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Market Foresight Capability: Determinants And New Product Outcomes

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MARKET FORESIGHT CAPABILITY: DETERMINANTS AND NEW PRODUCT OUTCOMES

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ABSTRACT

To achieve and maintain a superior competitive position, firms must develop market sensing capability—the ability to sense events and trends in markets ahead of competitors (Day 1994a). According to Day, in firms with superior market sensing capability, "the processes for gathering, interpreting, and using market information are more systematic, thoughtful, and *anticipatory* than in other firms" [emphasis added]. Although Day asserted that market orientation captures the essence of a market sensing capability, researchers have suggested that market orientation, by itself, does not provide the requisite ability to develop competitive advantage because of its focus on *detecting* rather than *anticipating* market trends.

While prior research, most notably pertaining to market orientation, has addressed the detection of current market trends, a gap in our knowledge remains regarding the ability to anticipate future market conditions. This research seeks to address this lacuna by exploring a firm's market foresight capability, defined as the organizational capability that allows the firm to anticipate emerging shifts in the market before they are evident to competitors. Organizations possessing superior market foresight capability derive a multitude of benefits from having greater insight into future market conditions. These benefits include the ability to determine which future market trends warrant further exploration and exploitation, the identification of critical resources that will be needed in the future, and—of primary interest in this dissertation—the ability to develop new products that meet customer needs in the future. This research seeks to better inform managers as to the organizational characteristics that enhance the firm's ability to anticipate future markets by developing and testing a model of the antecedents and new product outcomes of a firm's market foresight capability.

The constructs selected as determinants of market foresight capability are supported by dynamic capability theory, which focuses on the organization's information processes, learning culture, and coordination/integration influences that elevate lower-level capabilities of individuals and teams to an organization-level or dynamic capability. The organizational information processes that are hypothesized to positively impact market foresight capability include active scanning, market experimentation, and lead user collaboration. The impact of information processes on market foresight capability is contingent on an organization's learning culture (future orientation and learning orientation) and interdepartmental connectedness, which influence the coordination and integration of information between organizational actors.

A firm's potential for long-term competitive advantage lies in using the insights resulting from its market foresight capability to create advantageous resource configurations. To create valuable resource configurations, the firm with superior market foresight capability must capitalize on its ability to anticipate change through the development of new product and service offerings that better serve the needs of customers. It is hypothesized that superior market foresight capability results in heightened new product creativity, faster speed to market, and better market-entry timing. These new product outcomes of market foresight capability are further hypothesized to lead to superior new product financial performance. Of course, firms cannot realize the hypothesized new product benefits unless they are able to capitalize on market opportunities. Therefore, the relationships between market foresight capability and new product outcomes are hypothesized to be contingent on organizational inertia.

Dedicated with love to my wife Jie,
my children Alexis and Kimberly,
and in memory of my mom.

Thank you for your love and support. And for believing in me…

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CHAPTER ONE: INTRODUCTION

Chance favors only the prepared mind
– Pasteur

In his award-winning research on the nature of market-driven organizations, Day (1994a; 1999a; 2002) delineated market sensing as the organizational capability that facilitates the detection and anticipation of market events. This capability is the result of organizational processes, as well as values and norms that facilitate the generation of superior market knowledge. Researchers have suggested that an organization with a heightened market sensing capability possesses a source of competitive advantage through its ability to exploit market knowledge (Day 1994a; Drucker 1986; Narver and Slater 1990; Rumelt 1984; Woodruff 1997). Despite an increased interest in the literature, the absence of a clear definition and the lack of empirical verification have hampered the study of market sensing. This dissertation seeks to resolve these shortcomings by systematically exploring market sensing, including its antecedents and outcomes.

Researchers have conceived market sensing as the process through which organizations perceive, interpret, and understand the environment (Day 1994a; Gioia and Chittipeddi 1991; Thomas, Clark, and Gioia 1993; Weick 1979; Weick 1995). Anderson and Narus (1999) summarized market sensing as the process of generating knowledge about the marketplace that individuals in the firm use to guide their decision-making. According to Dickson (1992), managers with heightened sensing skills have the intuitive ability to scan the total marketplace and identify significant changes. Dickson's point of view agreed with that of Rumelt (1984), who argued that managers' ability to recognize changes in the market ahead of competitors is the

factor that yields an enhanced competitive position. Day (1994a) also concluded that gaining market knowledge before competitors is a benefit of a firm's market sensing capability. However, it could also be argued that the value market sensing provides the firm is not so much dependent on learning of market events before competitors but on whether the firm learns in time to influence the shape of the market and is both willing and able to capitalize on product-market opportunities. Based on the above conceptualizations, market sensing is defined as the organizational capability that enhances a firm's understanding of its environment through the development of superior market knowledge in time to influence market outcomes (Anderson and Narus 1999; Day 1994a; Day 1999a; Gioia and Chittipeddi 1991).

