strengthens the relationship between structural differentiation and venturing ($\beta=.238$, $p<.01$), thereby confirming Hypothesis 3. Fig. 2B shows that in the case of structurally differentiated units, shared vision is a tool to achieve synergies between the venture and the rest of the organization. When there is low informal coordination in the form of a shared organizational vision between members of different organizational units, structural differentiation is negatively influencing the level of venturing (see Fig. 2B).

The interaction term of TMT group contingency rewards and structural differentiation was non-significant in our model, thereby not providing support for Hypothesis 4. We ran additional regressions without the other moderating effects to observe whether the moderating effect of TMT group contingency rewards was perhaps already explained by the other integration mechanisms, in particular TMT social integration. The additional regressions did not provide a significant moderating effect of TMT group contingency rewards.

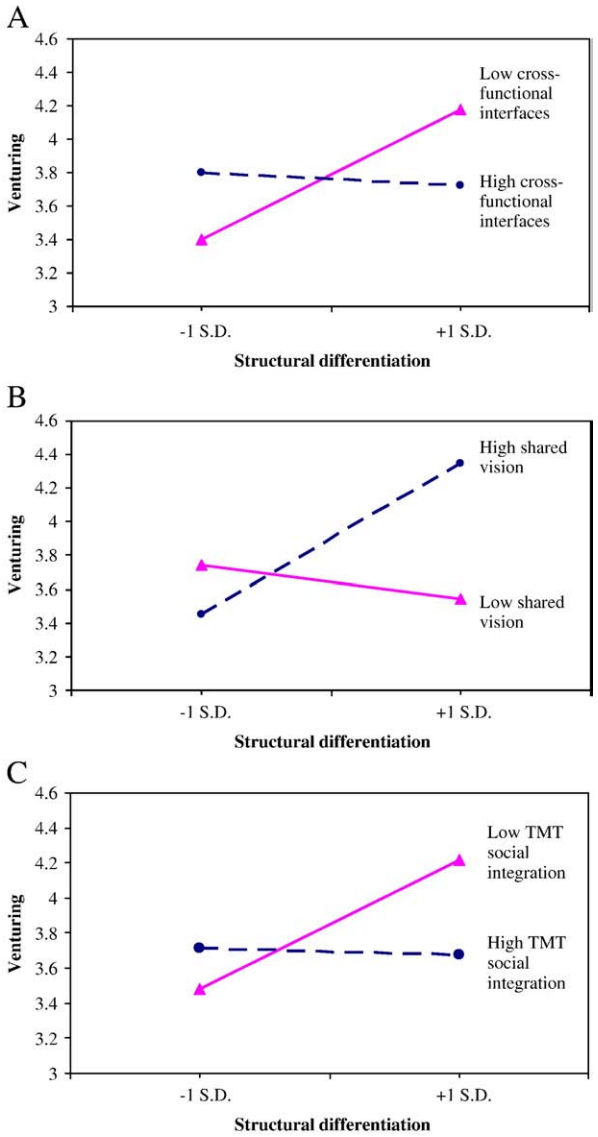

Fig. 2. A. Interaction of structural differentiation and cross-functional interfaces. B. Interaction of structural differentiation and shared organizational vision. C. Interaction of structural differentiation and TMT social integration.

The significantly negative moderation effect of top management team social integration on the relationship between structural differentiation and venturing ($\beta = -.171$, $p < .05$) confirmed Hypothesis 5. Thus the effect of structural differentiation on corporate venturing becomes significantly stronger if firms make limitedly use of TMT social integration (see Fig. 2C). In case of high top management team social integration there is a slight negative effect of structural differentiation on venturing.

6. Discussion

Conceptual arguments assert that – because of the necessity to allow local adaptability while facilitating knowledge-sharing between units – successfully managing corporate venturing in established firms is complex and difficult to achieve. Recent research started to explore how organizations may use configurations of differentiation and integration mechanisms to simultaneously achieve adaptability and coherence (Heller, 1999; O'Reilly and Tushman, 2004). We tested this core idea by exploring how combinations of structurally differentiation and various types of integration mechanisms contribute to establishing loose-coupling architectures that facilitate corporate venturing in established firms. Based on two dimensions, (1) formal and informal, and (2) organizational and TMT, we delineated four types of integration mechanisms.

