

## Cognition and Decision Making in Diversified Firms

Larry Stimpert, Colorado College  
Irene Duhaime, Georgia State University

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*The study reported here sought to identify top managers' beliefs about the management of diversification and to determine whether these beliefs are associated with key decisions. The study identified three broad sets of beliefs or orientations about the management of diversification that are commonly held by the executives of large diversified firms. The study found that these management orientations are significantly associated with a number of strategic choices, including decisions about the extent of diversification, divestment activity, new product development efforts, and research and development spending. The results illustrate the influence of managerial cognition on strategic decision making and shed additional light on the management of diversification and corporate strategy.*

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Literature reviews, written more than two decades ago, concluded that the study of diversification has been too narrow, largely ignoring the management of diversification even though this is likely to be a much more important influence on performance than the extent of diversification (Datta et al, 1991; Hoskisson & Hitt, 1990; Ramanujam & Varadarajan, 1989). In particular, the influence of managerial decision making has been largely ignored in most diversification studies (Dess et al, 1995). While it was surely hoped that these reviews would stimulate new research on diversification, this literature stream has seen relatively little study in the last decade and too few studies have pursued new approaches advocated by these reviews.

By focusing on the influence of managers in diversified firms, the research reported here addresses questions that have received too little attention. Following Hambrick and Mason's (1984) upper echelons framework, this study asks two key questions. First, what are top managers' beliefs about the management of diversification? Second, the study then considers whether executives' beliefs about the management of diversification are associated with their firms' strategic choices, including decisions about diversification strategy, acquisition and divestment activity, new product development efforts, and research and development spending.

### Background

Research in managerial cognition examines how mental models determine what stimuli are noticed and how they are interpreted, and how mental models influence decision making (Dutton & Dukerich, 1991; Gioia & Chittipeddi, 1991; Levy, 2005; Lounsbury & Glynn, 2001). Thus, the cognitive perspective on strategy argues that insight into decision making requires an appreciation of the beliefs and understandings contained in executives' mental models.

Though a significant body of managerial cognition literature has now accumulated, relatively few researchers have applied this perspective to the study of diversification. More than two decades ago, Prahalad and Bettis (1986) argued that executives would need to learn how to manage diversification "as a distinct process and skill" (1986: 488), and that in doing so, they would develop knowledge structures - mental models or, in their words, dominant logics - that contain executives' beliefs and understandings about the management of diversification.

Building on the work of Prahalad and Bettis, a few studies have explored how management beliefs shape understandings of the competitive environment and how their firms are positioned relative to their competitors (Garg et al, 2003; Mason & Harris, 2005; Neill & Rose, 2006). Empirical research by Stimpert and Duhaime (1997) focused on one aspect of dominant logic - how top managers of diversified firms understand their firms' businesses to be related. They found that the managers of diversified firms hold at least three distinct views of relatedness, based on product and process similarities, a reliance on common marketing attributes, and the application of strict financial controls. More recent studies by Piscitello (2004) and Pehrsson (2006) have found that a coherence or relatedness around a company's technological competencies is associated with enhanced performance.

Many other studies have examined how managers' beliefs influence decision making in diversified contexts (Kor & Leblebici, 2005; Leavy, 2001; Pehrsson, 2006; Tanriverdi & Venkatraman, 2005). Early work by Duhaime and Schwenk (1985) concluded that managers' cognitive biases can explain the failure of many acquisitions. More recent research by Levy (2005) concluded that companies are more likely to engage in global diversification if their executives' mindsets were focused primarily on the external environment. Kazanjian and Drazin (1987) described the relationships among managerial cognition, decision making, and successful diversification. Vanhaverbeke and

Peeters (2005) focused on the need to overcome cognitive inertia when companies face discontinuous change.

These studies suggest that some progress has been made in understanding the linkage between managerial cognition and decision making in diversified firms, but they also point to some significant shortcomings. First, relative to other streams of upper echelon and diversification research, the literature examining the influence of managers on decision making in diversified firms is not as well developed, and studies have examined the influence of executives on only a very limited set of strategic choice variables. Finally, much of the research has been conceptual, and too few studies have tested research propositions with empirical data. A decade ago, Hoskisson and Hitt noted that in spite of “compelling theoretical arguments” no empirical studies had examined the influence of executives’ beliefs on diversification and corporate strategy decision making (1990: 482). Over the last decade and a half, researchers have made some good progress toward addressing this shortcoming, but many important and interesting research questions remain to be explored.

