THE FOLLOWER'S DILEMMA: INNOVATION AND IMITATION IN THE PROFESSIONAL SERVICES INDUSTRY

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Firm decision makers contemplating imitation of a competitor's innovation face a dilemma: Imitate a new, unproven offering, or forgo imitation and perhaps miss out on the "next big thing"? Approaching this underexplored area of research, we apply information-based imitation theory to evaluate organization- and offering-level characteristics influencing imitation under conditions of high environmental uncertainty and high information asymmetry. In analyzing the service mark filings of the 50 largest management consulting firms over 11 years, we find that although an innovator's organization-level characteristics increase imitation, offering-level characteristics decrease imitation. Furthermore, organization- and offering-level characteristics interact, resulting in different imitation outcomes.

Few topics in the strategy literature have been examined as thoroughly as the actions of first mover firms (e.g., Lambkin, 1988; Lieberman & Montgomery, 1988; Makadok, 1998; Suarez & Lanzolla, 2007). The argument of the first mover perspective is that firms that proactively enter a new product or market space may enjoy a temporal competitive advantage over follower firms (Suarez & Lanzolla, 2007). Research has shown, however, that first mover firms in fact may be as likely to suffer from competitive *disadvantages* as to obtain competitive advantages (Boulding & Christen, 2008; Christensen, 1997; Lieberman & Montgomery, 1998). Therein lies the risk of going first: depending on context, a firm's innovation has an almost even probability of success or failure (Suarez & Lanzolla, 2007). Competitors of the first mover, however, face a dilemma of their own. On the one hand, such a firm may choose to imitate all or a portion of the first mover's innovation. As a competitive response, such mimicry represents an effort to minimize any advantage the first mover may have derived from the innovation (DiMaggio & Powell, 1983; Makadok, 1998). On the other hand, the firm may choose to bypass the innovation and not imitate, acting perhaps on a belief that the innovation is too risky or the environment too uncertain (Dougherty & Heller, 1994). Regardless of the choice the follower firm makes—to imitate or not—both options contain considerable uncertainty.

There is the possibility, for example, that the first mover made a wrong decision and the innovation will not be well received by the market. Under this scenario, the imitator would be simply repeating the mistake made by the first mover. Conversely, there is the possibility that the first mover has hit upon the "next big thing" and, by not imitating the innovation, the competitor firm may miss a significant market opportunity. There is also the possibility that imitation will spark an increased competitive rivalry, thereby lowering industry-wide profit potential. Not imitating the first mover, however, may threaten the competitor's legitimacy; that is, it may be perceived as staid and not in tune with changes in the market. Thus, a "follower's dilemma" is inherent in imitation decisions; firms must weigh the uncertainty of imitating a first mover's offering against the uncertainty of not imitating.

Although prior research provides guidance on environmental and organizational antecedents to imitation (e.g., Abrahamson, 1996; Lieberman & Asaba, 2006; Terlaak & King, 2007), significant gaps remain in understanding the causes and consequences of imitation decisions. For example, the use of imitation as a competitive response in environmental contexts where competitors possess similar market knowledge is well understood (e.g., Chen, Su, & Tsai, 2007; Ferrier, 2001; Gimeno, 1999), but less understood is imitation under conditions of environmental uncertainty and high information asymmetry (i.e., when market actors possess different and unequal stores of market knowledge). Lieberman and Asaba made an important observation about this environmental context—the confluence of environmental uncertainty

and high information asymmetry—stating that in such a setting "imitation processes are most interesting [because] . . . few decisions have outcomes that are fully predictable" (2006: 366). To further emphasize Lieberman and Asaba's (2006) argument, researching imitation in this environmental context is both interesting and important because, though imitation is a prevalent competitive tactic, in highly uncertain environments in which information asymmetry is high, outcomes, favorable or unfavorable, are uncertain.

From an empirical perspective, another gap in the imitation literature lies in the operationalization of the imitation and innovation constructs. Previous research has tended to portray innovation and imitation as dichotomous variables, framing innovation as either present or not, and firms as either imitating or not imitating (e.g., Greve, 1998; Guler, Guillen, & MacPherson, 2002; Haunschild, 1993; Lee, Lee, & Rho, 2002; Makadok, 1998). What is lacking is a finer-grained analysis of how degree of innovation influences degree of imitation, or, stated differently, the question of whether the level of imitation varies with the level of innovation.

We seek to address the two knowledge gaps posited above and make two additional contributions to the imitation and innovation literatures. First, we argue that imitation is predicated on both organization- and offering-level characteristics of a first mover and its innovation, and the interaction of these elements. A multilevel view of the imitation decision is consistent with the notion that an imitator differentially weighs the characteristics of the first mover and the characteristics of the innovation when considering whether or not to imitate and provides finer-grained insight into the antecedents of imitation.

Second, the setting for this research is the services sector, which comprises over half of the American economy and is still growing, according to the U.S. Census Bureau. Prior research on imitation has largely focused on product or commodity markets. Bowen and Ford (2002) suggested that the intangibility of service-based markets creates a number of competitive differences between product-focused firms and those primarily offering services. Given the growing importance of the services sector, as well as the potential for conclusions differing from those found in product-market settings, studies employing service sector data are inherently valuable to the strategy field.

It is also important to note the positioning of this research relative to the competitive dynamics literature. Like research on the first mover phenomenon, the study of competitive dynamics has an extensive history in the strategic management field (e.g., Chen, 1996; Chen & MacMillan, 1992; Porter, 1980), and it continues to be of interest to strategy scholars, particularly the work on multimarket competition (e.g., Chen et al., 2007; Gimeno, 1999). Generally speaking, the argument of multimarket theory is that competitor firms may exhibit different competitive behaviors in each market in which they compete (Chen, 1996). Two assumptions underlying multimarket theory concern factors posited to in part determine whether a competitive action pursued in one market can affect the competitive action pursued in another market.

The first is the assumption of competitive rivalry; that is, two firms' leaderships consider each other as competitors in multiple market contexts and are engaged in some manifestation of "challenge-response" behavior (Chen et al., 2007). To describe this assumption another way, for a competitive action in one market context to affect competitive action in another, the competitors must have at least some degree of rivalry in both markets. The second assumption is that each competitor must understand the consequence of a particular competitive action, at least to some degree (Chen, 1996). For example, in the airline industry, if airline A lowers its price on a route important to airline B, decision makers at both airlines are cognizant of the consequences of such a competitive action.

Both of these assumptions are pertinent for the current study, and in particular, for framing how it differs from research into multimarket competitive dynamics. The objective of this study was to explore the antecedents to imitation of an innovation under conditions of environmental uncertainty and high information asymmetry, where the consequences of innovation and imitation are largely unknowable. In short, although multimarket competitive theory does address a number of competitive situations, it does not provide a clear theoretical lens through which to evaluate imitation in the environmental context of interest in the current study—a context that is becoming far more prevalent in industry (Lieberman & Asaba, 2006).

THEORETICAL FRAMEWORK

At the outset of presenting our theoretical framework, we wish to note that we use the term *firm* to identify a focal firm (i.e., the firm that is considering imitation), and the term *competitor* to identify the organization whose services the focal firm is considering imitating (i.e., the first mover). Use of this naming convention continues throughout our article.

Innovation and Imitation

Abrahamson (1996) suggested that, in introducing any new product or service, firms must balance the norms of rationality against the norms of progressiveness. Rationality dictates that firms' offerings appear reasonable and in-step with the market (i.e., not implausible or outrageous) to gain acceptance. Conversely, per the norm of progressiveness, firms must be fresh and innovative, lest they appear staid and lagging behind changing market conditions. Whereas highly uncertain environments tend to favor innovative, progressive behavior (Covin & Slevin, 1991; Miller, 1983), the opposing force of rationality suggests that even in such environments, innovative behavior should be tempered. Indeed, being too innovative can also threaten organizational legitimacy (Deephouse, 1999) and may, in fact, imperil firm performance (Levinthal & March, 1993; March, 1991). Thus, firms must balance the need to be innovative with the need to appear reasonable and credible in their offerings—in other words, to be new, but not too new. Finding balance between these norms is at the heart of the tension between innovation and imitation: innovation generally advances progressiveness, but imitation reinforces rationality.

The need for balance between these two norms suggests firms that tend to favor innovation may also pursue imitation in some circumstances and, conversely, firms that favor imitation may also engage in selective innovation. Stated differently, firms are not unidimensional in their approaches to innovation or to imitation, and they find balance between the norms by pursuing both behaviors (Chen, 1996). Furthermore, there is also the possibility of seeking balance between the norms within an imitation decision itself. For example, imitators may seek to advance their progressiveness through imitating all, or almost all, of an innovation, thereby attempting to "ride the coattails" of the first mover (Abrahamson, 1996). Conversely, prospective imitators may chose to imitate only a small portion of an innovation, attempting to advance rationality by keeping pace with market changes while also attempting to limit downside risk from an untested innovation. The range of response options available to potential imitators raises this question: Why, and under what conditions, will a firm choose imitation, and if it does, to what degree will it imitate a competitor's innovation?

Theories of Information and Rivalry

In their recent survey of the imitation literature, Lieberman and Asaba (2006) put forth two theoretical frameworks for imitation decision making—one based in information and the other in rivalry.

