Business Horizons (2009) **52**, 441—450

Available online at www.sciencedirect.com

ScienceDirect

ELSEVIER

KELLEY SCHOOL OF BUSINESS
INDIANA UNIVERSITY

www.elsevier.com/locate/bushor

Beyond risk mitigation: Enhancing corporate innovation with scenario planning

William J. Worthington [a,*], **Jamie D. Collins** [a], **Michael A. Hitt** [b]

[a] *Hankamer School of Business, Baylor University, One Bear Place #98006, Waco, TX 76798-8006, U.S.A.*
[b] *Mays Business School, Texas A&M University, 4113 TAMU, College Station, TX 77843-4113, U.S.A.*

KEYWORDS
Scenario planning;
Innovation risk;
Exogenous shock

Abstract The impact of exogenous shocks on business strategy, and possible responses to those threats, have received growing attention when considering the challenges of conducting business in an increasingly complex business environment. Scenario/contingency planning is a tool used by firms to translate their organizational learning capabilities into preconceived operational responses designed to react to, and then recover from, an exogenous shock. The use of scenario planning that includes exogenous shock scenarios has become a best practice in many industries. This article explores the additional potential usefulness of scenario planning as a tool for promoting innovation and corporate entrepreneurship.

1. Response oriented innovation

Scenario planning can aid firms by guiding their corporate innovation capabilities to create novel strategic improvements. For example, scenario planning that includes exogenous shock may help managers acquire the knowledge necessary to respond effectively to major, unexpected negative events. In fact, it helps the firm develop plans regarding how it will respond to such events: plans that can then be implemented rapidly when those events do occur. Furthermore, organizations that learn to leverage the techniques of scenario planning may become more innovative in their entrepreneurial pursuits.

Corporate entrepreneurship applications abound when firms begin a holistic analysis of potential threats to their operations. Scenario planning aids top level managers in identifying potential weaknesses in their operations. When plans are implemented to buttress those weak points, new operational plans and abilities are uncovered. Some firms increase their ability to maintain operations in the face of severe events in the competitive environment, while others learn to turn challenges from exogenous shocks into a source of competitive advantage.

For example, when Hurricane Ike targeted Houston, Texas in September 2008, two local firms responded based on the lessons they had learned from Hurricanes Katrina and Rita, as well as a plethora of scenario planning activities spawned in the aftermath of the September 11, 2001 terrorist attacks. One of the largest privately held grocery chains in

* Corresponding author.
E-mail address: Bill_Worthington@Baylor.edu (W.J. Worthington).

0007-6813/$ — see front matter
doi:10.1016/j.bushor.2009.04.008

the United States, H.E.B. operates 67 stores and employs some 11,000 workers in the Houston area. In anticipation of, and preparation for, Hurricane Ike, H.E.B. pre-positioned generators and the fuel needed to keep them running so the firm's stores could keep food fresh during the period that Houston might be without power. Additionally, it called in 1,500 staff members from unaffected areas to boost manpower in the event that local employees would not be able to get to work, due to weather or protection of family members and personal property. The chain remained viable, and had every store reopened within 6 days (Bargmann, 2008).

Likewise, Continental Airlines—headquartered at Bush Intercontinental Airport, just north of Houston—developed emergency scenario planning procedures in 2006, after experiencing a near miss during Hurricane Rita. In response to that planning, Continental purchased an underground bunker in Conroe, Texas (50 miles inland) and outfitted that facility to control all its domestic and international flight operations. As Ike closed to within 100 miles, Continental "stood-up"—or activated—the bunker. From there, the carrier directed its plane evacuation plan, moving aircraft to other airports and redirecting traffic to other hubs. The airline operated continually throughout the storm, and even achieved 89% domestic on-time flight performance (Bargmann, 2008). Obviously, a backup operations facility situated in an underground bunker cannot, and did not, appear overnight. Plans to respond, react, and recover can only be developed through the use of tools—such as scenario planning—that are carefully implemented to develop such responses.

2. Exogenous shock

The context in which most firms operate has become increasingly dynamic, uncertain, and unpredictable. Dynamic conditions require firms to adapt their strategy formulation and implementation actions to re-align the firm in a way that maximizes its value creation potential (Kang, Morris, & Snell, 2007). In addition to traditional environmental threats—such as competitors' actions, customers' changing demands, suppliers' needs and abilities to fulfill the firm's needs, and various other stakeholder concerns—firms also encounter challenges posed by exogenous shocks (Haveman, Russo, & Meyer, 2001). Unpredictable supply chain interruptions, abnormal weather events, major global economic disruptions, cyber security failures, and the risk of physical attacks on high profile company assets are only a few examples of exogenous shocks that can threaten a firm. The potential threat to business imposed by exogenous shocks requires increased vigilance by managers seeking to protect their firms. When considering the challenges of conducting business in an increasingly competitive environment, the impact of exogenous shocks on business strategy and possible responses to those threats have received growing attention (Doh & Teegen, 2003; Dunning, 2003; Suder, 2004).

