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"Everyone in a complex system has a slightly different interpretation. The more interpretations we gather, the easier it becomes to gain a sense of the whole."
Margaret J. Wheatley

Most firms, especially high technology ventures, operate in environments of great uncertainty where adverse events can shift whole industries or just overwhelm individual firms. For example, Biotechnology firms routinely test their products in FDA approved trials for efficacy and morbidity effects. Success in these trials is highly uncertain as they can be stopped at any moment due to a lack of drug efficacy or a deterioration in the patient population (Moran, 2003). Such failures can have devastating consequences for the funding Biotechnology firm which are often small, resource constrained and highly dependent upon stakeholder goodwill. On average, such failures decrease firm value by 19 percent and are relatively common,

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occurring to over a quarter of all public biotechnology firms (DeCarolis, Yang, Deeds & Nelling, 2009). Given the consequences and relatively commonality of an adverse event, how can a firm prepare itself?

While the strategic change literature is vast (see, Rajagopalan & Spreitzer, 1997, for an extensive review), it has focused on the ability of the firm's resources (i.e. Kraatz & Zajac, 2001), management (i.e. Bantel & Jackson, 1989) and actions (i.e. Tripsas & Gavetti, 2000) to adapt to change once it has occurred. Ignoring, with some exception (DeCarolis et al., 2009), the ability of the firm to influence the severity of the event itself. A gap that the social constructivist literature would indicate the firm has some influence over (Isabella, 1990).

Inherent within the strategic change literature is the concept of an initial negative or adverse event that initiates the period of strategic change. For example, Meyer (1982) investigated the organizational response to a "jolt" in the form of a doctor's strike. Other scholars have coined various terms for these initial negative events including 'Discontinuity', 'Critical Event' and 'Controversial Event' (Lorange, Morton & Ghoshal, 1986; Ocasio, 1995; Weick, 1993). Most studies within this body of research have generally blended together the trigger element into the definition of strategic change, thus discounting the possibility that the triggering event and the ensuing change may be treated both theoretically and empirically as two separate, albeit related, occurrences. While strategic change scholars have acknowledged the socially constructed nature of environmental changes (Isabella, 1990), this understanding has not extended to the initial interpretation of an adverse event. If as we argue, this trigger element is subject to interpretation, then perhaps the characteristics of the firm may influence the nature of the interpretation.

To address these gaps, we take a constructivist view but extend this to the interpretation of the initial event. We ask the following research question: What is the influence of the firm's ability-to-change and its willingness-to-change on shareholder interpretation of adverse event severity? We address this research question in the following ways. First we propose a theoretical extension to the strategic change literature that incorporates the concept of an adverse event as a distinct part of the process of strategic change; a part that has an immediate outcome of consequence to the firm. Second, our theoretical model suggests that stakeholder interpretation of the severity of the adverse event is a separate but related important outcome of the occurrence of the event itself. Third, our model proposes and tests the impact of organizational and top management team capabilities on stakeholder interpretation of the severity of the adverse event. Understanding the effect of firm characteristics on stakeholder interpretation of an adverse event may help management pre-position the firm so that adverse events when they occur are not as damaging as they would have been.

This paper makes the following contributions: We synthesize the conceptual work on adverse events and develop a uniform definition of an adverse event. We incorporate

insights from resource based (Barney, 1991) and upper echelon theory (Hambrick & Mason, 1984) to explore the impact of a firm's resources and upper management team on stakeholder interpretation of an adverse event. Finally, we empirically test and find support for the proposition that ex ante TMT characteristics influence shareholder interpretation of event severity.

This paper proceeds as follows. First, we present a background of the literature on adverse events, synthesize that literature and propose a definition of an adverse event. Second, two hypothesis are developed which suggest a relationship between stakeholder interpretation of the adverse event and ex-ante organizational capabilities – both in terms of resources and top managers - to contend with the adverse event Third, the research setting, the analytic method and the results of the analysis are presented. Finally, the outcome and implications of the study are discussed including the study's limitations and a potential research agenda.

THEORETICAL BACKGROUND

Our research question addresses the influence of organizational and top management capabilities on the severity of stakeholder interpretation of an adverse event. Critical to this question is the definition of an adverse event. As mentioned in the Introduction, the term 'adverse event' has had several interpretations. We present a review of these interpretations and propose a synthesized definition based on this review. Our definition incorporates a socially constructed and stakeholder centric view of an adverse event

Inherently wedded to strategic change research is the concept of adversity. While important to the body of research, this concept has been construed in various ways by different scholars. Various terms such as "jolt", "discontinuity", "shock", and "economic adversity" have been used to describe the occurrence of discrete adverse episodes. By examining the commonalities across these definitions, a uniform definition is sought.

First, implied or stated in all the definitions is a break in a pattern of occurrence. This break is most pronounced in the definitions of jolt, discontinuity and critical event (Lorange et al., 1986; Meyer, 1982; Pride, 1995). Second, the pattern disturbance must present a potential harm. While implicit in all the definitions, this potential harm is most pronounced in the definitions of jolt, cosmology episode and controversial event. (Elsbach, 1994; Meyer, 1982; Weick, 1993). Third, the pattern disturbance and the potential harm must be perceived. Fligstein (1991) points this out in the definition of "shock" through use of the terms "perceived crisis." This implies that there are pattern disturbances that do not rise to the level of perception. That the event may be perceived by various parties can be seen in the definitions; cosmology episode, economic adversity, controversial event and critical event (Elsbach, 1994; Ocasio, 1995; Pride, 1995; Weick, 1993). Fourth, the disturbance itself is a discrete event that can be identified in time. Meyer (1982) in the definition of "jolt" points to this by using the term "transient". Similarly, Fligstein (1991) uses the term "crisis" which implies a discrete event and Ocasico (1995) uses the term "failure" which

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implies a measurement point. Finally, there is an implied constructivist element. The development of a crisis is based upon the mutual interpretation of interacting parties. Isabella (1990) points this out in the definition of a challenging event by using the idea that the event is a 'context'. Constructivist elements are also pronounced in the definition of critical event, indicated by use of the term "collective definition". A review of these terms and their meanings is offered in Table 1.

Based upon the deconstruction of the definitions used in the relevant literature, a unified definition is developed. An adverse event is defined as an occurrence that deteriorates the perceived value creating capacity of a firm that stakeholders are aware of and that initiates a stakeholder response. By having the adverse event focus on value deterioration, harm is inherent. By recognizing that value is a perception, the constructivist dynamic is implied. By having the adverse event initiate a stakeholder response, the definition acknowledges a pattern deviation that rises to the level of perception. By focusing on stakeholders, the definition acknowledges the potential actions of multiple parties.

This response would necessarily differ by stakeholder. For example, a contaminated product might initiate a response among customers, while a drop in profitability might initiate a response among shareholders. It is the role that stakeholder reaction to an adverse event plays in a firm's navigation through an adverse event's cycle that is the core of this theoretical examination.

External stakeholders have access to relatively limited information about the firm and upon the occurrence of an adverse event are placed at an additional information disadvantage to the top management team. In such an environment, signaling theory suggests that external stakeholders may look toward associated observable information that serves to reduce the information asymmetry (Austen-Smith & Banks, 2000; Spence, 1976).

