

## STRATEGIC LEADERSHIP AND EXECUTIVE INNOVATION INFLUENCE: AN INTERNATIONAL MULTI-CLUSTER COMPARATIVE STUDY

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*This study investigates the relationship of strategic leadership behaviors with executive innovation influence and the moderating effects of top management team (TMT)'s tenure heterogeneity and social culture on that relationship. Using survey data from six countries comprising three social cultures, strategic leadership behaviors were found to have a strong positive relationship with executive influence on both product-market and administrative innovations. In addition, TMT tenure heterogeneity moderated the relationship of strategic leadership behaviors with executive innovation influence for both types of innovation, while social culture moderated that relationship only in the case of administrative innovation. Copyright © 2005 John Wiley & Sons, Ltd.*

Strategic leadership and innovation strategy are crucial for achieving and maintaining strategic competitiveness in the 21st century (Ireland and Hitt, 1999). Strategic leaders have been repeatedly recognized for their critical role in recognizing opportunities and making decisions that affect innovation processes (Drucker, 1985; Finkelstein and Hambrick, 1996; Quinn, 1985). Strategic leaders' opportunity recognition and exploitation add considerable business value (Yukl, 1998).

The interactions between leadership and innovation variables have attracted increasing attention in empirical studies (e.g., Halbesleben *et al.*, 2003; Kets De Vries, 1996; Sharma and Rai, 2003; Tierney, Farmer, and Graen, 1999; West *et al.*, 2003), but most of these studies have not focused

on actual strategic leaders (Antonakis and House, 2002; Yukl, 1999).

Nonetheless, there has been progress in exploring the linkage between strategic leaders' demographic characteristics and innovation strategy within the upper echelons perspective (e.g., Bantel and Jackson, 1989; Enns, Huff, and Golden, 2003; Thong and Yap, 1995), but these studies have failed to directly study actual strategic leadership behaviors and their effects on organizational innovation process (Cannella and Monroe, 1997).

Furthermore, Papadakis, Lioukas, and Chambers (1998) and others have emphasized that strategic decisions and, by extension, organizational innovation are substantially influenced by top managers and the external environmental context. For example, recent research indicates that both leadership behaviors and innovation processes are affected by the socio-cultural context (Elenkov, 2002; Schneider and Barsoux, 2003). However, the lack of in-depth knowledge about moderating effects of contextual variables on the relationship of leadership with strategically important organizational

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outcomes constitutes a major weakness of leadership research (Antonakis, Avolio, and Sivasubramaniam, 2003).

Therefore, this study attempts to open up the 'black box' within the top management team dynamics to better understand how strategic leaders affect innovation processes in organizations. In this study, we define strategic leadership as *the process of forming a vision for the future, communicating it to subordinates, stimulating and motivating followers, and engaging in strategy-supportive exchanges with peers and subordinates*.

The scope of the study includes 1095 respondents from 223 companies located in six countries within three different socio-cultural clusters: Anglo, Germanic, and Eastern-Slavic. The main purpose of this study is to investigate if and how strategic leadership behaviors are related to a key aspect of organizational innovation, specifically executive influence on innovation across multiple social clusters.

In particular, three research questions are addressed in this study: (1) Do strategic leadership behaviors affect executive influence on innovations, after controlling for other factors known to affect organizational innovation? (2) Given our increasingly globalized economy, does social culture affect the relationship of strategic leadership with executive innovation influence? (3) Given the importance of top management teams, does TMT tenure heterogeneity influence this relationship? Figure 1 includes the theoretical model used to explore these three questions.

## THEORETICAL BACKGROUND

### Innovation research

Innovation research during the 1980s and early 1990s established that innovation strategy is essentially associated with business strategy (Burgelman, Kosnik, and Van den Poel, 1988; Maidique and Frevola, 1988; Zahra and Covin, 1993). Therefore, basic types of innovation are inherently related with the main types of strategic changes. Based on Miles *et al.*'s (1978) conceptualization, the most fundamental strategic decisions executives make concern changes in product-market domains and construct mechanisms (structures and processes) of their organizations. This conceptual development has been followed by a series of empirical studies (e.g., Damanpour, 1987; Hoffman and Hegarty, 1993) providing further support to the typology of product-market and administrative innovations. For example, Hoffman and Hegarty (1993) have used Principal Components Analysis (PCA) corroborating this typology.

Research on innovation strategy has also paid increasing attention to the antecedents of innovation. A number of studies have indicated that environmental factors, organizational characteristics, and managerial-level factors, including leadership, represent the main antecedents of organizational innovation (Damanpour, 1991; Hadjimanolis, 2000; Wolfe, 1994).

Focusing on the impact of leadership on innovation strategy, several theories emerged during the 1990s—e.g., the componential theory of Amabile

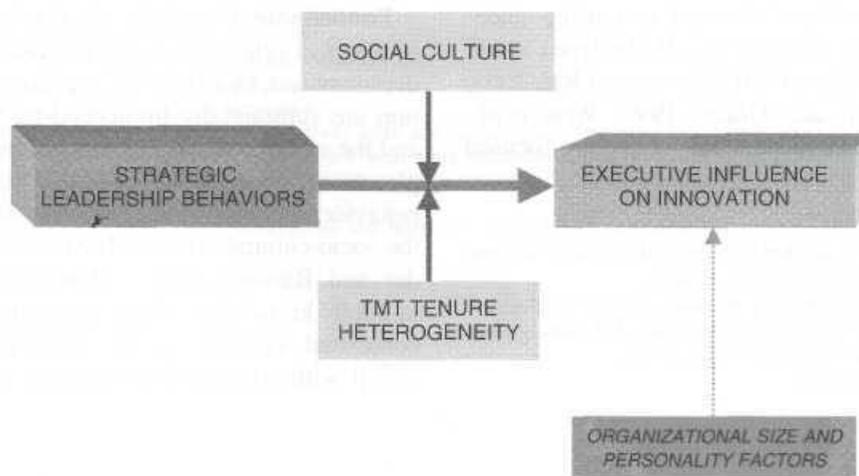


Figure 1. Strategic leadership behaviors and executive innovation influence

(1997) and the interactionist theory of Woodman, Sawyer, and Griffin (1993). Those theories offered specific conceptualizations of plausible means for leadership to influence innovation variables. For example, the componential theory has provided a model whereby 'positive' leadership behaviors affect subordinate perceptions of leader support, which in turn stimulates creativity, a key factor in the innovation process (Burgelman *et al.*, 1988).