Our findings indicate that organizations differentiating venturing activities from ongoing business activities enhance their corporate venturing activities, thereby providing support for Hypothesis 1. In this sense, our study sheds more light on the debate between those scholars arguing for more autonomy (e.g. Burgelman, 1985) versus those arguing for more integration

(Chesbrough, 2000; Thornhill and Amit, 2001). Ceteris paribus, our findings support the former arguments that structural differentiation allows exploratory and exploitative activities to coexist. Establishing separate venturing units helps organizations to buffer experimentation and the development of new competences from ongoing operations (Burgelman, 1985; Gilbert, 2005). However, our research findings also suggest that the previously asserted effect of differentiation on facilitating corporate venturing is strongly influenced by the use of integration mechanisms. Future studies should therefore focus on configurations of differentiation and integration mechanisms when studying corporate venturing, instead of focusing on a single differentiation or integration mechanism.

Regarding the moderating effects of organizational integration mechanisms, our findings support Hypothesis 2 that using formal organizational integration (i.e. cross-functional interfaces) to establish horizontal coordination and knowledge transfer across structurally differentiated units impedes corporate venturing. This finding confirms the claim of Tushman and Nadler (1978), who argued that "more simple mechanisms should be utilized to the fullest possible extent; given their greater cost, the more complex integrating mechanisms should only be used for residual interdependence" (1978: 621). Given the low interdependence of ventures and mainstream units, there will simply be no residual interdependence, while ventures would still incur the costs, time and effort associated with such complex integration mechanisms. Additionally, the reciprocality of knowledge flows associated with formal organizational integration mechanisms could place the venture under close scrutiny, making the venture more susceptible to business pressures in its early stages (Burgelman, 1985). Accordingly, our study provides new insights into venturing and organizational learning theory by showing that cross-functional interfaces have a strong negative effect on the relationship between structural differentiation and corporate venturing. The link with differentiation and corporate venturing enhances our understanding of the complex contingencies associated with integration mechanisms. It points to the relevance for organizational learning theory to not only look at the benefits of integration mechanisms in terms of enhanced knowledge sharing, but also at the costs involved at establishing and maintaining integrative mechanisms.

Our results support Hypothesis 3 that informal organizational integration (i.e. shared organizational vision) contribute to corporate venturing by enabling organizations to achieve strategic coherence and integration of structurally differentiated organizational units. Our results contribute to previous literatures concerning the importance of shared values and collective goals to compensate for structural differentiation to create loosely-coupled systems (Orton and Weick, 1990; Tsai, 2002). A shared sense of direction and collective frame of reference creates a common language that allows differentiated venturing units to effectively communicate and share knowledge with established organizational units (Nahapiet and Ghoshal, 1998; Orton and Weick, 1990).

Our findings regarding cross-functional interfaces and a shared organizational vision point out that there is an important discrepancy in the effects of formal and informal organizational integration mechanisms. Using formal integration mechanisms in combination with structural differentiation results in organizations composed of conflicting *formal* architectures. The complexity and rigidity of formal integration mechanisms have detrimental effects on corporate venturing, while informal integration mechanisms seem complementary to structurally differentiation. This provides new insights into the effects of organizational integration mechanisms, which have previously been associated with positive outcomes (cf. Gupta and Govindarajan, 2000).