### **The Nature of Executives’ Beliefs about the Management of Diversification and How Those Beliefs Influence Strategic Decision Making**

Research aiming to “get inside the heads” of executives assumes that they carry mental models of phenomena that allow them to make sense of their situations and respond appropriately (Johnson-Laird, 1983). It is widely acknowledged that mental models play key roles in executives’ decision making processes (Walsh, 1995). First, mental models simplify the complexity associated with business environments, and, in the process, they determine which environmental stimuli will be noticed and which will be ignored (Boisot & Child, 1999; Starbuck & Milliken, 1988). The management of a diversified firm is a challenging and complex task (Hall, 1987). To manage this complexity, the executives of diversified companies must have a conceptualization of their firms - their scope, objectives, competitive environment, and management requirements - but in the diversified firm, these demands are compounded both by the number and by the diversity of its businesses (Porter, 1987). Thus, executives of diversified firms must process vast amounts of information and they face an almost unlimited array of choices. As a result, their mental models play a key role in complexity reduction, making comprehensible the challenging task of managing the diversified firm.

Mental models also influence how stimuli are interpreted, and suggest appropriate responses or decisions based on these interpretations. So, learning about how the managers of large diversified firms make sense of their situations and tasks is a key to understanding the strategies of their firms (Goold, Campbell, & Alexander, 1994; Prahalad & Bettis, 1986).

Mental models are shaped by individual experiences and by unique interpretations of these experiences. Thus, we could expect that mental models about the management of diversification could be quite idiosyncratic. In fact, Barney (1992) suggested that executives could gain advantage by managing their diversified firms in novel ways. On the other hand, researchers have cited a variety of institutional factors to suggest that there may be patterns of management beliefs that are widely held among executives (Huff, 1982; Spender, 1989). Hambrick (1982) also suggested that executives share “a common body of knowledge” that is disseminated through the media and other venues. And, field research by Goold and Campbell (1987) provides support for proposing the existence of patterns of executive beliefs about the management of diversification and that these beliefs influence strategic decisions.

For example, the literature highlights the belief that diversification is best managed by seeking to derive synergies from a portfolio of related businesses. In their field study of 16 diversified British companies, Goold and Campbell (1987) identified firms whose executives pursued a “strategic planning management style,” that exploits synergies by closely coordinating common resources and skills across business units. The diversification literature also suggests or implicitly assumes that firms managed by executives who subscribe to the importance of product and process relatedness will make fewer acquisitions and divestments and seek to achieve synergies through the integration and close coordination of functional and operating departments (Jones & Hill, 1988; Tanriverdi & Venkatraman, 2005).

Second, researchers have also emphasized the value of managing diversification from a functional perspective, especially in firms that have little commonality across businesses or product lines, while others have emphasized the value of applying a common technology or set of technological capabilities across businesses (Miller et al, 2007; Pehrsson, 2006; Piscitello, 2004). Still other writers have emphasized the importance of developing a set of marketing and differentiation skills that can be applied to all businesses, even though these businesses may lack common product characteristics (Kazanjian & Drazin, 1987; Mason & Harris, 2005; Porter, 1985, 1987; Tanriverdi & Venkatraman, 2005). Such a functional or technological approach to the management of diversification may be embodied in close relationships and coordination between businesses and their marketing channels and end users (Woodruff, 1997), or through the ability to apply knowledge about customers’ needs and buying behaviors across businesses (Farjoun, 1998; Nayyar, 1993).

Executives who develop a diversification strategy around a common functional skill or capability that can be

applied to all businesses will most likely emphasize brand equity, new product development, sales growth, and market share (Kazanjian & Drazin, 1987; Porter, 1987). The generic strategy of differentiation and most portfolio planning frameworks also emphasize market share and sales growth, and specifically advocate allocating cash to new products and growth opportunities. Thus, we could expect that a focus on functional skills or technological capabilities will be associated with more product development (Lamont & Anderson, 1985; Vanhaverbeke & Peeters, 2005), and should also be reflected in higher R&D spending.

