IS THE SUM MORE THAN THE CORPORATE ENTREPRENEURSHIP PARTS? THE DIFFERENT EFFECTS OF SOCIAL CAPITAL ON INNOVATION, VENTURING, AND RENEWAL PROCESSES

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ABSTRACT

This study seeks to further delineate how organizational antecedents differentially influence the three components of corporate entrepreneurship: innovation, venturing or strategic renewal. We argue that structural differentiation may help organizations to maintain multiple and often conflicting demands of entrepreneurial and mainstream activities. Taking a social capital perspective, our study further examines two contingencies in the form of informal integration mechanisms (i.e. connectedness and TMT social integration). Our findings show that structural differentiation has a positive effect on all three components of corporate entrepreneurship, yet the latter is moderated by integration mechanisms. Interunit connectedness has a positive moderation effect regarding innovation and venturing, and TMT social integration has a negative moderation effect regarding strategic renewal. This reveals that innovation is influenced by informal integration mechanisms on the organizational level, strategic renewal on top management team level, while venturing is influenced by integration mechanisms on both levels.

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INTRODUCTION

Prior studies have emphasized that corporate entrepreneurship is crucial to obtaining a competitive advantage (Zahra, 1993), yet our understanding of organizational antecedents remains rather unclear. Corporate entrepreneurship consists of three components: a company's innovation, venturing and renewal activities (Sharma and Chrisman, 1999; Simsek et al., 2007; Zahra, 1996). While innovation, venturing, and renewal have been suggested to capture different activities, there has been very little comparative research that simultaneously investigates antecedents of all three components of corporate entrepreneurship.

Despite the emergence of studies concerning competitive environments (cf. Zahra, 1993), TMT demographics (Srivastava and Lee, 2005; Zahra, 1996; Zahra et al., 2000) or capabilities and network ties (Floyd and Wooldridge, 1999; Yiu et al., 2007; Yiu and Lau, 2008), few have actually addressed one of the major challenges for entrepreneurial firms, namely that entrepreneurial and mainstream business activities require fundamentally different organizational structures and modes of management (Burgelman, 1983; Verbeke et al., 2007). In order to effectively pursue entrepreneurial activities in an established organization, previous studies have shown that management should structurally separate entrepreneurial from mainstream units (Burgelman, 1985; Block and MacMillan, 1993; Gilbert, 2006). However, such differentiated structures create boundaries between units that make it more difficult to access the organization's resources and skills across boundaries.

This suggests that firms should combine structural differentiation with informal integration mechanisms that cut across unit boundaries. Fiol (1995) argued that it is the access to a diverse set of firm resources that significantly enhances corporate entrepreneurship activities, which points to the importance of social capital at multiple levels within the organizations in pursuing corporate entrepreneurship (Gilbert, 2006; Tushman and O'Reilly, 1996; Westerman et al., 2006). However, in particular at top management team level such integration mechanisms have also been associated with inertia and rigid management logics (Burgelman, 2002; Tripsas and Gavetti, 2000). There is still a lack of theoretical understanding and empirical evidence on how informal integration across structurally differentiated units impact corporate entrepreneurship activities, and whether these effects differ for innovation, venturing and strategic renewal as three distinct components of corporate entrepreneurship.

In this paper we address these gaps in the corporate entrepreneurship literature by investigating the differential effects of structural differentiation and informal integration mechanisms on innovation, venturing and renewal. By doing so, we make at least two contributions to the literature. First, we investigate how differentiation and informal integration mechanisms jointly affect corporate entrepreneurship activities. Although there has been some case evidence how this combination affects innovation (Westerman et al., 2006) and venturing (Gilbert, 2006), there has not yet been cross-sectional research that considers all three components of corporate entrepreneurship. We extend corporate entrepreneurship literature by investigating to what extent organizational antecedents, i.e. differentiation and informal integration mechanisms, have different implications for innovation, venturing and renewal processes.

Second, we contribute to the understanding of the role of social capital in corporate entrepreneurship by showing how linking mechanisms can provide access to social capital in structurally differentiated organizations to enhance corporate entrepreneurship activities. Previous research on the role of social capital in corporate entrepreneurship focused on gaining access to external social capital through strategic alliances (Yiu and Lau, 2008). Our research focused on how

entrepreneurial units can gain access to social capital present within the firm, which can be a major challenge for corporate entrepreneurs. The paper proceeds with a literature review and hypotheses followed by a discussion of our research methods. Subsequently, we present our results and end with a discussion of our findings and implications for theory and practice.

LITERATURE REVIEW

Corporate entrepreneurship consists of innovation, venturing and renewal activities (Simsek et al., 2007; Yiu and Lau, 2008; Zahra, 1993). Innovation refers to the development and introduction of new products, services and production processes (Zahra, 1996). Venturing is the creation of new businesses within existing organizations (Block and MacMillan, 1993), which can take place in new or existing markets (Zahra et al., 2000). Strategic renewal involves the reconfiguration of the organization's resource patterns, changing its strategy, competitive approach or product-market domain (Stopford and Baden-Fuller, 1994). Most studies in the domain of corporate entrepreneurship focused on one of these components, like innovation (Westerman et al., 2006), venturing (Burgelman, 1985; Hill and Birkinshaw, 2007) or strategic renewal (Huff et al., 1992). The few studies that did focus on corporate entrepreneurship tend to be divided between those that focused on corporate entrepreneurship as a meta-construct (cf. Ling et al., 2008; Simsek et al., 2007) versus those that focused on the individual components, i.e. innovation, venturing and strategic renewal (cf. Yiu and Lau, 2008; Zahra, 1996).