Table 1
Summary of Negative Event Definitions

		Adverse Event Characteristics Within Each Definition				
Term	**Definition**	**Pattern Disturbance**	**Harm**	**Perception**	**Discrete**	**Construction**
Jolt (Meyer, 1982)	Transient perturbations whose occurrences are difficult to foresee and whose impacts on organizations are disruptive and potentially inimical.	Perturbation	Inimical impact		Transient	
Discontinuity (Lorange et al., 1986)	Irregular, nonlinear and erratic change due to social, economic, technological and political forces	Irregular, nonlinear, erratic				
Challenging Event (Isabella, 1990)	Context for substantial change and adaptation. Unfolds over time.					Context
Shock (Fligstein, 1991)	A perceived crisis which creates a reconstitution of the rules or models of new organizational strategies that undermine the existing rules	Crisis	Undermine	Perceived	Crisis	Reconstitution
Cosmology Episode (Weick, 1993)	Loss of meaning and loss of psychological means to rebuild. Collapse of role systems.		Loss Collapse	Meaning (Individual internal)		
Controversial Event (Elsbach, 1994)	Creates legitimacy threat		Threat	(External agent)		Legitimacy
Economic Adversity (Ocasio, 1995)	Failure to meet a level of aspiration that induces organizational stress.		Failure	Aspiration (organization)	Failure	Org. stress
Critical Event (Hoffman & Ocasio, 2001; Pride, 1995)	Contextual dramatic happenings that focus sustained public attention and invite the collective definition or redefinition of social problems	Dramatic happening		Focus public attention (External agent)		Collective definition

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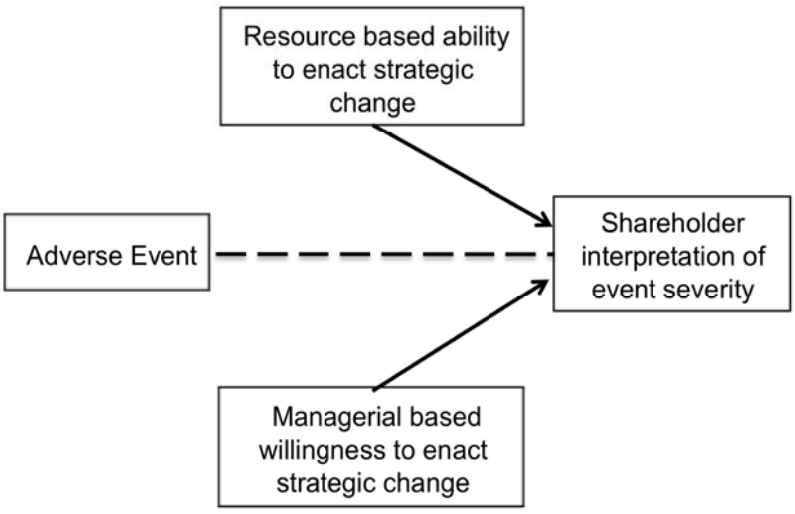
Stakeholder interpretation becomes important during adverse events because stakeholders provide those tangible and intangible resources necessary for the firm to navigate the adverse event. For example, employees, customers, and regulators are important stakeholders. In a time of crisis, their ongoing support can be critical. Similarly, stockholders are critical stakeholders that provide financial resources. In our model, we focus on stockholder interpretation of an adverse event in a technologically dynamic industry.

Adverse events draw stakeholder attention and increase stakeholder processing of incoming information. Such processing may impact stakeholder estimation of future firm performance. Research in cognitive psychology has determined that people do not pay attention to information uniformly. Increased information processing is triggered when an obvious breakpoint disrupts an expected pattern. These breakpoints function to focus attention on the new information (Kiesler & Sproull, 1982). However, disruptive information that is negative is more likely to attract stakeholder attention (Weinberger & Lepkowska-White, 2000) and act as a breakpoint (Sharma & Lacey, 2004). An adverse event as defined above is such a breakpoint. With the occurrence of an adverse event, the information available to the top management team is often greater and of higher quality than the information available to external stakeholders.

MODEL DEVELOPMENT

Resources and managerial influence are at the heart of strategy literature (Barney, 1991; Child, 1972). In this section, we extend resource based and upper echelon theory to the occurrence of adverse events in order to develop our theoretical model. The research model is presented in Figure 1.

FIGURE 1
Theoretical Model



The resource based view of the firm proposes that a firm is a bundle of unique capabilities and those capabilities that are unique, valuable and non-imitable will lead to competitive advantage (Barney, 1991; Wernerfelt, 1984). The knowledge based view (Grant, 1996; Nonaka, 1994), a theoretical extension to the resource based view, argues that heterogeneous knowledge bases are the primary resource determinants of performance differences among firms. The underlying knowledge of firms may be conceptualized in terms of stocks and flows (DeCarolis & Deeds, 1999; Dierickx & Cool, 1989). Stocks of resources are accumulated over time. Flows of knowledge enter into the organization and may be accumulated into stocks. Viewing the organization's knowledge base in this way, we can conceptualize that at any moment in time, an organization may possess a stock of varied knowledge or capabilities. These varied stocks or bundles may also be considered strategic options that the firm may choose to pursue a subset of.

An option's value is derived from the future decision rights it creates. Bowman and Hurry (1993, p 762) view a firm's resource investments as a 'bundle of options' which create future strategic choices. They write:

'Options come into existence when existing resources and capabilities allow preferential access to future opportunities.' (Bowman & Hurry, 1993, p 762)

McGrath and Nerkar (2004) in a study of the pharmaceutical industry found actual firm R&D strategy was more consistent with a real options perspective than theories that rely purely on assumptions from finance or economics. Bundles of resource options create strategic flexibility. The cost of investment in a real option is lower than the cost of a full-scale product development. More strategic options are available to a firm with a larger set of real options. In an uncertain environment, a greater set of resource options reduces firm specific risk by increasing firm flexibility to change strategic direction when any specific strategic direction becomes unavailable. The ability to engage in strategic change afforded by a portfolio of real resource options may reduce stakeholder perception of severity of an adverse event.

While a bundle of resource options provides the firm with specific alternative directions, slack provides the firm the ability to respond to environmental opportunity (Greenley & Oktemgil, 1998). Slack refers to the difference between the resources possessed by the firm and the resource demands of the current business. Penrose (1959) considered organizational slack a prime driver of organizational growth and innovation. Theorists point out that slack allows a firm the ability to take advantage of opportunities available within the environment and thus facilitates strategic change and organizational adaptation (Bourgeois, 1981; Meyer, 1982; Thompson, 1967). Slack resources have been found to effect organizational response to environmental change (Mahajan & Lummer, 1993). The most visible form of slack identifiable by external stakeholders is financial slack. The ability to meet current financial needs or a high level of working capital is a common indicator of financial slack (Mishina, Pollock & Porac, 2004).

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The more flexibility a firm signals in its resource portfolio the more stakeholders should appreciate the firm's ability to engage in strategic change. Research into reputation formation indicates that a firm's resource signals are important to stakeholder perception (Coombs & Holladay, 2006; Hall, 1992; Rindova, Petkova & Kotha, 2007; Rindova, Williamson, Petkova & Sever, 2005). During the occurrence of an adverse event, the flexibility to engage in strategic change should reduce the severity of stakeholder interpretation of the adverse event. The composition of a firm's resource portfolio is a strong signal of the firm's flexibility and ability to engage in strategic change. Firms with larger real option portfolios will have greater abilities to engage in more specific strategic directions. Firms with higher levels of financial slack resources will be have a greater ability to take advantage of opportunities available within the environment.

These arguments lead to the following proposition:

> *Proposition 1. The greater the flexibility of a firm's capabilities, the lower the shareholder perception of adversity during the occurrence of an adverse event.*

While a firm's resource capabilities may signal strategic flexibility, it is top managers that oversee the strategic change that moves the firm in a new direction. The upper echelon perspective (UEP) posits that the senior management team's demographics are observable signals of the cognitive dispositions and internal processes of the senior management team that influence organizational outcomes (Hambrick, 2007; Hambrick & Mason, 1984). The link between senior management demographics and organizational outcomes has been suggested in relationship to corporate strategy (Jensen & Zajac, 2004), diversification posture (Michel & Hambrick, 1992), innovation (Bantel & Jackson, 1989), corporate performance (Thomas, Litschert & Ramaswamy, 1991) and strategic change (Boeker, 1997; Hambrick, Cho & Chen, 1996).