Finally, Williamson (1975), Teece (1982), Hall (1987), and Hill (1994) all argue that the application of strict financial controls such as ROI and other performance criteria may be the only effective way for executives to manage the complexity of a widely diversified portfolio of businesses. In their field research, Goold and Campbell also identified a number of firms that they labeled as “financial control” companies. They found that these firms view budgets as a “contract” between corporate executives and individual businesses, and “that annual financial performance is the critical measure of achievement” (1987: 133).

It's widely assumed that executives who hold a financial control orientation will pursue more unrelated diversification (Fligstein, 1987). Since they lack operating or technical expertise about individual business units, these executives are also more likely to emphasize growth through acquisition over internal development of businesses (Hayes & Abernathy, 1980). The financial control companies in Goold and Campbell's (1987) sample were all active acquirers, and they also found that the executives believe that poor-performing businesses should be divested. Hayes and Abernathy were concerned that executives who emphasized financial controls would spend less on R&D and product development.

### **Summary and the Research Questions Addressed by This Study**

All of this theorizing is already accepted as conventional wisdom, but aside from the detailed field interviews conducted by Goold and Campbell, we have little insight into whether the top managers of diversified firms subscribe to commonly held views about the management of diversification. Thus, we propose the following research question:

Research Question #1: Are there patterns of executive beliefs about the management of diversification, and if so, what are those beliefs?

Similarly, cognitive theory posits that beliefs influence decisions. Thus, a cognitive perspective on the management of diversification suggests that executives who hold different cognitive orientations will make different decisions, and this reasoning suggests a second question:

Research Question #2: If the top managers of diversified firms hold specific patterns of beliefs about the management of diversification, do these beliefs have a discernable influence on the key strategic decisions made by diversified firms, including decisions about diversification strategy, acquisition and divestment, product development, and R&D?

## **RESEARCH METHODOLOGY**

### **The Survey Questionnaire and Cognitive Variables**

Carefully designed surveys can be an effective way to assess executives' beliefs (Zajac & Shortell, 1989). They are especially effective when researchers hope to obtain large numbers of observations in order to perform rigorous statistical analyses. This study employs a unique set of primary data that was developed in a multistage process that involved field interviews with executives of several large diversified firms as well as surveys of a larger set of such firms. Though developed in 1991, and already used in previous studies, it is ideally appropriate for addressing this study's research questions. Nor do we believe that its relevance or usefulness has been diminished by time. All other measures used in this study have been gathered for time periods appropriately matched to this primary dataset.

The first step in developing the questionnaire was to conduct a thorough search of the literature aimed at identifying all of the processes for managing diversified firms that have been described in past research. This literature search identified four broad categories of management processes, including 1) the sharing of functional skills or technological capabilities across businesses (Goold & Luchs, 1993; Kazanjian & Drazin, 1987; Porter, 1985, 1987; Rumelt, 1974, 1982; Pehrsson, 2006; Piscitello, 2004), 2) encouraging businesses to pursue the same generic strategy (Porter, 1987), 3) a wide range of management and financial control systems (Dundas & Richardson, 1982; Goold & Campbell, 1987; Teece, 1982; Williamson, 1975), and 4) acquisition and internal development as possible

modes of diversification (Lamont & Anderson, 1985; Song, 1982). This compilation of management processes was followed by interviews with executives from six Fortune 500 firms, which provided corroborating support for the four sets of processes identified in our literature review, while also suggesting a few additional processes.

Ultimately, the literature review and the interviews produced a list of 24 survey items to assess executive beliefs about the management of diversification. CEO recipients of the survey were asked to provide their assessments of each of the 24 items on a five-point scale (from “1” for this would almost always be an inappropriate policy to “5” for this would almost always be an appropriate policy). Three top planning officers and a CEO – all from diversified Fortune 500 firms – pretested the survey and offered many suggestions for improvement.

