

The concept of entrepreneurial intensity: Implications for company performance

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The Concept of Entrepreneurial Intensity: Implications for Company Performance

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Entrepreneurial orientation is explored as an organization-level variable. The concept of entrepreneurial intensity (EI) is introduced to capture both the degree and amount of entrepreneurship evidenced within a given organization. It is hypothesized that levels of EI are significantly associated with measures of company performance. Results are reported of a survey directed at a cross-section of industrial firms. The findings indicate significant relationships among EI and five of six performance measures. The relationships are strongest when more weight is placed on the degree versus the amount of entrepreneurship demonstrated by a firm. J BUSN RES 1996. 36.5-13

Much has been written regarding entrepreneurship as a means to economic growth and global competitiveness (Drucker, 1985; Foster, 1986; Gilder, 1984; Morris and Lewis, 1991; Schumpeter, 1950). Birch (1979, 1987) and others (Birch and McGracken, 1982; Reynolds, 1986; Stevenson and Sahlmen, 1986) have provided evidence that entrepreneurial ventures are responsible for as much as 85% of the growth in employment within the U.S. in recent years. Similarly, Peters (1987) has argued that entrepreneurial attitudes and behaviors are a key determinant of the ability of large firms to survive and prosper in the turbulent environments confronting many industries today (see also Burgelman, 1983; Brandt, 1986; Miller, 1983; Pinchot, 1985; Sathe, 1985).

And yet, although considerable effort has been expended in attempts to define the term "entrepreneurship" (e.g., Cunningham and Lischeron, 1991; Cooper and Dunkelberg, 1986; Gartner, 1988; Long, 1983; Van der Werf, 1989), less attention has been devoted to establishing its underlying nature. For instance, researchers have made some progress in identifying core dimensions that underlie the entrepreneurship construct (Covin and Slevin, 1989; Miller and Friesen, 1983; Davis, Morris, and Allen, 1991) and in identifying conditions that are

most conducive to the occurrence of an entrepreneurial event (Gartner, 1985; Moore, 1986; Macmillan, Block and Narasimha, 1986). However, many related questions remain unanswered. Examples of issues that have been raised but not resolved include the extent to which entrepreneurship is attitudinal or behavioral, the differences between small business start-up and entrepreneurship (and between entrepreneurship and intrapreneurship), and the temporal aspects of entrepreneurship (i.e., when does organized economic activity become entrepreneurship, and does it stop being entrepreneurship and become something else at some point in time?) (Bird, 1989; Bygrave, 1989; Cheah, 1990; Covin and Slevin 1991; Low and Macmillan, 1988).

Perhaps the more fundamental question, though, and certainly one whose resolution will shed light on other unresolved issues, concerns what it means to describe a particular event as "entrepreneurial." That is, there appear to be firms whose performance would seem to qualify as being highly entrepreneurial, and others who are not at all entrepreneurial. If entrepreneurship is variable, as suggested by some (e.g., Covin and Slevin, 1991; Kuratko, Montagnano, and Hornsby, 1990; Morris and Paul, 1987), what factors define how entrepreneurial a firm is at a given point in time?

This question is the subject of the present research. Specifically, entrepreneurship is conceptualized as a phenomenon to be found in virtually all organizations, but one that occurs in varying degrees and amounts. The concept of entrepreneurial intensity is examined, and an approach for measuring intensity is presented. Results are reported of a survey relating the levels of entrepreneurial intensity in firms to a number of company performance variables. Managerial implications are drawn, and suggestions made for ongoing research.

The Nature of Entrepreneurship

Entrepreneurship can be defined as "the process of creating value by bringing together a unique package of resources to

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exploit an opportunity" (Stevenson, Roberts, and Grousbeck, 1989). Whereas considerable disagreement exists concerning the relative importance of an emphasis on new venture creation, development of new products and services, assumption of risk, ownership, or a growth orientation, there is an emerging consensus that entrepreneurship involves a behavioral process and is opportunity-driven (Covin and Slevin, 1991; Gartner, 1990; Moore, 1986; Stevenson and Jarillo, 1990).

