Examining the Technical Corporate Entrepreneurs' Motivation: Voices from the Field

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Prior research has proposed five conditions that support corporate entrepreneurship: rewards, management support, resources including time, organizational structures (at the macro level), and risk acceptance. This article investigates the sufficiency of these conditions in motivating individual scientists or engineers who have created and commercialized multiple breakthrough innovations in mature corporations—or technical corporate entrepreneurs. Using in-depth interviews with technical corporate entrepreneurs and human resource managers, we explore both how they are motivated and whether there is concurrence between how they say they are motivated and how their human resource managers perceive that they are motivated. We find the framework applicable but incomplete relative to motivating these individuals. The additional dimensions of appropriate work design (at the micro level) and their intrinsic motivation to innovate need to be considered in supporting technical corporate entrepreneurship. Further, we find that an important disparity exists between what technical corporate entrepreneurs say motivates them and the perceptions of their human resource manger.

Introduction

Increasing attention has centered on entrepreneurial behavior within existing organizations, which is often referred to as intrapreneurship or corporate entrepreneurship. Corporate entrepreneurship is the process whereby an individual or group working within an existing organization creates a new organization or instigates renewal or innovation within that organization (Sharma & Chrisman, 1999). Empirical evidence is compelling that corporate entrepreneurship improves organizational performance (Zahra & Covin, 1995). The firm that exemplifies corporate entrepreneurship internally undertakes somewhat risky ventures, engaging in product-market innovation and developing *proactive* solutions to opportunities through forming new businesses or bringing new

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products to life (Miller, 1983). The research reported in this article focuses on a subset of individual corporate entrepreneurs who create breakthrough innovation in mature firms.

Radical innovation lies at the core of new business development and long-term wealth creation (Kirchhoff, 1991; Schumpeter, 1942). A radical innovation is a product, process, or service that offers significant step-change improvements in performance or cost. Radical innovations transform existing markets and create new ones (Leifer, O'Connor, & Rice, 2001), serve as the basis of new technology trajectories, and are an important part of the creative destruction by which existing products are replaced by new ones (Ahuja & Lampert, 2001).

Organizations do not innovate—individuals within those organizations innovate (Krueger, 2000). Corporate entrepreneurs are the individuals who take hands-on responsibility for innovating within an organization (Pinchot, 1985) and may arise out of many functions including marketing, finance, and engineering. Previous corporate entrepreneurship research has focused on middle managers, with little specification as to their functional origins (i.e., Hornsby, Kuratko, & Zahra, 2002; Kanter, 1985; Kuratko, Montagno, & Hornsby, 1990; Pearce & Kramer, 1997). This study focuses on the technical corporate entrepreneur: engineers and scientists responsible for breakthrough technology innovations in firms. Given the fundamental role of the technical corporate entrepreneur in creating breakthrough innovation, understanding how these individuals are motivated is of immense interest to management.

Little is known about ways to motivate the technical corporate entrepreneurs who create breakthrough innovation, representing a gap in the literature. We draw from the organizational behavior literature to inform and extend our understanding of employee motivation within corporate entrepreneurship research. There are five theoretically derived and empirically confirmed environmental dimensions through which we can motivate corporate entrepreneurship behavior: the reward system, management support, resource availability, organizational structure, and a risk-taking culture. Management support, organizational structure, and the reward system are identical to motivators found in the motivation and empowerment research within the organizational behavior literature. However, the motivation and empowerment literature also suggests that job design and intrinsic motivation are necessary factors to motivate employees, factors not found in the research on conditions necessary to support corporate entrepreneurship. This begs the question as to whether there may be additional motivators necessary to support corporate entrepreneurship other than those reported.

This research investigates what motivates the individuals who create breakthrough innovations and drive radical new products in mature firms—technical corporate entrepreneurs. It is investigated using the five conditions identified in the corporate entrepreneurship literature as an initial framework. We strive to determine if the conditions are sufficient in motivating technical corporate entrepreneurs. We also investigate discrepancies between their stated motivation and their human resource manager's perception of their motivation.