The results of prior studies are ambiguous and do not provide a clear answer to whether it is conceptually and empirically worthwhile to make a distinction between the various components of corporate entrepreneurship. Conceptually, it has been argued that innovation, venturing and strategic renewal are fundamentally different concepts (Sharma and Chrisman, 1999; Verbeke et al., 2007). An important distinction is that innovation and venturing are about creating new products and businesses, while strategic renewal is about redefining existing businesses (Sharma and Chrisman, 1999). As such, strategic renewal might have more far-reaching consequences for the organization than innovation and venturing, and requires more top management team involvement (Floyd and Lane, 2000; Verbeke et al., 2007; Wiersema and Bantel, 1992).

Moreover, innovation, venturing, and renewal might be initiated at different levels analysis. Opportunities for innovation are most easily spotted by frontline management, who has the best knowledge of the market and products (Burgelman, 1983). The responsibility for innovations in terms of new products or services is usually delegated to unit level managers, as these innovations will often fit in an existing portfolio of products. In case the newly developed products require the development of a new business it is labeled as venturing. Ideas for such new businesses tend to emerge from the bottom-up (Burgelman, 1983). The role of top management is, however, more significant than in innovation, because of the potential risk and size of the investment that corporate ventures carry (Day, 1994). As such, innovation is expected to be the most bottom-up process, venturing involves more top management, while strategic renewal is expected to be the most top-down process.

Corporate entrepreneurship activities and the role of social capital

A fundamental requirement for the development of new knowledge is the possibility to draw upon existing knowledge from different knowledge bases (Nahapiet and Ghoshal, 1998). As such, corporate entrepreneurship involves both creating new and reusing existing knowledge (Katila and Ahuja, 2002). This leads to the development of new competencies or the redefinition of existing competencies (Floyd and Wooldridge, 1999). It implies that competing sets of capabilities must coexist in an organization for some time, as it is not the case that one capability suddenly vanishes when another begins (Gilbert, 2006). Fiol (1995) argued that such colliding sets of capabilities lead to creative breakthroughs. Creating a wider and more diverse body of knowledge and capabilities is best facilitated through autonomous (Burgelman, 1985; Hill and Rothaermel, 2003), loosely coupled (Orton and Weick, 1990) or structurally differentiated (Gilbert, 2006; Lawrence and Lorsch, 1967; O'Reilly and Tushman, 2004) units. Providing autonomy to entrepreneurial units increases their flexibility to adapt to local demands and adopt working methods that suit their explorative activities. Yet, autonomous units also lead to the emergence of boundaries between units (Carlile, 2004). Although these boundaries facilitate exploration within units, it makes reciprocal knowledge and resource transfer across these boundaries more difficult, thereby constraining the access of corporate entrepreneurship activities to knowledge and resources present in other parts of the organization (Floyd and Wooldridge, 1999; Scarbrough et al., 2004).

Fiol (1995) pointed out that integration is necessary to manage the processes by which the different pockets of knowledge interrelate and achieve synergies. Social capital literature pointed not only to the availability of these knowledge and resources but also to the mechanisms that provide

access to these resources, such as the networks of personal, informal relationships (Belliveau et al., 1996; Tsai, 2002). Tsai and Ghoshal (1998) argued that such intrafirm networks are important facilitators of innovation and value creation. This points to the importance of studying the direct contacts between members from different units to enhance the interaction and collaboration among them, which has been referred to as connectedness (Jaworski and Kohli, 1993; Jansen et al., 2006). An increasing number of studies recognize the importance of integration (Ling et al., 2008; Yiu et al., 2007) and social capital (Yiu and Lau, 2008) for corporate entrepreneurship activities.

While social capital has primarily been investigated at the organizational level, it might be equally important at top management level (Belliveau et al., 1996). In the context of structurally differentiated units, scholars have in particular referred to the role of social integration as an integration mechanism on top management team level (Gilbert, 2006; O'Reilly and Tushman, 2004; Smith and Tushman, 2005). TMT social integration facilitates the interaction and knowledge exchange across top managers (Smith et al., 1994). Socially integrated top managers might also be able to better allocate resources and identify opportunities for knowledge sharing between differentiated units thereby increasing the effective use of its social capital (O'Reilly and Tushman, 2004).

The question addressed in this paper is whether informal integration mechanisms at both organizational (i.e. connectedness) and TMT level (i.e. TMT social integration) will have a similar moderating effect on the relations between structural differentiation and the three components of corporate entrepreneurship. We will first explain the role of structural differentiation in facilitating the creation of knowledge and resources, and subsequently argue how informal organizational integration and informal TMT integration might moderate this relationship.

HYPOTHESES

Structural Differentiation

Structural differentiation can be defined as "the segmentation of the organizational system into subsystems" (Lawrence and Lorsch, 1967, p. 3-4). It refers to the extent to which activities are structurally separated in different units in the organization. An organization could structure its units around specific product-market domains (Chandler, 1962), could separate more explorative units from exploitative units (Tushman and O'Reilly, 1996), or units could differ in goal or time orientation (Golden and Ma, 2003). Structurally differentiating units allows competing frames to coexist within organizations (Gilbert, 2006) and to adjust working methods and control systems to the specific needs of a unit. The increased freedom enhances creativity and knowledge creation within the autonomous units. The boundaries between differentiated units protect both the entrepreneurial and mainstream units from intruding effects they might have on each other (Block and MacMillan, 1993).