Despite the fact that the environment surrounding most entrepreneurial events is both chaotic and ambiguous, the behavioral process involved can be approached as a logical set of steps or stages (e.g., Stevenson and Gumpert, 1985). These stages include opportunity identification, business concept specification, assessment of requisite resources, acquisition of those resources, and then management and harvesting of the business. Moreover, entrepreneurial events tend to evolve and frequently demand significant adaptability on the part of entrepreneurs as they move through the stages.

The entrepreneurial process can also be characterized in terms of key inputs and outputs (Gartner, 1990; Keats and Bracker, 1988; Morris, Sexton and Lewis, 1993). The requisite inputs consist of environmental opportunities, one or more entrepreneurial individuals, an organizational context, a business concept, and various financial and nonfinancial resources. Outputs tend to be quite variable, but can include creation, new products and services, a going venture, profit, employment and asset growth, and failure.

The organizational context within which entrepreneurship occurs can range from a small, home-based business or an independent retail establishment to a large multinational corporation (Bird, 1989; Carland and Carland, 1990; Cornell and Perlman, 1990; Hisrich and Peters, 1992; Pinchot, 1985). Further, nonprofit organizations, institutions, and governmental units are all susceptible to entrepreneurial behaviors (e.g., Berry, 1989; Kanter, 1983; Wilson, 1973). Although some observers appear to distinguish entrepreneurship from intrapreneurship or corporate entrepreneurship, the similarities with regard to the definition, the process, the required inputs, and the potential outputs are greater than the differences. Nonetheless, when the organizational context is an established firm, the process becomes subject to a number of constraints and opportunities not found with most independent start-ups (Brandt, 1986; Kao, 1989; Pinchot, 1985; Zahra, 1986). Based on the type of organization involved, differences are likely to exist in terms of assumption of risk, ownership of the entrepreneurial concept, personal reward possibilities, availability of existing resources, and the amount of freedom and control exercised by the entrepreneur.

Whether in an independent start-up or a corporate context, entrepreneurship is both an individualistic and a collectivistic pursuit. Little occurs without a visionary individual who champions a concept, persists in overcoming internal and external obstacles, and accepts responsibility for failure (Burgelman and Sayles, 1986; Peters, 1988; Pinchot, 1985; Tropman and Morningstar, 1989). And yet, the complexity of many new product

opportunities, combined with technological constraints, the diversity of markets, regulatory restrictions, uncontrollable economic developments, and the need for partnerships with suppliers and distributors suggest that networks, teamwork, and well-coordinated task integration are vital for success (Kanter, 1983; Kay, 1979; Reich, 1987; Stewart, 1989).

The Concept of Entrepreneurial Intensity

Underlying entrepreneurial attitudes and behaviors are three key dimensions: innovativeness, risk-taking, and proactiveness (Covin and Slevin, 1989; Ginsberg, 1985; Miles and Arnold, 1991; Miller, 1983; Morris and Paul, 1987). Innovativeness refers to the seeking of creative, unusual, or novel solutions to problems and needs. Risk-taking involves the willingness to commit significant resources to opportunities having a reasonable chance of costly failure. These risks are typically calculated and manageable. Proactiveness is concerned with implementation—with doing whatever is necessary to bring an entrepreneurial concept to fruition. It usually involves considerable perseverance, adaptability, and a willingness to assume some responsibility for failure. To the extent that an undertaking demonstrates some amount of innovativeness, risk-taking, and proactiveness, it can be considered an entrepreneurial event, and the person behind it an entrepreneur.

A given individual or organization is capable of producing a number of entrepreneurial events over time (Stevenson and Jarillo, 1990). Schumpeter (1934) defined entrepreneurship in terms of five types of events: introduction of new goods or new quality of goods, introduction of new methods of production, opening of a new market, utilization of new sources of supply, and carrying out new organizational forms (see also Gartner, 1985; Vesper, 1990). Whereas pursuing one of these events is entrepreneurship, there is some evidence to suggest that entrepreneurship is also associated with multiple events. Covin and Slevin (1991) argue that entrepreneurial organizations are those in which behavioral patterns are recurring. Davidsson (1989) uses the term "continued entrepreneurship" to describe a tendency he found among individuals and organizations that are more entrepreneurial to pursue novel opportunities on an ongoing basis. Ronstadt (1988) argues that entrepreneurship is a dynamic, multiventure process. He provides evidence that the act of starting a new venture leads those involved down a "venture corridor" that enables them to see intersecting corridors leading to new opportunities that were not previously visible. The work of Davidsson and Ronstadt is consistent with that of Sexton and Bowman-Upton (1991) and others (e.g., Hambrick and Crozier, 1985), who focus on a growth orientation as the defining characteristic of entrepreneurship. Thus, for many small "lifestyle" businesses, the act of starting operations was an entrepreneurial event, but their subsequent satisfaction with the status quo suggests they are not an especially entrepreneurial organization. Rather, a continued effort to develop

new products, services, markets, and so forth is indicative of a highly entrepreneurial operation.