### Strategic leadership

A great deal of the attention of early leadership researchers was focused on what lower-level managers did, or should do, as they attempted to provide guidance, support, and feedback to subordinates (Yukl, 1998). However, in the 1970s and 1980s there was considerable disagreement concerning the impact of leadership on performance, as skeptics from the field of organizational sociology contended that leadership behaviors influenced organizational performance less than did environmental or organizational factors (e.g., Hannan and Freeman, 1977; Salancik and Pfeffer, 1977), while proponents argued that leaders had a major impact on the performance of organizations (e.g., Child, 1972; Day and Lord, 1988; Thomas, 1988).

Nonetheless, leadership skeptics pointed to situations in which top managers had little influence on organizational outcomes, due to constraints imposed by internal coalitions, organizational histories, external stakeholders, and variable economic conditions. Meindl, Ehrlich, and Dukerich (1985) even argued that management scholars had a 'romance' with the notion of leadership when the empirical evidence simply didn't support this belief.

In response to this skepticism about the impact of leaders, three streams of leadership research have emerged. First, Hambrick articulated an ambitious research agenda set out to provide stronger theoretical and empirical support for the impact of strategic leadership within the strategic management literature (Hambrick and Mason, 1984). He called this the 'upper echelons perspective' and it has had a profound impact on our understanding of organizational processes and outcomes (Finkelstein and Hambrick, 1996).

Bowing to leadership skeptics, the upper echelons research has also recognized that sometimes top managers matter a great deal to organizational outcomes, sometimes not at all, and

often are somewhere in between, depending on how much discretion—or latitude of action—is afforded to them (e.g., Hambrick and Finkelstein, 1987). Discretion exists when there is an absence of constraints to decision making and when there are many plausible alternative courses of strategic action. With more discretion, top managers are more likely to realize their original intentions and vice versa.

While the upper echelons perspective expanded our understanding of strategic leadership, it has been criticized for not directly studying actual strategic leadership behavior (Cannella and Monroe, 1997). Instead, it has used demographic proxies and inferred strategic leadership behaviors. Most of these studies have been also conducted in Western, developed (predominantly the United States) economies. As such, it is unknown and relatively unexplored just how strategic leadership behaviors vary throughout the world. In sum, the upper echelons perspective has provided good theoretical and some empirical arguments for the central role of strategic leadership, but our understanding is still lacking in significant ways.

In parallel with the upper echelons perspective, other leadership studies have made important advances towards developing a deeper understanding of leadership factors and their effects within the organizational behavior literature. This represents the second stream of leadership research explored in this study. In his seminal work on leadership, Burns (1978) introduced the concepts of transactional and transformational leadership styles. While transactional leaders cater to their followers' immediate self-interests, transformational leaders uplift the moral, motivation, and morals of their followers. A considerable amount of research has been conducted since that time supporting the power and utility of these two styles of leadership (Avolio, 1999; Bass, 1985, 1998; Cannella and Monroe, 1997; Hunt, 1991; Podsakoff, MacKenzie, and Bommer, 1996; Shamir, House, and Arthur, 1993; Waldman *et al.*, 2001; Yukl, 1998).

Transactional leadership refers to the exchange relationship between the leader and the follower. There are three forms by which transactional leadership manifests itself: (1) contingent reward behavior where the leader clarifies for the follower what the follower needs to do to be rewarded for the effort; (2) management by exception behavior,

where the leader monitors the followers' performance and takes remedial action if the follower fails to meet expected standards; and (3) *laissez-faire* behavior, where the leader avoids taking any action at all times (Bass, 1998).

Transformational leadership refers to the leader moving the follower beyond immediate self-interests. There are four forms by which transformational leadership manifests itself: (1) Managers exercise idealized, or charismatic, influence by becoming role models for their followers (Shamir *et al.*, 1993). Followers seek to identify with charismatic leaders and want to emulate them. Such leaders are endowed by their followers as having greatly superior capabilities and other important personal characteristics (e.g., persistence and determination). (2) Leaders who practice inspirational motivation behave in ways that motivate and inspire those around them by providing meaning and challenge to their work. Such leaders communicate clear and challenging expectations that followers want to meet. (3) Leaders who engage in intellectual stimulation provide support to their followers' efforts to be creative. Such leaders question existing assumptions and approaches. They reframe issues important to their organizations in new ways. (4) Leaders exhibit individual consideration by providing followers with support, mentoring, and coaching. Such leaders pay special attention to each individual follower's needs for personal achievement and growth. New learning opportunities are created along with a supportive climate. Leaders demonstrate acceptance of individual differences in terms of needs and desires. Leaders' interactions with each of their followers are personalized (Bass, 1998).

The distinction between transactional and transformational leadership does not mean that the two sets of behaviors are unrelated. The two leadership styles differ in relation to the process by which the leader motivates subordinates as well as in the types of goals set. Nonetheless, both sets of behaviors have been found to influence performance, except for *laissez-faire* leadership behaviors. While conceptually distinct, transformational and transactional leadership may both be utilized by the same manager in different amounts and intensities while also complementing each other (Bass, 1985, 1998; Howell and Avolio, 1993; Waldman *et al.*, 2001). This stream of research is known as the 'full range of leadership' perspective (Avolio, 1999).

While this full-range perspective on transactional and transformational leadership behaviors has led to many interesting and intuitively appealing insights, much of this literature has focused on students and/or lower-level leaders (Antonakis and House, 2002; Yukl, 1999). Also, the apparent influence of social culture on the effects of leadership behaviors has rarely been explored, and when they have there have been contradictory results (Elenkov, 1998; Schneider and Barsoux, 2003). Finally, most of this research has focused on the individual level of analysis and has not explored how leadership factors relate to organizational-level processes and outcomes (Waldman *et al.*, 2001). As such, the power and implications of this perspective need to be refined and extended.