The next section reviews the literature concerning conditions for corporate entrepreneurship, which has primarily focused on middle managers. We then draw on the employee motivation literature from organizational behavior to extend what has been a limited understanding of motivation within corporate entrepreneurship research. This discussion is followed by an empirical examination of self-proclaimed motivators (and de-motivators) of technical corporate entrepreneurs and as perceived by their human resource managers. The implications of the results for research and managerial practice are presented in the final discussion.

Literature Review

Conditions Supporting Corporate Entrepreneurship

Across the 1980s, researchers proposed several organizational conditions that they theorized initiated and influenced corporate entrepreneurship behavior—or motivated these behaviors. We first review the flow of the empirical research that has been completed to test the relevancy and independence of the proposed dimensions and then present the dimensions.

Based on the conditions that had been theorized in the literature to support corporate entrepreneurship, Kuratko et al. (1990) developed the Intrapreneurial Assessment Instrument (IAI) to assess the underlying environmental factors required to behave entrepreneurially. This effort was extended by Hornsby, Montagno, and Kuratko (1992) using standard scale development techniques. Their survey-based study of managers resulted in finding five dimensions of the firm's internal environment necessary to support corporate entrepreneurship. Hornsby, Kuratko, and Montagno (1999) later expanded this work to include cultural differences between Canadian and American managers, resulting in the Corporate Entrepreneurship Assessment Instrument (CEAI). In 2002, Hornsby et al. further tested the CEAI with two additional samples of middle managers. Their results further confirmed that five distinct internal organizational factors were necessary to support corporate entrepreneurship: (1) rewards/recognition; (2) management support; (3) resources, including time availability; (4) organizational structure; and (5) acceptance of risk.

The use of rewards and reinforcement as motivators is highly visible in the literature (Block & Ornati, 1987; Kanter, 1985; Sathe, 1985). To be effective, a reward system that fosters corporate entrepreneurship must consider goals, feedback, individuality, and rewards based on results. The use of an appropriate reward system can enhance an individual's willingness to assume the risks associated with entrepreneurial activity.

Management support, management's willingness to facilitate or promote entrepreneurial initiatives, is also well documented (Hisrich & Peters, 1986; MacMillan, Block, & Narasimha, 1986; Quinn, 1985; Sykes, 1986). Management support can take many forms, including championing innovative ideas and institutionalizing entrepreneurial activities within the firm.

Resource availability, including time, is a third condition found necessary for corporate entrepreneurship. Employees must perceive the availability of resources for innovative activities (Hisrich & Peters, 1986; Katz & Gartner, 1988; Sathe, 1985; Sykes, 1986). Slack resources encourage experimentation and risk taking (Burgelman & Sayles, 1986).

The fourth condition is organizational structure (Hisrich & Peters, 1986; Sathe, 1985; Sykes & Block, 1989). An organizational structure supporting corporate entrepreneurship provides administrative mechanisms that allow ideas to be evaluated, selected, and implemented (Burgelman & Sayles, 1986).

Risk taking is the final condition that consistently appears as a necessary support for corporate entrepreneurship. Employees and management must be willing to accept risk and have a tolerance for failure should it occur (Burgelman, 1983, 1984; MacMillan et al., 1986; Sathe, 1985; Sykes, 1986; Sykes & Block, 1989).

In summary, research has found that middle managers believe that a number of environmental conditions must be in place in the firm to support corporate entrepreneurship or to motivate entrepreneurial behavior within the firm. We now turn to a review of the organizational behavior literature on motivating individuals in general.

Employee Motivation

Motivation is the factor, other than knowledge, that energizes, directs, and sustains an individual's behavior (Locke & Latham, 1990). It is the set of processes that move a person toward a goal. Motivated behaviors are voluntary choices controlled by the individual employee. Since motivation influences productivity, management needs to understand what motivates employees to reach peak performance. Relatively subtle changes in the organizational environment can leverage individual motivation, making possible increases in individual creativity (Amabile, 1993) and task performance (Callahan, Brownlee, Brtek, & Tosi, 2003).