Information-based imitation. The information-based imitation framework arises from the fields of economics and sociology and casts uncertainty as a necessary condition. The basic tenet of economic information-based imitation is the idea that in uncertain environments, market knowledge is heterogeneous (information asymmetry is high), and the competitor introducing an innovation may be perceived to have superior market knowledge (Bikhchandani, Hirshleifer, & Welch, 1992). Furthermore, Abrahamson (1996) and Bikhchandani et al. (1992) suggested that firms are more likely to follow competitors that are perceived to be "fashion leaders" or "trend setters"—a status that imparts significance to their decisions. The key point of the fashion leaders concept (see Abrahamson, 1991, 1996) is that a competitor with a reputation for being at the forefront of innovation, or with a particular competence in a given area, is often assumed to possess superior market knowledge (Lieberman & Asaba, 2006). Thus, under information-based imitation, firms will actively look for and evaluate the signals sent by their competitors for information concerning the competitors' beliefs about the market; such signals are typically conveyed by the competitors' historical reputation and demonstrated competencies (Bikhchandani, Hirshleifer, & Welch, 1998).

Nonetheless, evaluating the quality of this signal is difficult, a fact that often causes firms to give greater weight to signals that are supported by specific competitor commitments (Bikhchandani et al., 1998). For example, competitor commitments that are accompanied by a significant investment on its part, and/or also strategic changes, increase the credibility of the signals and thereby their salience (Lee, 2001; Milgrom & Roberts, 1986; Williamson, 1983). Hence, when a competitor makes a substantive commitment—such as introducing a new product or service—this commitment conveys specific, credible information to the potential imitator about the competitor's view of market conditions. In parsing the signal, the potential imitator will assess not only what it knows about the signal sender, but also the information contained in the new product or service introduction, in line with the notion of multilevel imitation decision making (Bikhchandani et al., 1998). Thus, under information-based imitation, a prospective imitator will consider characteristics of the competitor generally, and of the new offering specifically, when contemplating imitation.

Similarly, sociological approaches to information-based imitation have focused on "isomorphic

pressures," based in uncertainty, to predict imitation. Under this perspective, imitation provides the benefit not only of reducing uncertainty through homogeneity (DiMaggio & Powell, 1983; Haunschild & Miner, 1997), but also of allowing a firm to economize on "search costs" by assuming competitors face similarly uncertain environmental conditions (Cyert & March, 1963). Commenting on this, Lieberman and Asaba noted: "In highly uncertain environments, where quick action is necessary, imitating others becomes an attractive decision rule" (2006: 373). Contributing to the benefits of imitation under environmental uncertainty is the assumption that the legitimacy of imitation increases as more and more firms imitate (Deephouse, 1996), despite increasing competitive pressures as the specific market niche fills (Deephouse, 1999). To summarize the economic and sociological perspectives, information-based imitation can be thought to have two critical antecedents: perceived information asymmetry, manifested in the belief that a competitor may possess superior market information, and environmental uncertainty. Furthermore, the decision to imitate a new offering is likely multilevel in nature, dependent on characteristics of both the competitor and the offering.

Rivalry-based imitation. In contrast to the type of imitation posited under economic and sociological theories, rivalry-based imitation centers on effort to maintain competitive parity—to keep the competitive status quo. The foundation for rivalry-based imitation is the assumption of low information asymmetry; that is, the view that market actors are likely to possess demonstrably similar knowledge about market conditions (Lieberman & Asaba, 2006). Situations of low information asymmetry are typically found in more certain environments, where the relationships between market actors are better established and the outcome of competitive actions, including imitation, are well known (Baum & Korn, 1996; Gimeno & Chen, 1998; Gimeno & Woo, 1996). In this context, imitation is used more as competitive tool driven by intraindustry competitive dynamics than as a mechanism to deal with perceived information asymmetry or environmental uncertainty.

Lieberman and Asaba (2006) argued, however, that information- and rivalry-based theories of imitation are not mutually exclusive and that firms may follow both theories in pursuing imitation. Furthermore, as Lieberman and Asaba noted, it is theoretically plausible, though less likely, to have rivalry-based imitation under conditions of environmental uncertainty. The critical differentiating characteristic, however, in favoring one theory over the other, is level of information asymmetry, with information asymmetry high for information-based and low for rivalry-based. Given that environmental uncertainty and high information asymmetry favor information-based imitation, the question then turns to identifying specific antecedents to imitation in this context.

Organization-Level Characteristics Affecting Imitation of an Innovation

Competitor organizational innovativeness. Competitor organizational innovativeness is a firm-level construct defined as a competitor's history of introducing innovative offerings over time. An organization's history is part of its reputation (Fombrun, 1996; Fombrun & Shanley, 1990). A competitor's reputation and pattern of historical behavior provide information about the competitor to stakeholders and other market actors, particularly those firms contemplating imitation of the competitor's innovation (Bikhchandani et al., 1998). Thus, a competitor's history of consistently introducing innovative new offerings to a market may signal an innovation competency that overshadows the uncertainty and illegitimacy of an innovative new offering (Ashforth & Gibbs, 1990; Suchman, 1995). To state this idea differently, though the viability of an innovative new offering may be viewed as uncertain, its purveyor's track record in innovation may mitigate this uncertainty. In this way, competitor organizational innovativeness is a signal that the competitor, at the organizational level, possesses superior information regarding the introduction of innovative offerings. Under information-based imitation theory, this information superiority signal by the competitor is likely to encourage the imitation of an innovation of that competitor, so that:

> *Hypothesis 1. There is a positive relationship between a competitor's organizational innovativeness and the imitation of an innovation of that competitor.*

Competitor offering relatedness. A competitor's offering relatedness is a firm-level construct defined as the collective similarity of the competitor's offerings. Provision of closely related products or services may signal that the competitor has superior information about a particular market (Bikhchandani et al., 1998). Conversely, providing more diffuse or unrelated offerings may signal that the competitor lacks a substantive information advantage in any one market. The information superiority demonstrated by the competitor's offering relatedness might likely bolster its reputation (Haas & Hansen, 2007) and, like its track record for innova-

tiveness, decrease the uncertainty surrounding an innovation (Abrahamson, 1996). It is important to note here the distinction between the information superiority signaled by competitor organizational innovativeness and the information superiority signaled by competitor offering relatedness. Competitor organizational innovativeness is marked by the competitor's historical record of successfully introducing innovative offerings over time. In this way, the information superiority signal is broadly based, encompassing all offerings of the competitor. In contrast, competitor offering relatedness is defined as the collective similarity of its offerings. The information superiority signaled in this case is in regard to knowledge of a particular market space. We would expect firms to be more likely to imitate a competitor's innovation when that competitor is perceived to have specialized knowledge in a particular market. Therefore:

Hypothesis 2. There is a positive relationship between the relatedness of a competitor's offerings and the imitation of an innovation of that competitor.

Offering-Level Characteristics Affecting Imitation of an Innovation

Our key research question is how a firm parses, and what weight it assigns, the signals communicated through organization- and offering-level characteristics to determine whether or not imitation is an appropriate response to the introduction of an innovation by a competitor. Thus, although organization-level competitor characteristics are important factors in the imitation decision, so too are offering characteristics (Bikhchandani et al., 1998). Indeed, firm decision makers contemplating imitation are not ultimately thinking about imitating the competitor per se; rather, they are contemplating imitation of an innovation of the competitor. Importantly, the act of introducing an innovation to the market represents a substantive commitment on behalf of the innovator to pursue an opportunity in a new market space (Milgrom & Roberts, 1986; Miller, 1983). As such, the innovation represents a credible signal of the competitor's belief about current market conditions and, more specifically, of the competitor's perceived confidence in the market's receptiveness to the innovation. Indeed, whether the innovation is radical or incremental, bringing forward a new product or service represents a significant investment on the part of the innovator (Ettlie, Bridges, & O'Keefe, 1984). Thus, prospective imitators are expected to parse the information contained in the signal—the characteristics of the innovation itself—carefully for insight into the innovator's perceived understanding of the market environment (Milgrom & Roberts, 1986).

In their respective discussions of the norms of rationality, Meyer and Rowan (1977) and Abrahamson (1996) suggested that, as the innovativeness of an offering increases, the less reasonable that particular offering appears to the market. In other words, the more radical the innovation, the less confidence the market has in its perceived appropriateness or, equivalently, the more confidence that the innovation is poorly aligned with the current needs of the market. Conversely, an incremental innovation tends to engender a higher degree of market confidence in its congruence with market expectations. Thus, the innovativeness of a new offering represents a signal, or proxy, of the degree of "fit" between the offering and the market's perception of its reasonableness: high levels of innovativeness indicate a poor perceived fit between market and innovation, and low levels of innovativeness represent a higher degree of fit (Abrahamson, 1996). Under rationality logic, imitating a highly innovative offering represents a higher likelihood of violating rationality norms; that is, by imitating the innovation, the imitator may appear out of sync with the market and less rational and may even, in more extreme cases, actually imperil its organizational reputation (Abrahamson, 1996; Lieberman & Asaba, 2006).

Ultimately, this argument suggests a negative relationship between a competitor's offering innovativeness—defined as the extent to which a new offering introduces concepts and ideas previously unknown to the market—and imitation of that offering. At low levels of offering innovativeness, there is less risk of violating the norms of rationality, and imitation of the competitor's less innovative offerings is less likely to jeopardize a firm's reputation. As innovativeness increases, however, so does the uncertainty surrounding the rationality of the innovation. Applying information-based imitation theory, at higher levels of offering innovativeness, firms may doubt the efficacy of the offering and thus may be more likely to believe their internal information as opposed to attributing information superiority to the competitor (Lieberman & Asaba, 2006). In other words, the innovativeness of an offering decreases the information superiority signal, causing firms to rely more on their internal information rather than attribute information superiority to the competitor (Bikhchandani et al., 1998). Conversely, at lower levels of offering innovativeness, the uncertainty surrounding the innovation is demonstrably lower, and those contemplating imitation may be more likely to jettison

their internal information, having more confidence in the competitor's interpretation of the market (Bikhchandani et al., 1992). To summarize, innovation is inherently risky and uncertain (Dougherty & Heller, 1994), and the greater the innovativeness of a new service offering, the less likely firm decision makers contemplating imitation are to believe that the competitor possesses superior market knowledge; therefore:

> *Hypothesis 3. There is a negative relationship between the innovativeness of a competitor's offering and the imitation of that offering.*

Interaction of Organization- and Offering-Level Characteristics

As suggested in the discussion of information-based imitation, the decision to imitate is likely multilevel in nature, encompassing both organization- and offering-level characteristics. However, the interaction between organization- and offering-level characteristics may predict differing imitation outcomes, particularly given our arguments that organization-level characteristics favor imitation, and an offering-level characteristic dampens it. Resolving this apparent contradiction and arriving at an imitation decision, however, depends on the particular configuration of characteristics, as different imitation outcomes emerge on the basis of the range of possible combinations of organization- and offering-level factors. Stated differently, in making the imitation decision, a potential imitator may face situations of either complementary or contradictory information superiority signals that jointly affect the imitation decision.