A third stream of leadership research emphasizes the importance of vision and its effects on organizational processes and outcomes (Judge, 1999; Larwood *et al.*, 1995; Westley and Mintzberg, 1989). Strategic management researchers have stressed the crucial role of vision by defining leadership itself as a management activity through which the leader secures the cooperation of others in pursuit of *a vision* (e.g., Hambrick, 1989; Wright, Kroll, and Parnell, 1998). Leadership researchers have also argued that corporate managers who want to change the status quo should formulate and articulate a shared and inspiring vision of the future (Bennis and Nanus, 1985). Visionary leadership has gradually emerged as a crucially important, but relatively underemphasized, aspect of leadership research (Baum, Locke, and Kirkpatrick, 1998).

Visionary leadership refers to the ability to create and articulate a realistic, credible, and attractive vision of the future for an organization or organizational unit (Nanus, 1992; Sashkin, 1988). It originates from intuitive perception and calculative analysis of the characteristics of the present situation, and it directs attention towards achieving desirable, but realistic, future outcomes. Researchers emphasize the interaction of personal experiences and environmental characteristics in creating and articulating a compelling vision (Cannella and Monroe, 1997).

Visionary leadership studies underscore that effective top managers are able to develop and communicate to followers some clear and compelling imagery, which recognizes and draws on traditions and that offers their organizations innovative ways to improve by bringing energy and commitment to

the workplace (Nutt and Backoff, 1997). Visionary leaders are also able to articulate attractive visions, which focus attention on possibilities that are inspirational, unique, and attainable, and offer a new order that can result in organizational distinction. The imagery communicated to followers is more effective if it is challenging and powerful, but also clear and realistic. Alternatively, a vision is believed to be likely to fail if it doesn't convey a view of the future that is perceived to be clearly and convincingly better for the organization and its members.

The major problem with the visionary perspective is that most of the empirical work in this area has been anecdotal in nature. Furthermore, it is unknown if visionary leadership has the same or a different impact on organizational processes and outcomes, like its conceptual cousin—transformational leadership behaviors. As such, systematic research is needed to better understand the role and impact of strategic leadership vision.

In sum, there are three streams of leadership research that assert that strategic leadership behaviors should have a systematic impact on strategic processes and outcomes. The three streams are the upper echelons perspective, the full range of leadership perspective, and the visionary leadership perspective. Each of these perspectives is explored further for their influence on the innovation process within corporations across many different social cultures and national boundaries to better understand their impact above and beyond previously established determinants of organizational innovation.

## RESEARCH HYPOTHESES

### Strategic leadership behaviors and innovation influence

More than two and a half decades ago, Cooper and Schendel (1976) showed that executive decisions and ensuing organizational actions regarding innovation had important strategic implications. Both theoretical discussions and empirical investigations have indicated that organizational acceptance and promotion of innovation require top management support and involvement (e.g., Drucker, 1985; Ireland and Hitt, 1999; Jassawalla and Sashittal, 2000). A few studies (e.g., Enns *et al.*, 2003; Hansen and Kahnweiler, 1997;

Papadakis and Bourantas, 1998; Thong and Yap, 1995) have shown that members of the top management team (TMT) play a critical role in innovation processes in organizations as well.

Organizational innovation is a difficult process. It requires the examination of hidden assumptions, unlearning previous behaviors, and overcoming considerable obstacles (Senge, 1990). The innovation process tends to exacerbate conflicts between R&D, engineering, marketing, and manufacturing departments, and managers at the operational level have no clear idea at the outset which innovation project may be viable in the corporation as a whole (Burgelman, 1984, Henry, 2001). Often, these conflicts are likely to slow down and halt the innovation process, unless there is an active intervention by strategic leaders.

Furthermore, previous research has demonstrated that there are two primary, but distinct ways that innovation occurs within organizations. One source of innovation occurs in the development of new product-markets. Another source of innovation occurs in the development of new and more efficient administrative mechanisms: new systems for strategic planning and control, new systems for training, development or promoting managers, and new departments or managerial positions for improving intraorganizational coordination (Hoffman and Hegarty, 1993).

There are a number of ways by which strategic leaders can influence organizational innovation processes. By virtue of their prominent position within the firm, strategic leaders are more capable of seeing environmental trends that affect the organization's future and providing more effective communication to the rest of the organization, and this leads to higher levels of organizational innovation (Papadakis and Bourantas, 1998). A second potential way that effective strategic leaders can positively influence organizational innovation is through the creation of an exciting vision of the future about successfully conducted innovation activity (Hansen and Kahnweiler, 1997). A third potential way that strategic leaders can influence organizational innovation is through the selection, promotion, and ongoing support of change champions (Kanter, 1985). A fourth potential way is for strategic leaders to create an organizational culture in which productive work is done, productive workers are rewarded, and productive relationships are built and enhanced (Avolio, 1999; Podsakoff *et al.*, 1996; Shamir *et al.*, 1993).

There is some limited, but encouraging empirical support for the notion that leadership behaviors influence organizational innovation processes. For example, transformational leadership behaviors have been found to have strong positive effects on the levels of innovation, risk taking, and creativity within business units (e.g., Howell and Avolio, 1993). Similarly, leadership behaviors like serving as a good work model (i.e., exercising charismatic influence), being open to new ideas (i.e., intellectual stimulation), or providing constructive feedback and valuing individual contributions (i.e., contingent reward) have also been reported to positively affect subordinate perceptions of leader support, which in turn stimulates creativity and innovativeness (Amabile, 1997).

Leaders' behaviors and relationships with followers have also been found to be associated with enhanced creativity (Tierney *et al.*, 1999). West *et al.* (2003) have concluded that without an identifiable leader organizational innovation suffers. Moreover, the reported impact of leadership on creativity was sizable, as the exhibited standardized regression coefficients were above 0.50 (West *et al.*, 2003). Therefore, we propose that strategic leadership behaviors are responsible for fostering innovation activity related to both product-market innovations (PM) and administrative innovations (ADM). In formal terms:

*Hypothesis 1a: Strategic leadership behaviors positively affect executive influence on product-market innovations.*

*Hypothesis 1b: Strategic leadership behaviors positively affect executive influence on administrative innovations.*

### **Moderators of the strategic leadership-innovation influence relationship**

#### *TMT tenure heterogeneity*

A number of researchers have suggested that TMT demographic characteristics interact in a complex way with a host of other leadership factors in shaping the processes and outcomes of executive decisions. TMT tenure heterogeneity, in particular, has been shown to influence interpersonal dynamics of strategic issue processing (Jackson, 1992), international diversification strategy (Tihanyi *et al.*, 2000), corporate strategic change (Wiersema and

Bantel, 1992), firms' competitive moves (Hambrick and Cho, 1996), and comprehensiveness of strategic planning (Bantel, 1993). Another recent study has provided empirical evidence indicating that TMT heterogeneity moderates the effectiveness of innovation strategy (Lyon and Ferrier, 2002).