The Hawthorne Studies, conducted by Elton Mayo from 1924 to 1932 (Dickson, 1973), found that employees were motivated by sources other than financial reward, and their motivation, in turn, influenced behavior. This research initiated an approach to management where human relations and employee motivation became a primary focus. This effort to understand what motivates employees gave rise to a number of core motivation theories (e.g., Adams, 1965; Herzberg, Mausner, & Snyderman, 1959; Maslow, 1943; Skinner, 1953; Vroom, 1964).

Herzberg's hygiene-motivation theory is particularly applicable to our investigation as the original research was undertaken in the offices of engineers and other professionals. Herzberg theorized that motivation can be dichotomized into hygiene factors and motivation factors (Herzberg et al., 1959). Motivators or intrinsic factors such as achievement and recognition produce job satisfaction because of the individual's need for growth and sense of self-achievement. It follows therefore that to motivate an individual, a job must be challenging, must have enrichment potential, and must be of interest to the jobholder. *The main motivators are not in the environment but in the intrinsic value and satisfaction gained from the job itself.*

Hygienic or extrinsic factors such as pay and job security are not directly a part of the job itself and for this reason may lead to job dissatisfaction. When there is a shortage of motivating factors that positively encourage employees, they may focus on other nonjob-related hygiene factors or *de-motivators*. A lack of intrinsic motivators leads to overconcentration on potentially negative hygiene factors that can be seen and therefore can form the basis of complaint and concern. Herzberg's theory recognizes the intrinsic satisfaction that can be obtained from the work itself and places attention on job design.

More recently, others have argued that motivational synergy is best achieved by both intrinsic and extrinsic mechanisms. A meta-analysis on this topic showed that tangible rewards can enhance rather than undermine the effects of intrinsic motivation—if the rewards are dependent on performance (Eisenberger & Cameron, 1996). Additionally, Amabile (1993) found that when creativity is particularly important, it may be best to hold off heavily emphasizing extrinsic motivators, especially during the problem presentation and idea generation states when intrinsic motivation appears to be most important. However, extrinsic motivators may be helpful in sustaining intrinsic motivation during the sometimes arduous validation and implementation stages.

While these previous studies investigated factors directly associated with motivation, it also can be heightened indirectly through developing an individual's sense of power and meaning related to tasks. This empowerment affects both the initiation and persistence of an individual's task behavior, allowing managers to mobilize personnel in the face of difficult challenges (Bandura, 1997). Empowerment through increasing intrinsic motivation results in greater work satisfaction and effectiveness and in more innovative behavior (Spreitzer, 1995). A number of extrinsic factors, including organizational systems, supervisory practices, reward systems, and job design have been found to influence employee

motivation indirectly through their impact on empowerment (e.g., Block, 1987; Conger, 2000; Kanter, 1983; Thomas & Velthouse, 1990).

Organizations with high levels of formalization and impersonal control systems can stifle employee initiative, meaningfulness, and sense of responsibility. Authoritarian supervisory styles can strip control and discretion from organizational members. When organizations do not provide rewards that are valued by members, or when rewards are not based on competence, initiative, and innovative job behavior, employees' sense of power decreases (Szilagyi, 1980). Finally, when jobs provide very little challenge and meaning, or when they involve conflict and overload, employees can feel crippled. Organizations that provide multiple sources of loosely committed resources at decentralized or local levels, structure open communications systems, and that create extensive network-forming structures are more empowering (Kanter, 1983).

Empowering supervisory practices include: (1) expressing confidence in subordinates' accomplishments by high performance expectations; (2) allowing subordinates to participate in decision making or to create their own jobs; (3) providing autonomy from bureaucratic constraint; and (4) setting inspirational and/or meaningful goals (Bennis & Nanus, 1985; Block, 1987; Conger, 2000; Conger & Kanungo, 1988; Neilson, 1986). Reward systems that emphasize innovative performance with high incentives foster a greater sense of self-efficacy (Kanungo, 1987; Lawler, 1977) and increased performance (Jenkins, Mitra, Gupta, & Shaw, 1998). Jobs that provide task variety, personal relevance, appropriate autonomy and control, low levels of established routines and rules, and high advancement prospects are more likely to empower (Block, 1987).