While scholars have questioned the causal mechanisms that link senior management team demographic characteristics and firm outcomes (Carpenter, Geletkanycz & Sanders, 2004; Priem, Lyon & Dess, 1999), the same is not true for the use of senior management team demographics as signals to stakeholders. Managerial demographics have been identified as important signals to stakeholders (Cohen & Dean, 2005; Higgins & Gulati, 2006). Cohen and Dean (2005) used the occurrence of an IPO as an information asymmetric context to study the influence of top management team demographics on investor behavior. They found that organizational legitimacy can be signaled by the demographic characteristics of the top management team. Their measure of legitimacy was calculated based upon the top managers level of industry experience, prior TMT experience, age and education. Set in a similar IPO context, Higgins and Gulati (2006) studied the effect of the top managers demographics as indicators of 'resource legitimacy' and 'role legitimacy.' Resource legitimacy estimated the firm's potential for access to upstream, horizontal or downstream resources. Role legitimacy estimated the manager's ability to fulfill critical roles within the

firm. Downstream resource legitimacy and role legitimacy were found to positively influence investor actions as measured the number of dedicated institutional investors who participated in the firm's IPO. These studies point to top management team demographics as important signals of legitimacy to shareholders in environments where information is unevenly distributed.

Lacking in the upper echelon perspective and signaling theory streams of research is an examination of how top management team demographic characteristics may act as signals to stakeholders during the occurrence of an adverse event. Since senior management characteristics have been shown to act both as a signal to stakeholders and impact organizational outcomes including strategic change, it is likely that demographic characteristics, might also be indicative of top management's ability to handle an adverse event and engage in strategic change. The perceived ability of management to guide the organization through an adverse event may influence shareholder perception of the severity of an adverse event.

Three such characteristics are age, organizational tenure and team heterogeneity. Theorists have argued that executive tenure and age are indicative of strategic persistence, a reluctance to engage in strategic change and commitment to the status quo (e.g. Boeker, 1997; Finkelstein & Hambrick, 1990; Hambrick, Geletkanycz & Fredrickson, 1993; Knight, Pearce, Smith & Olian, 1999; Wiersema, 1992). It has been argued that this persistence is due to tenure related impacts on socialization, organizational communication and managerial cognition. As senior management spends time in an organization they become increasingly convinced of the correctness of the organizations way of acting. This process occurs due to the ongoing socialization and selection inherent in rising to the top of an organization (Schneider, Goldstein & Smith, 1995). Resistance to change may be particularly prevalent with respect to the top management team's own actions, especially those that are taken publicly such as strategic actions (Finkelstein & Hambrick, 1990). Further, as tenure increases, socialization creates a common shared perspective making it difficult to consider alternative challenging perspectives and increasing commitment to the status quo (Hambrick et al., 1993). Established routines, habits and information sources predispose actions that are familiar (Katz, 1982).

Similar to the arguments regarding tenure, older executives are generally considered to be more conservative than younger executives and therefore less willing to engage in strategic change. As people age, psychological flexibility decreases while rigidity and resistance to change increases (Wiersema, 1992). Older executives may be more concerned with financial and career security, thus avoiding risky decisions such as strategic change. Wiersema and Bantel (1992) examining strategic change in a sample of fortune 500 firms found that firms engaged in strategic change were characterized by top management teams that were younger and had shorter tenures. Boeker (1997) found similar results regarding top management team tenure in a study of strategic change in semiconductor firms.

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While age and tenure are two important demographic characteristics that indicate a general predisposition toward or against strategic change, top management team composition is another variable that is easily visible to stakeholders and may indicate managerial ability to navigate through an adverse event and engage in strategic change (Wiersema, 1992). Team demographic homogeneity can create perceptions of similarity, group identity and cohesion leading to high commitment to prior actions (Janis, 1972). Demographic heterogeneity represents diversity in the cognitive resources within a team. According to Hambrick and Mason's (1984) original formulation of the upper echelon perspective, heterogeneous teams will have more information available from a wider variety of sources leading to more diverse interpretations and potentially better decisions. Group heterogeneity has been associated with innovation (Bantel & Jackson, 1989) as well as strategic change (Wiersema, 1992), which stakeholders may find appealing given the occurrence of an adverse event.

To sum, we suggest that older top management teams, top management teams with greater organizational tenure and top management teams that are more homogeneous are more resistant to change. During the occurrence of an adverse event these demographic characteristics could be used by shareholders as signals of the top manager's ability to respond to the adverse event. This argument leads to the following proposition:

> *Proposition 2: The greater the perceived ability of the top management team to engage in strategic change, the lower the shareholder perception of adversity during the occurrence of an adverse event.*

RESEARCH METHOD

Research Context

The biotechnology industry presents a unique environment to examine the relationship of adverse event interpretation severity and signals of resource and management capabilities. Biotechnology is a knowledge intensive industry based on highly complex and specific understandings that continue to evolve. Firms often possess unique assets in the form of process or molecule patents. As a relatively young industry, biotechnology firms are often small with limited financial resources, limited staffs and technically involved senior management. As such, these firms are highly dependent upon the knowledge and expertise of their top management. Given their limitations, many firms are focused on the development of just a few molecules. However, while there are a substantial number of smaller firms, the industry also includes sizeable firms with robust pipelines, proven products in the market and substantial financial resources.

Even though there is a good deal of heterogeneity among firms, all firm products are subject to the same rigorous vetting process. Before any drug is made available to the U.S. public, it must be approved by the Food and Drug Administration (FDA). At minimum, drug potentials must pass through three phases of clinical trials before final submission to the FDA for approval. The shepherding of a drug through this process is both time consuming

and expensive. It has been estimated that is takes between 10-15 years and approximately $897 million for a drug to go from initial research to final approval (Moran, 2003). Even with the time and resources available, success is not certain. Drug potentials often drop out of trial or are not advanced to the next stage. This failure can be due to a lack of drug efficacy, deterioration in the patient population, poor economics of the final market, dissolution of a partnership, or any number of other reasons (Moran, 2003).

In the biotechnology industry, failing product development strategies are clearly delimited through the gatekeeper role played by the FDA and thus become visible for the corporation creating a natural breakpoint that focuses stakeholder and managerial attention. Given the time and resources dedicated to drug development, the failure of a drug in trial can be a serious blow to a biotechnology firm. The failure of a drug in trial by definition eliminates future potential revenue streams and thereby calls into question the long term viability of the firm. Additionally, any costs that have been incurred in product development and testing may largely become irrecoverable. Furthermore, since most biotechnology companies are focused on a specific technology or a limited number of molecules, the overall value of the knowledge assets of the corporation may be called into question. Since these failures can happen to any drug under investigation, they present a unique opportunity to study the impact of adversity in the biotechnology industry. The failure of a drug in trial can be considered an adverse event. By raising a drug to clinical trial status, management has made a strong public statement in a value conversation with shareholders that reflects their belief in the wealth creating capacity of the knowledge assets of the corporation. The failure of that drug to progress through the testing phases therefore represents a loss of potential future revenue and the degradation of the knowledge assets of the corporation. It is logical therefore that a trial failure would be acknowledged by shareholders through a devaluation of the corporation's market value.

Methodology

This study relied on the market model event study method (McWilliams & Siegel, 1997; McWilliams & McWilliams, 2000) and uses hierarchical regression. Market model event studies measure wealth changes in individual stocks as compared to changes occurring in the overall market. This methodology allows the assessment of wealth changes either gained or lost due to the occurrence of a specific event. The market model event study methodology has been used to study many topics including; regulatory events (Grace, Rose & Karafiath, 1995), financial investments (Ding & Sun, 1997), technology investments (Hunter, 2003), the R&D process (Kelm, Narayanan & Pinches, 1995), management changes (Mahajan & Lummer, 1993) and strategic alliances (Houston, 2003).