As a result, many studies on innovation have argued in favor of separating innovative from mainstream activities (cf. Bonner et al., 2002; Hill and Rothaermel, 2003; O'Connor and DeMartino, 2006). In a similar vein, scholars have suggested to place venturing activities in autonomous new venture divisions (Block and MacMillan, 1993; Burgelman, 1985; Hill and Birkinshaw, 2007). The isolation leads to a more diverse body of knowledge and protects entrepreneurial units from dominant managerial cognitions and inertia present in mainstream businesses (Benner and Tushman, 2003; Burgelman, 2002; Gilbert, 2005; Tripsas and Gavetti, 2000). An organization comprised of loosely coupled units is also easier to renew, as strategic renewal processes could be confined to a single autonomous unit instead of having spillover effects to the entire organization (Verbeke et al., 2007; Volberda et al., 2001; Yiu et al., 2007; Zahra, 1996). Moreover, because of the relative freedom of structurally differentiated units, they might be able to respond more aptly to environmental changes.

H1: Structural differentiation has a positive effect on all three components of corporate entrepreneurship.

The Moderating Role of Integration Mechanisms

Although the positive effects of structural differentiation are rather well-established in corporate entrepreneurship literature, little is known about integration mechanisms. Integration on itself might be an unwanted situation for corporate entrepreneurship activities, as tightly integrated units lose their distinctiveness (Orton and Weick, 1990) and might be subject to increased business pressure to show quick results (Burgelman and Valikangas, 2005). In combination with structural differentiation, however, integration mechanisms might lead to simultaneous loose-tight coupled systems that are a distinctive characteristic of entrepreneurial firms. In the following sections we use a social capital perspective to address the moderating role of two such integration mechanisms, and assess their effects on corporate entrepreneurship activities. To this end, we will focus on interunit connectedness as informal organizational integration mechanism and TMT social integration as informal top management team integration mechanism.

Interunit connectedness refers to the extent that employees from different departments engage in direct contacts with each other (Jansen et al., 2006; Jaworski and Kohli, 1993). Connectedness refers to informal social relations that contribute to the exchange and actual use of knowledge (Deshpande and Zaltman, 1982; Jaworski and Kohli, 1993). Interunit connectedness may offset some of the drawbacks of highly autonomous units (Sethi, 2000). For instance, informal social ties enable organizational members from different organizational units to recognize opportunities and function as bridging linkages across differentiated units (Floyd and Wooldridge, 1999; Hargadon and Sutton, 1997).

Brown and Eisenhardt (1997) showed this created a prosperous organizational context for launching new innovations. Connectedness may be important for facilitating the merging of diverse knowledge sources located in differentiated units underpinning the creation of radical innovations (Jansen et al., 2006; Subramaniam and Youndt, 2005). In this sense, informal social relations may also contribute to venturing activities by facilitating the combination of new as well as existing knowledge sources across differentiated units.

Besides providing access to social capital, interunit connectedness may also establish legitimacy and support for differentiated ventures (Subramaniam and Youndt, 2005; Floyd and Wooldridge, 1999). Informal social relations may also aide renewal processes by acting as a mechanism to increase participation and communication (Crossan and Berdrow, 2003). Connectedness may in that sense establish norms for behavior and communicate an urgency for renewal (Volberda et al., 2001). Connectedness, however, is primarily a mechanism to provide access to social capital present in other parts of the organization. The fluidity of the network of relations might make it less suitable as a mechanism to steer renewal processes. As such, we expect the moderating effect of connectedness on the relationship between structural differentiation and corporate entrepreneurship to be most pronounced for venturing and innovation and less pronounced for strategic renewal.

H2: The extent to which employees of different units are connected to each other has a positive effect on the relation between structural differentiation and all three components of corporate entrepreneurship. The effect will be strongest for innovation and venturing and weakest for strategic renewal.

TMT social integration establishes informal intrinsic values among top management team members to discuss and to motivate cooperation across differentiated units. It increases negotiation, compromise, and collaboration between organizational units (Michel and Hambrick, 1992). The sympathy ties and increased homophily may, however, lead to less critical evaluation (Belliveau et al., 1996). Increased homogeneity of TMTs has been negatively related to innovation (Srivastava and Lee, 2005) and strategic renewal (Wiersema and Bantel, 1992). 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). It has also been associated with preferential resource allocation (Kramer, 1991), which may in particular be problematic in differentiated organizations where units face a stronger internal competition for resources than more integrated organizations. In such cases the minority opinion of an innovative or venturing unit is often not taken into account, as top managers often have vested interests in mainstream businesses (Smith and Tushman, 2005).

Burgelman (2002) showed that innovative venturing activities were not accepted by top management team's dominant logic, which led to an increasing inert and narrowly focused organization. Given the greater resource requirements of corporate ventures versus innovations, the former will need to be rationalized by top management (Burgelman, 1983). This leads us to believe the effect of TMT social integration is more pronounced for venturing than for pursuing innovation. Strategic renewal is strongly driven by top management (Crossan and Berdrow, 2003; Wiersema and Bantel, 1992). Even if strategic renewal processes are confined to a single organizational unit, they may still attract top management involvement (Verbeke et al., 2007). Top management teams may fear that strategic renewal in an independent unit may create externalities that affect other parts of the organization (Rugman and Verbeke, 2003). This may cause them to overreact to renewal initiatives in differentiated organizations, thereby harming the renewal process. Tripsas and Gavetti (2000) showed that the narrow dominant logic of socially integrated TMTs prevented them from initiating necessary renewal processes. This effect may be stronger in differentiated organizations, which are associated with a richer body of social capital and multiple conflicting interests. As such, we expect a negative effect of TMT social integration on corporate entrepreneurship activities in structurally differentiated organizations. Considering the stronger involvement of TMTs in venturing and renewal processes relative to innovation, we expect the moderating effect of TMT social integration to be less pronounced for the latter.