In summary, while the corporate entrepreneurship literature proposes a number of factors that promote innovation in large organizations, the organization behavior literature suggests that there may be other important factors that motivate technical corporate entrepreneurs to create breakthrough innovation. This study addresses this disparity by investigating the perceptions of technical corporate entrepreneurs and human resource managers in large organizations with an entrepreneurial orientation. The remainder of this article discusses our methodology, results, and conclusions.

Method

Sample

This study uses a multiple case comparison methodology. Each case consisted of dyads composed of a technical corporate entrepreneur and a human resource manager. Each dyad was from the same business unit of a U.S.-based technology dependent organization. All of the organizations included in this research rely on continued innovation and advancement of technology to stay competitive. The 17 organizations fell into 10 primary industries, as classified by http://www.hoovers.com: (1) aerospace and defense; (2) automotive; (3) chemicals; (4) computer hardware; (5) computer services; (6) consumer products; (7) electronics; (8) industrial manufacturing; (9) medical equipment; and (10) telecommunications equipment. All the companies had been in existence for more than 25 years; each had over $1.5 billion in revenues.

The firms recruit technical personnel from a large research-based Midwestern university, with an individual at the firm generally responsible for coordinating recruitment efforts. The company contact identified a technical professional in their firm who had been instrumental in inventing and commercializing products that represented significant technical breakthroughs, which came to market and created new businesses. Individuals nominated by the university contact were first screened through preliminary conversations

to ensure that they were in fact a technical corporate entrepreneur. A human resource manager who had worked with this technical corporate entrepreneur was identified by either the corporate contact or the entrepreneur. In all, 24 technical corporate entrepreneurs, 23 men and 1 woman, with a median tenure of 20 years at their organizations, and 19 human resource managers participated in the research. Several of the companies identified multiple individuals for both categories.

Research Instrument

Separate in-depth, open-ended interview guides were designed for the technical corporate entrepreneurs and for the human resource managers. Interview questions focused on what conditions motivated and de-motivated the technical corporate entrepreneurs. The questions were asked in categories found in the organizational behavior literature (organizational structures and job design; rewards, incentives, and recognition; and supervisor-related motivators) rather than in the corporate entrepreneurship framework. The questions were open-ended to allow respondents to reveal as many of their thoughts on this topic as possible. Interviews were conducted in the fall of 2003 and early spring of 2004, either in person at their place of business or by phone. All were recorded with a digital voice recorder and then transcribed.

Data Analysis

The interviews were coded using qualitative analysis software (NVIVO 2.0). The data were first coded as motivators or de-motivators and then categorized according to the five predetermined organizational conditions for corporate entrepreneurship using the definitions of the dimensions from the grounded theory literature and the CEAI items. Motivators and de-motivators that did not fit the predetermined conditions were content analyzed to determine emergent patterns and to derive additional categories.

Limitations

As with all research, there are limitations that should be taken into account when interpreting the results. The sample was a convenience population of companies—ones that support university recruitment and research—rather than a completely random sample. Because these were all large, successful, mature firms, the results may not generalize to smaller firms even though technical corporate entrepreneurs likely exist there. The statements were analyzed by frequency of mention, and saliency may not be equivalent to importance (Griffin & Hauser, 1993). Finally, this research was conducted in firms where corporate entrepreneurship was associated with technology development. Thus, the findings may not apply to motivating corporate entrepreneurs in firms that do not require technology development to get into new businesses and new markets. Taken together, these factors may limit the generalizability of these findings.

Results

Sufficiency of Conditions in Motivating Technical Corporate Entrepreneurs

While almost 80% of the motivating statements fit into the original five categories, two additional motivating themes emerged from technical corporate entrepreneurs and both of those as well as a third new theme emerged from human resource managers

(Table 1). Some dimensions are not perceived as salient by human resource managers for motivating technical corporate entrepreneurs. The emergent motivating themes are:

1. *Intrinsic Motivation*: The stimulation or drive stemming from within oneself. As one innovator said: "My motivation is the energy, the enthusiasm, the dynamics of carrying this thing through further and further and further—That's the motivator as opposed to anything you can receive financially." Both respondent groups identified intrinsic motivation as important. They indicated that firms need to be careful not to implement policies or structures that inadvertently decrease intrinsic motivation.
2. *Work Design*: Both respondent groups identified the way work is organized as motivating, including challenging projects that are of interest. Interactions with others and having project teams include other technical corporate entrepreneurs with similar or related interests foster ideas and creativity. This category differs from the more macro-level organizational structure category in the literature as it concerns the specific job and project-based micro-level work design. As one human resource manager articulated: "Good match in work assignment. They need to feel it's challenging, and that they have the skills to perform and deliver."
3. *Company Pride*: Human resource managers believe that the company or brand in and of itself provides a sense of pride and motivation. The company's history, accomplishments, and outside community respect from being associated with it motivates.

Thus, although the corporate entrepreneurship framework applies to motivating this important group of technical individuals, it is incomplete. Although intrinsic motivation is not a stated organizational condition required to support corporate entrepreneurship, it is inherent in these individuals and may be enhanced—or eliminated—by various organizational conditions. A technical individual's job design is dictated by management and the organizational structure, which may, leverage their intrinsic motivation. Appropriate work design was more frequently mentioned than either organizational structures or attitudes toward risk acceptance. Work design at the micro level is more salient in motivating these types of corporate entrepreneurs than is organizational structure at the macro level. The particulars of the work within the unit as well as other environmental conditions may need to be considered to maximally motivate these technical corporate entrepreneurs.

Motivational Concurrence between the Entrepreneurs and Human Resource Managers

From Table 1, it is obvious that there are similarities and differences in what is motivating for technical corporate entrepreneurs and the perceptions of human resource managers. Both technical corporate entrepreneurs and human resource managers state that rewards and recognition, management support, work design, and time and resources are the four most salient motivating categories, in that order. However, technical corporate entrepreneurs articulate that two other dimensions of organizational support for corporate entrepreneurship also motivate and de-motivate them more than their human resource managers perceive that they do. Human resource managers appear to have a narrower view of how these individuals are motivated. Motivating the technical corporate entrepreneur, or supporting their intrinsic motivation, is a complex and multifaceted task, and one that the human resource function does not seem to fully comprehend. There also are qualitative differences in the statements given within each category of motivating dimensions, as discussed below.

Table 1

Motivators and De-motivators by Corporate Entrepreneurship Category

Conditions	# of motivators	% of total motivators	# of de-motivators	% of total de-motivators	Condition total	% of total
Technical corporate entrepreneurs						
Rewards	90	36.3	20	18.3	110	30.8
Management support	40	16.1	27	24.8	67	18.8
Time/resources	33	13.3	24	22.0	57	16.0
Organizational structure	25	10.1	8	7.3	33	9.2
Risk acceptance	6	2.4	10	9.2	16	4.5
Intrinsic	23	9.3	—	—	23	6.4
Work design	31	12.5	20	18.3	51	14.3
Company pride	—	—	—	—	—	—
Column total	248	100.0	109	100.0	357	100.0
Human resource managers						
Rewards	83	46.4	19	30.6	102	42.3
Management support	32	17.9	16	25.8	48	19.9
Time/resources	22	12.3	18	29.0	40	16.6
Organizational structure	3	1.7	—	—	3	1.2
Risk acceptance	—	—	1	1.6	1	0.4
Intrinsic	7	3.9	—	—	7	2.9
Work design	27	15.1	8	12.9	35	14.5
Company pride	5	2.8	—	—	5	2.1
Column total	179	100.0	62	100.0	241	100.0

Rewards and Recognition. Not unexpectedly, this motivating category is the most salient to both groups. Individuals in both groups said: "Money talks." However, human resource mangers put a greater amount of emphasis on formal rewards and recognition than technical corporate entrepreneurs. They are also more likely to perceive generally applicable institutional rewards as being motivators for technical corporate entrepreneurs. Corporate technical entrepreneurs see rewards and recognition more as an assumed starting point for retaining their services. With inadequate rewards, they leave. Over and above that, however, technical corporate entrepreneurs tend to focus more on actions that bring rewards to them individually, and that support their being rewarded in extra or unusual ways for being different from others and achieving outcomes that others could not. "I was given a one-time, special award that doesn't happen every year." More of their de-motivators have to do with institutional rewards designed to be egalitarian in their application across average employee populations. "The company gives small money awards for going above and beyond normal duties. Problem is that they're being given out for just normal everyday work, and given out like candy." There seems to be a disconnect in understanding between these two groups in the role that institutional rewards play in motivation for this importantly different group of technical employees, and human resource managers may believe that this category of motivating actions has more power to motivate than perhaps it does for these individuals.