When the TMT possesses a relatively diverse range of tenures, it is likely that they collectively view the world in very different ways and that this leads to diversity of behaviors. Generally, researchers have argued that team heterogeneity is negatively related to social integration and communication (e.g., Smith *et al.*, 1994; Wiersema and Bantel, 1992). In addition, Pitcher and Smith (2001) recently found that more heterogeneous TMTs have more cognitive diversity operating within these teams. This suggests that leadership effectiveness is more critical for diverse TMTs than for relatively homogeneous TMTs, and that tenure heterogeneity may moderate the leadership behavior-innovation influence process. This theory and research suggest the following two moderation hypotheses:

*Hypothesis 2a: The relationship of strategic leadership behaviors to executive influence on product-market innovations is moderated by TMT tenure heterogeneity.*

*Hypothesis 2b: The relationship of strategic leadership behaviors to executive influence on administrative innovations is moderated by TMT tenure heterogeneity.*

#### *Social culture*

Strategic management research has recognized that the concurrent investigation of factors at environmental/institutional, organizational, and managerial levels is a critical prerequisite to understand the innate nature of strategic choices and, by extension, strategic leadership (Cannella and Monroe, 1997). In a recent study, Antonakis *et al.* (2003) have suggested that socio-cultural context may affect the relationship of leadership with strategically important organizational outcomes. Shane (1992) makes an important observation: why is it that some social cultures are more innovative than others?

In general, researchers from various perspectives have recognized that societies have evolved into

groups of people with distinguishable characteristics that set them apart from other groups of people (House *et al.*, 2002). Each one of these distinct groups of people represents a different social culture. A social culture can be defined as a system of values, norms, attitudes, rituals, and elements of mental programming that are common for members of a social group (Hofstede, 2001; Schneider and Barsoux, 2003). Social cultures vary along identifiable dimensions that reflect value orientations (e.g., Hofstede, 2001). Similarly, the norms for behavior in society differ from one culture to another. Empirical evidence indicates that cultural norms exhibit both resilience (Holt, Ralston, and Terpstra, 1994) and susceptibility to change (Ralston *et al.*, 1999). Recognizing these complex characteristics of social culture is an important step in understanding its importance for leadership behaviors and innovation processes. In this study, we focus on socio-cultural clusters that transcend national boundaries to better capture the role of socio-cultural similarities and differences (Ronen and Shenkar, 1985; Schneider and Barsoux, 2003).

Innovation processes within organizations have been shown to be affected by the socio-cultural context (Elenkov, 2002; Schneider and Barsoux, 2003; Shane, 1992). Leadership has also been shown to be affected by social culture (Ardichvili and Kuchinke, 2002; Chong and Park, 2003; Hofstede, 2001; Judge, 2001). Most recently, researchers have started paying increasing attention to the interactions among leadership, innovation, and social culture (Hayton, George, and Zahra, 2002; Hadjimanolis, 2000; Thomas and Mueller, 2000). Papadakis *et al.* (1998) have emphasized that strategic decisions, and by extension innovations, are influenced by both top managers and external environmental context, including social culture (Hadjimanolis, 2000). Moreover, national (social) culture has been conceptualized as a contextual variable likely to moderate the effects of leadership (Antonakis *et al.*, 2003).

In brief, prior research has demonstrated that social culture may influence strategic processes in their relation with certain types of innovation. However, not much has been discovered as to the specific effects of social culture on the linkage between strategic leadership and innovation processes. This leads to the following exploratory hypotheses:

*Hypothesis 3a: The relationship of strategic leadership behaviors with executive influence on product-market innovation is moderated by social culture.*

*Hypothesis 3b: The relationship of strategic leadership behaviors with executive influence on administrative innovations is moderated by social culture.*

## RESEARCH METHODS

### Research design

The data for the current study were collected through a large and ongoing multinational research study. At the first stage, public sources were used to arrive at a cluster sample, which consisted of 290 single-business firms or business units located in six countries: United States (southeastern United States), United Kingdom (England), Germany, Austria, Russia, and the Ukraine. The titular heads (presidents, managing directors, or CEOs) of each one of the firms or business units included in the initial sample were requested to participate in the study and, upon agreement, to respond to the Top Executive Survey (TES) and to provide contact information for up to five more members of their top management team. The TES included items measuring executive tenure, personality traits, as well as an open-ended item intended to investigate vision development, following the methodology introduced by Baum *et al.* (1998). The presidents, managing directors, or CEOs of 227 firms or business units formally agreed to participate and returned their responses to the TES together with the requested contact information.

At the next stage, 1340 surveys were mailed out to the previously identified managers. Those surveys had two versions: the first one, designed for titular heads, included only items measuring executive innovation influence, but did not include items measuring strategic leadership behaviors; and the second one, prepared for the other members of the top management teams, included items from Multifactor Leadership Questionnaire (MLQ)—Form 6S, but did not include items measuring executive innovation influence. The second group of respondents—the 'subordinate' members of TMTs—were also asked to complete the TES

(provided separately from the MLQ). This way, the survey design resolved one of the most serious problems associated with leadership research: measuring both leadership behaviors and the effects of leadership by the same instrument. All questionnaires were translated into German and Russian because these languages represented the working languages of the surveyed managers from the non-English clusters. Comparability among the translated versions was verified using procedures tried and endorsed in prior research.

A total of 1095 top managers (223 presidents, managing directors, or CEOs, and 872 subordinates, who were also members of the respective TMTs and were directly involved in making strategic decisions) provided data for the current study. As such, our survey data constituted an 81.7 percent usable response rate. The 223 firms and business units were located in the following countries: 47 in the United States, 35 in the United Kingdom, 43 in Germany, 28 in Austria, 47 in Russia, and 23 in the Ukraine. These were either single-business firms (58%) or divisions (42%) of diversified companies engaged in the manufacture of (1) computers, (2) industrial electronics, (3) consumer electronics, (4) electronic components, (5) communication equipment, (6) apparel, (7) food products, or (8) chemicals.