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Sample and Data Collection

The sample was constructed by cross referencing two primary data sets. First, the Compustat database was used to identify all publicly traded biotechnology firms. Firms were identified using the Global Industry Classification Standard (GICS) that was developed by Morgan Stanley Capital International and Standard & Poor's. GICS code 352010 was used and is defined as:

> "Companies primarily engaged in the research, development, manufacturing and/or marketing of products based on genetic analysis and genetic engineering. Includes companies specializing in protein-based therapeutics to treat human diseases." (GICS, GICS 2005)

This code identified 265 publicly traded biotechnology firms in the Compustat database that traded between 1992 and 2002. Second, the Recombinant Capital Database (ReCap) was used to identify terminations of all drugs in trial over the same period. ReCap identified 758 such terminations in its database. After initially cross-referencing these two databases, 381 terminations were identified that were associated with public companies. However, in order for a termination to be used in an event study, the date of the termination must be identified by date to the specific day it occurred. While the ReCap database identifies the month and year of the termination, it does not identify the specific date of the termination. The Lexus/Nexus news service was used to search all wire reports related to the company and the terminated drug to identify the specific date of the termination.

Companies are often reluctant to publicize negative information and this step of the process significantly restricted the number of observations available to the study. Further, in order for a termination to fit the definition of an adverse event, the drug termination should occur due to an influence external to the firm that management would need to respond to and not an internal decision by management to refocus its strategy. The final dataset only included observations where 1) the specific date of the termination could be clearly identified (necessary for the event study methodology) and 2) the termination was due to lack of drug efficacy or adverse development (terminations due to other, internal to the firm, business reasons were not included). The final dataset is made up of 81 observations. Eight of these observations are attributable to three companies and are controlled for in the analysis. These observations clearly represent an adverse event for the firm that occurs on a specific date, without prior knowledge, and therefore are applicable to the event study methodology.

Dependent Variable

Two primary cautions noted in the use of the market model event study methodology are the identification of the event date and the limitation of the event window (McWilliams & McWilliams, 2000). Both of these cautions relate to controlling for potentially confounding events. In order to address the first of these cautions, event dates were based upon an

observation by observation search of wire service news reports provided by the Lexus/ Nexus database. In order to address the second caution, the event window was limited to the day of the event announcement and the following date. Methodological research has supported the preference for short event windows (McWilliams & McWilliams, 2000).

The dependent variable was calculated utilizing the Wharton Research Data Service, Eventus Software and the Center for Research in Security Prices (CRSP) daily stock database. Abnormal daily returns are aggregated over the event window of interest to obtain the dependent variable, the Cumulative Abnormal Return (CAR). For this study, the CAR was aggregated for the event day and the trading day immediately following (0,+1).

Independent Variables

Flexibility of Resource Capabilities

Two theoretical perspectives were developed to indicate a firm's Resource Flexibility. The Real Options perspective incorporates the flexibility the firm's resources create that allow the firm to engage in a possible set of specific strategic directions. The Slack resource perspective indicates the flexibility the firm has to take advantage of opportunities available within the environment.

Two measures are created to estimate the firm's Real Options flexibility; Drugs in Development and Prior Patents. Before any drug is made available to the US public, it must be approved by the Food and Drug Administration (FDA). At minimum, drug potentials must pass through three phases of clinical trials before final submission to the FDA for approval. The different stages of drug development roughly equate to different risk levels in the drug development process. Before a drug can enter phased FDA testing, a company must submit data showing that the drug is reasonably safe for use in initial, small-scale clinical studies. During this preclinical development a company evaluates the drug's toxic and pharmacologic effect through animal testing. In Phase 1 studies, the drug is introduced into healthy humans to determine metabolic and pharmacologic action. These are generally small studies confined to 20-80 people (FDA, 2008). In Phase 2 studies the drug is introduced in a clinical trial to patients with the disease to determine initial indications of efficacy in humans. These studies are generally conducted in a small number of patients, usually less than a few hundred people (FDA, 2008). Phase 3 trials are conducted in patient populations of several hundred up to several thousand. These trials are used to extrapolate results to the general population and to develop physician labeling (FDA, 2008).

A firm's Drugs in Development represents the firm's real options to develop different drug candidates vs the drug candidate that fell out of trial. To calculate these real options, a firm's preclinical, Phase 1 and Phase 2 drugs in development were added together. Phase 3 drugs were not included in this calculation as these drugs are already in expensive large-scale human trials and have clearly moved beyond the option phase of development. Identification of preclinical, Phase 1 and Phase 2 drugs in development was accomplished

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using the Recap database and firm's 10-k reports filed with the SEC. Drugs in Development was calculated as a count the drugs in either the Preclinical, Phase 1 or Phase 2 status as of the year-end prior to the occurrence of the adverse event.

In addition to Drugs in Development, a firms Prior Patents were used to represent the real options embedded in the firm's resources. In the biotechnology industry, firms often possess unique knowledge assets identified in the form of process or molecule patents. Patenting is important in the biotechnology industry as patents represent the intellectual capital of the industry and protect core intellectual property (Shan & Song, 1997). Lerner (1994) demonstrated that the scope of a patent increases the valuation of biotechnology firms. Patents represent the potential for the firm to gain future economic value from unique and legally protected knowledge. As such, they are credible measures of the real options held within the firm's resource portfolio to develop future income streams. Prior Patents were obtained from the online patent database maintained by the US Patent and Trademark Office. A count of Prior Patents was made as of the year-end before the occurrence of the adverse event. In order to account for the highly skewed nature of patent distributions, the variable LN (Prior Patents) was calculated as the natural log of (Prior Patents + 1).

Drugs in Development and Prior Patents are used to measure resource flexibility that focuses on the ability of the firm to move in a specific strategic direction. The Slack Resource perspective on resource flexibility focuses on the ability of the firm to take advantage of environmental opportunity. The ability to meet current financial needs or the level of working capital is a common measure of financial slack (Mishina et al., 2004). Financial slack is estimated as the difference between a firm's working capital available vs working capital required. Working capital available is defined as the firm's cash and cash equivalents while working capital required is defined as the firm' current liabilities. This ratio (Cash & Equivalents / Current Liabilities) is calculated for the year-end financial statements that occurred immediately prior to the adverse event.

Top Management's Willingness to Engage in Strategic Change

The ability of the top management team to engage in strategic change was discussed in relationship to the team's general predisposition as well as the influence of the team's composition. Aligned with the theoretical development earlier, average age and average tenure of the top management team are used to measure the team's general predisposition to engage in strategic change. Similarly, measures of age heterogeneity, tenure heterogeneity and educational heterogeneity are used to estimate the influence of team composition on team willingness to engage in strategic change.

The Edgar database was used to collect firm and demographic information from 10k and proxy reports filed with the SEC. As part of the 10k filing process, each corporation must identify all individuals who are executive officers and provide demographic and background information. Based on this regulatory requirement, the individuals included in the TMT for this study were those identified through Part III Item 10 of the 10k.

Information was collected from the 10k and the proxy that was filed immediately prior to the occurrence of the adverse event. The age and tenure of each executive officer was calculated to the year of the adverse event occurrence. This value was then used to calculate the TMT average age and average tenure for the year-end immediately prior to the adverse event. Age and tenure heterogeneity measures were calculated as of the same year-end using the coefficient of variation. This was chosen as the best measure of heterogeneity due to its scale invariant properties (Allison, 1978). Educational heterogeneity was calculated with a Herfindal-Hrischman index for educational background categories (Hambrick et al., 1996).

Control Variables

Younger firms are generally considered to have a higher potential for failure (Freeman, Carroll & Hannan, 1983; Stinchcombe, 1965). This liability has been attributed to a lack of developed roles and relationships at new and young ventures (Freeman et al., 1983; Stinchcombe, 1965). Researchers have also identified a higher potential for failure due to firm size described as a "liability of smallness" (Bruderl & Schussler, 1990). This liability stems from the idea that small firms do not perform as well as larger firms. Higher failure rates have been attributed to problems of raising capital, attracting, recruiting and retaining talented employees and legitimacy problems with external stakeholders (Aspelund, Berg-Utby & Skjevdal, 2005; Fichman & Levinthal, 1991). The higher risk of failure attributable to younger and smaller firms indicates that shareholders would be inclined to sell shares in younger and smaller firms, given the occurrence of an adverse event. To control for these issues, Firm Age and Firm Size are added as controls. Firm age is measured in years and calculated from the IPO year to the year of the adverse event. The IPO year was used as the initial year, as the IPO process has been found to effectively "reset the clock" and reintroduce risks associated with the liability of newness (Amburgey, Kelly & Barnett, 1993). Firm Size was entered as the log of total assets, which was collected from the 10k for the end of the year prior to the adverse event.