We expected a positive effect of formal top management team integration (i.e. TMT group contingency rewards) on the relationship between structural differentiation and corporate venturing, yet we found no support for such a moderating effect as predicted in Hypothesis 4. Although group contingency rewards have been shown to create outcome interdependencies that necessitate coordination and collaboration among top management team members (Siegel and Hambrick, 2005), our study indicates that they do not enhance corporate venturing activities within structurally differentiated organizations. A possible explanation for the insignificant relationship could be that the creation of collaboration through top management team contingency rewards is not a sufficient condition for establishing strategic synergies among venturing and mainstream organizations units. It might be of influence for what group outcome the top managers are rewarded. Based on prior research we used a measure that focused on firm performance as underlying aspect (cf. Collins and Clark, 2003). Future research could address other aspects of organizational performance such as innovativeness or growth achieved through venturing that may influence the relationship between structural differentiation and corporate venturing.

We found that informal top management team social integration had a negative impact on the relationship between structural differentiation and corporate venturing, as predicted by Hypothesis 5. This underpins prior literatures which suggest that socially integrated top management teams may suffer from groupthink (Janis, 1982). Highly cohesive top management teams decrease the access to divergent perspectives and may decrease the ability of TMT members to evaluate alternative solutions for resource allocation (Srivastava and Lee, 2005). This in turn leads to less understanding of and support for structurally differentiated ventures. This finding also contributes to theory on role conflict. Structural differentiation sends a message that units should stick to their own knitting, but if senior teams are very cohesive, organizational members also receive a signal that integration is positive. Sending mixed signals to employees creates role conflict and weakens interpersonal trust (Floyd and Lane, 2000). Sillince (2005) put forward a theoretical argument that attempts at structural differentiation are, therefore, only successful if they are followed by differentiation rhetoric from top management. Our findings contribute to previous insights by showing that firms wanting to increase their venturing output through structural differentiation should limit social integration across TMT members.

Our study confirms the importance of structural differentiation to enabling the coexistence of exploration and exploitation. However, it also shows that certain integrative mechanisms such as cross-functional interfaces and TMT social integration decrease the development of venturing activities. This is in sharp contrast with recent arguments made in organizational ambidexterity literatures that top management may be in the best position to integrate differentiated units through TMT social integration (Gilbert, 2006; O'Reilly and Tushman, 2004). In this sense, we contribute to literatures on organizational ambidexterity by showing that achieving integration through cross-functional interfaces and socially integrated TMTs has negative outcomes for corporate

ventures. Such integration mechanisms might increase cross-fertilization of exploratory and exploitative activities, in which the dominance of exploitative activities may drive out the more explorative activities. Future conceptual development on organizational ambidexterity and learning should address how integrative mechanisms can be tied to the different needs of explorative and exploitative units.

Several managerial implications of our findings can be pointed out. First, firms aiming to enhance their venturing efforts should hive off their venturing activities into distinct units. Structurally differentiating venturing activities from mainstream units allows firms to use different reward and control systems that protect the venture from business pressures of more established units in the organization. Second, management can enhance venturing efforts even further if they establish a shared organizational vision. This increases the understanding between venturing units and established businesses, and ensures that ventures do not wander off in unwanted directions but embrace the organizational goals. A third implication of our findings is that management should be careful not to enforce too much integration of the venture and mainstream businesses. Establishing cross-functional interfaces and socially integrated top management teams to integrate structurally differentiated ventures with the rest of the organization has detrimental effects on corporate venturing, as these mechanisms make ventures susceptible to inertial forces present in the parent organization.

6.1. Limitations and future research

Our study presents a first step toward uncovering the specific joint effects of structural differentiation and specific integration mechanisms that are conducive to corporate venturing, and study limitations suggest the need for additional research. Although we took great care in separating the collection of data on the independent and dependent variables to reduce the likelihood of common method bias, the downside is that this had an adverse effect on our final response rate. Low response rates are an increasing problem in contemporary management research, faced with a trend towards over-surveying (Weiner and Dalessio, 2006). Even if data samples are still sufficiently large, as in our case with a final sample of 240 companies, there is still the potential problem of limiting generalizability due to nonresponse biases, which is much more important than the actual response rate (Rogelberg and Stanton, 2007). As such, we checked for differences between nonrespondents and respondents, as well as between early and late respondents. Even though there were no significant differences, we were concerned it could still influence our regression results. Therefore, we applied a Heckman-procedure as outlined by Berk (1983) and Koch and McGrath (1996) to include an inverse Mill's ratio in the regression analysis, which controlled for potential biases in our sample. The low response rate did not affect our results after inclusion of the sample bias correction (see Table 2). In other words, what we might lose in response rate was offset by the increased validity of our applied method of separating the measurement of the independent and the dependent variables.