### **Dependent and Control Variables**

The choice of the dependent strategic decision variables was quite deliberate. Articles by Hambrick and Mason (1984) and Prahalad and Bettis (1986) refer to diversification strategy, acquisition and divestment activity, product development, and R&D efforts as the key decisions that managers must make. All of these decisions are included in this study as dependent variables, and they are measured over a five-year period from 1992 through 1996 in order capture the influence of managerial thinking at a point in time on subsequent strategic activity.

Diversification was assessed using the entropy measure of diversification (Palepu, 1985), and is calculated using as:  $Diversification = \sum [P_j \ln(1/P_j)]$ , where  $P_j$  is the share of sales in each segment  $j$  and  $\ln(1/P_j)$  is the relative weight of each segment  $j$ , so that higher values indicate greater diversification. We obtain the necessary data from Mergent Online and calculated a five-year average diversification score for the years 1992 through 1996.

To measure acquisition, divestment, and new product development activity, we obtained the number of acquisitions, divestments, and new product introductions made over the five-year period 1992 through 1996 from Moody's Industrial Manuals and The Wall Street Journal Index. Any shorter time frame seemed to be too narrow a window to assess whether a particular firm was actively acquiring or divesting businesses, and a five-year period also seemed sufficient to capture trends in new product development efforts. R&D spending, coded as a percentage of firm sales, was calculated as the five-year average for 1992 through 1996. Data for these calculations were obtained from Mergent Online.

Three control variables were also included. CEO tenure was included because CEO beliefs may be reinforced and their decisions more strongly manifested in their firms over time. ROA was also included because firm success may also reinforce managerial thinking. And, firm size is included because it has been previously shown to be an influence on many of the dependent variables. Data for these variables were also gathered from Mergent Online for 1991.

### **Sample**

Because diversification is a critical issue for large firms and CEOs are ultimately responsible for their firms' diversification decisions, we mailed our survey to the CEOs of the largest 1,000 U.S. companies. The use of CEOs as informants is consistent with the research questions posed in this study, and many other studies examining the influence of top executives have also relied on CEOs as informants (e.g., Zajac & Shortell, 1989). From this initial and two follow-up mailings, 174 completed and usable responses were received, for a response rate of just under 20 percent. This compares favorably with most mail surveys reported in the strategy literature that have been addressed to the executives of large firms (Hambrick et al, 1993). Statistical analyses comparing total assets, sales revenues, and return on assets of the responding and non-responding CEOs' firms revealed no significant differences.

### **Data Analysis**

Respondents' ratings of the 24 management belief variables were factor analyzed to identify a more finite set of underlying dimensions, or, in this case, patterns of beliefs about the management of diversification (Hair et al, 2005). Factor analysis is the ideal method for analyzing the survey data. It reduces our 24 variables into a more finite set of factors that show central tendencies in executives' beliefs about how to manage diversification. Due to the exploratory nature of the study, principal components analysis was employed to factor analyze the data and identify patterns of beliefs. The resulting factors were rotated using the varimax transformation, since orthogonal transformations tend to be easier to interpret and are recommended when factor scores are to be used in subsequent statistical analyses (Hair et al. 2005). The factor scores are standardized (i.e., their means = 0 and their standard deviations = 1) statistical composites representing each of the factors that were used in regression analyses to assess relationships between executives' orientations and their firms' strategies.

## RESULTS

**Executives' Beliefs and Understandings about the Management of Diversification**

The first research question asked whether top executives have discernable beliefs about the management of diversification. Analysis of the survey data showed that they do. Examining the results of several initial factor analyses suggested that a three-factor solution offered the most explanatory power and produced the fewest number of cross-loadings. The original three-factor solution included three variables that did not load significantly on any of the factors. Following the recommendation of Hair et al (2005), the three-factor solution was rerun omitting these three variables. The resulting solution (shown in Table 1) produced a very straightforward and interpretable factor matrix with no cross-factor loadings and all but one of the remaining 21 variables loading significantly on one of the three factors. Factor loadings with absolute values greater than .30 can be considered significant and are shown in bold print (Hair et al, 2005).