A keyword search for "terror" in the ABI database yields 1,891 hits in *The Wall Street Journal* from October 2006 to October 2007. This would seem to indicate that the business press recognizes the impact that such shocks can have on the business environment generally, or on individual firms specifically, if they are targeted or are the only firm in their industry to be affected. Additionally, the U.S. Chamber of Commerce recently published its second report entitled "Business Disaster Assistance and Recovery: Long-Term Recovery Issues and Case Studies." The report is an executive summary of business responses and associated community outcomes from disasters, including effects of exogenous shocks (BCLC, 2007). Even administrators of universities, in the United States and globally, recognize the importance of establishing a response to incidents of exogenous shock. Many campuses are developing and practicing crisis management plans to guide responses during emergency situations such as weather events, physical confrontations, and crimes occurring on or near campus; the importance of such plans can be evidenced by tragedies including the Virginia Tech massacre (June, 2007). Indeed, the industry of crisis response and organizational or business resilience was reborn in the post-9/11 era.

When firms assess their external environment to consider new markets or re-evaluate existing ones, the threat of exogenous shocks should be a distinct consideration. Threats to firm property and personnel are of primary concern to top managers (Harvey, 1993). Yet, research has shown that exogenous shocks can negatively affect firm reputation (Roberts & Dowling, 2002), possibly leading to a reduced stock price along with other effects on non-employee stakeholders (Hergert, 2004). Employees, investors, and other stakeholders may view any significant business disruption as a sign of weakness within the company that in turn can produce negative cash flows.

Despite the potential harm, however, not all organizations prepare for external shocks (Laegreid & Serigstad, 2006). Harvey (1993) found that fewer than 50% of Fortune 500 corporations had implemented plans to react to or protect their organization from terrorist attacks, and the plans that were

in place dealt mainly with weapons training and actions to avoid the kidnapping of employees as opposed to mitigation and response. A more recent *McKinsey Quarterly* survey indicates that a majority of executives do not believe their companies have adequately addressed, or prepared for, the multitude of exogenous factors that could cause a substantial interruption in their business. This point is echoed in the *2008 Continuity Insights/KPMG Business Continuity Management Benchmarking Survey*. Respondents to the survey note that while 67% of firms indicate their business continuity program is well integrated with their crisis management program, only 36% suggest that they are well integrated with their strategic planning activities (''Business Continuity,'' 2008). Meanwhile, other firms choose to respond, yet fail to adjust effectively, thereby suffering the consequences (Rynes & Shapiro, 2005). Thus, exogenous shocks have become a salient concern for firms, and learning how to respond to those shocks is of prime importance for managers.

Businesses which proactively built a culture of resilience, defined herein as the ability to absorb and effectively respond to an exogenous shock, into their organization were better able to react to and recover from the terrorist attacks on 9/11 (Argenti, 2002). For example, Marsh & McLennan Companies (MMC) had a working disaster recovery and business-continuity plan in place prior to 2001. When executives realized the threat, they enacted the plan. Marsh, though losing 295 employees that day, quickly recovered its business operations while preparing and implementing a health and welfare response to its egregious loss of human life. Chairman Jeffrey W. Greenberg (2002) articulated the difficulty of recovering business operations while at the same time dealing with the catastrophic loss of colleagues: ''It goes without saying that preparedness—good crisis management—is essential to being able to manage through a disaster. . .it very much mattered that we had those plans [in place]'' (p. 64).

In contrast, the ongoing crisis in the world's financial markets illustrates the harsh realities that firms can encounter due to lack of planning. Merrill Lynch & Co, Lehman Brothers, Bear Sterns, AIG, CitiGroup, Wachovia, Washington Mutual, IndyMac, Fannie Mae, and Freddie Mac are among the numerous high-profile financial service companies that have been rocked by exogenous shocks on Wall Street. The competitive reality facing all of these firms changed rapidly, forcing them to search for effective methods of dealing with shocks to the housing and credit markets.

Fannie Mae, the largest mortgage buyer in America, and Freddie Mac, America's second largest mortgage company, were both taken over by the government in late 2008 after suffering devastating financial losses. Their market capitalization—defined as share value multiplied by total shares outstanding—dropped by approximately 98% in the 1-year period leading up to their collapse. These firms were unable to effectively respond to the exogenous shock caused by a significant slowdown in the United States housing market and subsequent freezing of credit markets. American International Group (AIG), the world's largest insurer, had to deal with net losses totaling $18.5 billion in the first three quarters of 2008 due to asset write-offs tied to the collapse of the subprime mortgage market. A government bailout loan of $85 billion was required in late 2008 to enable AIG to remain liquid.

Financially distressed firms unable to receive government bailouts had to find an acquirer, or restructure to avoid bankruptcy. Lehman Brothers filed for Chapter 11 (reorganization) after experiencing multi-billion dollar losses. Bear Sterns encountered liquidity problems in early 2008, and was sold to JPMorgan Chase for 92% less than the firm's value 1 year earlier. Other financial firms placed on the auction block include Merrill Lynch, which was acquired by Bank of America, and Wachovia, which collapsed and was purchased by Wells Fargo. Washington Mutual's fortunes changed from being one of America's largest banks with over $300 billion in assets, to eventually being seized by regulators and having its assets sold at severe discounts to its competitors.

Scenario, or contingency, planning is a key tool used by firms and governments alike to build organizational resilience. Organizations that utilize scenario/contingency planning to explore their exposure to risk in times of exogenous shocks may be better able to formulate entrepreneurial responses to such shocks (Alvarez & Barney, 2008). While some firms have chosen strategies to react to exogenous events, others have pursued a more proactive entrepreneurial posture (Kuratko, Hornsby, & Goldsby, 2007). In the following sections, we explore the additional potential usefulness of scenario planning as a tool for promoting innovation and corporate entrepreneurship (Ireland, Covin, & Kuratko, 2009).