Another term for the number of events (new products, service, processes) in which a firm becomes involved in entrepreneurial frequency. Similarly, the extent to which any one event is innovative, risky, and proactive can be termed the degree of entrepreneurship. Frequency and degree combine to form a variable we can label entrepreneurial intensity. Accordingly, entrepreneurship is not an either/or determination, but a question of "how often" and "how much." To paraphrase Cheah (1990, p. 346), "no firm is entrepreneurial all the time, and no firm can ever be only entrepreneurial." Figure 1 represents an illustration of entrepreneurial intensity, with the vertical axis capturing the "how often" aspect or frequency, and the horizontal axis capturing the "how much" or degree.

Using the factors described in Figure 1, a two-dimensional matrix has been created that we shall refer to as the entrepreneurial grid. This grid is illustrated in Figure 2, and five possible scenarios have been highlighted. The scenarios, which have been labeled periodic/incremental, continuous/incremental, periodic/discontinuous, dynamic, and revolutionary, reflect the variable nature of entrepreneurial intensity. For example, an organization responsible for numerous entrepreneurial events that are highly innovative, risky, and proactive will fit into the revolutionary segment of the entrepreneurship matrix and will exhibit the highest levels of entrepreneurial intensity. Similarly, where few entrepreneurial events are produced, and these events are only nominally innovative, risky and proactive, the organization can be described as periodic/incremental in terms of its (modest) level of entrepreneurial intensity.

To apply this concept, consider the five firms superimposed on Figure 2. Wendy's, the fast food chain, has maintained a competitive advantage by responding to changing environmental trends on a periodic and incremental basis. For instance,

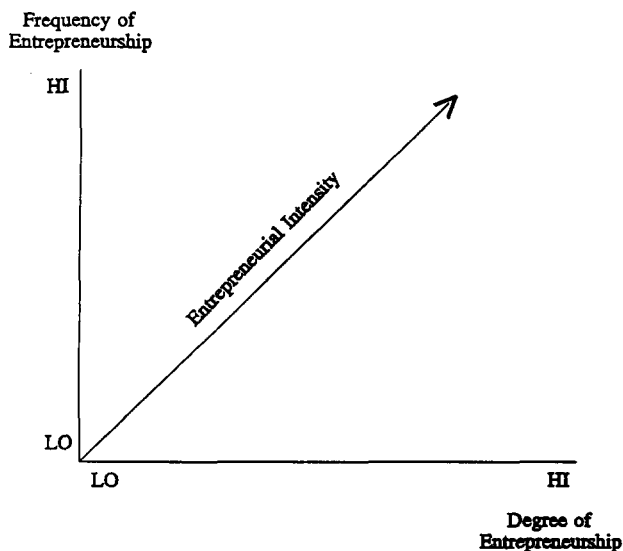


FIGURE 1. The variable nature of entrepreneurship

Wendy's responded to the demand for convenience with drive-up window service, to the demand for lighter, low-calorie meals with salads and baked potatoes, and to market maturity with a "value menu." Procter and Gamble, the large consumer packaged goods manufacturer, produces a continuing stream of product improvements, revisions, and occasional new product developments. Much of their success is based on evolutionary adaptation of successful product concepts, such that they are high in terms of entrepreneurial frequency but moderate to low with regard to degree. Nucor revolutionized the sheetmetal industry with a major process innovation whereby sheet still could be produced in a minimill at substantial cost savings. Although the frequency of entrepreneurial events stimulated by Nucor has been relatively low, their radical technological changes reflect a high degree of entrepreneurship. Minnesota Mining and Manufacturing (3M) has a unique talent for finding commercial uses for new technologies, developing a given technology into dozens of marketable forms, and finding novel applications for these products. Today, they sell more than 6,800 consumer and industrial products and have a goal of achieving 25% of annual sales from products developed in the last five years, placing them in the dynamic segment of Figure 2. Lastly, Bell Laboratories' breakthrough advances in both basic and applied research has earned it a reputation as one of the most innovative and productive research facilities in the world. Developments involving the transistor, the laser, the solar cell, fiberoptic transmissions, and major cellular communication improvements suggest Bell Labs may reflect a revolutionary level of entrepreneurial intensity.