H3: The extent to which a firm has a socially integrated TMT has a negative effect on the relation between structural differentiation and all three components of corporate entrepreneurship. The effect will be weakest for innovation and strongest for venturing and strategic renewal.

METHODS

Sample and Data Collection

We randomly selected a sample of 4,000 firms in the Netherlands from the Reach database. Reach provides basic company and financial information for all companies registered at the Dutch Chamber of Commerce, making it the most comprehensive company database in the Netherlands. We administered a questionnaire to the executive directors of each of the 4,000 firms in order to measure our study variables. Executive directors from 452 firms returned their questionnaire, representing a response rate of 11.3 percent. The next year, we administered a second survey to the same 452 executive directors to assess their firm's corporate entrepreneurship activities. We received 240 completed surveys, representing an effective response rate of 53.1 percent. Compared to the original sample, our final response rate was 6 percent, not uncommon in contemporary survey studies targeting executives (cf. Koch and McGrath, 1996). The average size of the firms was 495.39 (s.d. = 3098.15) full-time employees and the average firm age was 40.56 years (s.d. = 34.97). The firms were operating in a broad range of 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 (s.d. = 10.17).

Variables

The independent and dependent variables were based on multi-item constructs derived from prior literature. Items of our constructs are provided in appendix 1.

Corporate entrepreneurship was measured with 14 items based on Zahra's (1996) scale. Factor analysis showed corporate entrepreneurship consisted of three components: innovation, venturing and strategic renewal. The corporate entrepreneurship scale was the composite measure of these three components. *Innovation* (5 items, $\alpha = .91$) taps into the number of new product introductions and process improvements initiated by the firm. *Venturing* (5 items, $\alpha = .82$) gauges the extent of new business creation. *Strategic renewal* (4 items, $\alpha = .86$) assesses the extent to which the firm has renewed its existing units.

Structural differentiation was measured with a six-item scale ($\alpha = .79$) based on Worren et al. (2002). The items captured the extent to which organizations separate innovation and efficiency activities in different autonomous organizational units. *Interunit connectedness* ($\alpha = .78$) was measured with four items based on Jaworski and Kohli (1993). The scale measures the extent to which members of different departments have direct contacts with each other. *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).

Control variables. We controlled for several variables that might influence corporate entrepreneurship activities, such as firm size and age, past performance, environmental dynamism and type of industry (cf. Zahra and Hayton, 2008). *Firm size* was measured by the log of the number of employees. *Firm age* was measured by the log of the number of years since the firm's founding. *Past performance*, as indicator for the presence of organizational slack, was measured on a Likert scale that compared firm performance over the past three years relative to competitors in the industry on ROI, sales growth, profit growth, attracting new customers and market share growth ($\alpha = .82$). *Environmental dynamism* taps into the rate of change of the competitive environment and was captured by a four-item measure ($\alpha = .80$) from Jansen et al. (2006). To control for additional *industry* effects, we included seven dummies: manufacturing, construction, trade, transportation, financial services, professional services, and other industries.

Reliability and validity of questionnaire

We applied several methods during the questionnaire design and execution to increase the reliability and validity of our findings. First, by collecting data for the independent and dependent variables at two different points in time, we reduced the likelihood of common method bias (Podsakoff et al., 2003). Second, we reduced the possibility of social desirability bias by ensuring confidentiality (Podsakoff et al., 2003). We agreed not to reveal the name of the executive director and asked for the questionnaire to be returned directly to the research team. Third, the respondents had an average company tenure of 13.57 years, indicating that the selected respondents were experienced and knowledgeable about the firm, increasing the confidence in the validity of our data (Li et al., 2007).

Fourth, to assess the validity of the major assumption that the responses of a single senior executive are valid representations of the organizational phenomena under investigation (Venkatraman and Grant, 1986), we surveyed one additional top management team member in each responding company for both surveys. The first survey resulted in 36 responses from the 240 firms in our final sample, and the follow-up survey 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 0.72 to 0.99 with a median of 0.92 (mean 0.92) for the independent variables survey, and ranged from 0.78 to 0.99 with a median of 0.96 (mean of 0.95) 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), connectedness (.95), TMT social integration (.94), innovation (.95), venturing (.94), and strategic renewal (.94). Overall, the r_{wg} values indicate sufficient agreement within organizations for both the independent and dependent variables.

Fifth, our obtained response rate may raise concerns about potential non-response bias, in which unobserved determinants may have an effect on the study variables (Huselid, 1995). To assess potential differences we compared non-respondents and respondents on firm age, number of employees and revenue. T-tests showed no significant differences. Next, we compared early and late respondents in terms of demographic characteristics and model variables. The assumption is that late respondents are more like the general population while early respondents might have unobserved motives to participate (Armstrong and Overton, 1977). The comparison did not reveal any significant differences ($p>.05$). Finally, we more formally tested for potential effects of non-response bias by applying a Heckman-procedure (see e.g. Berk (1983) and Koch and McGrath (1996) for an elaborate description on how to conduct this test). In short, the test consists of two stages. First, it estimates response versus non-response based on firm age, size, revenue, and industry membership. Second, the estimations are after a transformation incorporated in the original regression as a control variable that gauges bias due to non-response. The direction and significance of all our main independent and moderating variables remained the same, further indicating that non-response bias is not of concern in our study.