RESULTS

The wealth impact from an adverse event was operationalized as the 2 day CAR (0, +1). For all firms having an adverse event, the mean CAR (0,+1) measured -19.24%. The significance of this mean CAR (0,+1) was assessed with the parametric Patell test and the non-parametric Generalized sign test. The CAR (0,+1) was significant ($p<0.001$), for both tests, in line with the results by Sharma (2004). A lack of significance in the other event windows, from 5 days before to 5 days after the event, for both the Patell and Generalized sign tests indicates a clean and well-defined event window.

Table 2 presents a profile of the sample in term of mean, median, standard deviation, skew and kurtosis. The majority of firms are approximately 12 years. Firm size is approximately $578 million in total assets but a few firms have substantial resources with total assets that reach $6 billion. All firms hold significant amounts of cash as the measure of cash to

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current liabilities averages 9.23x. The positive skew and leptokurtic nature of this variable indicates some firms maintain very high levels of liquidity. The TMT averages 49.5 years of age with 4.9 years experience in the executive ranks at the firm. Correlations between the variables are presented in Table 3.

Table 2
Descriptive Statistics

	Mean	Standard Dev
CAR (0,+1)	-0.19	0.25
Total Assets	5.01	1.71
Firm Age	12.69	4.65
Cash to Cur Liab	9.23	10.61
Drugs in Dev	7.36	4.56
Prior Patents	3.42	1.55
TMT Avg Age	49.25	3.29
TMT Avg Tenure	4.9	1.95
TMT Age Het	0.13	0.05
TMT Tenure Het	0.71	0.37
TMT Ed Het	0.72	0.06

Hierarchical Regression Analysis

Hierarchical regression was performed to test the hypothesis. OLS assumptions were examined for the full model with no problems detected. Multicollinearity was examined by calculating VIF statistics (Belsley, Kuh & Welsch, 1980). The highest VIF measured 1.71 well below the 5.0 level where multicollinearity is considered a problem. A Durbin Watson statistic of statistic of 2.060 indicated no problem due to auto-correlation. Heteroskedacity (White, 1980) and residual normality (D'Agostino & Stephens, 1986) were examined through residual plots with no obvious problems detected. The distribution of the standardized residuals had a skew of -0.31 and a kurtosis of 0.11 where 0.00 skew and 0.00 kurtosis represent a normal distribution.

Results of the regressions are presented in Table 4. In the first step of the analysis, the control variables Firm Age and Firm Size were introduced into the model. Both Firm Age and Firm Size were significant. The model achieved an adjusted Adj R2 of 33.6% and was significant with a p value less than 0.001. The second step of the regression analysis tested Proposition 1, which examined the relationship of the firm's Resource Flexibility and shareholder interpretation of event severity. Greater Resource Flexibility was predicted to reduce shareholder interpretation of event severity as the firm would have the flexibility in resources to engage in strategic change. Proposition 1 was tested by adding in a block the Resource Flexibility measures of Drugs in Development, Prior Patents and Slack Resources to the model. Drugs in Development and Prior Patents represented the firm's flexibility to engage in specific strategic directions created by the real options the firm has invested in. The level of Slack Resources represented the general flexibility the firm had to take

advantage of environmental opportunities. None of the Resource Flexibility measures were significant and Proposition 1 was not supported.

TABLE 3
Pearson Correlations

							Top Management Team			
							Average		Heterogeneity	
	CAR	T Assets	Firm Age	Cash to CLiab	Drugs In Dev	Prior Patents	Age	Tenure	Age	Tenure
CAR (0,+1)	1.00									
Total Assets	.45***	1.00								
Firm Age	.24*	.11	1.00							
Cash to Cur Liab	.15	.28**	-.16	1.00						
Drugs in Dev	.22*	.44***	-.09	.36***	1.00					
Prior Patents	.27*	.58***	.32**	.08	.11	1.00				
TMT Avg Age	.18	.06	.26*	.00	.00	.05	1.00			
TMT Avg Tenure	-.14	-.12	.28*	-.01	.00	.24*	.44***	1.00		
TMT Age Het	-.16	-.29**	-.05	-.13	-.31**	-.21+	.15	-.19+	1.00	
TMT Tenure Het	.12	.18	.27*	-.03	-.14	.12	-.06	-.42***	-.01	1.00
TMT Ed Het	.15	.53***	.12	.06	.11	.34**	-.10	-.14	-.12	.25*

***<.001 **<.01 *<.05 +<.10

The third and fourth steps of the analysis tested Proposition 2, which examined demographic indicators of senior management's willingness to engage in strategic change on shareholder interpretation of event severity. Demographic indicators of a willingness to engage in strategic change were predicted to decrease the severity of shareholder interpretation of event severity. In the 3rd step TMT Average Age and TMT Average Tenure were entered. In the 4th step TMT Age Heterogeneity, TMT Tenure Heterogeneity and TMT Education Heterogeneity were entered. The demographic indicators were entered in two blocks because the causal logic supporting the addition of Average Age and Average Tenure is different than the causal logic supporting the heterogeneity variables. In step 3, the Average Age (p=0.026) and Average Tenure (p=.016) variables were both significant. As a block, these variables improved the model. The Step 3 model achieved an adjusted R2 of 37.2%. The change in R2 of 6.1% was significant (p=.024). In Step 4 of the model, the heterogeneity variables were entered. Only the Age Heterogeneity variable was significant (p=.071). As a group, the heterogeneity variables did not significantly improve the R2 of the model.

To determine if Age Heterogeneity alone would improve the model, a Reduced Model was calculated where only the Age Heterogeneity variable was added to the Step 3 model. The Reduced Model achieved an adjusted R2 of 39.2%, a significant improvement in R2 of 2.5% (p=.071).

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TABLE 4

Hierarchical Regression Results

DV: Cumulative Abnormal Return			Top Management Team		
	Controls[1]	Resources	Age and Tenure	Heterogeneity	Reduced Model
Variables	Step 1	Step 2	Step 3	Step 4	
Intercept	-.575(.094)***	-.602(.098)***	-1.269(.352)**	-.854(.477)+	-1.323(.348)***
Firm Age	.010(.005)*	.012(.005)*	.012(.005)*	.013(.006)*	.011(.005)*
Total Assets	.053(.014)***	.053(.019)**	.029(.020)	.030(.024)	.016(.021)*
Cash to Cur Liab		.002(.002)	.002(.002)	.002(.002)	.002(.002)
Drugs in Dev		.002(.006)	.004(.006)	.000(.006)	.002(.006)
Prior Patents		-.010(.017)	.010(.018)	.013(.018)	.013(.018)
TMT Avg Age			.018(.008)*	.023(.009)*	.024(.009)**
TMT Avg Tenure			-.035(.014)*	-.051(.019)**	-.047(.015)**
TMT Age Het				-.998(.569)+	-1.009(.550)+
TMT Tenure Het				-.033(.078)	
TMT Ed Het				-.624(.447)	
F Value	9.209***	5.801***	5.798***	5.097***	5.752***
Adj R^2	.336	.322	.372	.397	.392
Change in R^2		.011	.061*	.044	.025+

***<.001 **<.01 *<.05 +<.10

1- Results are shown after implementing firm level controls for the occurrence of multiple adverse event per firm.