3. Scenario planning

Scenario planning is a tool used by firms to translate their organizational learning capabilities into preconceived operational responses designed to react to, and then recover from, an exogenous shock. Scenario planning begins by considering possible events that could reasonably, albeit

remotely, occur within the external environment. Political instability, war or other armed conflict, terrorist incidents, severe weather, market collapses, and the dramatic loss of key personnel are all examples of unexpected but possible events that a firm may be forced to deal with over time. Firms develop a combination of scenarios that create a hypothetical exogenous shock. The scenario planning team then formulates contingencies for handling the shock, employing a ''learning before doing'' simulation (Pisano, 1994). Table top exercises are a common method used by leading managers to walk-through the hypothetical scenarios, listing actions needed at each step of the incident response (Cavanagh, 2008). Eventually, the firm compares current organizational routines with the proposed emergency responses. Ideally, core routines within the firm are modified in anticipation of possible shock scenarios to establish resilience within the normal work flow of the firm (Gersick, 1991).

Scenario planning is an example of applied double loop (Argyris, 1976) or second order learning (Lant & Mezias, 1992). While single loop learning may aid firms with incremental improvements in efficiency, double loop learning is more explorative and can lead to fundamental shifts in organizational strategy (March, 1991). Firms may implement scenario planning as a means of generating or considering the transformational changes (Tushman & Romanelli, 1985) that may be forced upon them during the onset of an exogenous shock event. While too much organizational change can actually reduce double loop learning (Newman, 2000), scenario planning is designed to introduce changes methodically by considering multiple possible scenarios and then converging on the most productive array of changes that can best prepare the organization to handle exogenous events and help the firm achieve a new equilibrium (Gersick, 1991). Thus, scenario planning can provide a means for firms to develop or improve their dynamic capabilities through tacit accumulation of experiences based on hypothetical responses, knowledge articulation during simulations, and knowledge codification through the written articulation of scenario planning decisions/results (Zollo & Winter, 2002).

Although knowledge is often captured at the individual level before integration into the larger organizational entity (Jarvenpaa & Majchrzak, 2008), organizations that actively utilize scenario planning as a knowledge management tool can enhance their absorptive capacity (Wiltbank, Dew, Read, & Sarasvathy, 2006) by facilitating knowledge transfer. This suggests that firms with the ability to effectively conduct exogenous shock-related scenario planning should benefit from an enhanced absorptive capacity. Firms can benefit from having well-developed scenario planning capabilities via an enhanced ability to respond to environmental threats and opportunities. Firms that have used their absorptive capacity to develop and ''learn the knowledge necessary'' to integrate various components of an exogenous shock-related scenario planning strategy are also likely able to use this expertise to deal with a myriad of competitive threats in the external environment and enhance their competitive position (D'Aveni, 1999). In effect, these firms are building dynamic managerial capabilities that help them manage effectively when they encounter major challenges (Adner & Helfat, 2003).

Taking a proactive stance to enrich the firm's absorptive capacity and dynamic managerial capabilities via scenario planning, including exogenous shock-focused scenarios, provides knowledge benefits for the entire firm. For example, planning for intentional acts of sabotage against the firm can help the firm develop learning processes which aid in making other types of decisions (Cohen & Levinthal, 1990; Martin & Salomon, 2003; Sirmon, Hitt, & Ireland, 2007). In fact, prior planning can aid organizations to process information and render tactical decisions more rapidly during a crisis (Weeks, 2007).

Research further suggests that crisis-prepared companies reduce their actual exposure to crisis situations by pre-emptively exploring the source of potential threats and building defenses to those threats. For example, call centers based along the Gulf Coast might alter their operation from a 1x100% to a 2x100% capacity format when both centers normally run at 50%. The second location can be situated well inland, allowing it to be ''ramped up'' to 100% capacity if the facility along the coast is forced to close for any reason. Preparing these moves ahead of time can dramatically lower crisis-related costs—imagine the cost of establishing a new call center from scratch when time is of the essence—and can even represent the difference between firm survival and death (Mitroff & Alpaslan, 2003).

Managers have become more aware of the exogenous threat environment, and changes are being incorporated. Bain & Company's recent survey of 8,500 executives found that corporate use of scenario and contingency planning techniques increased from 38% before 9/11 to over 70% following the terror attacks (Rigby & Bilodeau, 2007). Firms have embraced scenario and contingency planning as a means of preparing for exogenous shocks before such events occur. Thus, the use of scenario planning that includes exogenous shock

scenarios has become a best practice in many industries and—according to Randall Yim, Managing Director of Homeland Security for the Government Accountability Office—is increasingly important for businesses operating in multiple international markets (Buchanan, 2004).

4. Organizational learning

Consistently creating value for customers requires corporations to effectively acquire, combine, and exploit relevant resources (Sirmon et al., 2007). Doing so allows a firm to produce above average returns, even if it possesses similar resources as its competitors and faces comparable environmental conditions. Within the domain of corporate entrepreneurship, managers are constantly seeking new ways of improving their capabilities, processes, and product offerings to enrich the value proposition offered to customers (Kuratko, Ireland, Covin, & Hornsby, 2005).