Whereas Figure 2 depicts five discrete segments, it is important to note that these segments have been arbitrarily defined to provide an example of how entrepreneurial intensity may vary. Amounts and degrees of entrepreneurship are relative. Further, it is possible to operate at more than one point in the space. A given organization could be highly entrepreneurial at particular times and not at all entrepreneurial at others. Consequently, it could occupy different segments of the matrix at different points in time.

There is a growing research foundation to support the concept of entrepreneurial intensity. Keats and Bracker (1988) use the term in characterizing different types of entrepreneurs and suggest that organizational performance is affected by intensity. Stuart and Abetti (1987), in a study of factors contributing to venture success, examined a variable they termed "organic emphasis" to describe the extent to which a firm's internal environment and culture are innovative, opportunistic, and risk-taking, as well as a variable labeled "entrepreneurship level" to reflect the degree to which the firm's leaders demonstrated characteristics associated with the entrepreneurial personality. Schaefer (1990) assesses "levels of entrepreneurship" in an organizational context. Jennings and Seaman (1990) discuss the "entrepreneurial aggressiveness" of savings and loan institutions, as reflected behaviorally in their financial portfolios. Cheah (1990) proposes a continuum of entrepreneurial possibilities based on the extent to which the entrepreneur is creating sig-

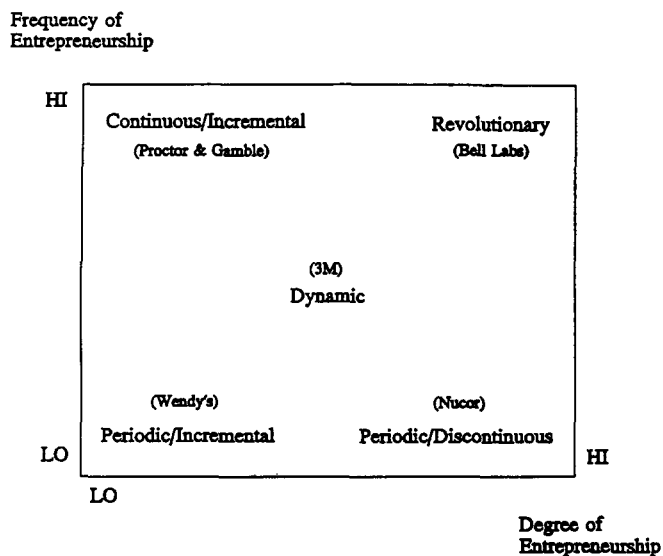


FIGURE 2. Five categories of entrepreneurial intensity.

nificant new profit opportunities (disturbing the equilibrium) versus capitalizing on available opportunities (bringing disequilibrium into equilibrium). Covin and Slevin (1991) refer to the "entrepreneurial posture" of firms.

Although both frequency and degree are implicit in the work of most of the authors cited previously, the distinction between the two has not been sufficiently developed. For instance, Cheah's (1990) conceptual argument appears to emphasize degree, whereas the measures used by Jennings and Seaman (1990) seem to focus more on the frequency. Alternatively, Covin and Slevin (1990) mention the "extensiveness and frequency of product innovation," and Schaeffer (1990) examines how entrepreneurial decision-making is in general as well as the number of new services introduced by the firms she studied.

Entrepreneurship and Company Performance

There is reason to believe that the level of entrepreneurial intensity may positively affect performance outcomes in a company. The impact of entrepreneurship has been approached from a variety of perspectives. Groundbreaking work by Birch (1979), Davidsson (1989), and others suggests the entrepreneurial sector of society is responsible for a disproportionate number (as high as 90%) of the new jobs created. Others draw a distinction between entrepreneurial firms and traditional small businesses, claiming that 10% create most of the jobs (e.g., Sexton and Bowman-Upton, 1991). By inference, then, a relationship would seem to exist between the entrepreneurialness of a start-up and job creation.