The significant improvement in the explanatory power of the model from the addition of the demographic variables in the third and fourth step supported the general proposition of the paper that senior management demographic characteristics influence stakeholder interpretation of an adverse event. However, while the significance of the block supports this general proposition, the signs of the variable coefficients indicate that different demographic characteristics are interpreted separately. The coefficient on TMT Average Age was positive indicating a correlation with a stakeholder interpretation of reduced event severity. This conclusion is a reversal of the proposition development that increase in average age signals a reduced ability to engage in change. In a similar reversal, the coefficient for TMT Age Heterogeneity was negative indicating a correlation with a stakeholder interpretation of increased adverse event severity. This finding is a reversal of the proposition development that the additional cognitive resources available through a heterogeneous team would allow greater levels of change. While the signs of these two variables were in the opposite direction of those proposed, the sign for TMT Average Tenure was negative supporting the proposition. Increased TMT Average Tenure, indicating a lower ability to engage in change was correlated with an increased stakeholder interpretation of adverse event severity. A summary of the propositions and the analysis results is shown in Table 5.

TABLE 5

Summary of Propositions and Results

Proposition	Measure	Result
Resource based ability to change		
	Cash to Current Liabilities	NS
	Drugs in Development	NS
	Prior Patents	NS
Managerial based willingness to change		
	Average Age	Significant, Reversed sign
	Average Tenure	Supported
	Age Heterogeneity	Significant, Reversed Sign
	Tenure Heterogeneity	NS
	Education Heterogeneity	NS

DISCUSSION

In this paper, we have investigated the research question of the impact of specific organizational and managerial capabilities on shareholder interpretation of adverse events. In so doing, we have addressed an important gap in the strategy literature, that is, we have specifically looked at an important acute outcome of an adverse event – shareholder interpretation – and then hypothesized and tested a model of the organizational and managerial variables that might lessen the severity of shareholder interpretation of that event.

Our model predicts that bundles of firm capabilities represents options for firms in the face of adverse events and that the composition of the top management team signals to shareholders the ability of the firm to engage in strategic change. We test our model in a technologically dynamic industry – biotechnology. Terminations of drugs under clinical development represent the adverse event.

The results of the statistical analysis present two surprising results worthy of further discussion: the insignificance of the resource capability variables and the mixed signs of the significant demographic variables. After controlling for firm age and size, flexibility in the firm's resource capabilities does not appear to influence stakeholder interpretation of adverse event severity. This is surprising since flexibility in resources would intuitively appear necessary for a firm to engage in strategic change. An explanation for the insignificance of the resource variables can be found in the finance literature (Fama, 1980). Traditional valuation models incorporate the concept of a firm's future cash flow pattern, along with a discount rate determining the value of an investment. In such a traditional valuation model, the future cash flows available to the firm from the resource variables are already incorporated into the firm's current valuation. Under such a model, the potential

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cash flows embedded in flexible resources are already captured in the stock's valuation and would not have an additional impact during the occurrence of an adverse event.

The second finding worthy of further discussion is the mixed signs of the significant demographic variables. The demographic variables, Average Age and Average Tenure were significant in the model, supporting the general proposition of the paper that demographic indicators of the senior management team influence stakeholder interpretation of event severity. However, the signs of these variables were mixed. The sign of the average age variable was in the opposite direction of the hypothesis, while the average tenure variable was in the direction of the hypothesis. These results suggest that the presence of older top management teams reduce the negative impact of an adverse event – in other words, shareholders believe that older teams will be better equipped to deal with the adverse event. Moreover, the results suggest that teams with less tenure are also better equipped to deal with the adverse event. Interestingly, the significance and negative sign of the age heterogeneity variable, in the opposite direction of the hypothesis, suggests that the interpretation by shareholders of adverse events is more negative when top management teams are more age diverse.

While it has been argued that age is indicative of an unwillingness to change strategic direction, other research has pointed toward an opposing view. Significant research on learning has indicated that learning gained through greater experience is linked to firm performance (Bapuji & Crossan, 2004; Levinthal & Rerup, 2006). Management teams with greater experience should have higher absorptive capacity, allowing them to interpret and react to critical information faster (Cohen & Levinthal, 1990). The strategic schemas of more experienced actors are more complex, enabling a quicker and more multifaceted understanding of cause and effect relationships within an ambiguous information environment (Nadkarni & Narayanan, 2007). Effective decision making within high velocity environments has been linked to the ability to simultaneously consider a large number of alternatives (Eisenhardt, 1989), which is indicative of a complex strategic schema that have developed over time. This literature indicates that management teams with greater experience would be better positioned to understand and respond to an adverse event, thus shareholders would be less inclined to sell shares in firms led by older executive teams or executive teams.

While heterogeneity among the senior management team may contribute to more effective decision making and strategic change (Bantel & Jackson, 1989; Hambrick & Mason, 1984; Wiersema, 1992) as hypothesized in this paper, theorists have also linked it to slower decision making and potentially greater team conflict (e.g. Hambrick et al., 1996; Smith, Smith, Sims Jr., O'Bannon & Scully, 1994). The opposite results found in this study may indicate that stakeholders view team heterogeneity as more of a sign of a slow decision process than an improvement in decision making.

RESEARCH IMPLICATIONS AND LIMITATIONS

The occurrence of adverse events can only be expected to increase, as organizational environments grow more global and more uncertain. This fact heightens the need for an extension of research in the area of adverse events. Our definition of an adverse event focuses on the understanding that event severity is perception based and heterogeneous across firms. Our empirical analysis points to the fact that shareholder perception of the severity of the adverse event does vary across firms depending on the capabilities of the top management team. Future research might explore the potential influence on the severity of stakeholder perception due to 1) concentrations of ownership, 2) ownership by shareholder type and 3) the influence of organizational legitimacy on interpretation severity. Also, testing in other industries would provide more insights into our model as well as including other variables developed from different theoretical frameworks. Earlier in the paper we mentioned that stakeholders such as customers and regulatory bodies would also have their own perceptions of an adverse event. An interesting extension would be the reaction of other stakeholders to adverse events. Future research might investigate the variables that impact perceptions of firm adverse event severity among various stakeholders. Similarly, there are a host of other adverse events in other contexts that are worth exploring.

Shareholders are important stakeholders. Their opinions are reflected in the capitalization of the firm and affect the firm's ability to raise funds. In times of adversity, shareholders can act quickly on existing signals that indicate management's willingness to act. The managerial implications of these results indicate the influence that shareholder perceptions of the top management team have on value creation/destruction during the occurrence of an adverse event. The findings of this study suggest that who is at the helm – the top management team composition - influences value creation/destruction during the occurrence of an adverse event. This influence is indicative of shareholder perception of the TMTs ability in the face of an adverse event.

This study is not without imitations. First, our model is tested in one industry. Clearly, exploring this model in other industry or multi-industry contexts would yield interesting insights in the relationship among the independent variables proposed here and adverse event interpretation. Second, our model is grounded in resource based and top management theory, and thus focuses on variables relating to these two streams. Other types of independent variables might impact adverse event interpretation. However, even with these limitations, this study does suggest areas of thoughtful concern.

MANAGERIAL IMPLICATIONS AND CONCLUSION

With regard to practice, as organizational environments increase in their level of volatility and adversity, understanding stakeholder response to the interaction of adversity and organizational characteristics can help managements position their firms for the highest stability. Our findings suggest that the composition of the top management team is an important element affecting stakeholder perception during times of adversity. This finding

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is actually consistent with insights from venture capitalists who base a significant amount of their funding decisions on the nature of the top management team.

While resource capabilities did not play the predicted role in our study, we do not rule out their importance to firms during times of distress. As explained earlier, the information about firm capabilities may already be incorporated into the market price. More importantly, we feel that resource capabilities, while not significant in the short adverse event window, will play a more critical role in long term strategic change.

This paper contributes to scholarly literature in four important ways. First, prior definitions of adversity are analyzed and then synthesized. We propose a new definition of an adverse event that incorporates critical elements from prior literature. Second, the study brings to the fore the interpretation of the triggering event itself as an important dependent variable. Third, we extend resource based and upper echelon theory to the interpretation of adverse events. Finally, the study sheds new light on the relationship of the firm's resource and management capabilities on interpretation of adverse event severity by stakeholders.