The resource-based view (RBV) can be used to help understand the intersection of the threat of exogenous shocks and the importance of effectively managing key capabilities within the firm. When faced with complex and highly uncertain external environments, firms must rely on strong internal capabilities to compete effectively, especially in the adaptation and response to exogenous shocks. Resource based logic suggests that differences in firm performance are related to the value of the resources held and the manner in which they are managed by firms. Firms possessing knowledge, processes, or capabilities that help them differentiate the value that they provide to their customers from that provided by their competitors have the potential to achieve superior performance (Sirmon et al., 2007). To achieve superior performance, however, requires that those resources be used in an effective manner.

Resources are the tangible and intangible assets a firm uses to develop and execute its strategies. Resources that are rare (i.e., not widely held) and valuable (i.e., able to enhance the firm's efficiency or effectiveness) can yield at least a temporary competitive advantage. Resources that are also simultaneously imperfectly imitable (i.e., they resist easy duplication by competitors) and non-substitutable or non-transferable (i.e., they cannot be purchased in factor markets) can produce sustainable competitive advantage (Barney, 1991; Dierickx & Cool, 1989).

The firm's absorptive capacity is precisely such an idiosyncratic and difficult to imitate resource (Cohen & Levinthal, 1990). The ability to acquire, assimilate, and integrate new knowledge from outside the firm offers substantial potential firm-level benefits (Grant, 1996; Kogut & Zander, 1993; Spender & Grant, 1996). Combining the absorptive capacity resource with processes that help a firm acquire and absorb new knowledge can facilitate achieving a competitive advantage.

Knowledge management capabilities can be particularly valuable to firms due to the difficulty that competitors have in assessing and understanding tacit knowledge held by a firm (Makino & Delios, 1996; Martin & Salomon, 2003; Reed & DeFillippi, 1990). Therefore, firms capable of acquiring, assimilating, and integrating new knowledge—including exogenous shock-related knowledge—enrich their existing knowledge stocks with learning-based processes. These firms are more likely to integrate complementary resources and achieve superior performance (Harrison, Hitt, Hoskisson, & Ireland, 2001; Ireland, Hitt, & Vaidyanath, 2002). Even firms focused largely on short-term financial performance are likely to benefit from an emphasis on enlarging their absorptive capacity and learning (Collins & Hitt, 2006). As noted previously, this learning enriches their dynamic managerial capabilities (Adner & Helfat, 2003).

Effectively managing existing knowledge within a firm contributes to capabilities which allow the firm to differentiate its goods and services from those of competitors. Because it also helps provide greater value to customers, it contributes to the development of a competitive advantage. In highly competitive industries, firms need to focus on building their knowledge and capabilities through learning processes to ensure survival. To meet this challenge, firms must actively manage their knowledge repertoires to build and diffuse knowledge. These knowledge management capabilities within firms have grown in importance with increasing globalization and competition based on knowledge. The extent to which a firm effectively manages its knowledge stocks is influenced by its ability to learn from varied knowledge inputs and experiences.

How well a firm learns from its experiences directly influences how adeptly it develops the most effective strategy choosing from among several strategic alternatives, and how effectively it manages key resources to implement the firm's strategy. Evidence suggests that exposure to new and diverse environmental conditions can require an organization to question existing assumptions and beliefs, thereby considering new information and identifying unique knowledge available (Dess et al., 2003). Firms facing particularly difficult competitive landscapes and significant

environmental threats can benefit significantly from an ability to absorb new knowledge, and thereby build their dynamic managerial capabilities (Adner & Helfat, 2003; Schlegelmilch & Chini, 2003; Simonin, 1999).

Organizational learning capability produces new knowledge that helps the firm respond and adapt to challenging environmental conditions (Hitt & Ireland, 2000). In particular, the use of scenario planning as a tool for managing a firm's stock of knowledge contributes to effective decision making within the firm (Finkelstein & Mooney, 2003; Fredrickson & Mitchell, 1984). Scenario planning is useful for combining the firm's current knowledge resources with newly acquired knowledge, which in turn can generate new knowledge and routines within the firm (Ketchen, Snow, & Street, 2004; Schoemaker, 1993).

5. Corporate innovation

The intent of corporate entrepreneurship is to develop consequential innovations that aid the firm's pursuit for competitive advantage (Morris, Kuratko, & Covin, 2008). These innovations can focus on the firm's strategy, product offerings, internal organization, market focus, or business model (Ireland & Webb, 2007). Furthermore, having this type of intentional entrepreneurial behavior can rejuvenate the organization through recognition and exploitation of entrepreneurial opportunities (Ireland et al., 2009). Thus, innovation is an essential component of successful corporate entrepreneurship (Ireland, Kuratko, & Morris, 2006a, 2006b). Commonly, innovation is considered to be product or process improvements that result in increased value for the firm's customers, thereby helping the firm to achieve or maintain a competitive advantage (Kuratko et al., 2005). However, firms can innovate in a variety of ways, ranging from relatively minor—yet valuable to the customer—changes to existing products, processes, or services, to radically new products, services, or processes. Minor changes can include improvements in reliability, size, performance, or specific product features. Radical breakthroughs in products, processes, or services can introduce unique and attractive features, substantial cost improvements, or exceptional performance. Thus, innovation can involve a relatively small number of discrete changes, as well as numerous continuous improvements by the firm. Regardless of the frequency and size of innovative actions, corporations can benefit from having their internal processes organized to support incremental adaptation and major changes (Kuratko, Hornsby, & Corso, 1996).