Others have suggested a relationship between the level of entrepreneurship in society and quality of life. For instance, Morris and Lewis (1991) claim that higher levels of en-

trepreneurship have a net positive impact on each of seven dimensions of societal quality of life (see also Hofstede, 1980; Morris, Lewis, and Sexton, 1993). The most notable impact is on the economic dimension, where evidence is provided that suggests entrepreneurial firms not only produce more jobs but are also responsible for a greater number of new products, services, and technologies, most of the net new wealth creation, and a sizeable amount of tax revenue.

An alternative perspective is provided by Peters and Waterman (1980) in their best-selling book, *In Search of Excellence*. In this book, as well as in a series of subsequent books, the authors provide anecdotal evidence of companies that consistently exceed industry norms on key financial performance ratios that also tend to demonstrate more entrepreneurial behavior than other firms within their industries. The focus in these books tends to be large, established companies.

Yet another stream of research suggests an entrepreneurial orientation is critical for organizations confronting turbulent external environments (Chittipeddi and Wallett, 1991). Miller and Friesen (1982), in a study of conservative and entrepreneurial firms, found significantly higher degrees of environmental hostility and heterogeneity in the latter. Separately, Miller and Friesen (1983) demonstrated a significant relationship among environmental dynamism, hostility, and heterogeneity and the amount of proactive, risk-taking, and innovative behavior in successful firms, but not so in unsuccessful firms. Ettlie (1986), also found corporate entrepreneurship to be related to environmental dynamism and complexity, but found organizational and strategic variables to be more important influences on entrepreneurship.

In a recent conceptual piece, Covin and Slevin (1991) introduce 44 propositions concerning antecedents and consequences of entrepreneurship, which they approach as a dimension of the strategic posture of an organization. They concluded, "surprisingly little systematic empirical evidence is available to support the belief in a strong positive relationship between entrepreneurial posture and firm performance" (p. 19). It is our position that establishing and refining this relationship requires measures of what we have termed entrepreneurial intensity. Such measures should reflect the relative importance of both degree and frequency of entrepreneurial behavior and should be applicable in virtually any organizational environment. This brings us to the current study.

The Study

In an attempt to quantify entrepreneurial intensity and its effects, a survey instrument was developed and administered to managers from a cross-section of industrial firms. Consistent with the work of Covin and Slevin (1989, 1990) and others (e.g., Davis, Morris, and Allen, 1991, Jennings, and Seaman, 1990; Schaeffer, 1990; Zahra, 1986), the research hypothesis being tested was that entrepreneurial intensity was positively

related to financial, market, and employment performance outcomes.

Questionnaire Design

A self-report questionnaire was designed in which managers were asked to provide responses that best described operations within their companies over the most recent fiscal year. To assess frequency of entrepreneurship, individual questions were included where respondents reported the absolute number of new products, new services, and new production or operational processes introduced by (or, for processes, within) their firms. Respondents were asked to skip any sections that did not apply to their firms.

The degree of entrepreneurship was measured in two ways. First, the 13-item scale developed by Miller and Friesen (1983) and subsequently adapted by others (e.g., Covin and Slevin, 1989; Ginsberg, 1985; Miles and Arnold, 1991; Morris and Paul, 1987; Shaeffer, 1990) was used. Here, subjects indicate on a five-point response scale their agreement or disagreement with a series of statements that characterize the extent to which company philosophy and top-level decision-making is innovative, risk-taking, and proactive. Reliabilities reported for this scale have ranged from 0.79 to 0.88. Second, after indicating the number of new products, services, and processes introduced by their firms, respondents indicated on a five-point scale the extent to which these innovations were: (1) new to the world, (2) new to their markets, and (3) modifications or extensions of things the company was already doing.

Company performance was assessed in four areas with six measures. Respondents reported the percentage increase or decrease in revenues, profits, employees, and the size of their customer base over the past year. In the latter area, they indicated percentage changes both in the number of new customers and the overall size of the customer base. They also indicated the extent to which changes in the revenue area were greater or less than that experienced by the industry as a whole.