We conducted a series of ANOVAs using industry affiliation, age group, and level of education of the respondents as predictor variables and executive influence on, respectively, product-market and administrative innovations as dependent variables, in order to examine the potential generalizability of the results. In particular, we evaluated the information about the main product(s) of the business units in our study, and we found that each of them can be placed in one of the eight industry categories (listed above) at the 3-digit North American Industry Classification System (NAICS) level. None of the six ANOVAs (two for industry affiliation, two for age group, and two for level of education) showed any significant difference between the groups of respondents.

## Variables and measures

### *Strategic leadership behaviors*

These behaviors were measured by using the methodology presented by Baum *et al.* (1998) in conjunction with Bass and Avolio's (1992) Multifactor Leadership Questionnaire (MLQ)—Form

6S. The MLQ literature has been found to be one of the best instruments and most utilized set of measures of all leadership studies (Lowe and Galen, 1996).

This MLQ instrument includes 21 items measuring only leadership behaviors. These items can be divided into seven factors: Idealized Influence, Inspirational Motivation, Intellectual Stimulation, Individual Consideration, Contingent Reward, Management-by-Exception, and Laissez-Faire. The first four factors were included in the Transformational Leadership set of behaviors. Contingent Reward and Management-by-Exception factors represented the Transactional Leadership set of behaviors. Laissez-Faire, measuring whether respondents require little of others, are content to let things ride, and let others do their own thing, forms a set of behaviors of its own. As this leadership behavior defies the very essence of strategic leadership, we have not included Laissez-Faire in the list of strategic leadership behaviors. Laissez-Faire was, however, used as a control variable for the purposes of statistical analysis.

Cronbach's alphas, measuring reliability, of the MLQ-Form 6S scales were (a) Idealized/Charismatic Influence ( $\alpha = 0.78$ ), (b) Inspirational Motivation ( $\alpha = 0.81$ ), (c) Intellectual Stimulation ( $\alpha = 0.75$ ), (d) Individual Consideration ( $\alpha = 0.74$ ), (e) Contingent Reward ( $\alpha = 0.73$ ), and (f) Management-by-Exception ( $\alpha = 0.72$ ).

Vision development, representing an additional transformational behavior, was measured by focusing on the strategic leader's vision possessing essential attributes. Hence, we concentrated our attention on seven attributes—clarity, brevity, challenge, abstractiveness, future orientation, stability, and desirability or ability to inspire—which were investigated, and found to be significantly related to, organizational effectiveness in one of the most comprehensive empirical studies of visionary leadership (Baum *et al.*, 1998). For our data, the transformational-visionary leadership behavior showed satisfactory reliability ( $\alpha = 0.76$ ).

### *TMT Tenure Heterogeneity*

TMT Tenure Heterogeneity was measured by using the following formula (Finkelstein and Hambrick, 1996):

$$\text{TMT Ten Het} = \text{OTMT/MTMT}$$

where TMT is the standard deviation of executives' respective job tenures on the top management team and  $u_{TMT}$  is the mean of executives' respective tenures on the same top management team. The higher the resulting score, the greater TMT Tenure Heterogeneity. These data were obtained from self-reported job tenure information provided by the respondents.

### *Social Culture*

This moderator variable was operationalized by using a nominal variable within the three cultural clusters (i.e., Anglo, Germanic, and Eastern Slavic). These clusters were converted to three dichotomous variables through dummy coding of 0 or 1 for use in regression analyses (Cohen and Cohen, 1983). Anglo culture was represented by a 0 score on the other two cultures. These data were obtained from self-reports by the respondents.

### *Executive influence on innovation*

There are two dependent variables in this study: executive influence on Product-Market (PM) Innovations and executive influence on Administrative (ADM) Innovations. We measured each construct through the perceptions of the titular heads of each organization regarding the extent of executive influence on recent or shortly anticipated outcomes of the innovation process. This approach reflects the presence of a time lag between when managers take actions on innovation and when the results of the respective innovation process materialize (Burgelman, 1984; Henry, 2001). Specifically, the participating titular heads (the presidents, managing directors, or CEOs of each organizational unit included in the study) rated the amount of influence (1 = no influence to 5 = a dominant influence) that their TMT had on a list of specific innovations.

Following the pioneering approach of Jemison (1981) using a multi-item instrument to measure managerial influence on strategic decision making, the executive influence on innovation has been assessed by using two multi-item scales. We took advantage of Hoffman and Hegarty's (1993) measures for Product-Market Innovation and Administrative Innovation, which were conceptually based on strategic typology developed by

Miles *et al.* (1978) and supported through principal components analysis (PCA). In order to examine the content validity of those measures, we performed confirmatory factor analysis (CFA) with LISREL VIII (Joreskog and Sorbom, 1996) using a sample of 138 managers working for companies in the southeastern United States. The results from CFA provided evidence for content validity of the measures for executive influence on innovation.

The measure for executive influence on PM included three items: (1) new products or services (for existing markets); (2) new markets (for existing products/services); and (3) new products or services for new markets. The measure for executive influence on ADM also comprised three items: (1) new planning and control system; (2) new department or permanent position; and (3) new system for training, development, or promoting managers.

Next, we used CFA to investigate the construct validity of those scale measures. For this purpose, the average variance ( $R^2$ ) extracted by all the items loading on PM and ADM was compared to the critical 0.50 threshold (Carr, 2002). The average  $R^2$  for both PM (0.57) and ADM (0.60) exceeded the minimum threshold, thus providing evidence for convergent validity of the respective measures. In a test for discriminant validity, the squared correlation between PM and ADM was compared to the average  $R^2$  for PM and the average  $R^2$  for ADM. The squared correlation between PM and ADM (0.41) was smaller than the average  $R^2$  in both cases, thus providing evidence for discriminant validity of the measures for executive influence on PM and executive influence on ADM (Carr, 2002). The reliability (Cronbach's alpha) of the scales measuring executive influence on PM and ADM was 0.78 and 0.80, respectively.