To build innovation requires firms to develop and use new ideas in ways that create value (Linder, Jarenpaa, & Davenport, 2003). Innovation can become a primary vehicle to improved productivity and greater profitability in highly dynamic environments. By having an intentional focus on how to best deliver value to consumers, firms that embrace innovation can often create sustainable growth (McEvily, Eisenhardt, & Prescott, 2004). Firms can foster innovation by promoting the development and adoption of new products, services, or processes that increase profitability and overall competitiveness (Zahra, Nielsen, & Bogner, 1999). Companies can leverage their innovative capabilities by engaging in strategic entrepreneurship, which involves simultaneous opportunity-seeking and advantage-seeking behaviors, and may result in superior performance (Ireland, Hitt, & Sirmon, 2003).

We argue that one possible avenue for enhanced innovation is through the use of scenario planning. The process used to create the scenarios aids firms in exploring the environment while exploiting their resources and capabilities (March, 1991). This may require companies to shift their perspective of scenario planning from risk mitigation to opportunity recognition. Recognizing that uncertainty in the firm's environment is an indicator of potential opportunities is an essential insight for executives (McMullen & Shepherd, 2006). In particular, we believe that firms can use scenario planning for exogenous shocks to identify unique opportunities. Relevant examples of innovative responses to the risks posed by potential exogenous shocks are discussed next. Specifically, firms can use scenario planning to identify possible exogenous events and then form strategies to respond to those events after they occur, or to position themselves before they do.

5.1. Innovative responses

In the United States, 85% of critical infrastructure is privately owned (Buchanan, 2004). This infrastructure includes airlines, trucking, shipping, power grids, healthcare facilities, and office buildings (Flynn, 2005). Private companies provide the necessary services for life, and are thus potential targets for intentional harm from terrorists. Additionally, non-human threats, such as the recent hurricanes in the Gulf of Mexico, demonstrate the vulnerability of these systems to natural events.

In response to increasing national security concerns and public expectations that firms provide adequate—if not excellent—responses to these

events, multiple Fortune 500 firms have established Emergency Operation Centers (EOCs) specifically designed to handle exogenous shock events (Flynn, 2007). Some, such as the aforementioned Continental Airlines bunker in Conroe, are designed for use in times of specific crisis (Trottman, 2006). The New York Board of Trade similarly established secondary trading floors, to be used as a substitute for its main trading floor in case of damage, in the Queens section of New York City following the 1993 World Trade Center bombing (Argenti, 2002). Still other firms have facilities that are staffed around the clock, to monitor ongoing operations and potential threats which may demand rapid response; consider, for example, Wal-Mart's emergency operations center in Arkansas (Rojas, 2006); the Lowe's facility that coordinates movement of its Storm Recovery Teams (BCLC, 2007); and CNN's Atlanta news facility, which is designed to traffic up to three times the usual volume of data and personnel as handled during a typical news day. IBM also has a 24-hour Global Operations Center that monitors operations and is capable of surging—meaning it can rapidly expand its capability by adding personnel to pre-existing computer stations and phone lines prepared in advance—during emergency events (Keenan, 2007).

It should be noted that these contingency responses can be costly. The New York Board of Trade's secondary trading floors sat empty for many years, but still cost $300,000 annually to maintain with no revenue production. Yet, those back-up facilities were critical for its reopening shortly after the 9/11 attacks (Argenti, 2002). The Board did spend heavily to ensure its continuous operation, but the cost—both financial and operational time loss—of recovering from a disaster with no pre-planning may have been insurmountable. Investing the $300,000 annually can be viewed as a threat mitigation option; that is, an effective way of managing risk (Bowman & Hurry, 1993). Furthermore, stakeholders may view these expenditures as a business tax implemented on firms in the form of heightened internal security expenditures and higher insurance premiums. These special expenditures totaled $18 billion in 2002; $150 billion if logistics and insurance costs are included (Weidenbaum, 2003). As costly as these measures seem, executives may feel that lack of action is an unacceptable alternative (Laufer & Coombs, 2006).

Firms can be positioned to respond to, and recover from, an exogenous shock. However, other firms may decide to take advantage of the threat of shock by becoming a preferred provider or a first responder during and shortly after the event by pre-positioning themselves ex ante.

5.2. Innovative positioning

Advanced use of scenario planning can help firms go beyond innovative responses to more complex repositioning of their strategy. In doing so, a firm can develop an entrepreneurial strategy to take advantage of the uncertain environment resulting from exogenous shocks. For example, firms may differentiate their strategy by providing goods or services to customers that have current needs or are likely to have special needs in the near future. This approach responds to the belief that opportunities exist when uncertainty is the greatest (McGrath & MacMillan, 2000).