Competitor organizational innovativeness and offering innovativeness. For this interaction, we predict the highest level of imitation under conditions of high organizational innovativeness and low offering innovativeness, as this context represents the clearest signal that a competitor possesses information superiority. The competitor has a high degree of demonstrated innovation competency, fostering a greater belief that it has superior information in regards to the introduction of innovative new offerings. Similarly, the offering itself is only incremental in its innovativeness, which decreases the uncertainty of the innovation's congruence with current market conditions. It thereby also promotes a greater belief that the competitor possesses superior market knowledge. Conversely, we expect the lowest level of imitation under low competitor organizational innovativeness and high competitor offering innovativeness. In this context, the competitor signals no information superiority of any

kind; it has no demonstrable innovation competency, nor does the high level of offering innovativeness suggest that the competitor possesses a fundamentally superior understanding of current market conditions.

The remaining two configurations are less straightforward. Indeed, current theory provides little guidance about whether the information superiority signal of the organizational characteristics or that of the offering will prevail in determining if imitation is an appropriate competitive response. In both of these contexts, the potential imitator is receiving contradictory information superiority signals—high competitor organizational innovativeness suggesting information superiority, but also high offering innovativeness, which calls into question congruence between the innovation and market expectations. Similarly, although low offering innovativeness may signal that the firm is more in tune with the market, a correspondingly low level of competitor organizational innovativeness signals no demonstrable innovation competency. In the absence of theory to direct prediction as to which signal will dominate, we can only assume that the two signals will offset each other; that is, a pure form of the interaction exists, in which case the level of imitation would not change. Thus, a complex interaction of competitor offering innovativeness and competitor organizational innovativeness is predicted to result in differing levels of imitation, in line with the following hypothesis:

> *Hypothesis 4a. The innovativeness of a competitor's offering and the competitor's organizational innovativeness interact in such a way that low offering innovativeness and high organizational innovativeness result in the highest level of imitation, and high offering innovativeness and low organizational innovativeness result in the lowest level of imitation.*

Competitor offering relatedness and offering innovativeness. Similar to the configurations offered in Hypothesis 4a, two configurations of complementary information superiority signals that predict the highest and lowest levels of imitation, respectively, are expected in the interaction of competitor offering relatedness and offering innovativeness. The level of imitation should be at its greatest when competitor offering relatedness is high and offering innovativeness is low, as this configuration represents the clearest overall signal of competitor information superiority. Conversely, under conditions of low competitor offering relatedness, when the competitor signals no demonstrable competence in a particular market and signals

no demonstrably superior understanding of market conditions by introducing a highly innovative new offering, the level of imitation should be at its lowest. Again, as with Hypothesis 4a, the imitation outcomes of those configurations that represent conflicting information superiority signals are less clear (high competitor offering relatedness/high offering innovativeness, and low competitor offering relatedness/low offering innovativeness), and in the absence of theory to direct which signal will dominate, we again can only assume that the two signals will offset one another. Thus, the preceding complex interaction is offered, in keeping with the following hypothesis:

> *Hypothesis 4b. The innovativeness of a competitor's offering and the competitor's offering relatedness interact in such a way that low offering innovativeness and high offering relatedness result in the highest level of imitation, and high offering innovativeness and low offering relatedness result in the lowest level of imitation.*

METHODOLOGY

Study Context

The majority of empirical imitation research has focused on product or commodity markets (e.g., Asaba & Lieberman, 1999; Delios, Gaur, & Makino, 2008; Gimeno, Hoskisson, Beal, & Wan, 2005; Rhee, Kim, & Han, 2006); instead, we focused on the services sector of the economy for three key reasons. First, the patent protection available in product-markets imposes a barrier to direct imitation. A firm may desire to imitate an innovation, but patent protection makes such imitation legally difficult and often excessively expensive (Greve, 2003). Yet in the services sector, relatively little protection exists for the intellectual property purveyed by service firms (Bowen & Ford, 2002), the result being few legal impediments to imitation. Second, it is extremely difficult to know a priori the value of an innovation, particularly in the professional services sector. Specifically, customers in this sector must ex ante select services and service providers, although the full value of the services will only be known ex post (Maister, 1993). This unknown heightens uncertainty in the imitation decision. As Lieberman and Asaba noted, "Arguably, imitation processes are most interesting in environments characterized by uncertainty or ambiguity [and without uncertainty imitation] is comparatively straightforward and well understood" (2006: 366–367). Lastly, as Bowen and Ford (2002) noted, though service- and product-based firms share

some competitive similarities, there are significant differences in their strategic management, pertaining to delivery systems, customer relations, human capital needs, and the production and consumption of offerings by customers (activities that are simultaneous in the case of service-based firms). The prevalence of product-based research on imitation thus raises a generalizability concern when applying those results to service-based firms and warrants studying different contexts to test imitation theories.

Professional Services Firms

For the purposes of this study, pending and registered service marks for the 50 largest management consulting firms (Kennedy Information, 1999) from 1989 to 1999 were extracted from the U.S. Trademark database.[1] As discussed previously, information-based imitation is predicated on both environmental uncertainty and high information asymmetry, and for this reason, we chose the period from 1989 to 1999, because it was marked by explosive growth and change in the professional services sector. U.S. Census Bureau data indicate that during 1987–2002, the 50 largest management consulting firms experienced an 810 percent growth in revenue, a 788 percent increase in payroll, and a 364 percent increase in the number of employees. Comparatively, over the same period and on average, firms in the United States experienced a 121 percent increase in revenue, a 7 percent increase in payroll, and a 19 percent *decrease* in the average number of employees. During the study period, the firms in the sample were dealing with extraordinary increases in professional staff and office openings, as well as a dra-

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[1] Service marks are essentially trademarks attached to services rather than tangible goods. For example, only Procter & Gamble can use the term "Crest" to sell toothpaste, and only Lenovo can use the term "ThinkPad" to sell laptops, and these trademarks are assigned to tangible products. Likewise, only Fidelity can use the term "Magellan" to sell mutual funds, and only General Motors can use the term "Goodwrench" to sell automotive repair services. According to the U.S. Patent and Trademark Office, the purpose of marks is to "identify and distinguish" the products or services of a firm. Two principal benefits flow from identifying and distinguishing among products and services. First, they encourage the production of quality goods that are known by their trademark. Second, consumer search costs are reduced. Unlike patents, trademarks and service marks may be renewed indefinitely as long as they have not become generic.

matic increase in the number of client firms, all while increasing the number of services offered and the number of markets served.

Additionally, beginning in 1989, all firms had the opportunity to file marks *before* they offered the goods or services in commerce. This was referred to as an "intent-to-use filing" on the premise that a firm intended to use the filed-for mark but was not currently doing so. Thus, firms with products or services under development could file for mark protection in parallel with development, rather than wait until after the product or service was offered to the public. Finally, prior to 1989, the 50 largest consulting firms had filed only 21 service marks, but in the study period the number increased exponentially, underscoring the dramatic growth of services offered by the firms. All of these factors combine to create a high degree of environmental uncertainty and information asymmetry.

Data extracted from the U.S. Trademark database included the service mark itself, the filing date, the registration date, and a description of the services to which the service mark pertained. This data set includes all service marks filed by these firms regardless of whether the service mark registration was ultimately granted or not. To these data we added location and descriptive data for each firm drawn from the *Directory of Management Consultants* (Kennedy Information, 1999) and the Insite 2 Intelligence Database. In all, 557 service marks are recorded, with approximately 51 percent of them registered.

Dependent Variable

The dependent variable in this analysis—*imitation*—describes the degree to which a firm introduces an offering based wholly or in part on an innovation by a competitor. Measuring imitation is particularly difficult in the context of professional services firms, because services are intangible and, by their nature, difficult to describe. To file for a service mark, every firm must provide a concise yet parsimonious listing of the specific services that the mark covers. This description lies at the heart of the service mark protection: the firm wishes to define its service mark as broadly as possible, but the Trademark Office seeks to clearly define boundaries and limit the scope of the mark. We analyzed the description of services using key consulting terms identified from Kennedy Information's (1999) *Directory of Management Consultants*, combined with geographic terms (e.g., state, national, international, multinational, global, etc.), as well as the 1987 SIC divisions (e.g., agriculture, forestry, fishing, mining, construction, manufacturing,

transportation, etc.).[2] In total, 252 unique consulting, geographic, and industry terms were identified. The key terms used in the description of services for a given mark were then compared to the key terms in every other mark.[3] We obtained the imitation variable using network analysis (Borgatti, Everett, & Freeman, 1999), by building an affiliation matrix with the Bonacich normalization routine (Bonacich, 1972), which essentially evaluates the correlation between the use of key terms in the description of services for mark *i* with the key terms used in the description of services for mark *j* (Wasserman & Faust, 1994). The formula for imitation was as follows:

$$\text{Imitation}_{ij} = \frac{(n_{11} \times n_{22}) - \sqrt{n_{11} \times n_{22} \times n_{12} \times n_{21}}}{(n_{11} \times n_{22}) - (n_{12} \times n_{21})},$$

where

n_{11} = the number of key terms in common between mark *i* and mark *j*,

n_{12} = the number key terms used by mark *i* minus n_{11},

n_{21} = the number key terms used by mark *j* minus n_{11}, and

n_{22} = the total number of key terms used in all marks minus n_{11} plus n_{12} plus n_{21}.