While the ability to understand both current and future events is important to the financial performance of the firm, Day's (1994a) conceptualization of market sensing suggested two distinct organizational capabilities: detecting current market trends and anticipating future market trends. While these two dimensions of market sensing share many similarities, each dimension requires unique processes, skills, and orientations for its development. Furthermore, sensing the present and anticipating the future offer distinct performance outcomes for the firm. For example, the ability to sense current market events is a necessary condition for survival but may be limited as a source of long-term competitive advantage because the product-market opportunities are readily apparent to all competitors. Conversely, the ability to detect future market events does provide a source of long-term competitive advantage, because the product-market opportunities are known only to a single firm or a limited number of firms. While Day (1999b) suggested that firms must focus on both current and future markets, he later concluded that the ability of firms to do so is rare (2002). Figure 1 outlines the two dimensions of market sensing.

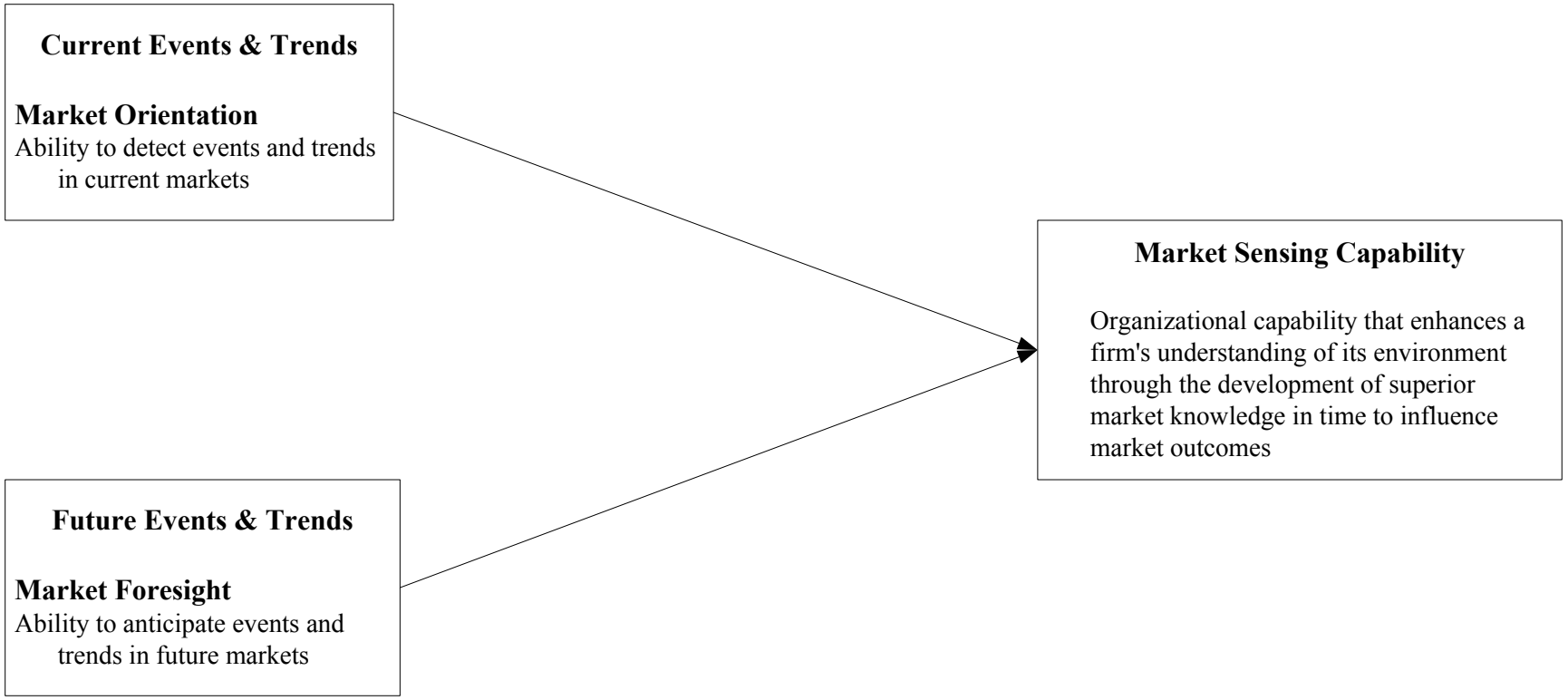

Figure 1: Dual Dimensions of Market Sensing Capability

As argued above and depicted in Figure 1, market sensing entails two distinct organizational abilities: the detection of current market trends and the anticipation of future market trends. The detection of current market trends has been well researched in the market orientation literature. Day (1994a) went so far as to suggest that a firm's market orientation and market sensing capability are strongly related. Market orientation has been defined by Kohli and Jaworski (1990, p. 6) as the "organizationwide generation of market intelligence pertaining to current and future customer needs, dissemination of the intelligence across departments, and organizationwide responsiveness to it." Although this definition suggests that market orientation has a current and future focus, an examination of the items used to measure market orientation reveals that primarily current market events and trends are addressed. Since the ability to sense current market events, or market orientation, is well covered in the literature, the attention of this dissertation will focus on outlining the ability of firms to anticipate future market changes. In this research, the ability to anticipate emerging trends is referred to as market foresight.

Market foresight is conceptualized as the ability of a firm to anticipate changes in the served market and to anticipate the emergence of new markets. This capability is developed by organizational processes, values and norms, and coordinational influences that together provide knowledge concerning future market conditions. However, due to the dynamic interplay among multiple environmental factors, greater understanding of future events is valuable only if this understanding is developed before competitors' understanding or, at least, early enough to influence the market. This point can be clarified further by thinking of the emergence of an environmental change on a timeline, with one end being the point in time when the first sign of a change appears and the other end being when the change is known by all competitors. The point in time at which the firm learns of the change defines its ability to prosper from this knowledge.