Most top executives understand the potential impact that exogenous shock can impose on businesses (Laufer & Coombs, 2006). Exogenous shock considerations have been integrated into strategies for some firms, as evidenced by Lockheed Martin's acquisition of California-based Pacific Architects and Engineers Inc. (PAE) to pursue contracts with the State and Defense Departments in competition with KBR (formerly Kellogg Brown & Root). Firms such as PAE and KBR target the "winning the peace" goals of the United States government's War on Terrorism as their primary strategic intent (Cole, 2007). Their strategy can be described as integrated differentiation/low cost (Hitt, Ireland, & Hoskisson, 2009). It is differentiated in that few firms can handle the complexity of requirements that a specialized niche customer—the U.S. government—demands, yet low cost in their ability to provide services to the United States government cheaper than the government can provide them itself. The examples of both companies demonstrate that exogenous events have made their mark in the executive suites by altering firm strategies.

Further, Goodyear Tire & Rubber Company formalized its response to exogenous threats by adopting the NFPA 1600 industry standard: National Fire Protection Association Standard on Disaster/Emergency Management and Business Continuity Programs. By integrating its previously distinct programs for emergency response, IT security, risk management, supply chain, and safety into a comprehensive business continuity program, Goodyear uncovered areas for synergy creation. This form of continuity building led to improvements within the firm's supply chain, resulting in a more flexible communication network that can manage raw material sourcing in times of regional conflict (Rojas, 2008).

In contrast, United States automakers in Detroit have historically ignored global improvements in process design, customer satisfaction, quality control, and legacy cost avoidance. Instead

of transforming their global strategies to take advantage of changing global conditions, these firms are now fighting bankruptcy and seeking bailout monies from the federal government.

These aforementioned examples suggest how a few firms are transforming their ability to pre-position themselves to take advantage of changing environmental conditions. Scenario/contingency planning is a tool that allows firms to leverage their existing organizational learning to create dynamic managerial capabilities that enhance their innovative practices and transform their corporate strategies. Firms that choose to be proactive have increased opportunities for corporate innovation. Firms that ignore this growing best practice (e.g., U.S. automakers) may do so at their peril.

6. An opportunity to innovate

Given the extent of potential damage from exogenous shock events and their impact on American business, the private sector office of the U.S. Department of Homeland Security (DHS) felt compelled to act. DHS has reportedly considered a ''security-preparedness Sarbanes-Oxley'' bill to propose to Congress, thereby making business continuity and disaster/terrorist response a corporate governance issue (Keenan, 2007). Title IX of Public Law 110-53, *Implementing Recommendations of the 9/11 Commission Act of 2007*, charges the Assistant Secretary for Infrastructure Protection with developing a certification of comprehensive disaster preparedness for businesses to adopt (Cavanagh, 2008).

Executives often view potential exogenous shocks as sources of risk exposure for their firms. We encourage executives to move beyond a risk mitigation perspective by seeking opportunities for innovation through the use of scenario/contingency planning. The act of considering multiple exogenous shock-related contingencies exposes executives to a more fine-grained understanding of potentially unmet economic opportunities in the firm's environment. These opportunities can lead to improvements in supply chain efficiencies, logistical process improvements, development of new products and services, or identification of new markets for the firm's products and services. Therefore, worst-case considerations of exogenous shock threats may enable firms to discover new, innovative ways to protect or even strategically re-position their strategic actions for greater value creation. This type of proactive organizational posture significantly increases the likelihood that the firm will recognize and exploit new opportunities faster than its competitors. Firms taking this approach can positively influence their environment and benefit from conditions that others view only as a source of risk (Kuratko et al., 2007). By considering the worst, managers may discover their best.

References

Adner, R., & Helfat, C. E. (2003). Corporate effects and dynamic managerial capabilities. *Strategic Management Journal, 24*(10), 1011—1025.

Alvarez, S. A., & Barney, J. B. (2008). Opportunities, organizations, and entrepreneurship. *Strategic Entrepreneurship Journal, 2*(3), 171—173.

Argenti, P. (2002). Crisis communication: Lessons from 9/11. *Harvard Business Review, 80*(12), 103—119.

Argyris, C. (1976). Single loop and double loop models in research on decision making. *Administrative Science Quarterly, 21*(3), 363—375.

Bargmann, J. (2008, December). In control. *Continental Magazine*, 63—65.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99—120.

BCLC. (2007). *Business disaster assistance and recovery: Long-term recovery issues and case studies*. Washington, DC: Business Civic Leadership Center of the U.S. Chamber of Commerce.

Bowman, E. H., & Hurry, D. (1993). Strategy through the option lens: An integrated view of resource investments and the incremental-choice process. *Academy of Management Review, 18*(4), 760—782.

Buchanan, L. (2004). Protect your interests. *Harvard Business Review, 82*(11), 28.

Business continuity: A profession adrift? (2008, March/April). *Continuity Insights*, 18—27.

Cavanagh, T. E. (2008). *Benchmarking business preparedness: Plans, procedures, and implementation of standards*. New York: The Conference Board.

Cohen, J. J., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly, 35*(1), 128—152.

Cole, A. (2007, September 24). Lockheed looks beyond weapons: Contractor targets growth with services in strife-torn areas. *The Wall Street Journal*, p. A10.

Collins, J. D., & Hitt, M. A. (2006). Leveraging tacit knowledge in alliances: The importance of using relational capabilities to build and leverage relational capital. *Journal of Engineering and Technology Management, 23*(3), 147—167.

D'Aveni, R. A. (1999). Strategic supremacy through disruption and dominance. *Sloan Management Review, 40*(3), 127—135.