### *Control variables*

Innovation research has indicated that organizational size (Damanpour, 1991) can affect innovation processes. Organizational size was operationalized as the natural logarithm of the number of employees, a standard measure in management research. These data were obtained from Top Executive Surveys returned by the titular heads of the participating organizations.

Personality variables have also been shown to influence creativity, which in turn has been

shown to be related to organizational innovation (Ormel and Rijdsdijk, 2000; Reilly, Lynn, and Aronson, 2002; Yellen, Winniford, and Sanford, 1995). The 'Big Five' model of personality has become widely accepted as a measure of psychological profile of people in different countries, occupations, and socio-cultural contexts (Judge and Bono, 2000). All traits included in this model—extraversion, openness to experience, agreeableness, conscientiousness, and neuroticism—have been shown to correlate with leadership behaviors (Judge and Bono, 2000; Judge *et al.*, 2002). The Big Five model of personality was operationalized by using NEO Personality Inventory-Revised (Costa and McCrae, 1992). In this study, the titular heads of the business units provided self-assessment of their own personality traits.

## DATA ANALYSIS

Table 1 provides descriptive statistics and pairwise correlations for all independent and dependent variables. Among the set of independent variables, the largest correlation was found between idealized influence and inspirational motivation ( $r = 0.52$ ,  $p < 0.001$ ), followed by the correlation between inspirational motivation and vision development ( $r = 0.37$ ,  $p < 0.001$ ) and the association between intellectual stimulation and vision development ( $r = 0.35$ ,  $p < 0.001$ ). Other leadership studies (e.g., Avolio, Bass, and Jung, 1999) also indicated the presence of high intercorrelations among leadership factors, so our data are not particularly worrisome. Addressing the issue of multicollinearity on a theoretical level, Bass (1998) has argued that the various leadership factors should be highly interrelated. Antonakis *et al.* (2003) provided empirical support for that argument using CFA, in order to verify the discriminant validity of each of the leadership factors.

To more systematically investigate for overall multicollinearity, we performed multiple regression analyses, with each of those variables in turn serving as a dependent variable. Following the approach advocated by Tabachnick and Fidell (1983), squared multiple correlations (SMCs) between each of the so designated dependent variables and the combination of all of the other independent variables included in Table 1 were obtained

through the above-mentioned analyses. We found that none of the SMCs were dangerously close to 1. Specifically, the largest SMC among the variables for executive influence on PM was 0.74 and for executive influence on ADM was 0.77. These values are not particularly worrisome, according to Tabachnick and Fidell (1983). Hence, it was concluded that multicollinearity was not a problem in our data set.

To test for normality, linearity, and homoscedasticity of residuals, initial run with standard multiple regressions was performed. Those analyses yielded  $R = 0.59$ ,  $p < 0.001$  for PM innovations and  $R = 0.68$ ,  $p < 0.001$  for ADM innovations. The shape of each of the scatter plots of residuals against predicted dependent variable scores satisfied the rectangularity requirement. Multivariate outliers were tested among the independent variables using BMDP4M. Five outliers were identified and deleted from the analysis following the procedure described by Tabachnick and Fidell (1983).

## Strategic leadership behaviors and influence on innovations

Hierarchical regressions were performed to determine if additional information regarding strategic leadership improved predictions of executive influence on, respectively, PM and ADM beyond that afforded by social culture, organizational size, TMT tenure heterogeneity, and the personality traits of the strategic leader. The overall results for PM strongly supported Hypothesis 1a. Specifically, all seven measures of strategic leadership behavior were significantly related to PM innovation influence. Moreover, the explained variance for strategic leadership behaviors was significant ( $AR^2 = 0.47$ ;  $p < 0.001$ ).

Hypothesis 1b, which investigated the effect of strategic leadership behaviors on ADM, also received empirical support from our data, as only management-by-exception was not a significant predictor. However, all other strategic leadership behaviors were significant and positive predictors, as indicated by their Bs (refer to Table 2). Notably, strategic leadership behaviors explained the largest change in variance in ADM ( $\Delta R^2 = 0.52$ ,  $p < 0.001$ ), followed at a great distance by CEO personality characteristics ( $AR^2 = 0.10$ ,  $p <$

Table 1. Descriptive statistics and correlation matrix ( $N = 223$ )

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
1. Influence on PM Innovation	2.61	0.68	—																	
2. Influence on ADM Innovation	2.79	0.72	0.64***	—																
3. Social Culture	0.45	0.50	0.20*	0.22*	—															
4. Organizational Size	0.44	0.41	0.07	0.08	0.03	—														
5. TMT Tenure Heterogeneity	0.56	0.26	0.18	0.20*	0.11	0.12	—													
6. Neuroticism	3.07	0.49	-0.21*	-0.26**	0.14	0.03	0.14	—												
7. Extraversion	4.98	0.53	0.20*	0.22*	0.25*	0.06	0.22*	-0.25*	—											
8. Openness to Experience	4.87	0.49	0.21*	0.20*	0.18	0.03	0.10	0.12	0.33**	—										
9. Agreeableness	4.69	0.51	0.19*	0.23*	0.26**	0.09	0.04	0.28**	0.25*	0.29**	—									
10. Conscientiousness	5.02	0.56	0.22*	0.24*	0.27**	0.03	0.08	-0.31**	0.20*	0.08	0.19*	—								
11. Contingent Reward	2.15	0.78	0.20*	0.22*	0.24*	-0.06	-0.07	-0.14	0.10	0.12	0.23*	0.10	—							
12. Management by Exception	1.73	0.70	0.19*	0.14	0.17	0.03	-0.11	0.10	0.02	0.03	0.05	0.21*	0.10*	—						
13. Vision Development	2.97	0.52	0.22*	0.27**	0.21*	0.14	0.18	-0.22*	0.26*	0.27**	0.21*	0.22*	0.29**	0.05	—					
14. Idealized Influence	2.19	0.81	0.17	0.21*	0.23*	0.06	0.14	-0.20*	0.21*	0.18	0.30**	0.10	0.22*	0.21*	0.24*	—				
15. Inspiration Motivation	2.81	0.73	0.24*	0.22*	0.30**	0.03	-0.08	-0.30*	0.28**	0.22*	0.34**	0.12	0.23*	0.11	0.37***	0.52***	—			
16. Individual Consideration	2.41	0.82	0.21*	0.24*	0.22*	-0.18	0.04	-0.04	0.20*	0.25*	0.31**	0.14	0.19*	0.05	0.31**	0.22*	0.31**	—		
17. Intellectual Stimulation	2.69	0.78	0.22*	0.25*	0.26**	0.11	0.22	-0.09	0.24*	0.23*	0.29**	0.09	0.18	0.06	0.35***	0.19*	0.34**	0.23*	—	