Management Support. Both groups made statements about management support the second most frequently. For technical corporate entrepreneurs, this category was the most frequently mentioned potential de-motivator. How these individuals are personally managed is critical to their continued motivation. In terms of how management support is motivating, technical corporate entrepreneurs talk about it in terms of *encouraging* and *enabling* innovators, shielding them from bureaucracy that prevents them from being creative. Their view of management that is motivating is their direct manager more than upper management in general. Thus, when a manager either brushes aside a new idea as unimportant—especially with seemingly little consideration—or alternatively steals an idea and runs with it as his or her own, they are de-motivated to continue to innovate under that manager.

   Human resource managers may not understand how important this management issue is, especially in terms of a manager's potential to de-motivate. Their view of management as de-motivating centers around the general leadership of the firm by upper management, rather than individual management. They also may not quite understand how management's involvement with these technical subordinates is like walking a knife-edge—too much and the manager is meddling. Not enough, and the manager is not enabling. Their statements suggest that their general view is *more is always better* in terms of interaction and management involvement.

Time and Resources. Both technical corporate entrepreneurs and human resource managers appeared to place a similar amount of emphasis on and voiced similar specific types of actions in the time and resources dimension. Most frequently mentioned is the need for freedom in terms of time. However, technical corporate entrepreneurs also view freedom as an ability to pick the area in which they work, an aspect of freedom not generally recognized by their human resource managers. Another aspect of motivating resources, according to both groups, is the ability to interact with others outside the firm. Both groups also recognize that eating up their technically highly creative people's time with bureaucratic tasks is highly de-motivating.

Work Design. Both technical corporate entrepreneurs and human resource managers made statements associated with the motivational powers of individual-level work design the fourth most frequently. However, human resource managers perceived work design as being more motivational than de-motivational, while technical corporate entrepreneurs indicate that depending on how their jobs are structured, work design can be highly de-motivating. The job has to be structured right, which includes doing challenging work, working on projects that will have value to potential customers, and working with other world-class technologists. This is something that the human resource managers also understand, even if they may underestimate the potential de-motivational powers of not structuring work appropriately. Both groups understand that having to work on mundane projects or with only less capable people is de-motivating. Human resource managers also perceive that giving these technical personnel impossible rather than just challenging assignments de-motivates them. However, these issues were not raised by the technical corporate entrepreneurs interviewed. One might speculate that these successful technologists may have enough self-confidence in their abilities to believe that failure is not an issue. Major de-motivators for them, on the other hand, are not being able to follow a project to its completion. These individuals are finishers.

Intrinsic Motivation. The two groups were highly dissimilar in their perceptions of the power of intrinsic motivation. Even though no question in the interview instrument addressed intrinsic motivation, 17 technical corporate entrepreneurs (71%) stated that it was their own intrinsic motivation that drives them, compared to 33% of the human resource managers. First and foremost, the technical corporate entrepreneurs stated, it was their own intrinsic motivation that drove them to continue laboring on a project. Firm actions and structures could support that motivation or reduce it but could not create it. It came from within. While both groups talk about intrinsic motivation using similar concepts and terms, intrinsic motivation may be more pervasive in and important to technical corporate entrepreneurs than perceived by human resource managers.

Organizational Structures. Technical corporate entrepreneurs made far more statements about both the motivating and de-motivating saliency of this dimension than their human resources counterparts, who saw this only as a potential motivator. Both groups indicated that having special parts of the organization set aside for highly innovative activities were motivators. They both also mentioned the motivating potential of having special innovation showcase events. However, the technical corporate entrepreneurs also raised issues about how the general structure of the organization both motivates and de-motivates. Flat structures, with few people between them and upper managers, motivate. Not having formal structures that supported getting innovative ideas funded and moved through development and into commercialization was de-motivating.