Dess, G. G., Ireland, R. D., Zahra, S. A., Floyd, S. W., Janney, J. J., & Lane, P. J. (2003). Emerging issues in corporate entrepreneurship. *Journal of Management, 29*(3), 351—378.

Dierickx, I., & Cool, K. (1989). Asset stock accumulation and sustainability of competitive advantage. *Management Science, 35*(12), 1504—1511.

Doh, J. P., & Teegen, H. J. (2003). Private investment in emerging markets telecommunications infrastructure: Global trends, national policies, firm strategies. *Competition & Change, 7*(1), 39—61.

Dunning, J. H. (2003). *Making globalization good: The moral challenges of global capitalism*. Oxford, UK: Oxford University Press.

Finkelstein, S., & Mooney, A. C. (2003). Not the usual suspects: How to use board process to make boards better. *Academy of Management Executive, 17*(2), 101—113.

Flynn, S. (2005). *America the vulnerable: How our government is failing to protect us from terrorism*. New York: Harper Collins.

Flynn, S. (2007). *The edge of disaster.* New York: Random House.

Fredrickson, J. W., & Mitchell, T. R. (1984). Strategic decision-processes: Comprehensiveness and performance in an industry with an unstable environment. *Academy of Management Journal, 27*(2), 399—423.

Gersick, C. J. (1991). Revolutionary change theories: A multilevel exploration of the punctuated equilibrium paradigm. *Academy of Management Review, 16*(1), 10—36.

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal, 17*(Winter), 109—122.

Greenberg, J. W. (2002). September 11, 2001: A CEO's story. *Harvard Business Review, 80*(10), 58—64.

Harrison, J. S., Hitt, M. A., Hoskisson, R. E., & Ireland, R. D. (2001). Resource complementarity in business combinations: Extending the logic to organizational alliances. *Journal of Management, 27*(6), 679—690.

Harvey, M. G. (1993). A survey of corporate programs for managing terrorist threats. *Journal of International Business Studies, 24*(3), 465—478.

Haveman, H. A., Russo, M. V., & Meyer, A. D. (2001). Organizational environments in flux: The impact of regulatory punctuations on organizational domains, CEO succession, and performance. *Organization Science, 12*(3), 253—273.

Hergert, M. (2004). The effect of terrorist attacks on shareholder value: A study of United States international firms. *International Journal of Management, 21*(1), 25—28.

Hitt, M., & Ireland, R. D. (2000). The intersection of entrepreneurship and strategic management research. In M. A. Hitt & R. D. Ireland (Eds.), *Blackwell handbook of entrepreneurship* (pp. 45—63). Chichester, UK: Blackwell Publishing.

Hitt, M. A., Ireland, R. D., & Hoskisson, R. E. (2009). *Strategic management: Competitiveness and globalization* (8th ed.). Mason, OH: South-Western Cengage Learning.

Ireland, R. D., Covin, J. G., & Kuratko, D. F. (2009). Conceptualizing corporate entrepreneurship strategy. *Entrepreneurship Theory and Practice, 33*(1), 19—46.

Ireland, R. D., Hitt, M. A., & Sirmon, D. G. (2003). A model of strategic entrepreneurship: The construct and its dimensions. *Journal of Management, 29*(6), 963—989.

Ireland, R. D., Hitt, M. A., & Vaidyanath, D. (2002). Alliance management as a source of competitive advantage. *Journal of Management, 28*(3), 413—446.

Ireland, R. D., Kuratko, D. F., & Morris, M. H. (2006a). A health audit for corporate entrepreneurship: Innovation at all levels (Part 1). *The Journal of Business Strategy, 27*(1), 10—17.

Ireland, R. D., Kuratko, D. F., & Morris, M. H. (2006b). A health audit for corporate entrepreneurship: Innovation at all levels (Part 2). *The Journal of Business Strategy, 27*(2), 21—30.

Ireland, R. D., & Webb, J. W. (2007). A cross-disciplinary exploration of entrepreneurship research. *Journal of Management, 33*(6), 891—927.

Jarvenpaa, S. L., & Majchrzak, A. (2008). Knowledge collaboration among professionals protecting national security: Role of transactive memories in ego-centered knowledge networks. *Organization Science, 19*(2), 260—276.

June, A. W. (2007). Crisis management plans are untested, survey says. *Chronicle of Higher Education, 54*(8), A27.

Kang, S. C., Morris, S. S., & Snell, S. A. (2007). Relational archetypes, organizational learning, and value creation: Extending the human resource architecture. *Academy of Management Review, 32*(1), 236—256.

Keenan, W. (2007). Preparing for the worst. *The Conference Board Review, 45*(3), 52—57.

Ketchen, D. J., Snow, C. C., & Street, V. L. (2004). Improving firm performance by matching strategic decision-making processes to competitive dynamics. *Academy of Management Executive, 18*(4), 29—43.

Kogut, B., & Zander, U. (1993). Knowledge of the firm and the evolutionary theory of the multinational. *Journal of International Business Studies, 24*(4), 625—645.

Kuratko, D. F., Hornsby, J. S., & Corso, L. M. (1996). Building an adaptive firm. *Small Business Forum, 14*(1), 41—48.

Kuratko, D. F., Hornsby, J. S., & Goldsby, M. G. (2007). The relationship of stakeholder salience, organizational posture, and entrepreneurial intensity to corporate entrepreneurship. *Journal of Leadership & Organizational Studies, 13*(4), 56—72.