Results

Table 1 presents an overview of the means, standard deviations and correlations of all our main variables. To test our hypotheses we regressed our hypothesized variables and controls on corporate entrepreneurship, innovation, venturing and strategic renewal (see Table 2). Models 1a-4a are our base models with the control variables, models 1b-4b added structural differentiation as our independent variable (hypothesis 1). Models 1c-4c included the interaction terms that gauged access to social capital (hypotheses 2 and 3). Prior to creating the interaction terms, we mean centered the variables. Variance inflation factors (VIF) stayed well below the suggested cut-off of 10 (Neter et al., 1990), indicating that multicollinearity was not of concern in our analyses. The models showed significant increases in explanatory power. Interesting to observe in Table 2 is that the effects of all the main variables are similar in direction across all components of corporate entrepreneurship. They do, however, differ in significance levels. Regarding the control variables we can observe that past performance has a strong positive effect on all components of corporate entrepreneurship except strategic renewal. Environmental dynamism only seems to positively affect venturing.

Insert Tables 1 & 2 here

Models 1b-4b showed significant increases in explanatory power compared to the base models with the control variables. Structural differentiation has the expected positive sign regarding corporate entrepreneurship ($\beta = 0.280$, $p<0.001$) and its components of innovation ($\beta = 0.285$, $p<0.001$), venturing ($\beta = 0.175$, $p<0.01$), and strategic renewal ($\beta = 0.176$, $p<0.01$). The effects remained when including the interaction terms, thereby providing support for hypothesis 1. The increase in R^2 when adding the interaction terms were significant for all models (1c-4c), although for strategic renewal only at the level of $p<.10$. The interaction term of connectedness on the relation between structural differentiation and corporate entrepreneurship activities were significantly positive for corporate entrepreneurship ($\beta = 0.221$, $p<0.001$), innovation ($\beta = 0.249$, $p<0.001$), and venturing ($\beta = 0.202$, $p<0.01$), see Figures 1A and 1B. This supports hypothesis 2 for all components except strategic renewal. It confirms our prediction that the effect would be stronger for innovation and venturing than for strategic renewal. Hypothesis 3 predicted a negative moderating effect of TMT social integration on structural differentiation and corporate entrepreneurship activities. It was strongly supported for corporate entrepreneurship ($\beta = -0.186$, $p<0.01$), venturing, ($\beta = -0.165$, $p<0.05$), and strategic renewal

($\beta = -0.153$, $p<0.05$), see Figures 2A and 2B. The effect was not significant for innovation. The results confirm our prediction that the effect would be strongest for strategic renewal and venturing and weakest for innovation.

Insert Figures 1A-B & 2A-B here

DISCUSSION

With this research we set out to investigate the effects of organizational antecedents on the three components of corporate entrepreneurship: innovation, venturing and strategic renewal. Our findings indicate that the directions of the effects are similar across all components of corporate entrepreneurship. The importance of organizational antecedents, however, is significantly different for innovation, venturing and renewal, suggesting the following theoretical implications.

First, the results showed that structural differentiation had a positive effect on all components of corporate entrepreneurship. Previous studies have suggested positive outcomes for innovation and venturing, it had not been investigated for strategic renewal. In their conceptual discussion, Volberda et al. (2001) suggested differentiated organizations might be facilitative to renewal, as changes can be confined to the unit involved instead of having effects for the whole organization. In this way, we contribute to corporate entrepreneurship literatures by providing empirical support for previous notions of the positive effects of differentiated organizations on innovation (Brown and Eisenhardt, 1997), venturing (Gilbert, 2006), and strategic renewal (Volberda et al., 2001).

Second, connectedness positively affected the relation between structural differentiation and innovation and venturing activities. Social capital provides the possibility to connect informally enabling to overcome the boundaries of structurally differentiated units. This allows innovation and venture units to secure the necessary resources and support and transfer available knowledge. Moreover, connecting the isolated pockets of knowledge in the organizations unleashes the creative potential of organizations, leading to increased venturing and innovation (Fiol, 1995). Previous studies focused on external social capital (Yiu and Lau, 2008), but it may be the internal social capital that holds the competitive advantage for innovations and ventures (Chesbrough, 2000). It seems that differentiation enriches the diversity and richness of social capital, while connectedness enables the access to the body of knowledge and resources.

The moderating effect of connectedness was non-significant for strategic renewal, suggesting that access to social capital on organizational level might not play an important role in strategic renewal. Volberda et al. (2001) suggested that in organizations comprised of differentiated, autonomous units, the renewal processes would be confined to the individual unit. As such, linking units together through direct contacts with other organizational members across units might not have a positive effect on strategic renewal processes in such organizations. Floyd and Lane (2000) suggested that increasing communication may be an ineffective way of facilitating strategic renewal processes when the underlying behavioural conflicts are not addressed. In that sense, strategic renewal processes in differentiated organizations might be better facilitated through for example transformational leadership (Ling et al., 2008). Further research could address the role of other integration mechanisms in strategic renewal.

TMT social integration appeared to have a negative moderating effect on the relation between structural differentiation with venturing and strategic renewal. Apparently, a potential downside of social integration is that it leads to a narrower TMT mindset, which does not understand nor embrace potential deviating behaviour through venturing and renewal. This is in line with earlier case evidence of Tripsas and Gavetti (2000) and Burgelman (2002). Recent findings on TMT social integration show significant ambiguity. We found a negative moderating effect for venturing and renewal, while Ling et al. (2008) found a negative but insignificant mediating effect of senior team integration on corporate entrepreneurship. In an earlier paper, the same authors found a strong positive effect of TMT social integration on ambidexterity (the sum of a firm's exploration and exploitation activities) (Lubatkin et al., 2006). It could be the case that the downside of TMT social integration in the form of groupthink is more problematic for corporate entrepreneurship activities, which often fall outside the dominant logic of management (Burgelman, 1983), than for more exploitation-driven mainstream activities. Further research is necessary to understand the effects of the role of TMT social integration in practice.