Acceptance of Risk. Of the previously put forth conditions supporting corporate entrepreneurship, the least mentioned by both technical corporate entrepreneurs and human resource managers was the firm's acceptance of risk, and both groups identified it more as a potential de-motivator than a motivator. Technical corporate entrepreneurs speak about the firm's risk acceptance in very personal terms—most often voicing the worry that failures may have negative impacts on careers. When a firm has a history of rewarding both failures and successes, technical corporate entrepreneurs are motivated to continue trying to push innovation envelopes. However, they worry that even when there has been a history of supporting failure in the past, management's attitudes toward accepting risk may change in the future. The one comment on this topic from a human resource manager,

"Excess controls to detour risk de-motivate," reflects more of an institutional concern with risk acceptance rather than a personal concern. There is little understanding by human resource managers of whether and how risk acceptance impacts the motivation of technical corporate entrepreneurs.

Company Pride. Human resource managers also perceived that pride in the company, its history, and its respect and reputation in the community motivates technical corporate entrepreneurs to strive for breakthrough innovations. However, none of the technical corporate entrepreneurs articulated this as a motivating concept for them. On the other hand, these are innovators who have chosen to innovate within large, mature organizations rather than strike out as entrepreneurs. It may be that corporate reputation influenced their decision to join this particular firm, but once there, it does not continue to provide an additional motivation to continue to innovate.

Summary. There is no general concurrence between the technical corporate entrepreneurs and human resource managers in either saliency or content of the potentially motivating conditions. Human resource managers tend to think institutionally, while technical corporate entrepreneurs think more personally. The human resource managers also tend to perceive that fewer of the conditions cited previously as supporting corporate entrepreneurship actually are motivating to them. It would suggest that they are a bit out of touch with the needs of these individuals.

Discussion and Managerial Implications

Technical corporate entrepreneurs differ from *average* technical employees in that they have been instrumental in creating, developing, and commercializing a very significant breakthrough technology or product, and they continue to want to work on breakthrough innovations. However, they want to do it in the context of a mature firm, not in an entrepreneurial start-up. The question about motivating them is a bit twofold: (1) whether motivating them is different from motivating technical employees in general and (2) whether the previously identified conditions supporting corporate entrepreneurship are sufficient in motivating them. While we cannot directly compare their statements about what motivates them to a more general population's statements, we can glean some insight into the first question from their human resource managers' statements about perceived motivation. The answer to the second question is that although the corporate entrepreneurship conditions appear to be necessary in supporting and motivating these technical corporate entrepreneurs, they are not sufficient. Two additional categories of motivators are also important, as one might predict from the organizational behavior literature on motivation and empowerment. Sufficiently supporting them is even more complex than the five dimensions of the corporate entrepreneurship framework would suggest.

Intrinsic motivation is more pervasive and important for these individuals than is indicated by the corporate entrepreneurship framework, aligning more along the view of the motivation literature. These people are internally driven to innovate and to see the fruits of their labor go to market and enable people to do things they have not been able to do before. The firm cannot create intrinsic motivation, which may be why Kuratko et al. (1990) did not include it in their development of the IAI. However, the firm can take actions to enable an individual's work efforts and thus sustain intrinsic motivation levels. The firm can also frustrate intrinsic motivation. Several technical corporate entrepreneurs

indicated that when firms or managers had taken actions that did not allow them to innovate, they changed managers or jobs, or at the extreme, left the firm. These are individuals that because of their past success can rather easily change jobs. Thus, retaining these technical corporate entrepreneurs requires marshalling the firm's actions across six dimensions to sustain their innovative activities; the five previously identified in the corporate entrepreneurship framework, but also the micro-level design of work for these individuals. Researchers and managers must not lose sight of the importance of intrinsic motivation when studying or designing reward systems, organizations, and jobs.