**Table 1: Executive Orientations or Beliefs about the Management of Diversification**

VARIABLE	FACTOR 1	FACTOR 2	FACTOR 3
Businesses should use the same marketing methods	<b>.8222</b>	-.0569	.0399
Businesses should use the same distribution channels	<b>.7953</b>	.1136	.0850
Marketing should be coordinated at the corporate level	<b>.7126</b>	.1435	-.0982
Businesses should sell to the same customer groups	<b>.7098</b>	-.0098	-.0751
Businesses should use the same manufacturing processes	<b>.6902</b>	-.1441	.0258
Manufacturing should be coordinated at the corporate level	<b>.6415</b>	.1794	-.1006
All businesses should be in the same industry	<b>.4676</b>	.2743	-.0003
Products and services should have strong brand name recognition	.1767	<b>.6335</b>	-.0265
Businesses should develop totally new products	.0425	<b>.6132</b>	.1133
Businesses should be market share leaders	-.0017	<b>.6053</b>	.0321
Businesses should emphasize research and development	.1986	<b>.5774</b>	-.0824
Businesses should be in different stages of the life cycle	.0914	<b>.5134</b>	.0871
Businesses should develop extensions of existing products	-.0744	<b>.4982</b>	-.0716
Cash should be reallocated to support new product development	-.0004	<b>.4894</b>	.0054
Acquisitions should offer opportunities to redirect the firm	.0394	<b>.3372</b>	.2219
Businesses should always meet financial goals	.0413	.1551	<b>.7629</b>
Businesses should be evaluated primarily by financial criteria	-.0167	.0722	<b>.6197</b>
Acquisitions should be some minimum size	-.0173	.0800	.2939
Acquisitions should be in the same industry	.2634	.1582	<b>-.3115</b>
Acquisitions should strengthen the firm's existing businesses	.1074	.1674	<b>.3187</b>
Businesses can miss financial goals if other objectives are met	-.0858	-.0071	<b>-.7346</b>
EIGENVALUES	3.60	2.60	1.91
FACTOR NAME	Core Business Orientation	Marketing Orientation	Financial Control Orientation

Loading significantly on the first factor were beliefs that businesses should use the same manufacturing processes, distribution channels, and marketing methods; that businesses should sell to the same customer groups; that manufacturing and marketing should be coordinated at the corporate level; and that businesses should be in the same industry. These beliefs are consistent with the view that executives should try to capture synergies by coordinating activities across their firms' businesses (Jones & Hill, 1988; Porter, 1985; Rumelt, 1974, 1982). And, this factor is also similar to the strategic planning management style identified by Goold and Campbell (1987). This factor is labeled core business orientation.

Loading on the second factor are principles that products and services should have strong brand name recognition and that businesses should be market share leaders; that businesses should emphasize R&D, product line extensions, the development of new products, and the reallocation of cash to support product development; that businesses should be in different life cycle stages; and that acquisitions should redirect the firm into new areas of opportunity. These beliefs are consistent with the view that the effective management of diversification results from applying a common set of marketing and product development skills to all businesses (Farjoun, 1998; Kazanjian & Drazin, 1987; Porter, 1985, 1987; Prahalad & Bettis, 1986). Other support for the existence of a marketing orientation comes from a study by Stimpert and Duhaime (1997), which found that many executives considered their firms to be pursuing related diversification strategies because they were applying a common set of marketing and differentiation skills (i.e., new product, advertising, and brand equity development) across their firms' businesses, even though these businesses may not share product or process similarities. This factor is labeled marketing orientation.

Finally, beliefs that all businesses should consistently meet financial goals and that businesses should be evaluated primarily by financial criteria; that acquisitions should not necessarily be in the same industry nor strengthen firms' existing businesses; and that financial targets should not be missed even if other strategic goals are being met load on the third factor. These beliefs are consistent with the view that diversification is best managed by emphasizing financial controls and financial performance objectives (Jones & Hill, 1988; Williamson, 1975). Similar to the financial control management style identified by Goold and Campbell (1987), this factor is labeled financial control orientation.