The results in Table 2 show that the components of corporate entrepreneurship: innovation, venturing, and renewal are differentially affected by the investigated organizational antecedents. Innovation is positively affected by configurations of structural differentiation and organizational level integration mechanisms, while strategic renewal is negatively influenced by structural differentiation and top management team integration mechanisms. Regarding the moderating impact of informal

integration mechanisms in structurally differentiated organizations, venturing seems to be in the middle with being affected by both organizational and top management team integration mechanisms. This is in line with previous research that suggested innovation is more a bottom-up process, while strategic renewal is more a top-down process (Floyd and Lane, 2000). Burgelman (1983) suggested that venturing is driven by frontline and middle management but ultimately needs to be ratified by top management. Future corporate entrepreneurship research should distinguish between innovation, venturing and renewal and investigate whether these differences also apply to other antecedents and outcomes of corporate entrepreneurship, as this is a highly relevant but under-researched topic.

Managerial implications

The findings of our study have at least two important implications for management. First, managers who try to increase corporate entrepreneurship activities in their firms, do best to not only separate units from each other through the organizational structure, but also to pay attention to appropriate integration mechanisms. While structural differentiation may develop a richer body of knowledge, integration mechanisms are needed to access these knowledge sources to apply in corporate entrepreneurship activities. However, care should be taken in which integration mechanism is used. While connectedness had positive outcomes for corporate entrepreneurship in differentiated organizations, TMT social integration had negative outcomes for corporate entrepreneurship.

Second, the findings indicate that the three components of corporate entrepreneurship, innovation, venturing and renewal have different organizational antecedents. Innovation is for example affected by horizontal integration mechanisms on organizational level, while strategic renewal is influenced by integration through the top management team. Despite these differences, the direction of their effects were similar for all three components of corporate entrepreneurship, indicating that innovation, venturing, and renewal do not experience contradictory, but rather complementary effects of organizational antecedents. This implies that managers could optimize the firm for overall corporate entrepreneurship (i.e. use both organizational as well as TMT integration mechanisms), and by doing so they will have optimized the firm for innovation, venturing and renewal processes.

In summary, the investigated relations between structural differentiation, informal integration mechanisms related to social capital and corporate entrepreneurship provide important new insights into how firms could manage their corporate entrepreneurship activities. Our study's findings reinforced the importance of structurally differentiating entrepreneurial from mainstream businesses when engaging in corporate entrepreneurship activities. We extended this research by providing new insights regarding how this effect is strongly positively moderated by connectedness on an organizational level and significantly negatively moderated by top management team's social integration. Moreover, we showed the effects for the three components of corporate entrepreneurship: innovation, venturing, and strategic renewal were significantly different. This provides important new avenues for both further research and management of corporate entrepreneurship activities.

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APPENDIX

Measures and items of independent and dependent variables[a]

Corporate entrepreneurship (Zahra (1996)

Innovation

Over the past three years…

We have pioneered the development of breakthrough innovation in our industry
Our organization is among the first to implement new processes
We are usually the first to recognize and exploit new markets in our industry.
Our organization is leading in the area of product and process innovations.
We have introduced a large number of new products and services to the market.

Venturing

Over the past three 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]

Strategic renewal

Over the past three years…

We have divested several unprofitable units[b]
Our organization has changed its strategy for each unit
We have initiated several programs to improve the productivity of our units
We have reorganized operations to ensure increased coordination and communication among units
Our organization has renewed the portfolio of activities within units

Structural Differentiation

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

Connectedness (Jaworski and Kohli, 1993)

It is easy to talk with virtually anyone you need to, regardless of rank or position
There is little opportunity for informal "hall talk" among employees® [b]
Employees from different departments feel comfortable calling each other when the need arises
People around here are quite accessible to each other
Our organization is characterized by close, personal relations between employees

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

Figure 1A Interaction of structural differentiation and connectedness on innovation

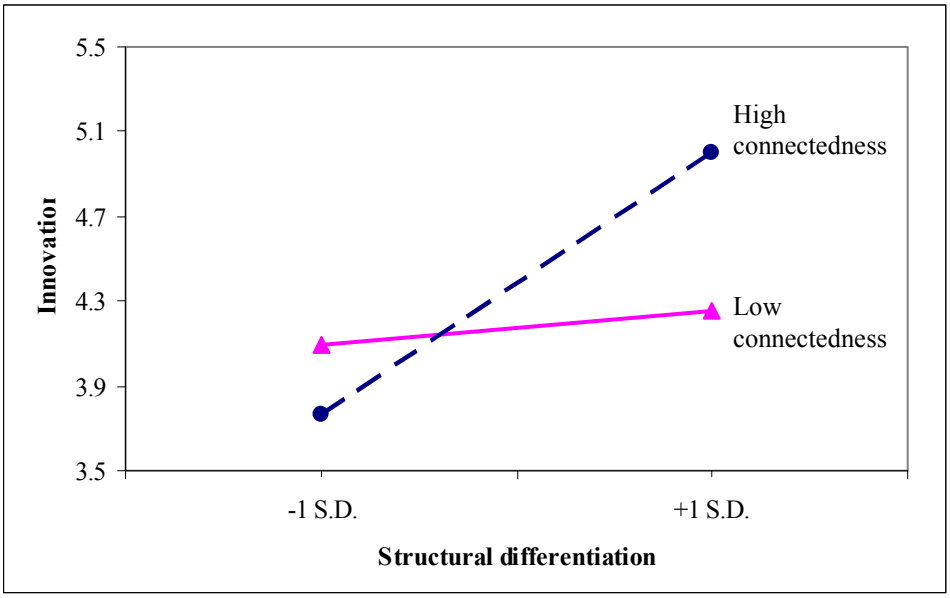

Figure 1B Interaction of structural differentiation and connectedness on venturing