Work design for these technical corporate entrepreneurs clearly deserves additional consideration, aligning with the organizational behavior literature. One of the ways that these individuals differ from other technical professionals is that they want their innovation efforts to make a difference both in terms of solving problems and creating profits for the firm (Griffin, Price, Maloney, Vojak, & Sim, Forthcoming). They believe, like Thomas Edison: "I don't want to invent anything that somebody won't buy." They are more business oriented than many technologists. They want their innovative efforts to be connected to customer problems that need to be solved—and important customer problems at that. To understand these problems, they need contact with customers. To get breakthrough ideas on how to solve those problems, they also need contact with other world-class technologists. Finally, tantamount to these individuals is that they are able to follow their innovations through to market delivery. Seeing their innovation through to the marketplace sustains their intrinsic motivation to go back to the lab and repeat the process.

Interestingly, two of the support conditions for corporate entrepreneurship may be acting more as hygiene factors than intrinsic motivators: risk acceptance and perhaps rewards. A lack of risk acceptance is seen as being de-motivating, but risk acceptance is not particularly motivating. It is visible only in its absence, exactly the definition of a hygiene factor. The same may be true for rewards, given the tone of the statements made by the technologists.

The other categories of motivators do not seem to operate as hygiene factors. We did not ask about empowerment or whether these types of potentially motivating actions operated directly to motivate these individuals or indirectly through empowering them and providing meaning to their jobs. However, this is clearly an avenue of interest for future research.

There is a significant disconnect between what these technical corporate entrepreneurs say motivates them and what their human resource manager perceives motivates them. The most glaring difference is that the technical corporate entrepreneurs tend to talk in personal terms while the human resource managers seem to focus more on institutional motivators. The technical corporate entrepreneurs speak more of individual and individualized rewards, about the way in which their first-level manager supports them, their freedom to select their projects and having time to do them, how their job is structured, and their ability to follow a project through to completion. Their human resource managers talk more about rewards that are overall generally applicable, including formal review processes, senior leadership's orientation, and bureaucratic structures. These constrain technical professionals from having the freedom or time that go along with creative, and potentially breakthrough projects. Even when asked to talk specifically about how to motivate unique individuals, human resource managers talk about mechanisms for motivating the general population at the firm more than mechanisms to support special populations, such as corporate entrepreneurs. Again, this disconnect between the two sets of responses suggests that technical corporate entrepreneurs do differ from the average population not only in what they do, but in how they are motivated.

From the technical corporate entrepreneurs' responses, firms could take a number of steps to enable and sustain this group's intrinsic motivation. Since how they are managed is critical, providing training to managers, or at least sensitizing them to the unique needs of these individuals, would likely be useful. Structuring their jobs to provide customer insights, interactions with other highly competent technologists and freedom also could be done, as could allowing these individuals to follow their creations through to the marketplace. Developing multiple mechanisms for obtaining funding for new idea development is another relatively low-cost action that could be taken.

Some aspects of motivating technical corporate entrepreneurs are potentially problematic, especially from a human resource perspective. For example, providing individualized rewards may be seen as creating inequities in the firm. Thus, although technical corporate entrepreneurs may desire more personalized support and see that as highly motivating, institutional considerations may prevent the firm from doing so.

This research suggests several avenues for future research. A scale for the work design dimension needs to be developed and validated in the context of corporate entrepreneurship, as the current scales are deficient in this dimension. This will allow the possibility of then conducting research to evaluate the relative importance of each of the dimensions and determine how they interrelate. Another interesting question is what role each of the dimensions plays in enabling intrinsic motivation. Additionally, this research raises the question as to whether these six organizational conditions supporting corporate entrepreneurship are associated directly with innovation outcomes, or whether intrinsic motivation mediates the relationship between them and innovation outcomes. Future research to address this question would be interesting.

In closing, this research suggests that the technical corporate entrepreneurs investigated are complex, both in terms of how to manage them and how to sustain their intrinsic motivation. While the conditions for corporate entrepreneurship do apply in motivating these individuals, they are not sufficient. Therefore, we propose adding the dimensions of intrinsic motivation and work design to the theoretical framework. Future work should carefully consider these dimensions in facilitating corporate entrepreneurship, especially in the context of creating innovation.

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