Firms that are first to acquire knowledge will be in a greater position to develop strategies to capitalize on a market opportunity, while late learners may be required to fight merely for survival. Therefore, market foresight is formally defined as the organizational capability that allows the firm to anticipate emerging shifts in the market in time to influence the shape of the market.

The ability to foresee pending changes should provide firms with a means through which superior performance is gained, primarily with respect to the development of new products. The importance of new product introductions on a firm's growth has been well documented in the literature (Gatignon and Xuereb 1997; Henard and Szymanski 2001; Menon, Bharadwaj, and Howell 1996; Walker and Ruekert 1987). However, the literature also shows that most new products fail (Boulding, Morgan, and Staelin 1997; Crawford 1977), causing the firms launching these failed products severe financial hardships (Tauber 1973). One primary explanation offered for the success or failure of a new product is the ability of the firm to understand the needs of customers (Brentani 2001; Cooper 1983a; Cooper and Kleinschmidt 1987; Dougherty 1992; Henard and Szymanski 2001; Keiser and Smith 1993).

New product development was selected as the context of this research because it is a critical domain in the strategy literature due to its importance to a firm's long-term financial performance (Adams and LaCugna 1994; Day 1994a; Griffin 1997; Wind and Mahajan 1997). Researchers have concluded that the development of successful new products relies on the knowledge-generating capabilities of the firm (Day 1994a; Dickson 1992; Leonard-Barton 1992; Moorman 1995; Moorman and Miner 1997; Nonaka 1991). Because market foresight reflects a knowledge-creating capability, firms with superior market foresight are in position to better understand customers and thus introduce new products that satisfy their needs. The organization

with superior market foresight is in a better position to compete more effectively in both existing and emerging markets through the timely development of creative new products that deliver superior customer value.

Developing innovative new products is becoming increasingly more important for organizations, especially in hypercompetitive environments. D'Aveni (1994) suggested that under conditions of hypercompetition, change is frequent and disruptive, thereby preventing any firm from developing a long-term competitive advantage. As such, he argued, organizations must create a series of temporary advantages in an effort to maintain long-term success. Temporary advantages can be created by anticipating changes in the market and developing new products that address the changes (D'Aveni 1994; Leonard-Barton 1995).