This formula yields a value between 0 and 1, with 0 indicating no words in common and 1 indicating that all words included in the description are common to both marks.

Independent Variables

*Focal firm (*firm j*) offering innovativeness* was an order-of-entry variable that registered to what degree a mark filing used concepts and ideas introduced previously, versus new concepts and ideas. To obtain this measure, it was necessary to evaluate the order of use of key management consulting terms: competitors that filed marks using terms earlier received higher scores than those that filed marks using the terms later. The terms used here are the same as those used to evaluate the imitation variable. Additionally, since a given mark could list many management consulting terms, it was important to score the order of use of each term. This

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[2] The key consulting terms have been expanded with each edition of this directory, and to date, there have been no deletions from the list. The list is available from the authors upon request.

[3] We expanded the key term list to capture variations as well. For example, for the term "long-term planning," we also added "long term planning," so as not to miss the key term because of the omission of a hyphen.

creates the relative innovativeness of the terms used. For example, if a competitor was the first to use term *t*, it received a 1. If it was the second to use the term, it received the value ½, and so forth. If the competitor did not use the given term, we set the value to 0 to avoid a divide-by-zero error. The scores for each of these terms were summed for each of the marks. Summation yielded a raw score that we then divided by the number of words in the mark's description of services to normalize for the length of the description of services. Normalization prevented possible score inflation when marks had longer descriptions, and it yielded a weighted score that we then logged to normalize its distribution.

Next, *competitor (*firm *i) organizational innovativeness* measured the collective innovative history of a firm's offerings. We operationalized competitor organizational innovativeness as the average of all prior offering innovativeness scores for a given competitor, producing an approximation of the competitor's past propensity to introduce innovative services over time, with higher values indicating greater innovativeness.[4]

Finally, *competitor (*firm *i) offering relatedness* measured how closely related, or similar, the offerings of a competitor were to each other. To construct this variable, we took the average imitation *among* the marks of the particular competitor. In other words, this variable measured the degree to which, on average, the services provided by a competitor were tightly clustered or diffuse. Essentially, calculation was similar to that used to create the dependent variable but measured within-firm (rather than between-firm) imitation.

Control Variables

Several control variables were appropriate. First, given that many management consulting services are subject to trends (Abrahamson, 1991, 1996; Abrahamson & Rosenkopf, 1993), it was important to control for the time between the filing of a competitor's mark and the filing of a focal firm's mark. Because trends may peak quickly and then drop off or may grow exponentially over time, we controlled for nonlinear effects as well, using *elapsed time* and *elapsed time squared*.[5] Second, we controlled for the *prior imitation of the competitor by the focal firm (*prior imitation *ij)*, to mitigate the potential in-

fluence of rivalry-based imitation. This variable was constructed by averaging the prior imitation of the competitor's services by the focal firm. Third, we controlled for the quantity of prior mark filings (*total marks filed*), as competitors that file a greater number of marks may have a greater likelihood of being imitated. Next, we controlled for the *age* and *size* of both competitor and firm. Prior research has shown that larger and more established competitors are more often imitated (Haunschild & Miner, 1997). Age was the number of years since a firm's founding, and size was the firm's rank among the top 50 management consulting firms in terms of revenue. As these two variables are collinear, both were centered. Fifth, we controlled for the geographic location of a firm's headquarters by adding a dummy variable coded 1 if the firm was *U.S.-based* and 0 if it was not. Approximately 20 percent of the firms in the sample were not headquartered in the United States. Sixth, we controlled for ownership structure, setting the variable *private* to 1 if a firm was privately held and to 0 if it was not. Seventh, for intent-to-use filings, a variable was set to 1 if the mark was filed as intent-to-use and 0 if it was not. Finally, year dummies were added as controls for the effects of contemporaneous correlation (Certo & Semadeni, 2006). In addition to these control variables, a prospective imitator's offering innovativeness and organizational innovativeness were included.

Statistical Method

A random-effects time series cross-sectional regression model was used to estimate the models (Greene, 2003). A Hausman test indicated that the random-effects model was appropriate.[6] The sample contained 557 unique observations over 11 years, yielding an unbalanced time series cross-sectional panel. Conversion of the data into dyadic pairs and temporal correction yielded 114,750 dyadic observations. As a robustness check, the models were also estimated using generalized least squares regression analysis controlling for heteroskedasticity, and the results

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[4] If the firm has only one service mark then, by definition, organizational innovativeness was set to zero.

[5] We transformed elapsed time to normalize its distribution.

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[6] The Hausman test evaluates the null hypothesis that the coefficients estimated by the efficient random-effects estimator are the same as those estimated by the consistent fixed-effects estimator. If the test results are insignificant, then a random-effects model is appropriate and preferred because it allows for both within and between information to calculate estimates; in contrast, the fixed-effects model only allows for within information to be used. Please see Certo and Semadeni (2006) for a more extensive discussion of these two forms of modeling.

TABLE 1
Summary Statistics and Correlations[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8
1. Imitation	0.56	0.44								
2. Elapsed time	−0.01	7.35	−.01***							
3. Elapsed time squared	54.03	78.17	−.02***	.22***						
4. Prior imitation *ij*	0.04	0.20	.05***	.01***	.02***					
5. Firm *j* total marks filed	28.16	38.47	.04***	−.03***	−.02***	−.14***				
6. Firm *j* intent-to-use	0.55	0.50	.06***	.00	−.04***	−.05***	.09***			
7. Firm *j* age	−0.96	37.17	.03***	.01*	−.03***	−.14***	.37***	−.07***		
8. Firm *j* size	−0.51	13.95	.01***	.01***	−.02***	−.17***	.46***	−.05***	.64***	
9. Firm *j* U.S.-based	0.94	0.23	−.01***	−.01***	−.02***	−.12***	.15***	.02***	.29***	.09***
10. Firm *j* private	0.72	0.45	.02***	.01**	−.00	−.03***	.33***	−.10***	.36***	.37***
11. Firm *j* offering innovativeness	−0.09	1.31	−.05***	.02***	.01*	.07***	−.07***	−.01***	.08***	.01*
12. Firm *j* organizational innovativeness	−0.06	0.97	−.01**	.05***	.01*	−.00	.00	.08***	.18***	.00
13. Firm *i* total marks filed	11.39	12.41	.01***	.03***	−.03***	−.12***	−.09***	−.01**	−.05***	−.06***
14. Firm *i* intent-to-use	0.45	0.50	.03***	.02***	−.04***	−.03***	−.02***	−.01*	−.01***	−.01***
15. Firm *i* age	−1.41	37.17	.06***	.04***	−.03***	−.12***	−.04***	−.00	−.05***	−.04***
16. Firm *i* size	−0.76	13.20	.05***	−.01*	−.01*	−.11***	−.07***	−.00	−.05***	−.06***
17. Firm *i* U.S.-based	0.94	0.23	−.01***	.06***	.02***	−.17***	−.02***	−.00	−.01***	−.01***
18. Firm *i* private	0.72	0.45	.03***	.01**	.02***	−.04***	−.05***	.00	−.03***	−.04***
19. Firm *i* offering innovativeness	0.01	1.00	−.05***	−.05***	−.02***	.03***	.01***	.00	.00	.01**
20. Firm *i* organizational innovativeness	0.03	1.03	.00	.01***	−.03***	.04***	.03***	−.00	.01***	.03***
21. Firm *i* offering relatedness	0.01	1.04	.09***	.04***	.04***	−.06***	.02***	.01	.01***	.01***

[a] Firm *i*: competitor; firm *j*: focal firm.

* $p < .05$

** $p < .01$

*** $p < .001$

were essentially similar. All models were estimated in Stata 11 (StataCorp, 2009).

RESULTS

Table 1 presents the summary statistics and correlations, and Table 2 presents the results of the model. In the tables, firm *i* represents a competitor and firm *j* represents a focal firm. Examination of the correlation table indicated that some of the variables have moderately high correlations, so to protect against multicollinearity, we computed variance inflation factors, and all were in the acceptable range. To assess overall model fit, chi-square statistics and Akaike's information criterion (AIC) were calculated and are reported.[7]

Hypothesis 1 predicts a positive relationship

between a competitor's organizational innovativeness and imitation of its innovation. Hypothesis 2 predicts a positive relationship between the competitor's offering relatedness and imitation of the innovation. Model 2 in Table 2 tests these hypotheses, and both are strongly supported ($\beta = 0.04$, $p < .001$; $\beta = 0.12$, $p < .001$, respectively). Thus, the results suggest that firms whose decision makers contemplate imitation likely consider competitors with a history of innovation and competitors with highly related offerings as having superior information about market conditions and that they are more likely to imitate an innovation of those competitors. Hypothesis 3 argues that offering innovativeness will be negatively related to imitation of the innovation. Again, model 2 in Table 2 tests this hypothesis, and it is strongly supported ($\beta = -0.07$, $p < .001$). Therefore, as hypothesized, the results suggest that a prospective imitator likely doubts the efficacy of highly innovative offerings

[7] A decrease in the AIC indicates better model fit (Akaike, 1974).