References

Allison, P. D. 1978. Measures of Inequality. *American Sociological Review, 43*: 865-880.

Amburgey, T. L., Kelly, D., & Barnett, W. P. 1993. Resetting the Clock: The Dynamics of Organizational Change and Failure. *Administrative Science Quarterly, 38(1)*: 51-73.

Aspelund, A., Berg-Utby, T., & Skjevdal, R. 2005. Initial Resources' Influence on New Venture Survival: A Longitudinal Study of New Technology-Based Firms. *Technovation, 25(11)*: 1337.

Austen-Smith, D., & Banks, J. S. 2000. Cheap Talk and Burned Money. *Journal of Economic Theory, 91(1)*: 1-16.

Bantel, K. A., & Jackson, S. E. 1989. Top Management and Innovations in Banking: Does the Composition of the Top Team Make a Difference? *Strategic Management Journal, 10*: 107-124.

Bapuji, H., & Crossan, M. 2004. From Questions to Answers: Reviewing Organizational Learning Research. *Management Learning, 35(4)*: 397-417.

Barney, J. 1991. Firm Resources and Sustained Competitive Advantage. *Journal of Management, 17(1)*: 99-120.

Belsley, D. A., Kuh, E., & Welsch, R. E. 1980. *Regression Diagnostics: Identifying Influential Data and Sources of Collinearity*. New York: Wiley.

Boeker, W. 1997. Strategic Change: The Influence of Managerial Characteristics and Organizational Growth. *Academy of Management Journal, 40(1)*: 152-170.

Bourgeois, L. J., III. 1981. On the Measurement of Organizational Slack. *Academy of Management Review, 6(1)*: 29-39.

Bowman, E. H., & Hurry, D. 1993. Strategy through the Option Lens: An Integrated View of Resource Investments and the Incremental-Choice Process. *The Academy of Management Review, 18(4)*: 760-782.

Bruderl, J., & Schussler, R. 1990. Organizational Mortality: The Liabilities of Newness and Adolescence. *Administrative Science Quarterly, 35(3)*: 530-547.

Carpenter, M. A., Geletkanycz, M. A., & Sanders, W. G. 2004. Upper Echelons Research Revisited: Antecedents, Elements, and Consequences of Top Management Team Composition. *Journal of Management, 30(6)*: 749-778.

Child, J. 1972. Organizational Structure, Environment and Performance: The Role of Strategic Choice. *Sociology, 6(1)*: 1-22.

Cohen, B. D., & Dean, T. J. 2005. Information Asymmetry and Investor Valuation of Ipos: Top Management Team Legitimacy as a Capital Market Signal. *Strategic Management Journal, 26(7)*: 683-690.

Cohen, W. M., & Levinthal, D. A. 1990. Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly, 15*: 128-152.

Coombs, W. T., & Holladay, S. J. 2006. Unpacking the Halo Effect: Reputation and Crisis Management. *Journal of Communication Management, 10(2)*: 123.

D'Agostino, R. B., & Stephens, M. A. 1986. *Goodness of Fit Techniques*. New York: Marcel Dekker, Inc.

DeCarolis, D. M., & Deeds, D. L. 1999. The Impact of Stocks and Flows of Organizational Knowledge on Firm Performance: An Empirical Investigation of the Biotechnology Industry. *Strategic Management Journal, 20(10)*: 953.

DeCarolis, D. M., Yang, Y., Deeds, D. L., & Nelling, E. 2009. Weathering the Storm: The Benefit of Resources to High-Technology Ventures Navigating Adverse Events. *Strategic Entrepreneurship Journal, 3(2)*: 147-160.

Dierickx, I., & Cool, K. 1989. Asset Stock Accumulation and Sustainability of Competitive Advantage. *Management Science, 35(12)*: 1504.

Ding, D. K., & Sun, Q. 1997. The Information Content of Fdi Announcements: Evidence from an Emerging Market. *International Review of Financial Analysis, 6(1)*: 63-76.

http://digitalcommons.kennesaw.edu/jekem/vol3/iss1/3
DOI: 10.7885/1946-651X.1036

Eisenhardt, K. M. 1989. Making Fast Strategic Decisions in High-Velocity Environments. *Academy of Management Journal, 32(3)*: 543.

Elsbach, K. D. 1994. Managing Organizational Legitimacy in the California Cattle Industry: The Construction and Effectiveness of Verbal Accounts. *Administrative Science Quarterly, 39(1)*: 57-88.

Fama, E. F. 1980. Agency Problems and the Theory of the Firm. *Journal of Political Economy, 88(2)*: 288-307.

FDA. 2008. Center for Drug Evaluation and Research - Handbook.

Fichman, M., & Levinthal, D. A. 1991. Honeymoons and the Liability of Adolescence: A New Perspective on Duration Dependence in Social and Organizational Relationships. *The Academy of Management Review, 16(2)*: 442-468.

Finkelstein, S., & Hambrick, D. C. 1990. Top-Management-Team Tenure and Organizational Outcomes: The Moderating Role of Managerial Discretion. *Administrative Science Quarterly, 35(3)*: 484-503.

Fligstein, N. 1991. The Structural Transformation of American Industry: An Institutional Account of the Causes of Diversification in the Largest Firms, 1919-1979. In W. W. Powell and P. J. Dimaggio (Eds.), *The New Institutionalism in Organizational Analysis*: 311-336. Chicago: University of Chicago Press.

Freeman, J., Carroll, G. R., & Hannan, M. T. 1983. The Liability of Newness: Age Dependence in Organizational Death Rates. *American Sociological Review, 48(5)*: 692-710.

GICS. GICS 2005. Global Industry Classification Standard.

Grace, E. V., Rose, L. C., & Karafiath, I. 1995. Using Stock Return Data to Measure the Wealth Effects of Regulation: Additional Evidence from California's Proposition 103. *Journal of Risk and Insurance, 62(2)*: 271-285.

Grant, R. M. 1996. Toward a Knowledge-Based Theory of the Firm. *Strategic Management Journal, 17*: 109-122.

Greenley, G. E., & Oktemgil, M. 1998. A Comparison of Slack Resources in High and Low Performing British Companies. *Journal of Management Studies, 35(3)*: 377-398.

Hall, R. 1992. The Strategic Analysis of Intangible Resources. *Strategic Management Journal, 13(2)*: 135.

Hambrick, D. C. 2007. Upper Echelons Theory: An Update. *Academy of Management Review, 32(2)*: 334-343.

Hambrick, D. C., Cho, T. S., & Chen, M.-J. 1996. The Influence of Top Management Team Heterogeneity on Firms' Competitive Moves. *Administrative Science Quarterly, 41(4)*: 659-684.

Hambrick, D. C., Geletkanycz, M. A., & Fredrickson, J. W. 1993. Top Executive Commitment to the Status Quo: Some Tests of Its Determinants. *Strategic Management Journal, 14(6)*: 401-418.

Hambrick, D. C., & Mason, P. A. 1984. Upper Echelons: The Organization as a Reflection of Its Top Managers. *Academy of Management Review, 9(2)*: 193.

Higgins, M. C., & Gulati, R. 2006. Stacking the Deck: The Effects of Top Management Backgrounds on Investor Decisions. *Strategic Management Journal, 27(1)*: 1.

Hoffman, A. J., & Ocasio, W. 2001. Not All Events Are Attended Equally: Toward a Middle-Range Theory of Industry Attention to External Events. *Organization Science, 12(4)*: 414-434.

Houston, M. B. 2003. Alliance Partner Reputation as a Signal to the Market: Evidence from Bank Loan Alliances. *Corporate Reputation Review, 5(4)*: 330-342.

Hunter, S. D. 2003. Information Technology, Organizational Learning, and the Market Value of the Firm. *Journal of Information Technology Theory and Application, 5(1)*: 1-28.