The questionnaire was pretested using a convenience sample of seven firms not included in the final sample. Based on personal interviews conducted at these firms, minor wording and order changes were made.

Sampling Procedure

The sampling frame consisted of industrial firms with 50 or more employees randomly selected from each of four SIC categories located in the seven-county central Florida region. The names of sampled firms were obtained from the *Florida Chamber of Commerce Industry Listing*. To ensure sample diversity and yet permit comparisons between firms of similar types, the selected SIC categories were food and kindred products (SIC 20), small equipment manufacturing (SIC 35), instruments and related products (SIC 38), and professional services (SIC 87).

A total of 210 surveys (approximately 50 per industry) were mailed to the senior marketing executive at each firm. Subjects

were sent the survey with a cover letter and stamped, self-addressed return envelope. To encourage participation, respondents were promised an executive summary of the findings, and follow-up telephone calls were placed five days after the initial mailing.

A useable set of 52 completed surveys was received from companies within an acceptable time period, for a 24.7% response rate. This rate would seem comparable to that achieved in similar studies, where the unit of analysis is the organization. The industry categories had fairly equal representation, with a low of 10 firms (SIC 20) and a high of 16 firms (SIC 87). The average firm had between 101 and 250 employees and had been in business for 15 years. Those responding had been in their current position for an average of 6.14 years and had been employed within their current industry for 11.89 years. To check for nonresponse bias, telephone calls were placed to samples of at least 10 nonresponding firms in each SIC category. No significant differences were identified on an industry basis between these firms and those responding in terms of their size (employees) or age.

Results

Reliability coefficients (Cronbach alpha) were calculated for the scale measuring the degree of entrepreneurship and its component dimensions. The estimated alphas were 0.84, 0.72, and 0.67, respectively, for the items measuring innovativeness, risk-taking, and proactiveness. Alpha for the summated scale was 0.74. These coefficients would appear to satisfy Nunnally's (1978) suggested minimum criterion. With regard to the frequency of entrepreneurship, absolute numbers of new products, services, and processes were reported. An average of 3.1 new products, 1.8 new services, and 3.4 new processes were reported.

Next, the entrepreneurial intensity (EI) measure was constructed. This entailed first computing composite mean scores for the degree component of EI. Then, the frequency component of EI was computed by averaging responses for the three questions concerning the number of new products, services, and processes introduced by a given firm. A measure of EI was then computed as an equally weighted linear combination of the degree and frequency components. Given the lack of available theoretical direction and for simplicity, degree and frequency were initially assumed to contribute equally to EI. Finally, a normalized measure of EI was computed so that scores for a given firm ranged from 0 to 1. The distribution of these scores is illustrated in Table 1 and is relatively normal, with a mean of 0.521 and a standard deviation of 0.162.

Differences among industries were next assessed for both the EI index and company performance. Based on mean scores, EI was highest in the food and kindred products industry (mean = 0.57, SD = 0.12), followed by small equipment manufacturing (mean = 0.51, SD = 0.21), instruments and related equipment (mean = 0.50, SD = 0.19), and then professional

Table 1. Frequency Distribution for EI Scores

Score	No. of Cases	%
0.00-0.10	2	3.8
0.11-0.20	1	1.9
0.21-0.30	5	9.6
0.31-0.40	5	9.6
0.41-0.50	16	30.7
0.51-0.60	9	17.3
0.61-0.70	7	13.4
0.71-0.80	5	9.6
0.81-0.90	2	3.8
0.91-1.00	0	0.0

$x = 0.52$; $SD = 0.16$

services (mean = 0.46, $SD = 0.56$). Using paired comparisons, the only significant difference was between food and kindred products and professional services ($t = 2.16$, $p < .05$). For the performance variables, the industries generally differed from one another in their rates of sales and profit growth ($t = 2.06$ to 3.71 , $p < .05$), but not employment growth or customer growth. Separately, no significant differences were found for either EI or the performance measures based on company size or age.

To test the hypothesized relationships between EI and organizational performance, six sets of regression analyses were run. The six measures of organizational performance served as the dependent variables, with EI as the independent variable. Further, for each equation, the analysis was rerun with differing weights placed on the two components of EI. Specifically, weights of 100/0, 90/10, 80/20, 70/30, 60/40, 50/50, 40/60, 30/70, 20/80, 10/90, and 0/100 were assigned, respectively, to the "degree of entrepreneurship" and the "amount of entrepreneurship" components of EI. Thus, 11 regression analyses were run for each of the six performance measures.