TABLE 1
Continued

9	10	11	12	13	14	15	16	17	18	19	20
.09***											
−.02***	.04***										
−.04***	.05***	.43***									
−.02***	−.05***	−.01*	−.01**								
−.00	−.01**	−.00	−.01*	.18***							
−.01***	−.03***	−.01*	−.01**	.35***	.06***						
−.01***	−.04***	.00	.01*	.37***	−.02***	.59***					
−.01***	−.01***	−.00	−.00	.20***	.65***	.25***	.16***				
−.01***	−.05***	−.00	−.00	.32***	−.11***	.38***	.43***	−.04***			
.00	.01*	−.00	−.01	−.20***	−.04***	.02***	−.09***	−.10***	.05***		
.01*	.02***	−.01**	−.02***	−.07***	.07***	.06***	−.33***	−.27***	.04***	.39***	
.00	.01**	.01*	.01*	−.06***	−.05***	−.02***	.07***	.35***	−.12***	−.09***	−.27***

and will tend to forgo imitation, trusting in their own internal information superiority.[8]

Hypotheses 4a and 4b argue that competitor organizational innovativeness and competitor offering relatedness, respectively, will interact with offering innovativeness to predict differing imitation outcomes depending on the configuration of the constructs. This argument is based on the notion that, in any given imitation decision, a prospective imitator may be faced with complementary or contradictory signals from organization- and offering-level characteristics. Testing these hypotheses required two steps. In the first step, the interaction variables were added to the research model and tested in models 3 and 4 for Hypotheses 4a and 4b, respectively, with both interactions highly significant ($\beta = -0.04$, $p < .001$; $\beta = 0.04$, $p < .001$). In the second step, point estimates of each interaction at one standard deviation from the mean were cal-

culated. A postestimation Wald test provided linear comparisons of these point estimates and indicated that all comparisons were statistically different at the .001 level. These results are presented and discussed in greater detail below.

Figure 1 shows a graph and point estimates for the effects of the interaction of competitor organizational innovativeness and offering innovativeness on imitation. As predicted, the highest and lowest levels of imitation occurred when the signals communicated by the characteristics were complementary. The highest level of imitation occurred under conditions of high competitor organizational innovativeness and low offering innovativeness (the marginal effect being a 0.06 change in imitation), as this configuration represents the clearest signal that a competitor possesses superior information about current market conditions. In contrast, imitation was far lower when the competitor was signaling essentially no information superiority by introducing a highly innovative new offering and having no demonstrable organizational innovation competency (the marginal effect being a −0.04 change in imitation). The conditions under

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[8] Post hoc analysis of the coefficients revealed that the competitor organizational innovativeness, competitor offering relatedness, and offering innovativeness results are statistically different from one another.

TABLE 2
Results of Random-Effects Regression Analysis for Imitation[a]

Variable[b]	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	0.76*** (0.09)	0.84*** (0.09)	0.86*** (0.09)	0.85*** (0.09)	0.86*** (0.09)
Elapsed time	−0.01*** (0.00)	−0.02*** (0.00)	−0.02*** (0.00)	−0.02*** (0.00)	−0.02*** (0.00)
Elapsed time squared	−0.01*** (0.00)	−0.02*** (0.00)	−0.02*** (0.00)	−0.01*** (0.00)	−0.01*** (0.00)
Prior imitation *ij*	0.06*** (0.01)	0.06*** (0.01)	0.06*** (0.01)	0.06*** (0.01)	0.06*** (0.01)
Firm *j* total marks filed	0.07*** (0.00)	0.07*** (0.00)	0.07*** (0.00)	0.07*** (0.00)	0.07*** (0.00)
Firm *j* intent-to-use	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)
Firm *j* age	0.13*** (0.00)	0.13*** (0.00)	0.13*** (0.00)	0.13*** (0.00)	0.13*** (0.00)
Firm *j* size	−0.01 (0.00)	−0.01 (0.00)	−0.01 (0.00)	−0.01 (0.00)	−0.01 (0.00)
Firm *j* private	0.01 (0.06)	0.01 (0.06)	0.01 (0.06)	0.01 (0.06)	0.01 (0.06)
Firm *j* U.S.-based	−0.02 (0.07)	−0.02 (0.07)	−0.02 (0.07)	−0.02 (0.07)	−0.02 (0.07)
Firm *j* offering innovativeness	−0.06*** (0.00)	−0.06*** (0.00)	−0.06*** (0.00)	−0.06*** (0.00)	−0.06*** (0.00)
Firm *j* organizational innovativeness	−0.05 (0.02)	−0.06 (0.02)	−0.05 (0.02)	−0.05 (0.02)	−0.05 (0.02)
Firm *j* total marks filed	−0.00 (0.00)	−0.01** (0.00)	−0.01*** (0.00)	−0.01*** (0.00)	−0.01*** (0.00)
Firm *i* intent-to-use	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)
Firm *i* age	0.07*** (0.00)	0.07*** (0.00)	0.07*** (0.00)	0.07*** (0.00)	0.07*** (0.00)
Firm *i* size	0.05*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)
Firm *i* private	−0.01*** (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Firm *i* U.S.-based	−0.03*** (0.01)	−0.07*** (0.01)	−0.07*** (0.01)	−0.07*** (0.01)	−0.07*** (0.01)
Firm *i* offering innovativeness		−0.07*** (0.00)	−0.07*** (0.00)	−0.07*** (0.00)	−0.07*** (0.00)
Firm *i* organizational innovativeness		0.04*** (0.00)	0.05*** (0.00)	0.05*** (0.00)	0.05*** (0.00)
Firm *i* offering relatedness		0.12*** (0.00)	0.12*** (0.00)	0.11*** (0.00)	0.11*** (0.00)
Firm *i* organizational innovativeness × firm *i* offering innovativeness			−0.04*** (0.00)		−0.02*** (0.00)
Firm *i* offering relatedness × firm *i* offering innovativeness				0.04*** (0.00)	0.03*** (0.00)
Log-likelihood	−63,433.99	−62,462.17	−62,403.81	−62,384.27	−62,362.8
χ^2	2,543.26	4,486.9	4,603.61	4,642.71	4,685.64
AIC	126,927.97	124,990.33	124,875.63	124,836.53	124,795.6
AIC improvement		1,937.64	114.70	39.10	40.93

[a] $n = 114{,}750$. Standardized coefficients are reported, with standard errors in parentheses. Year dummies were included in analyses but are not reported here.

[b] Firm *i*: competitor; firm *j*: focal firm.

** $p < .01$

*** $p < .001$

which the signals were contradictory produced noticeably intriguing results. Under conditions of low offering innovativeness and low competitor organizational innovativeness, the level of imitation was essentially neutral (no appreciable marginal change in imitation). However, under conditions of high competitor organizational innovativeness (a positive information superiority signal) and high offering innovativeness (a negative information superiority signal), the level of imitation fell (the marginal effect being a −0.02 change in imitation). This pattern suggests that although a competitor may have a demonstrable organizational competency for innovation, such a competency does not overshadow the inherent uncertainty, and thereby the perceived irrationality, of a highly innovative offering.

Figure 2 shows a graph and point estimates for the interaction of competitor offering relatedness and offering innovativeness on imitation. As with Figure 1, the highest and lowest levels of imitation occurred under conditions of complementary information superiority signals (marginal effects yielding 0.06 and −0.09 changes, respectively). Also in keeping with Hypothesis 4b, and similarly to the findings reported in Figure 1, there was essentially no change in imitation under conditions of low competitor offering relatedness and low offering innovativeness. However, imitation increased under conditions of high competitor offering relatedness (a positive signal) and high offering innovativeness (a negative signal), with a marginal effect being a 0.03 change in imitation. In this context, the strength of the positive organization-level characteristic outweighs the influence of the negative offering-level characteristic, so that competitors with a demonstrable competence in a particular market signal

FIGURE 1
Moderation of Competitor Organizational Innovativeness and Imitation by Offering Innovativeness
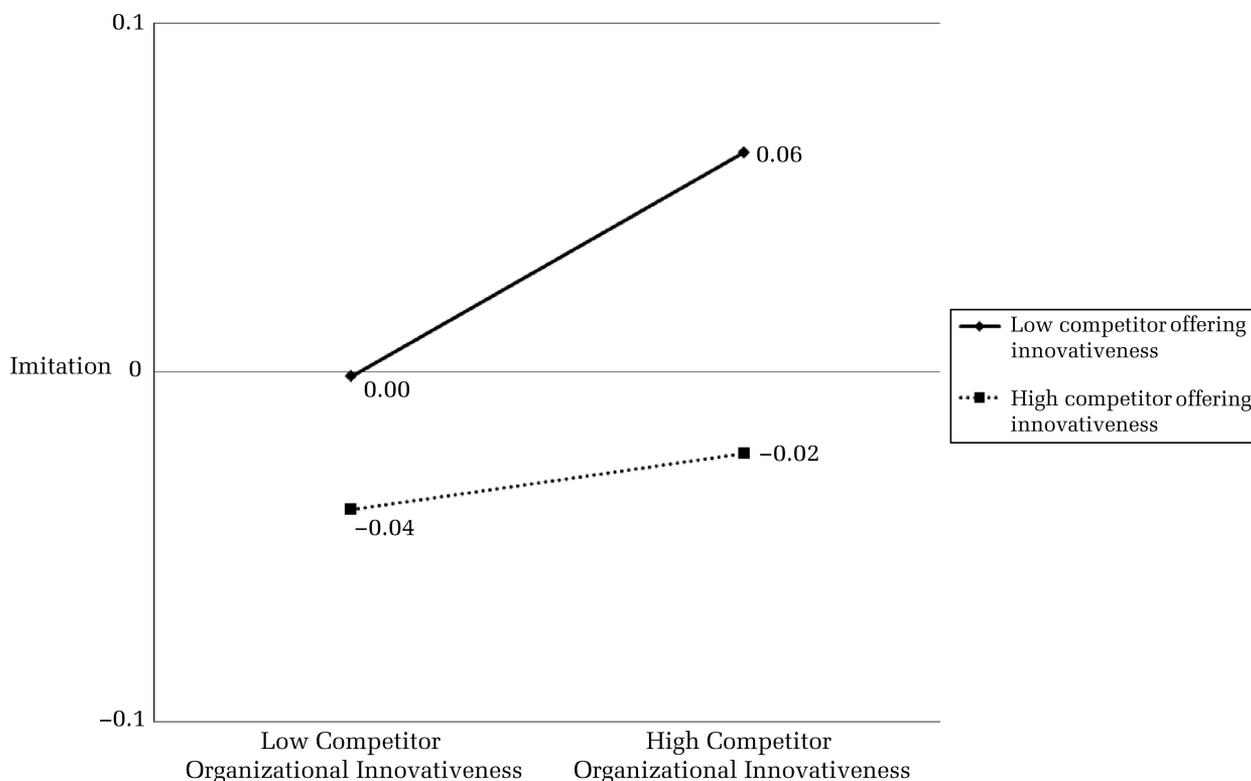
sufficient information superiority to eclipse the uncertainty of even the most innovative offerings.