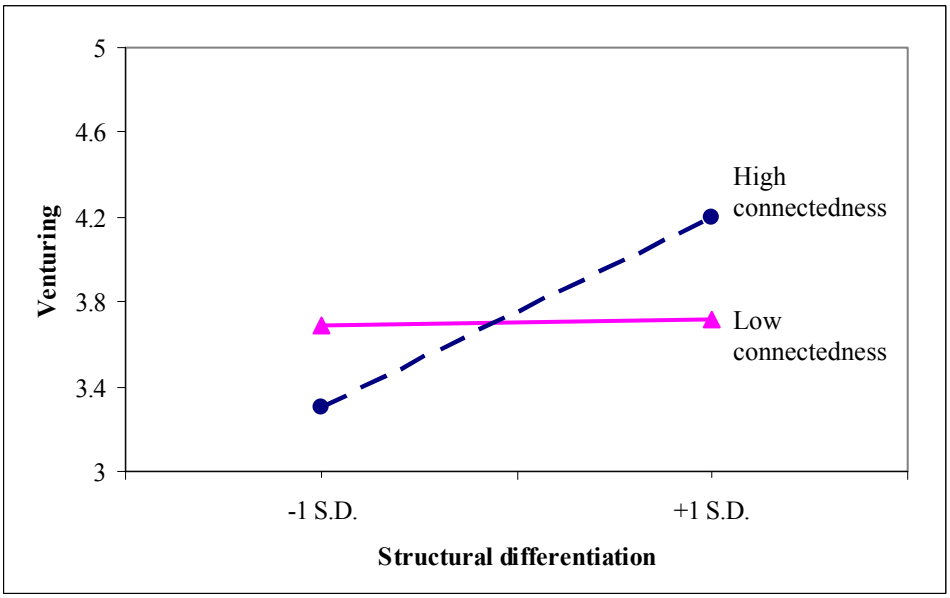

Figure 2A **Interaction of structural differentiation and TMT social integration on venturing**

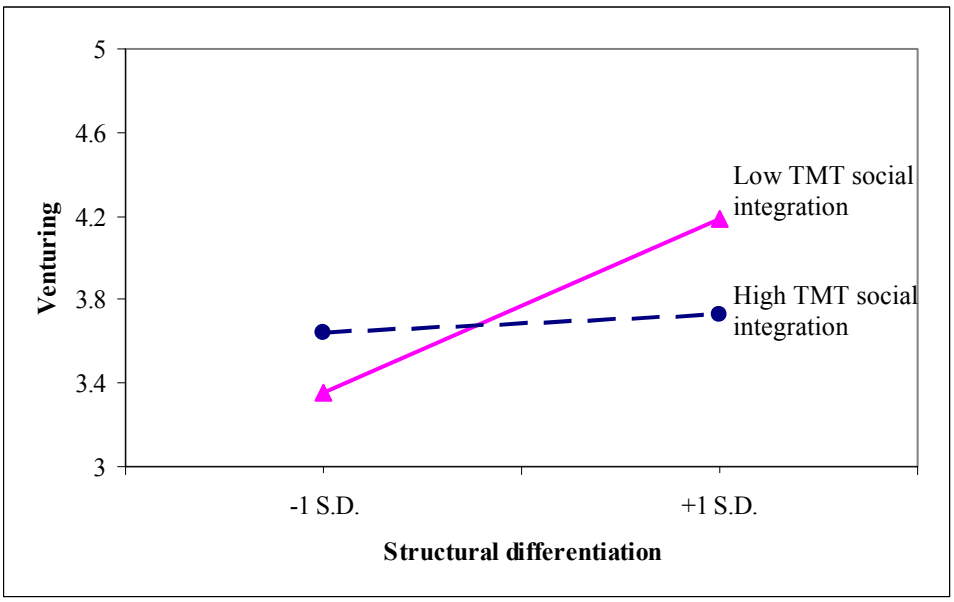

Figure 2B **Interaction of structural differentiation and TMT social integration on strategic renewal**

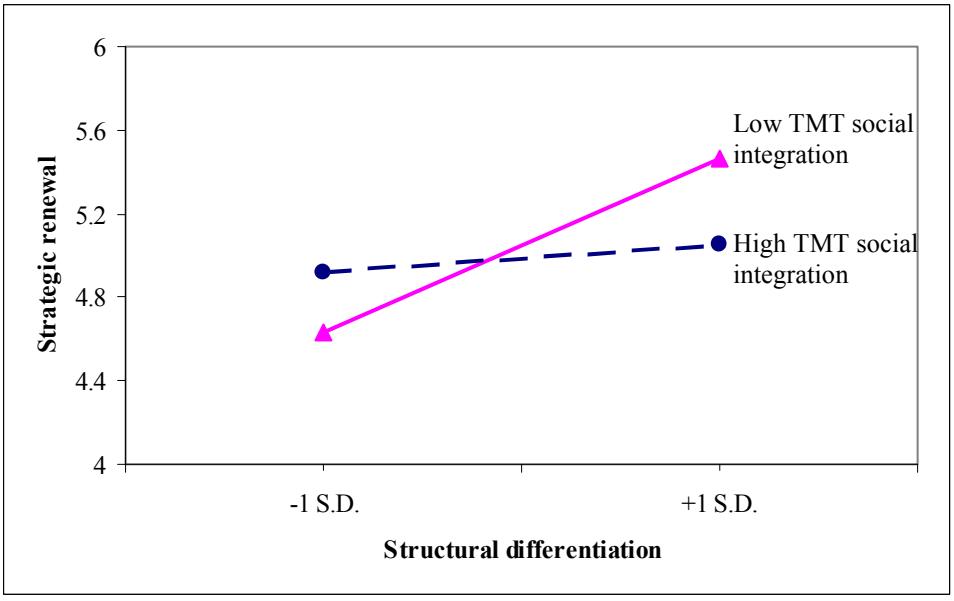

Table 1 Means, standard deviations, and correlations[a]