An issue for future research is to incorporate the relatedness of the venture to the parent firm. Relatedness determines to a large extent the degree to which a venture can benefit from knowledge and capabilities present in mainstream businesses (Sorrentino and Williams, 1995; Burgers et al., 2008). As such, highly related ventures might have stronger needs for integrative linkages with the parent firm than more unrelated ventures. In this research we assumed that ventures are relatively independent, with a small demand for knowledge-sharing possibilities. It would be worthwhile to investigate possible contingency effects of relatedness on the relation between differentiation, integration and corporate venturing. If there are contingent effects of relatedness, the question arises how corporations can adjust their differentiation and integration mechanisms to the individual needs of a venture.

6.2. Conclusion

Corporate venturing is a widely used approach among established firms to foster growth. With this research we set out to investigate the effect of differentiation and integration on corporate venturing. Our findings show that firms seeking to increase corporate venturing efforts should combine structural differentiation with a shared organizational vision to increase the level of corporate venturing. Cross-functional interfaces and socially integrated top management teams, however, appear to have detrimental effects on the level of venturing in a structurally differentiated organization. Instead, management should minimize formal cross-functional interfaces and informal integration of top management if they seek to enhance the firm's venturing efforts.

Appendix A

Measures and items of independent and dependent variables[a].

Corporate venturing (Zahra, 1996)
Over the past 3 years…
Our organization has entered many new industries
We have expanded our international operations significantly
We have acquired many companies in very different industries
Our organization has created various new lines of products and services
Our organization has established or sponsored various new ventures
We have focused on improving the performance of our current business rather than entering new industries®[b]

(*continued on next page*)

Appendix A (*continued*)

Structural differentiation (based on Jansen et al., forthcoming)
Our organization has autonomous units to enhance innovation and flexibility
Innovation and production activities are structurally separated in our organization
We have departments that are either focused on the short term or the long term
Our organizational units are specialized in certain functions and/or markets
We use distinct organizational units to serve different customer needs
Line and staff departments are clearly separated in our organization
Cross-functional interfaces (based on Gupta and Govindarajan 2000)
Employees are regularly rotated between different functions
There is regular talk about possibilities for collaboration between units
Our organization coordinates information sharing between units through a knowledge network
We have cross-functional teams to exchange knowledge between departments
We have standardized work processes for cooperation between units[b]
We often involve multiple organizational units in strategic decision-making[b]
Our organization uses temporary workgroups for collaboration between units on a regular basis
Shared organizational vision (Sinkula et al., 1997; Tsai and Ghoshal, 1998)
There is commonality of purpose in my organization
There is total agreement on our organizational vision
All organizational members are committed to the goals of this organization
People are enthusiastic about the collective goals and mission of the whole organization
Our unit shares the same ambitions and vision with other units at work
TMT group contingency rewards (Collins and Clark, 2003)
Top management team members' variable pay…
is based on how well the organization as a whole is performing
consists of multiple performance related elements
is based on the average performance of our organization[b]
is linked to performance measures on the organizational level
is dependent on the performance of the organizational unit a team member is responsible for®
TMT social integration (Smith et al., 1994)
The members of the top management team are quick to defend each other from criticism by outsiders[b]
Everyone's input is incorporated into most important company decisions
The members of the top management team get along together very well
The members of the top management team are always ready to cooperate and help each other
There is a great deal of competition between members of the top management team ®
The members of the top management team really stick together

[a]All items were measured on a seven-point scale, anchored by 1 = strongly disagree and 7 = strongly agree.
[b]Item deleted after factor analysis; ® reversed item.

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