The analysis yields several other noteworthy results. First, elapsed time and elapsed time squared are both negative. This indicates that, as time elapsed, the level of imitation decreased at an increasing rate. We take this to suggest that from their introduction, the services purveyed by these firms rapidly became obsolete, decreasing their imitation. An alternative explanation for this finding is the possibility that an innovation was very rapidly imitated by a significant number of firms in the sample. In this scenario, such rapid imitation effectively results in market saturation, whereby any remaining firms that have not imitated the innovation are far less likely to introduce a substantially similar service in such a crowded market space (Makadok, 1998). Next, average prior imitation is positive and significant, suggesting that past imitation is a good predictor of future imitation. As we elaborate in the next section, this variable is important to controlling for rivalry-based theories of imitation. Finally, U.S.-based competitors were imitated less than non-U.S.-based competitors. We are uncertain how to interpret this finding other than to say it warrants further examination.

We conducted several tests to evaluate the robustness of our results. First, to ensure that the initial mark filing of either a competitor or a focal firm did not bias our results, particularly if the firm had one or only a few filings, we dropped the first mark filing for each firm, and the results held. Next, we wished to know if the ultimate registration of a mark influenced our results. To test for this, we included a dummy variable that indicated if the mark was abandoned prior to registration, and once again, the results held. Third, 21 cases were lost in the sample by our limiting the study period to 1989–99. To evaluate if this censoring influenced our results, we included those 21 marks in our analysis, and the results did not differ significantly. Finally, we provide in model 5 of Table 2 the joint estimation of the two interactions, and the results are essentially the same as the models in which the two interactions are estimated separately. In sum, these robustness checks enhance our confidence in the reported results.

DISCUSSION

Organization- and Offering-Level Predictors of Imitation

Although the ubiquitous investment disclosure warns that "past performance is no guarantee of

FIGURE 2
Moderation of Competitor Offering Relatedness and Imitation by Offering Innovativeness
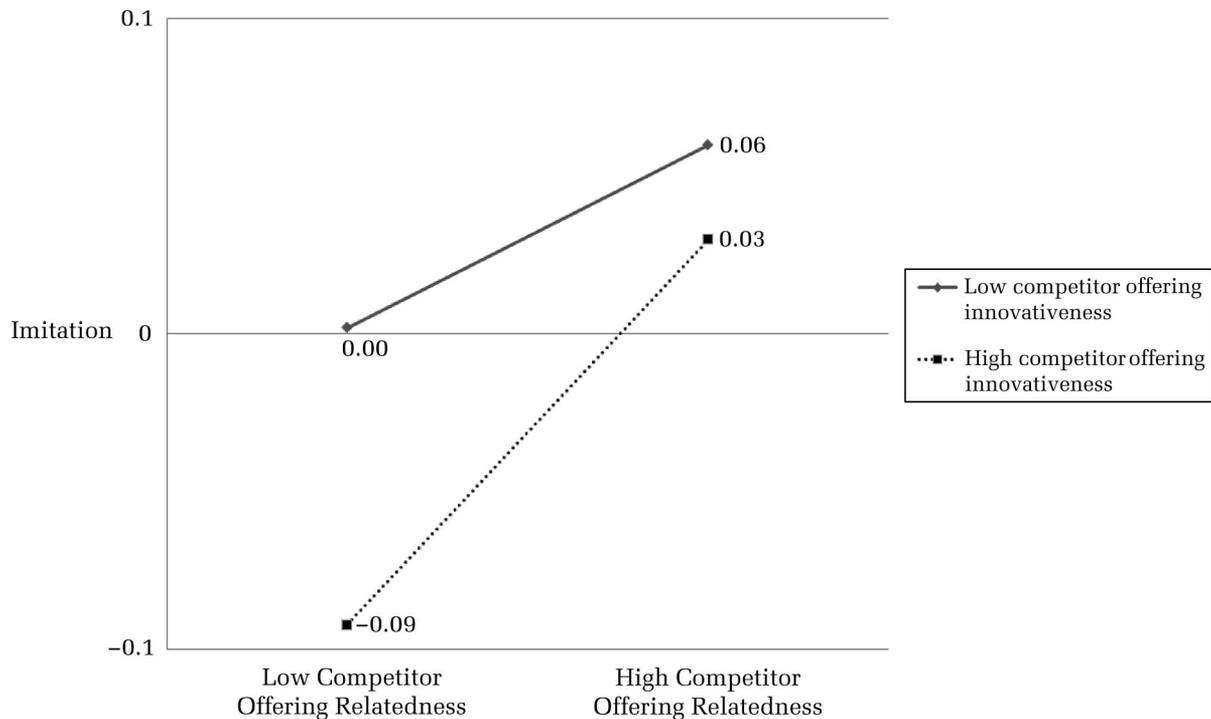
future results," there is evidence that a competitor's organizational innovativeness, or its history of introducing innovative offerings over time, increases imitation of that competitor's innovations. In keeping with Ashforth and Gibbs (1990) and Suchman (1995), the competitor's organizational innovativeness signals an innovation competency to those contemplating imitation, in such a way that this competency conveys legitimacy to new offerings. Similarly, competitor offering relatedness is positively related to imitation. Highly related offerings signal greater demonstrable competency in a particular market area than more disparate offerings (Calantone & Cooper, 1981). Like competitor organizational innovativeness, competitor offering relatedness likely signals perceived information superiority, which increases imitation.

Organization-level factors resulted in increased imitation, yet the innovativeness of an offering itself dampened imitation. As a robustness check for this result, we conducted post hoc analysis to test for the possibility of a curvilinear relationship between an offering's innovativeness and its imitation—examining the possibility that extreme innovation deterred imitation but that moderate innovation encouraged it—and the results were not significant. Thus, at its most basic level, the more innovative a competitor's offering, the less likely a firm is to imitate that innovation. This finding sup-

ports the argument based on norms of rationality at the offering level; specifically, radical innovations may violate market expectations of reasonableness (Abrahamson, 1996). Applying information-based imitation theory, a firm may be more likely to believe that the competitor has "guessed wrong" by introducing such a radical innovation, and it is therefore unlikely to imitate the innovation (Lieberman & Asaba, 2006).

It is important to discuss here the role of resources and capabilities in imitation decisions. Whenever imitation occurs among competitor firms, there is the possibility of faddish behavior and "bandwagons" (Abrahamson, 1991, 1996; Abrahamson & Rosenkopf, 1993; Palley, 1995). Such behavior, however, can be detrimental to those market actors that are quick to imitate but lack the concomitant understanding needed to actually make the product or service work (Lieberman & Asaba, 2006). This statement raises the question of the role of capabilities in the making of imitation decisions. Arguably, an imitation decision has two stages. First, those contemplating imitation must determine if their firm *should* imitate; that is, they must determine the appropriateness of imitation as a competitive response. Second, the prospective imitators must determine whether they *could* imitate; that is, evaluate whether the firm possesses, or could acquire, the resources and ca-

pabilities necessary to implement the imitation decision. Notably, information-based theories of imitation are fundamentally concerned with the first stage of the imitation decision, or whether a firm should or should not imitate an innovation because, as Lieberman and Asaba (2006) noted, firms may actually pursue imitation regardless of whether they actually possess the necessary capabilities to implement the imitation (implementation is here defined as the profitable introduction of an offering that imitates an earlier offering by a competitor).

Both economics- and sociology-based information theories of imitation suggest cases in which an imitation is pursued regardless of an inherent capability to actually implement the imitation. In the economics literature, Palley (1995) and Scharfstein and Stein (1990) wrote that inferior managers may knowingly imitate managers perceived to be superior solely to bolster their own reputations, regardless of the potential consequences of their actions. Sociological research has identified similar behavior among firms that frequently engage in late-stage imitation—such firms are often not concerned with implementation per se; rather, they engage in imitation, particularly of more prestigious firms, in an attempt to increase their market legitimacy (Fligstein, 1985; Lieberman & Asaba, 2006). Furthermore, a lack of consideration of inherent capability may be especially salient in contexts in which resources and capabilities are fundamentally similar among market actors (Lieberman & Asaba, 2006), such as the management consulting industry. In such a context, firms tend to possess demonstrably similar resource stocks (i.e., consultants with graduate business degrees), and their capabilities are inherently fungible. Collectively, these notions suggest that the findings in the current study regarding imitation decision making based on perceived information superiority signaled by organization- and offering-level characteristics are particularly salient, as these firms' decision makers are likely to assume that they already possess the necessary capabilities to implement an imitation.