The results are summarized in Table 2. The direction for all the relationships was positive, as hypothesized. Whereas many of the equations were significant at the .05 level (37 out of 66), Table 1 reports the equation for each performance variable whose EI weightings produced the highest R^2 . For exam-

ple, where the percentage change in employment was the dependent variable, an EI variable in which the "degree of entrepreneurship" was assigned a 0.70 weight and the "amount of entrepreneurship" was given a 0.30 weight produced on R^2 of 0.23 and was significant at the .02 level.

It appears that weights of 0.70/0.30 or 0.80/0.20, respectively, are the most appropriate. These weights produced the highest R^2 statistics for all six performance measures. The 0.80/0.20 weighting resulted in significant results on five of the six performance measures and produced the highest R^2 on the sixth performance measure. These findings indicate that the degree of entrepreneurship plays a larger role than does the amount in explaining the impact of entrepreneurial behavior on company performance. It also suggests that a combination of degree and amount consistently outperforms EI measures in which either degree or amount is left out.

More fundamentally, EI clearly affects company performance. Significant findings ($p < .05$) were produced for five of the six measures of performance. The strongest relationships were between EI and the percentage change in the overall size of the customer base ($R^2 = 0.33$, $f = 8.21$, $p = .01$), the percentage change in the number of new customers ($R^2 = 0.26$, $f = 4.87$, $p = .04$), and the percentage change in employment ($R^2 = 0.23$, $f = 6.44$, $p = 0.02$). Only the relationship between EI and the percentage change in profits was not significant.

Conclusions and Implications

These findings lend support to the concept of entrepreneurial intensity and, specifically, the importance of a measure that reflects both the degree and amount of entrepreneurial behavior in firms. Further, both the concept and the measures presented herein have applicability to organizations of differing sizes and types. Although the sample consisted only of firms operating in business markets, both product and service businesses were included, and a diverse set of technologies was represented.

Further, the existence of a positive relationship between entrepreneurship and performance is consistent with, if not stronger than, the findings reported in earlier studies. For instance, Covin and Slevin (1989) identified a 0.39 correlation

Table 2. Regression Results for Entrepreneurial Intensity (EI) and Company Performance Based on Different EI Weightings^a

Weighting ^b		Dependent Variable	df	R ²	f-ratio	sig(f)
Degree	Amount					
0.70	0.30	% change in employment	1,21	0.23	6.44	0.02
0.70	0.30	% change in sales	1,21	0.18	4.53	0.05
0.70	0.30	change in sales compared to competitors	1,30	0.18	6.49	0.02
0.80	0.20	% change in profits	1,15	0.08	1.23	0.28
0.80	0.20	% change in number of new customers	1,14	0.26	4.87	0.04
0.80	0.20	% change in overall size of customer base	1,17	0.33	8.21	0.01

^a Regressions were run with each of six measures of organizational performance as the dependent variable and EI as the independent variable.

^b Results are based on 11 runs on each company performance variable, where the weights placed on the "degree of entrepreneurship" and "amount of entrepreneurship" components of EI were varied from 100/0, 90/10, 80/20, 70/30, 60/40, 50/50, 40/60, 30/70, 20/80, 10/90, 0/100. The equation for each performance measure having the highest R^2 is reported here.

between entrepreneurship and performance. Whereas their measure was more global, it was dependent on subjective ratings. In the current study, the correlation coefficient for EI and actual changes in sales revenue is similar (0.43) to the results of Covin and Slevin, and the coefficient for employment growth is higher (0.48). Thus, a measure that explicitly distinguishes degrees and amounts of entrepreneurship would appear to be an improvement.