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

Table 2. Result of hierarchical regression analyses for executive influence on product/market and administrative innovation ( $N = 223$ )

	Predictor variables	Product-market innovations			Administrative innovation		
		$\beta$	$\Delta R^2$	$R^2$	$\beta$	$\Delta R^2$	$R^2$
I.	<i>Social Culture</i>		0.05*	0.05		0.06*	0.06
	Germanic Culture	0.11*			0.12*		
	Eastern Slavic Culture	0.09			0.08		
II.	<i>Organization Size</i>		0.02	0.07		0.02	0.08
III.	<i>TMT Tenure Heterogeneity</i>		0.04*	0.11		0.06*	0.14
IV.	<i>Personality Characteristics</i>		0.08*	0.19		0.10**	0.24
	Neuroticism	-0.19*			-0.25**		
	Extraversion	0.22**			0.23**		
	Openness to Experience	0.20*			0.20*		
	Agreeableness	0.17*			0.21**		
	Conscientiousness	-0.06			0.07		
V.	<i>Strategic Leadership Behaviors</i>		0.47***	0.66		0.52***	0.76
	Vision Development	0.21**			0.34***		
	Idealized Influence	0.20*			0.21**		
	Inspirational Motivation	0.29***			0.28***		
	Individual Consideration	0.21**			0.22**		
	Intellectual Stimulation	0.32***			0.29**		
	Contingent Reward	0.19*			0.26**		
	Management By Exception	0.11*			-0.06		

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

0.01) and TMT tenure heterogeneity ( $AR^2 = 0.06$ ,  $p < 0.05$ ).

### Moderating effects of TMT tenure heterogeneity and social culture

Hypotheses 2a and 2b concern the moderating impact of TMT tenure heterogeneity on the relationship of strategic leadership behaviors with executive innovation influence. The strategic leadership variables were entered first in each of the moderated regressions, followed by the TMT tenure heterogeneity variable and items for the interaction between strategic leadership behaviors and TMT tenure heterogeneity.

The results of the moderated regression analyses, displayed in Table 3, showed that TMT tenure heterogeneity did moderate the relationship of strategic leadership behaviors with executive influence on PM ( $AR^2 = 0.11$ ,  $F = 7.01$ ,  $p < 0.01$ ) and ADM ( $AR^2 = 0.12$ ,  $F = 8.97$ ,  $p < 0.01$ ), providing empirical support to Hypotheses 2a and 2b. Betas for PM and ADM and the independent strategic leadership variables having a significant interaction with TMT tenure heterogeneity were extracted through moderated regression analyses and displayed in Table 3(a, b).

Hypotheses 3a and 3b proposed that the executive innovation influence process varies by socio-cultural clusters. The results, displayed in Table 4, supported the moderating effect of social culture for ADM but not for PM innovations. Specifically, the interaction of social culture with the independent variables ( $AR^2 = 0.01$ ,  $F = 0.65$ ) was not significant in the case of PM innovations. Thus, Hypothesis 3a was not supported.

For influence on ADM innovations, the interaction of social culture with the independent variables explained a significant amount of variance in executive innovation influence ( $\Delta R^2 = 0.09$ ;  $F = 7.51$ ;  $p < 0.01$ ), providing support for Hypothesis 3b. Betas for ADM innovations and the independent strategic leadership variables having a significant cultural interaction were obtained and shown in Table 4(a).

## DISCUSSION AND CONCLUSIONS

In this study, we found that strategic leadership behaviors are positively associated with executive influence on innovation processes, beyond the effects of organizational size and the CEO's personality traits. These results are consistent with the

Table 3. Moderated regression analyses for executive influence on product-market and administrative innovation: TMT Tenure Heterogeneity ( $N = 223$ )

Step	Variables entered	Product-market innovations			Administrative innovation		
		$R^2$	$\Delta R^2$	$F$	$R^2$	$\Delta R^2$	$F$
1.	Strategic Leadership Behaviors (Vision Development, Idealized Influence, Inspirational Motivation, Individual Consideration, Intellectual Stimulation, Contingent Reward and Management by Exception)	0.48	0.48	37.23**	0.53	0.53	46.21*
2.	TMT Tenure Heterogeneity	0.51	0.03	3.18*	0.55	0.02	1.35
3.	Interaction Terms	0.62	0.11	7.01*	0.67	0.12	8.97**

(a) Significant TMT Tenure Heterogeneity interactions of strategic leadership behaviors for executive influence on product-market innovation—PM (from Step 3 above)

Interaction	$\beta$
TMT Tenure Heterogeneity $\times$ Vision Development	0.22*
TMT Tenure Heterogeneity $\times$ Idealized Influence	-0.20
TMT Tenure Heterogeneity $\times$ Intellectual Stimulation	0.23*
TMT Tenure Heterogeneity $\times$ Management by Exception	-0.17†

(b) Significant TMT tenure heterogeneity interactions of strategic leadership behaviors for executive influence on administrative innovation—ADM (from Step 3 above)

Interaction	$\beta$
TMT Tenure Heterogeneity $\times$ Vision Development	0.24*
TMT Tenure Heterogeneity $\times$ Idealized Influence	-0.26†
TMT Tenure Heterogeneity $\times$ Intellectual Stimulation	0.17†
TMT Tenure Heterogeneity $\times$ Contingent Reward	0.15†
TMT Tenure Heterogeneity $\times$ Management by Exception	-0.18†

†  $p < 0.10$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$

findings of prior research on the full range of leadership and the visionary leadership perspectives. Yet, the results of the current study have gone beyond the findings of each of these two research streams by looking at them collectively and comprehensively with currently active CEOs across multiple social cultures. Furthermore, we found that strategic leadership behaviors are associated with both product-market as well as administrative executive innovation influence, suggesting that effective strategic leadership has a pervasive effect on an organizational innovation.