Nonetheless, the possibility exists that a prospective imitator's internal capabilities could confound the imitation decision as investigated in the current study. Although we did not capture a variable directly measuring the internal capabilities of a prospective imitator, the intent-to-use variable, used as a control in the analysis, may represent a rough, but appropriate, proxy for firm capability. As discussed previously, a firm makes an intent-to-use filing to express a desire to provide a particular service to the market that it is not currently offering. Such a filing thus suggests lack of the capabilities neces-

sary to offer the service to the market at the time the filing is made. As Table 2 shows, the firm j (prospective imitator) intent-to-use dummy variable (with 1 indicating an intent-to-use filing and 0 indicating no filing) is positive and significant across the models. This finding indicates that a firm not currently offering a service, but with a desire to do so, is *more* likely to pursue imitation. A possible explanation for this result is that firms lacking the capability to engage in imitation still pursue it in an attempt to balance legitimacy against competitive forces (see Semadeni, 2006). Yet even in the presence of such a capability consideration, the model results maintain our finding that perceived information superiority—or lack thereof—is likely a predominate antecedent to imitation. As a further robustness test, we investigated the possibility that firm capabilities have an interactive effect on results (i.e., having the capability, as evidenced by the intent-to-use variable being set to zero, differentially affects the imitation decision). We tested this idea by splitting the sample into two groups based on whether an intent-to-use filing was or was not made, and then running our hypothesized models again. Neither the sign nor the significance of the coefficients of our variables of interest changed across the two groups, providing further evidence of the robustness of our findings.[9]

Interaction of Organization- and Offering-Level Characteristics

Hypotheses 4a and 4b state that a complex interaction of the two organization-level characteristics with offering innovativeness will result in significantly different imitation outcomes, and both of these hypotheses were supported. Notably, current theory was not informative in predicting imitation when information superiority signals were contradictory. In such cases, a pure form of the interaction would suggest that the signals carry equal weight, and therefore, should cancel each other out, resulting in no change in imitation. In two configurations, this was indeed the outcome. When competitor organizational innovativeness was low (a negative signal), when competitor offering relatedness was low (a negative signal), and when offering innovativeness was also low for both of these conditions (a positive signal), predicted imitation essentially dropped to zero, meaning that the signal weights were essentially equivalent. Such equivalency may be tied to the notion that incremental innovations tend to result in only marginal eco-

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[9] Results are available from the authors upon request.

nomic returns (i.e., the concept of low-risk, low-reward [see Milgrom & Roberts, 1986]). In this context, there may be little to be gained from imitating the innovation, and when that condition is combined with the lack of a clear information superiority signal at the organizational level, firms' decision makers seem to be somewhat ambivalent about imitating an only marginally innovative offering.

In the remaining two configurations of contradictory information superiority signals, we found evidence of dramatically different imitation behavior. Under conditions of high competitor organizational innovativeness (a positive signal) and high offering innovativeness (a negative signal), the overall level of imitation decreased. Thus, the weight of the offering-level characteristic was greater than that of the organization-level characteristic in this context. By contrast, under conditions of high competitor offering relatedness (a positive signal) and high offering innovativeness (a negative signal), imitation increased. In this context, the weight of the organization-level characteristic eclipsed that of the offering-level characteristic. Given that the constant in both of these interactions is offering innovativeness, prospective imitators are therefore placing differing weights on the information superiority signals sent by the two organization-level characteristics. Indeed, as the results in Table 2 indicate, the coefficient size of competitor offering relatedness was consistently stronger in the models than that of competitor organizational innovativeness and offering innovativeness.

These findings offer three key insights. The first is that, though competitors with a broad innovation competency may be more likely to be imitated, when such competitors introduce highly innovative offerings, the information superiority conveyed by organizational innovativeness is not sufficient to overcome the uncertainty of a radical innovation. In short, firms will follow a competitor with a track record for innovation, but not to the point of jeopardizing their own reputations and market legitimacy by imitating a dramatically innovative offering. The second is that firms seem much more comfortable imitating the innovations of those competitors with a demonstrable competency in a particular market area. In these cases, firms seem quick to jettison their own internal information in favor of following the actions of those competitors who are perceived to have superior knowledge about a specific market, regardless of whether the offering introduced by such competitors is radical or incremental. Lastly, these results also provide strong evidence that firms separate offering from firm and firm from offering when making imitation decisions or, in keeping with the observa-tion of Chamberlain (1933), that what distinguishes a firm is different from what distinguishes the products of the firm.

Implications

In addition to making a theoretical contribution by identifying the relative weightings of organization- and offering-level information superiority signals depending on context, our study's findings offer two additional implications. First, there is evidence that under conditions of environmental uncertainty, firms actively seek to balance the competing norms of rationality and progressiveness. Although this may be taken as empirical evidence supporting previous theoretical work (e.g., Abrahamson, 1996; Lieberman & Asaba, 2006), two new insights emerge here. The first is that concern over violating rationality appears to sufficiently dampen an appetite for imitating radical innovations. In keeping with Abrahamson (1996), firms' decision makers are likely to view a competitor's radical innovations with skepticism and to be unwilling to risk their reputation by imitating such radical new offerings. However, imitation increases at lower levels of offering innovativeness, underscoring the power of norms of progressiveness. Thus, firms may not be willing to imperil their reputation by imitating radical innovations, yet they do seek to keep pace with their competitive peers by imitating relatively more incremental innovations. Stated differently, we find empirical evidence that imitation is likely a mechanism through which firms seek to appear forward-looking (under norms of progressiveness) by imitating less risky innovations, but they will avoid imitating innovations that make them appear extreme (under norms of rationality).

Second, inasmuch as higher offering innovativeness resulted in a lower imitation, radical innovation appears to be a significant driver of differentiation in the services sector. From a competitive positioning perspective, significant imitation occurs at lower levels of offering innovativeness, suggesting that both information- and rivalry-based theories of imitation may be driving imitation decisions. Rivalry theories suggest that imitation is based on maintaining competitive parity, in such a way that firms' decision makers seek to diminish a potential competitive advantage through imitation (Lieberman & Asaba, 2006). Importantly, rivalry-based imitation is likely to occur in more certain environments and when information disparity between market actors is low. At low levels of offering innovativeness, information asymmetry is diminished, and firms may use imitation as a mechanism

to blur differentiation between themselves and their competitors—to maintain the competitive status quo. However, at high levels of offering innovativeness, perceived information asymmetry increases, thereby confounding imitation decisions. Thus, differentiation through radical innovation is more achievable in the professional services sector, as rivals are far less likely to imitate such innovations.

Research Limitations and Directions for Future Research

Like all social science research, this study does have certain limitations. First, as Lieberman and Asaba (2006) noted, there is the possibility of no imitation when two firms have similar offerings; rather, the two firms may have responded similarly to the same environmental stimuli and introduced demonstrably similar innovations concurrently. Although this occurrence is theoretically possible, Lieberman and Asaba (2006) also pointed out that it is highly unlikely to be prevalent. Given the extensively longitudinal nature of the data in the current study, we feel confident that, if present, the effect of such occurrences is negligible.

Second, empirically distinguishing between rivalry-based and information-based theories of imitation is difficult. Empirically, the inclusion of prior imitation does control, to some degree, for rivalry between competitor and focal firm. Thus, we feel confident that the conclusions drawn from this research regarding the dominance of information-based theories of imitation in such a context are well founded. Future research, perhaps qualitative in nature, might explore individual imitation decisions to unravel the information- and rivalry-based antecedents. The ability to separate and model rivalry and information factors in an imitation decision will likely provide helpful new insights into the imitation phenomenon.

Third, as with all empirical research, different study contexts and different operationalizations of constructs have the potential to produce different results. The management consulting industry during 1989–99 was marked by dramatic change and growth and so was an appropriate context in which to explore information-based imitation theory. Nonetheless, future research into different industries and time periods is necessary to better establish the generalizability of this study's findings.

Lastly, because the management consulting industry is secretive about its operations, we could not examine the performance of the offerings the sample firms introduced. Thus, the limitation is that data were not available to control for a given

mark's success or failure in the market. As a result, somewhat of a survivor bias is inherent to the study; that is, there is an assumption, particularly in the construct of competitor organizational innovativeness, that at least a plurality of the competitor's innovations were successful over time, or the competitor itself would become imperiled and falter. If the data could be obtained, future research into the performance consequences of imitation decisions would begin to fill a critical gap in the imitation literature.

Conclusion

The purpose of this study was finer-grained explanation of the factors that predict imitation in an important, yet underexplored, environmental context. This research identified both organization- and offering-level characteristics that influence imitation, and more significantly, identified an interaction between these characteristics wherein level of imitation differs substantially depending on the specific configuration of organization- and offering-level factors. These findings have enriched knowledge of the contributors to imitation decision making and facilitate better understanding of how firms resolve the follower's dilemma—to imitate or not.

REFERENCES

Abrahamson, E. 1991. Managerial fads and fashions: The diffusion and rejection of innovations. *Academy of Management Review*, 16: 586–612.

Abrahamson, E. 1996. Management fashion. *Academy of Management Review,* 21: 254–285.

Abrahamson, E., & Rosenkopf, L. 1993. Institutional and competitive bandwagons. *Academy of Management Review,* 18: 487–517.

Akaike, H. 1974. A new look at the statistical model identification. *IEEE Transactions on Automatic Control,* 19: 716–723.