### Relationships between Executives' Beliefs and Strategic Decision Making

Due to space limitations, means, standard deviations, and correlations among the variables are not shown here, but can be obtained from the authors upon request. The second research question asked to what extent executives' beliefs about the management of diversification would be associated with their strategic choices, and regression analysis was used to evaluate the existence of relationships between the independent management belief variables and the strategic decision variables. All regression models examined the influence of the independent variables in a hierarchical sequence. The control variables were entered first and the management orientation variables were then included. For all of the dependent variables except the number of new products, the control variables produced a significant model. The addition of the cognitive variables significantly improved all of the models except for the number of acquisitions, and so only the results for the complete regression models are shown here. The results show that the cognitive variables are associated with many key strategic choices.

**Table 2: Relationships among Executive Beliefs about the Management of Diversification and Their Firms' Strategic Decisions (Standardized beta estimates are reported; t-statistics are shown in parentheses)**

Independent Variables:	Dependent Variables:				
	Extent of Diversification	Number of Acquisitions	Number of Divestments	Number of New Products	R&D Spending
Tenure	.078 (.99)	-.096 (-1.15)	-.015 (-.19)	-.103 (-1.22)	-.117 (-1.24)
Return on Assets	-.211** (-2.74)	.062 (.76)	-.159* (-2.01)	.169* (2.04)	.305** (3.06)
Log(Sales)	.347*** (4.41)	.281** (3.30)	.344*** (4.21)	.033 (.38)	
Core Business Orientation	-.302*** (-3.97)	-.115 (-1.44)	-.189* (-2.44)	-.177* (-2.18)	.028 (.29)
Marketing Orientation	-.052 (-.70)	-.050 (-.63)	.074 (.98)	.167* (2.09)	.245* (2.59)
Financial Control Orientation	-.179* (-2.37)	-.090 (-1.13)	-.079 (-1.03)	-.060 (-.75)	.004 (.04)
F	6.94***	2.49*	4.12***	2.25*	3.76**
Adjusted R <sup>2</sup>	.26	.07	.14	.06	.16

\* p < .05 \*\* p < .01 \*\*\* p < .001

As summarized in Table 2, regression analyses found that the cognitive factors are associated with four of the five strategic decision variables, including diversification strategy, the number of divestments, the number of new product introductions, and the level of R&D spending. The core business orientation is negatively associated with the extent of diversification, indicating that executives who hold a core business orientation tend to pursue more focused diversification strategies. The core business orientation is also negatively associated with the number of divestments and the number of new product introductions. The marketing orientation factor is positively associated with the number of new product introductions and the level of R&D spending. (Log of sales, was not included in the model examining the variation in R&D spending because this variable is already adjusted for firm size.)

Interestingly, the financial control orientation was negatively associated with the extent of diversification, indicating that firms whose executives hold a financial control orientation are likely to be less rather than more diversified. In addition, the results suggest that firms whose executives hold a financial control orientation are not more likely to make acquisitions and divestments, introduce fewer new products, or spend less on R&D, all quite contrary to the concerns of Hayes and Abernathy (1980) and the view that a financial orientation would result in an emphasis on acquisition at the expense of new product development and R&D spending.

## DISCUSSION

### Contributions

This study offers important and provocative findings that contribute to our understanding of the key role of top executives in large diversified firms: First, analysis of the survey data revealed three broad patterns of beliefs

about the management of diversification - core business, marketing, and financial control orientations - that are commonly held by the executives of large diversified firms.

Second, subsequent data analysis found that these management orientations were associated with key strategic choices. Specifically, the core business orientation is negatively associated with the extent of firms' diversification strategies, the number of divestments, and the number of new products introduced. The marketing orientation is positively associated with the introduction of new products and R&D spending. The financial control orientation is negatively associated with the extent of firms' diversification strategies.

These findings lend empirical support to the arguments of Prahalad and Bettis (1986), who suggested that executives' dominant logics or knowledge structures would be an important influence on their strategic choices. But, our findings also call into question some longstanding conventional wisdom. For example, we do not find evidence that a financial orientation is associated with more acquisition activity or that it is associated with decisions that could be viewed as deleterious such as less product development and lower R&D spending. It is also worth pondering whether the core business orientation places so much emphasis on exploiting linkages and finding synergies across businesses that product development efforts actually suffer as a consequence.