A second important finding of this research is that TMT tenure heterogeneity moderates the leadership behavior-executive innovation influence relationship for both product-market and

administration innovations. As such, the top management team characteristics were found to have important influences on the leadership dynamics within the firm. This research refines and extends our understanding of the upper echelons perspective by looking at the relationship between actual leadership behaviors and the tenure heterogeneity within the top management team. As such, our data suggest that effective strategic leaders can channel the disparate viewpoints and perspectives of a diverse top management team into an 'engine of innovation' (Kalwait, 1992; Rosenbloom and Spencer, 1996).

A third important contribution of this study is the finding that social culture moderates the leadership behavior-executive innovation influence

Table 4. Moderated regression analyses for executive influence on product/market and administrative innovation: Social Culture ( $N = 223$ )

Step	Variables entered	Product–market innovations			Administrative innovation		
		$R^2$	$\Delta R^2$	$F$	$R^2$	$\Delta R^2$	$F$
1.	Strategic Leadership Behaviors (Vision Development, Idealized Influence, Inspirational Motivation, Individual Consideration, Intellectual Stimulation, Contingent Reward and Management by Exception)	0.48	0.48	37.23**	0.53	0.53	46.21*
2.	Social Culture	0.51	0.03	3.24†	0.57	0.04	3.97*
3.	Interaction Terms	0.52	0.01	0.65	0.66	0.09	7.51**

(a) Significant socio-cultural interactions of strategic leadership behaviors for executive influence on administrative innovation—ADM (from Step 3 above)

Interaction	$\beta$
Eastern Slavic $\times$ Vision Development	0.17†
Eastern Slavic $\times$ Individual Consideration	0.15†
Eastern Slavic $\times$ Contingent Reward	0.21*
Eastern Slavic $\times$ Management by Exception	0.20*
Germanic $\times$ Vision Development	0.24*
Germanic $\times$ Idealized Influence	0.17†
Germanic $\times$ Inspirational Motivation	0.25*
Germanic $\times$ Intellectual Stimulation	0.26*
Germanic $\times$ Contingent Reward	0.18†

†  $p < 0.10$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$

for administrative innovations, but not for product-market innovations. As such, our data suggest that product-market innovations transcend socio-cultural differences, but that administrative innovations might be contingent on specific cultural characteristics. Previous research has shown that product-market innovations are adopted faster than administrative innovations (Damanpour and Evan, 1984). Hence, one possible explanation for our results is that social culture accentuates the 'organizational lag' of administrative innovations. Another possible explanation for our result is that the state apparatus has a considerable impact on administrative innovations within a social culture (Gran, 1999). As such, our social culture variable could be a proxy for the degree to which the country has embraced global capitalism. Either way, our study reinforces the long-held notion that the organizational innovation process varies considerably by innovation type (Damanpour, 1987). Clearly, this finding merits additional study to understand it more fully.

Some important implications for business practice could also be outlined by taking advantage of the research findings. First and foremost, senior executives wishing to influence innovations should not rely on their hierarchical position alone. Possessing relevant strategic leadership skills appears to be critical to one's capacity to influence innovation strategy and its outcomes. Since most organizations are 'overmanaged and underled' (Kotter, 2001), perhaps this partially explains why organizational innovation is so difficult, yet so strategically important (Hamel, 2000).

In addition, TMT tenure heterogeneity proved to moderate the relationship of strategic leadership behaviors with executive influence on both product-market innovation and administrative innovation. Consequently, we can infer diversity within a TMT to be an important factor influencing the effectiveness of strategic leadership behaviors. A closer look at Table 3 (parts a and b) suggests that strategic leaders working with relatively heterogeneous TMTs will be more effective

influencing the innovation process if they emphasize vision development and intellectual stimulation to promote product-market innovations, and if they focus their efforts on vision development, intellectual stimulation, and contingent reward leadership to bring about administrative innovations.

Importantly, the results of the study have brought forth the idea that each strategic leadership behavior could, and should, be viewed independently and separately, as each has its own effects on organizational innovation processes, and each may have different interactions with contextual variables. In particular, each strategic leadership behavior is likely to be associated with different organizational outcomes, especially in terms of the magnitude of the results, in different social cultures. This approach represents a radical departure from prior leadership research approaches, which essentially ignored investigating actual individual leadership behaviors and the strategic effects of each of those behaviors.

Another implication of the present study is that strategic leaders can increase the efficiency of their actions, if they devote their scarce time to engaging in those strategic leadership behaviors which hold the greatest promise to lead to most positive outcomes in the context of the respective social culture. For example, strategic leaders from Germany are most likely to promote administrative innovation if they devote their time and energies mainly to vision development, inspirational motivation, and intellectual stimulation, according to our data. In contrast, strategic leaders from Russia are most likely to effectively influence administrative innovation if they focus their time and efforts on contingent reward leadership and the practice of management-by-exception.

This study should be interpreted in light of its key limitations. While this is common for cross-cultural studies, the non-random nature of the sample of participating firms poses limitations on the generalizability of the results. As such, caution should be used to generalize our findings for an entire social culture and further research is clearly needed. Also, there may have been some response bias due to the procedures used to identify members of top management teams who might provide information on strategic leadership behaviors. We simply do not know if there was any systematic bias on the part of the strategic leaders in their distribution of surveys to members of their

top management team. Finally, these data were cross-sectional in nature, so causality is theoretically inferred. Clearly, future research needs to examine these same relationships in a time-lagged fashion.

The present variables and relationships also need to be tested for their relationships to actual organizational innovations. While this is beyond the scope of the present study, it would be fascinating and important to learn how these seven strategic leadership behaviors relate to actual product-market and administrative innovations. Now that we have identified a comprehensive set of strategic leadership behaviors and moderators, we are well positioned to refine and extend our findings in future research projects.

In sum, we believe that this study has conceptually refined and empirically extended previous work on strategic leadership and the outcomes of innovation strategy. By collecting data within multiple social cultures, we have extended strategic leadership research beyond the typical North American sample of executives and organizations. Overall, we believe that this is a modest but important research effort to help leadership theorists and actual strategic leaders grapple with the enormous complexities posed by a varied and competitive global marketplace.

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