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1. Corporate entrepreneurship	4.34	0.94	-																
2. Innovation	4.30	1.27	.81**	(.91)															
3. Venturing	3.72	1.23	.79**	.52**	(.82)														
4. Strategic renewal	5.00	1.19	.69**	.32**	.27**	(.86)													
5. Structural differentiation	4.17	1.24	.37**	.36**	.24**	.25**	(.79)												
6. Connectedness	5.50	0.88	.13*	.16*	.10	.04	.11	(.78)											
7. TMT social integration	5.36	0.91	.14*	.16*	.08	.07	.14*	.43**	(.85)										
8. Dynamism	4.37	1.26	.20**	.21**	.22**	.03	.16*	.18**	.03	(.80)									
9. Firm size[b]	4.47	1.25	.14*	.11	.01	.22**	.22**	-.07	-.01	.05	-								
10. Firm age[c]	3.35	0.93	-.03	-.05	-.07	.07	-.03	.02	.04	-.16*	.14*	-							
11. Past performance	4.62	0.93	.34**	.37**	.29**	.10	.08	.15*	.19**	.04	.01	-.00	(.82)						
12. Construction	0.18	0.38	-.25**	-.20**	-.18**	-.20**	-.10	.16*	-.02	-.03	-.20**	.08	-.15*	-					
13. Trade	0.06	0.24	.06	.03	.05	.06	-.01	-.01	.10	-.07	-.10	.02	-.00	-.12	-				
14. Transportation	0.05	0.21	-.23**	-.22**	-.16*	-.14*	-.06	-.07	-.06	-.18**	.00	.02	-.05	-.10	-.06	-			
15. Financial services	0.08	0.26	.13*	.12	.07	.11	.10	.01	.03	.12	.11	-.16*	.05	-.13*	-.07	-.06	-		
16. Professional services	0.11	0.31	.13*	.08	.17**	.04	.08	.05	-.02	.18**	.02	-.30**	-.08	-.16*	-.09	-.08	-.10	-	
17. Manufacturing	0.53	0.50	.11	.11	.04	.10	.01	-.13	-.00	-.04	.14*	.21**	.16*	-.49**	-.27**	-.23**	-.30**	-.37**	-
18. Other industries	0.00	0.06	.02	.03	.00	.01	.02	.00	-.03	.01	-.07	-.11	-.04	-.03	-.02	-.01	-.02	-.02	-.07

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 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 entrepreneurship and its components

	Corporate entrepreneurship			Innovation			Venturing			Strategic renewal		
	Model 1a	Model 1b	Model 1c	Model 2a	Model 2b	Model 2c	Model 3a	Model 3b	Model 3c	Model 4a	Model 4b	Model 4c
Controls												
Industry dummies[b]												
- Construction	-.461**	-.175**	-.151*	-.479*	-.440*	-.389	-.400	-.376	-.308	-.503*	-.479*	-.419*
- Trade	.220	.055	.062	.119	.107	.131	.255	.248	.281	.285	.277	.307
- Transportation	-.858**	-.184**	-.168**	-1.080**	-1.034**	-.945**	-.667	-.639	-.557	-.827*	-.799*	-.747*
- Financial services	.263	.060	.075	.256	.188	.257	.183	.141	.201	.349	.306	.342
- Professional services	.317	.091	.104	.185	.128	.158	.594*	.559*	.602*	.173	.138	.179
- Other industries	.560	.029	.031	.779	.595	.666	.275	.162	.191	.625	.511	.501
Environmental dynamism	.087	.088	.094	.123*	.093	.098	.158*	.139*	.144*	-.019	-.037	-.034
Log organizational size	.073	.039	.036	.078	.019	.017	-.028	-.064	-.066	.170**	.133*	.131*
Log organizational age	.043	.046	.064	-.007	-.002	.027	.027	.030	.050	.109	.112	.118
Past performance	.287***	.272***	.284***	.436***	.419***	.427***	.348***	.338***	.351***	.078	.068	.082
Connectedness	.081	.061	.061	.129	.108	.117	.041	.028	.027	.072	.059	.051
TMT social integration	.026	-.005	-.022	.057	.014	.016	-.002	-.029	-.050	.025	-.002	-.034
Main effects												
Structural differentiation		.280***	.291***		.285***	.282***		.175**	.186**		.176**	.193**
Moderating effects												
Structural differentiation* Connectedness			.221***			.249***			.202**			.107
Structural differentiation* TMT social integration			-.186**			-.114			-.165*			-.153*
R^2	.264	.335	.376	.252	.321	.356	.184	.212	.242	.122	.152	.170
F-value for change in R^2		24.0***	7.45**		23.1***	6.10**		8.07**	4.34*		8.10**	2.39$^+$

[a] N = 240; unstandardized coefficients are reported; * p<.05; ** p<.01; *** p<.001

[b] Manufacturing served as reference group in regression analyses.