Isabella, L. A. 1990. Evolving Interpretations as a Change Unfolds: How Managers Construe Key Organizational Events. *Academy of Management Journal, 33(1)*: 7-41.

Janis, I. L. 1972. *Victims of Groupthink; a Psychological Study of Foreign-Policy Decisions and Fiascoes*. Boston: Houghton Mifflin.

Jensen, M., & Zajac, E. J. 2004. Corporate Elites and Corporate Strategy: How Demographic Preferences and Structural Position Shape the Scope of the Firm. *Strategic Management Journal, 25(6)*: 507.

Katz, R. 1982. The Effects of Group Longevity on Project Communication and Performance. *Administrative Science Quarterly, 27(1)*: 81.

Kelm, K. M., Narayanan, V. K., & Pinches, G. E. 1995. Shareholder Value Creation During R&D Innovation and Commercialization Stages. *Academy of Management Journal, 38(3)*: 770-786.

Kiesler, S., & Sproull, L. 1982. Managerial Response to Changing Environments: Perspectives on Problem Sensing from Social Cognition. *Administrative Science Quarterly, 27(4)*: 548-570.

http://digitalcommons.kennesaw.edu/jekem/vol3/iss1/3
DOI: 10.7885/1946-651X.1036

Knight, D., Pearce, C. L., Smith, K. G., & Olian, J. D. 1999. Top Management Team Diversity, Group Process, and Strategic Consensus. *Strategic Management Journal, 20(5)*: 445-465.

Kraatz, M. S., & Zajac, E. J. 2001. How Organizational Resources Affect Strategic Change and Performance in Turbulent Environments: Theory and Evidence. *Organization Science, 12(5)*: 632-657.

Lerner, J. 1994. The Importance of Patent Scope: An Empirical Analysis. *RAND Journal of Economcis, 25(2)*: 319-333.

Levinthal, D., & Rerup, C. 2006. Crossing an Apparent Chasm: Bridging Mindful and Less-Mindful Perspectives on Organizational Learning. *Organization Science, 17(4)*: 502-513.

Lorange, P., Morton, M., & Ghoshal, S. 1986. *Strategic Control*. New York: West Publishing Company.

Mahajan, A., & Lummer, S. 1993. Shareholder Wealth Effects of Management Changes. *Journal of Business Finance & Accounting, 20(3)*: 393-410.

McGrath, R. G., & Nerkar, A. 2004. Real Options Reasoning and a New Look at the R&D Investment Strategies of Pharmaceutical Firms. *Strategic Management Journal, 25(1)*: 1-21.

McWilliams, A., & Siegel, D. 1997. Event Studies in Management Research: Theoretical and Empirical Issues. *Academy of Management Journal, 40(3)*: 626-657.

McWilliams, T. P., & McWilliams, V. B. 2000. Another Look at Theoretical and Empirical Issues in Event Study Methodology. *Journal of Applied Business Research, 16(3)*: 1-11.

Meyer, A. D. 1982. Adapting to Environmental Jolts. *Administrative Science Quarterly, 27(4)*: 515-537.

Michel, J. G., & Hambrick, D. C. 1992. Diversification Posture and Top Management Team Characteristics. *Academy of Management Journal, 35(1)*: 9-37.

Mishina, Y., Pollock, T. G., & Porac, J. F. 2004. Are More Resources Always Better for Growth? Resource Stickiness in Market and Product Expansion. *Strategic Management Journal, 25(12)*: 1179.

Moran, M. 2003. Cost of Bringing New Drugs to Market Rising Rapidly. *Psychiatry News, 38(15)*: 25-26.

Nadkarni, S., & Narayanan, V. K. 2007. Strategic Schemas, Strategic Flexibility, and Firm Performance: The Moderating Role of Industry Clockspeed. *Strategic Management Journal, 28(3)*: 243-270.

Nonaka, I. 1994. A Dynamic Theory of Organizational Knowledge Creation. *Organization Science, 5(1)*: 14.

Ocasio, W. 1995. The Enactment of Economic Adversity: A Reconciliation of Theories of Failure Induced Change and Threat Rigidity. In L. L. Cummings and B. M. Staw (Eds.), *Research in Organizational Behavior*: 287-331: JAI Press, Inc.

Penrose, E. 1959. *The Theory of the Growth of the Firm*. New York: Wiley.

Pride, R. A. 1995. How Activists and Media Frame Social-Problems - Critical Events Versus Performance Trends for Schools. *Political Communication, 12(1)*: 5-26.

Priem, R. L., Lyon, D. W., & Dess, G. G. 1999. Inherent Limitations of Demographic Proxies in Top Management Team Heterogeneity Research. *Journal of Management, 25(6)*: 935-953.

Rajagopalan, N., & Spreitzer, G. M. 1997. Toward a Theory of Strategic Change: A Multi-Lens Perspective and Intregrative Framework. *Academy of Management Review, 22(1)*: 48-79.

Rindova, V. P., Petkova, A. P., & Kotha, S. 2007. Standing Out: How New Firms in Emerging Markets Build Reputation. *Strategic Organization, 5(1)*: 31-70.

Rindova, V. P., Williamson, I. O., Petkova, A. P., & Sever, J. M. 2005. Being Good or Being Known: An Empirical Examination of the Dimensions, Antecedents, and Consequences of Organizational Reputation. *Academy of Management Journal, 48(6)*: 1033-1049.

Schneider, B., Goldstein, H. W., & Smith, D. B. 1995. The Asa Framework: An Update. *Personnel Psychology, 48(4)*: 747-773.

Shan, W., & Song, J. 1997. Foreign Direct Investment and the Sourcing of Technological Advantage: Evidence from the Biotechnology Industry. *Journal of International Business Studies, 28(2)*: 267-284.

Sharma, A., & Lacey, N. 2004. Linking Product Development Outcomes to Market Valuation of the Firm: The Case of the U.S. Pharmaceutical Industry. *The Journal of Product Innovation Management, 21(5)*: 297-308.

Smith, K. G., Smith, K. A., Sims Jr., H. P., O'Bannon, D. P., & Scully, J. A. 1994. Top Management Team Demography and Process: The Role of Social Integration and Communication. *Administrative Science Quarterly, 39(3)*: 412-438.

Spence, M. 1976. Informational Aspects of Market Structure: An Introduction. *Quarterly Journal of Economics, 90(4)*: 591-597.

http://digitalcommons.kennesaw.edu/jekem/vol3/iss1/3
DOI: 10.7885/1946-651X.1036

Stinchcombe, A. L. 1965. Social Structure and Organizations. In J. G. March (Ed.), *Handbook of Organizations*: 142-193. Chicago: Rand McNally.

Thomas, A. S., Litschert, R. J., & Ramaswamy, K. 1991. The Performance Impact of Strategy-Manager Coalignment: An Empirical Examination. *Strategic Management Journal, 12(7)*: 509-522.

Thompson, J. D. 1967. *Organizations in Action; Social Science Bases of Administrative Theory*. New York,: McGraw-Hill.

Tripsas, M., & Gavetti, G. 2000. Capabilities, Cognition, and Inertia: Evidence from Digital Imaging. *Strategic Management Journal, 21(10/11)*: 1147.

Weick, K. E. 1993. The Collapse of Sensemaking in Organizations: The Mann Gulch Disaster. *Administrative Science Quarterly, 38(4)*: 628.

Weinberger, M. G., & Lepkowska-White, E. 2000. The Influence of Negative Information on Purchase Behavior. *Journal of Marketing Management, 16(5)*: 465-482.

Wernerfelt, B. 1984. A Resource-Based View of the Firm. *Strategic Management Journal, 5(2)*: 171.

White, H. 1980. A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity. *Econometrica, 48(4)*: 817-842.

Wiersema, M. F. 1992. Top Management Team Demography and Corporate Strategic Change. *Academy of Management Journal, 35(1)*: 91.