## Implications

Managing the diversified firm is an exceedingly complicated task. The executives of a diversified company must develop a conceptualization of their firm and must create and foster what Porter (1987) calls a "corporate theme" that describes the firm and how its businesses are related. Executives of diversified firms must also develop a set of beliefs about how diversification should be managed (Prahalad & Bettis, 1986). The aim of this study was to learn more about these management beliefs and how they influence strategic decision making.

The findings suggest that there are three patterns of beliefs about the management of diversification that are held by executives, and that these beliefs are associated with firms' strategic choices. Thus, the study provides empirical support for a cognitive perspective on the management of diversification and suggests that firms are not a "faceless abstraction" but that strategic decision making is closely associated with executive beliefs (Bettis & Prahalad, 1995).

Given the exploratory nature of this research study, we cannot presume that the three orientations described in this paper constitute a comprehensive set of beliefs about the management of diversification. Nor can we rule out the possibility that executives might combine various elements from these three orientations and other sources to create unique understandings about how they should manage their firms (Barney 1992). Future research can explore the nuances, and ensuing studies can also build on the findings offered here to explore dominant logics, and specifically whether the orientations described in this paper are shared among members of firms' top management teams.

For example, it would be worthwhile to examine how a wide variety of personality and organizational factors moderate or mediate the relationships that have been identified in this study. Specifically, how do executives' attitudes toward risk taking and focus on short-term versus long-term results moderate the relationship between their beliefs and their firm's strategies? Like this study, nearly all research on diversification strategy employs samples of very large firms, but many small and medium-sized firms are also diversified. It would also be interesting to know if the relationships identified in this study would also be present in samples of smaller firms? Or, it might even be hypothesized that these relationships would be stronger given that smaller firms are likely to experience fewer communication and coordination challenges.

Based on the findings of this study that show such significant links between executives' beliefs about the management of diversification and their firms' strategies, it is reasonable to assume that the quality of senior executives' knowledge structures may be a significant source of advantage for diversified firms. Though performance is likely to be highly dependent on a variety of contextual factors, Barney (1992) has argued that if executives' beliefs about the management of diversification are effective and difficult to imitate, then they may be an important source of advantage. For some diversified firms, executives' knowledge structures may foster the creation of unique and valuable sets of administrative practices or the ability to make especially effective decisions (Teece, 1982). These effective decisions and administrative practices are surely an important source of advantage for some diversified companies, and they offer a plausible explanation for the considerable performance variation across samples of large diversified firms.

This raises the question of how executives come to have an especially effective (and valuable) set of beliefs about the management of diversification. Does the experience gained from trial and error learning help? If so, we might hypothesize that longer-serving executives would be more effective leaders of diversified firms. Also, while managers may share broad views or beliefs about the management of diversification with the managers of other diversified firms, many management practices, routines, and standard operating procedures that are based on those beliefs might be quite idiosyncratic to specific firms. Thus, we could hypothesize that effectiveness results from experience

within a specific firm. Do top executives of diversified firms who are insiders enjoy a level of effectiveness not shared by outsiders who have had less time to develop sophisticated sets of process beliefs about effective management practices? Research on these questions would build on the study reported in this paper, and the findings could offer significant theoretical and practical value.

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**Larry Stimpert** is professor of economics and business at Colorado College. He received his Ph.D. in business administration from the University of Illinois at Urbana-Champaign. His research interests include corporate strategy and diversification, managerial and organizational cognition, and corporate governance. He has published in the Academy of Management Journal, the Journal of Management, and the Strategic Management Journal.

**Irene Duhaime** is a professor in the department of managerial sciences at the J. Mack Robinson College of Business Administration at Georgia State University, where she also serves as the associate dean for administration. She received her Ph.D. from the University of Pittsburgh. Her research interests include corporate strategy, entrepreneurship, and family business. She has published in the Academy of Management Journal, the Academy of Management Review, the Strategic Management Journal, and the Journal of Management.