Asaba, S., & Lieberman, M. B. 1999. *Why do firms behave similarly? A study on new product introductions in the Japanese soft-drink industry.* Academy of Management Best Paper Proceedings, BPS: 01-08.

Ashforth, B. E., & Gibbs, B. W. 1990. The double-edge of organizational legitimation. *Organization Science,* 1: 177–194.

Baum, J. A. C., & Korn, H. J., 1996. Competitive dynamics of interfirm rivalry. *Academy of Management Journal,* 39: 255–291.

Bikhchandani, S., Hirshleifer, D., & Welch, I. 1992. A theory of fads, fashion, custom, and cultural change

as information cascades. *Journal of Political Economy,* 100: 992–1026.

Bikhchandani, S., Hirshleifer, D., & Welch, I. 1998. Learning from the behavior of others: Conformity, fads, and informational cascades. *Journal of Economic Perspectives,* 12(3): 151–170.

Bonacich, P. 1972. Technique for analyzing overlapping memberships. In H. Costner (Ed.), *Sociological methodology:* 176–185. San Francisco: Jossey-Bass.

Borgatti, S. P., Everett, M. G., & Freeman, L. C. 1999. *Ucinet 5 for Windows* (v. 5.4). Natick, MA: Analytic Technologies.

Boulding, W., & Christen, M. 2008. Disentangling pioneering cost advantages and disadvantages. *Marketing Science* 27: 699–716.

Bowen, J., & Ford, R. C. 2002. Managing service organizations: Does having a "thing" make a difference? *Journal of Management,* 28: 447–469.

Calantone, R., & Cooper, R. G. 1981. New product scenarios: Recipes for success. *Journal of Marketing,* 45(2): 48–60.

Certo, S. T., & Semadeni, M. 2006. Strategy research and panel data: Evidence and implications. *Journal of Management,* 32: 449–471.

Chamberlin, E. 1933. *The theory of monopolistic competition.* Cambridge, MA: Harvard University Press.

Chen, M.-J. 1996. Technological expansion: The interaction between diversification strategy and organizational capability. *Journal of Management Studies,* 33: 649–666.

Chen, M.-J., & MacMillan, I. C. 1992. Nonresponse and delayed response to competitive moves: The roles of competitor dependence and action irreversibility. *Academy of Management Journal,* 35: 539–570.

Chen, M.-J., Su, K.-H., & Tsai, W. 2007. Competitive tension: The awareness-motivation-capability perspective. *Academy of Management Journal,* 50: 101–118.

Christensen, C. M. 1997. *The innovator's dilemma.* Boston: Harvard Business School Press.

Covin, J. G., & Slevin, D. P. 1991. A conceptual model of entrepreneurship as firm behavior. *Entrepreneurship: Theory and Practice,* 16(1): 7–24.

Cyert, R. M., & March, J. G. 1963. *A behavioral theory of the firm.* Englewood Cliffs, NJ: Prentice-Hall.

Deephouse, D. L. 1996. Does isomorphism legitimate? *Academy of Management Journal,* 39: 1024–1039.

Deephouse, D. L. 1999. To be different, or to be the same? It's a question (and theory) of strategic balance. *Strategic Management Journal,* 20: 147–166.

Delios, A., Gaur, A. S., & Makino, S. 2008. The timing of international expansion: Information, rivalry and imitation among Japanese firms, 1980–2002. *Journal of Management Studies,* 45: 169–195.

DiMaggio, P. J., & Powell, W. W. 1983. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review,* 48: 147–160.

Dougherty, D., & Heller, T. 1994. The illegitimacy of successful product innovation in established firms. *Organization Science,* 5: 200–218.

Ettlie, J. E., Bridges, W. P., & O'Keefe, R. D. 1984. Organization strategy and structural differences for radical versus incremental innovation. *Management Science,* 30: 682–695.

Ferrier, W. J. 2001. Navigating the competitive landscape: The drivers and consequences of competitive aggressiveness. *Academy of Management Journal,* 44: 858–877.

Fligstein, N. 1985. The spread of the multidivisional form among large firms, 1919–1979. *American Sociological Review,* 50: 377–391.

Fombrun, C. 1996. *Reputation: Realizing value from the corporate image.* Boston: Harvard Business School Press.

Fombrun, C., & Shanley, M. 1990. What's in a name? Reputation building and corporate strategy. *Academy of Management Journal,* 33: 233–258.

Gimeno, J. 1999. Reciprocal threats in multimarket rivalry: Staking out "spheres of influence" in the U.S. airlines industry. *Strategic Management Journal,* 20: 101–128.

Gimeno, J., & Chen, M.-J. 1998. The dynamics of competitive positioning: A pair-wise perspective. *Academy of Management Best Paper Proceedings,* BPS: 01–08.

Gimeno J., Hoskisson R. E., Beal, B. D., & Wan W. P. 2005. Explaining the clustering of international expansion moves: A critical test in the U.S. telecommunications industry. *Academy of Management Journal,* 48: 297–319.

Gimeno, J., & Woo, C. Y. 1996. Hypercompetition in a multimarket environment: The role of strategic similarity and multimarket contact in competitive deescalation. *Organization Science,* 7: 322–341.

Greene, W. H. 2003. *Econometric analysis.* Upper Saddle River, NJ: Prentice Hall.

Greve, H. R. 1998. Managerial cognition and the mimetic adoption of market positions: What you see is what you do. *Strategic Management Journal,* 19: 967–988.

Greve, H. R. 2003. A behavioral theory of R&D expenditures and innovations: Evidence from shipbuilding. *Academy of Management Journal,* 46: 685–702.

Guler, I., Guillen, M. F., & MacPherson, J. M. 2002. Global competition, institutions, and the diffusion of organizational practices: The international spread of the ISO 9000 quality certificates. *Administrative Science Quarterly,* 47: 207–232.

Haas, M. R., & Hansen, M. T. 2007. Different knowledge, different benefits: Toward a productivity perspective on knowledge sharing in organizations. *Strategic Management Journal,* 28: 1133–1153.

Haunschild, P. R. 1993. Interorganizational imitation: The impact of interlocks on corporate acquisition activity. *Administrative Science Quarterly,* 38: 564–592.

Haunschild, P. R., & Miner, A. S. 1997. Modes of interorganizational imitation: The effects of outcome salience and uncertainty. *Administrative Science Quarterly,* 41: 472–500.

Kennedy Information. 1999. *Directory of Management Consultants* (9th ed.). Fitzwilliam, NH: Kennedy Information.

Lambkin, M. 1988. Order of entry and performance in new markets. *Strategic Management Journal,* 9(S1): 127–140.

Lee, P. 2001. What's in a name.com? The effects of ".com" name changes on stock prices and trading activity. *Strategic Management Journal,* 22: 793–804.

Lee, J., Lee, K., & Rho, S. 2002. An evolutionary perspective on strategic group emergence: A genetic algorithm-based model. *Strategic Management Journal,* 23: 727–746.

Levinthal, D. A., & March, J. G. 1993. The myopia of learning. *Strategic Management Journal,* 14(special issue): 95–112.

Lieberman, M. B., & Asaba, S. 2006. Why do firms imitate each other? *Academy of Management Review,* 31: 366–385.

Lieberman, M. B., & Montgomery, D. B. 1988. First-mover advantages. *Strategic Management Journal,* 9(special issue): 41–58.

Lieberman, M. B., & Montgomery, D. B. 1998. First-mover (dis)advantages: Retrospective and link with the resource-based view. *Strategic Management Journal,* 19: 1111–1125.

Maister, D. H. 1993. *Managing the professional service firm.* New York: Free Press.

Makadok, R. 1998. Can first-mover and early-mover advantages be sustained in an industry with low barriers to entry/imitation? *Strategic Management Journal,* 19: 683–696.

March, J. G. 1991. Exploration and exploitation in organizational learning. *Organization Science,* 2: 71–87.

Meyer, J., & Rowan, B. 1977. Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology,* 83: 340–363.

Milgrom, P., & Roberts, J. 1986. Price and advertising signals of product quality. *Journal of Political Economy,* 78: 311–329.

Miller, D. 1983. The correlates of entrepreneurship in three types of firms. *Management Science,* 29: 770–791.

Palley, T. I. 1995. Safety in numbers: A model of managerial herd behavior. *Journal of Economic Behavior and Organization,* 28: 443–450.

Porter, M. E. 1980. *Competitive strategy: Techniques for analyzing industries and competitors.* New York: Free Press.

Rhee, M., Kim, Y.-C., & Han, J. 2006. Confidence in imitation: Niche-width strategy in the U.K. automobile industry. *Management Science,* 52: 501–513.

Scharfstein, D. S., & Stein, J. C. 1990. Herd behavior and investment. *American Economic Review,* 80: 465–479.

Semadeni, M. 2006. Minding your distance: How management consulting firms use service marks to position competitively. *Strategic Management Journal,* 27: 169–187.

StataCorp. 2009. *Stata statistical software: Release 11.* College Station, TX: StataCorp.

Suarez, F. F., & Lanzolla, G. 2007. The role of environmental dynamics in building a first mover advantage theory. *Academy of Management Review,* 32: 377–392.

Suchman, M. C. 1995. Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review,* 20: 571–610.

Terlaak, A., & King, A. A. 2007. Follow the small? Information revealing adoption bandwagons when observers expect larger firms to benefit more from adoption. *Strategic Management Journal,* 28: 1167–1185.

Wasserman, S., & Faust, K. 1994. *Social network analysis: Methods and applications.* New York: Cambridge University Press.

Williamson, O. E. 1983. Credible commitments: Using hostages to support exchange. *American Economic Review,* 73: 519–540.

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