Of some interest is the failure to find a relationship between EI and growth in profits. A number of explanations seem plausible. It may be that highly entrepreneurial firms are forced to heavily reinvest in product and market development on an ongoing basis, such that sales grow rapidly, but profits suffer. Cash flow problems are a common problem in rapid growth companies. Alternatively, higher degrees and frequencies of entrepreneurial events may produce higher new product failure rates, again penalizing profits. Another possibility concerns the time frames used in the study. Respondents reported on EI-related behavior and performance for the most recent fiscal period. One would expect some time lag between when the firm does something entrepreneurial and when profits are affected. The nature of this lag is complicated to the extent that entrepreneurial firms may be pursuing a variety of opportunities at a time, each of which requires a different investment base, and each having different payback expectations. The implicit assumption is that firms with higher EI scores are more entrepreneurial over time and, so, should perform better over time. Profit growth may be more complex though, affected by the complex interactions of a whole host of factors in a given year.

A number of managerial implications can be drawn from these findings. Managers should consider making EI a key activity ratio that is monitored and measured on an ongoing basis. Whereas measuring the frequency of entrepreneurial events will be relatively straightforward, assessing degrees of entrepreneurship may require that the 13-item scale used here be administered to panels of judges, including representatives from multiple levels of management, different functional areas, and some external observers (e.g., customers, middlemen, suppliers). In addition, it may be useful to develop industry standards for EI, so that managers can assess their firms' relative performance.

With such measures on hand, management can begin to set goals for both the frequency and degree of entrepreneurial behavior. For instance, the firm might set goals for the number of new-to-the-world products or services to be developed, the number of line extensions, and the number of product revision/improvements, in a given time period. Specific EI goals are likely to vary depending on level and functional area within the firm. Accordingly, there will be a need to monitor parts of the firm where EI is lower and to identify the underlying reasons.

It may also be possible to link EI to company strategy. For example, in the strategy classification framework developed by Miles and Snow (1978), firms are classified as prospectors,

analyzers, reactors, or defenders, based on their product/market focus, environmental scanning activity, and approaches to planning. One might expect firms that seek to be prospectors would have high EI scores relative to other firms, whereas defenders would have relatively low EI scores. Managers will need to ensure consistency between intended strategy and levels of EI.

The concept of entrepreneurial intensity also provides numerous opportunities for further research. For example, whereas an 0.80/0.20 weight seemed most appropriate here, the relative importance of degree and frequency when measuring EI may actually vary depending on certain strategic factors, such as the pace of technological change in an industry, the levels of competitive intensity, or the heterogeneity of market demand. Research is needed to identify the conditions under which degree versus frequency is more of a contributor to performance. It is also necessary to determine if frequency and degree contribute equally to short-term as opposed to long-term performance. It may be that frequency has more of a short-term impact, whereas degree is better able to impact long-term outcomes. Although hypothetical, such a possibility is implicit in the work of Hamel and Prahalad (1991). Using a baseball analogy of hitting many singles versus attempting to hit a home run, they emphasize the value of companies pursuing multiple smaller projects at a time over a potentially breakthrough project. A risk-reward trade-off is involved in which the former are thought to generate short- and intermediate-term profits, whereas the latter significantly impact long-term profitability.

Research might also be directed toward identifying realistic time lags between a decrease or increase in the level of entrepreneurial intensity within a firm and changes in organizational performance. This would require the development of longitudinal databases. The lag may vary depending on where the organization finds itself on the entrepreneurial intensity "continuum," as well as on the relative emphasis placed on the degree versus the frequency components of EI.

Research should also be directed toward establishing the types and amounts of costs associated with EI. Resource requirements are likely to vary considerably at different levels of EI within a given industry, and the shape of the cost curve should be estimated. A related question concerns the failures that result from EI. Product and service failure rates are likely to be positively associated with both the frequency and degree components of EI, and research is needed to determine which is greater and why.

Another fertile area for researchers involves the role of EI in determining environment-strategy-structure relationships. It would seem that EI serves a potentially critical role in integrating these three variables. As a case in point, firms experiencing higher levels of environmental turbulence may require higher levels of EI to survive and grow, which in turn generates corporate strategies that are more aggressive (e.g., prospecting, acquisition) as well as structures that are more flexible, decentralized, and open.

Finally, the robustness of the EI concept and the EI measures presented here must be established. Whereas a wide variety of organizational contexts should be explored, it might be especially worthwhile to examine the application of EI to nonprofit and governmental organizations. Progress in these areas is likely to require additional work in defining what constitutes a new product, service, or process and in establishing the strategically meaningful measures of performance.

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