Kuratko, D. F., Ireland, R. D., Covin, J. G., & Hornsby, J. S. (2005). A model of middle-level managers' entrepreneurial behavior. *Entrepreneurship Theory and Practice, 29*(6), 699—716.

Laegreid, P., & Serigstad, S. (2006). Framing the field of homeland security: The case of Norway. *The Journal of Management Studies, 43*(6), 1395—1413.

Lant, T. K., & Mezias, S. J. (1992). An organizational learning-model of convergence and reorientation. *Organization Science, 3*(1), 47—71.

Laufer, D., & Coombs, W. T. (2006). How should a company respond to a product harm crisis? The role of corporate reputation and consumer-based cues. *Business Horizons, 49*(5), 379—385.

Linder, J. C., Jarenpaa, S., & Davenport, T. H. (2003). Toward an innovation sourcing strategy. *MIT Sloan Management Review, 44*(4), 43—49.

Makino, S., & Delios, A. (1996). Local knowledge transfer and performance: Implications for alliance formation in Asia. *Journal of International Business Studies, 27*(5), 905—927.

March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science, 2*(1), 71—88.

Martin, X., & Salomon, R. M. (2003). Knowledge transfer capacity and its implications for the theory of the multinational corporation. *Journal of International Business Studies, 34*(4), 356—374.

McEvily, S. K., Eisenhardt, K. M., & Prescott, J. E. (2004). The global acquisition, leverage, and protection of technological competencies. *Strategic Management Journal, 25*(8—9), 713—722.

McGrath, R. G., & MacMillan, I. C. (2000). Assessing technology projects using real options reasoning. *Research Technology Management, 43*(4), 35—49.

McMullen, J. S., & Shepherd, D. A. (2006). Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review, 31*(1), 132—152.

Mitroff, I. I., & Alpaslan, M. C. (2003). Preparing for evil. *Harvard Business Review, 81*(4), 109—115.

Morris, M. H., Kuratko, D. F., & Covin, J. G. (2008). *Corporate entrepreneurship and innovation*. Mason, OH: Thomson / Southwestern.

Newman, K. L. (2000). Organizational transformation during institutional upheaval. *Academy of Management Review, 25*(3), 602—619.

Pisano, G. P. (1994). Knowledge, integration, and the locus of learning: An empirical analysis of process development. *Strategic Management Journal, 15*(2), 85—100.

Reed, R., & DeFillippi, R. J. (1990). Causal ambiguity, barriers to imitation, and sustainable competitive advantage. *Academy of Management Review, 15*(1), 88—102.

Rigby, D., & Bilodeau, B. (2007). A growing focus on preparedness. *Harvard Business Review, 85*(7/8), 21—22.

Roberts, P. W., & Dowling, G. R. (2002). Corporate reputation and sustained superior financial performance. *Strategic Management Journal, 23*(12), 1077—1093.

Rojas, B. (2006, March/April). Wal-Mart: Beyond business continuity basics. *Continuity Insights*, 10—13.

Rojas, B. (2008, March/April). BCP excellence: How did Goodyear get there? *Continuity Insights*, 14—17.

Rynes, S. L., & Shapiro, D. L. (2005). Public policy and the public interest: What if we mattered more? *Academy of Management Journal, 48*(6), 925—927.

Schlegelmilch, B., & Chini, T. (2003). Knowledge transfer between marketing functions in multinational companies: A conceptual model. *International Business Review, 12*(2), 215—233.

Schoemaker, P. J. H. (1993). Multiple scenario development: Its conceptual and behavioral foundation. *Strategic Management Journal, 14*(3), 193—213.

Simonin, B. L. (1999). Transfer of marketing know-how in international strategic alliances: An empirical investigation of the role and antecedents of knowledge ambiguity. *Journal of International Business Studies, 30*(3), 463—490.

Sirmon, D. G., Hitt, M. A., & Ireland, R. D. (2007). Managing firm resources in dynamic environments to create value: Looking inside the black box. *Academy of Management Review, 32*(1), 273—292.

Spender, J. C., & Grant, R. M. (1996). Knowledge and the firm: Overview. *Strategic Management Journal, 17*(1), 5—9.

Suder, G. (Ed.). (2004). *Terrorism and the international business environment*. Cheltenham, UK: Edward Elgar.

Trottman, M. (2006, October 2). Continental Airlines finds a safe haven in a Texas bunker. *The Wall Street Journal*, p. A1.

Tushman, M. L., & Romanelli, E. (1985). Organizational evolution: A metamorphosis model of convergence and reorientation. *Research in Organizational Behavior, 7*, 171.

Weeks, M. R. (2007). Organizing for disaster: Lessons from the military. *Business Horizons, 50*(6), 479—489.

Weidenbaum, M. (2003). The role of business in fighting terrorism. *Business Horizons, 46*(3), 6—12.

Wiltbank, R., Dew, N., Read, S., & Sarasvathy, S. D. (2006). What to do next? The case for non-predictive strategy. *Strategic Management Journal, 27*(10), 981—998.

Zahra, S. A., Nielsen, A. P., & Bogner, W. C. (1999). Corporate entrepreneurship, knowledge, and competence development. *Entrepreneurship Theory & Practice, 23*(3), 169—189.

Zollo, M., & Winter, S. G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science, 13*(3), 339—351.