While the importance of examining market foresight has been well documented in both the business press and academic literature, market foresight is hardly a new phenomenon. Edward A. Filene, founder of the Twentieth Century Fund, stated in 1924,

> Business successes during the next 10 or 20 years will be made by the men who are now best able to anticipate the changes that are coming in business and industry and who most wisely adjust their policies to them. (quoted in Goldberg and Sifonis 1994, p. 28)

More recently, Don Lehmann, MSI Executive Director, commenting on MSI's top tier priority topics for 2002-2004, stated that anticipating future needs was a key element in understanding customers. Concerning knowledge gaps in research Lehmann stated, “an element of futurism was identified as a critical research need. Proactive understanding clearly is on managers' minds” (MSI 2003). In fact, topics related to the use of marketing information have been top-tier topics on the MSI list since the early 1990s. Table 1 highlights selected quotes from the business and academic literature regarding market foresight.

Next, I will discuss the benefits of superior market foresight as well as the negative consequences associated with a lack thereof. Following this, I will address the development of market foresight.

Benefits of Market Foresight

Superior market foresight capabilities afford organizations numerous benefits that result from a greater understanding of the future needs of the market. For example, organizations with a superior ability to anticipate changes in the environment benefit in general from their ability to create superior customer value, namely through the development of new products that are more widely accepted in the marketplace (Day 1994a; Slater and Narver 1995). In addition, greater understanding of a market's direction allows for the identification of the resources and capabilities that will be needed to take advantage of future market shifts (Eisenhardt and Martin 2000; Teece, Pisano, and Shuen 1997).

The identification of consumer needs is a cornerstone of new product development, because it provides information critical in determining opportunities that can result in the introduction of profitable new products. Furthermore, researchers (Slater and Narver 1995; 2000) have cited the ability of the firm to identify and satisfy customers' expressed and latent needs as a key attribute for the creation of competitive advantage. However, customer needs can be conceptualized as more than just expressed or latent needs by including emerging needs as well (Dougherty 1992). Before exploring the concept of emerging needs, I will examine both expressed needs and latent needs.

Expressed needs are those needs the customer is aware of and is able to express in some form. Because these needs can be discovered quite easily through traditional market research

methods, expressed needs are widely recognized and known by customers and competitors alike. Latent needs, although present in the minds of customers, differ from expressed needs in that customers are unable to express them. A key premise of the marketing concept is that the development of new products should be based on the discovery of the latent needs of customers (Miller 1995; von Hippel 1978). Narver, Slater, and MacLachlan (2000) contended that latent needs are universal and that the role of the firm is to satisfy these needs, at the optimal time, through the development of an appropriate innovation.

In contrast to expressed or latent needs, emerging needs are not known by customers or competitors, because they have yet to exist. Emerging needs become known only as the result of some external event. This awareness can result from a "new to the world" technology being introduced, from a new governmental regulation, or through other environmental shocks (Dougherty 1992). For example, before the introduction of high-speed Internet access (e.g., cable or DSL lines), consumers could not imagine the need for personal firewall protection software. Because Internet connections were slow (56k baud rate at best) and few consumers had dedicated phone lines, computers were primarily connected to the Internet for short periods of time. With consumers migrating to high-speed Internet access and open connections to the Internet, the need for personal firewall protection arose and was discovered. Without the emergence of high-speed Internet access, this need would never have materialized.

Whatever their cause, emerging needs represent potential opportunities as well as threats to the firm (Dougherty 1992). The difference between opportunity and threat lies in the ability of the firm to anticipate and understand the effect these changes will have on its environment. As Dickson (1992) noted in his treatise on competitive rationality, the heterogeneity of supply and demand is always changing. The market is in a constant state of flux. This flux creates

"opportunities that can be imperfectly exploited by the motivated, alert, and hustling decision maker" (p. 69). Such exploitation is made possible through market foresight because firms with this capability are able to imagine products, services, and entire new businesses that do not yet exist; thus they earn the rewards associated with being a market leader (Goldberg and Sifonis 1994; Hamel and Prahalad 1994). For example, leaders at both Charles Schwab and Amazon.com had the foresight to see that the Internet would change the way in which consumers manage their stock portfolios and purchase books, respectively.

Negative Consequences Associated with a Lack of Market Foresight

Firms that are unable to anticipate market changes may not only miss opportunities, but if this lack of foresight is habitual, they may also find themselves attempting to play catch-up (Day 2002). Indeed, shifts in the environment offer significant challenges for survival if firms are slow to detect them. A lack of foresight also offers challenges for market leaders. In a recent interview, Michael Porter suggested that due to dramatic advances in technology that facilitate the free flow of information, firms that are unable to anticipate and respond to shifting environments may see their competitive advantages quickly disappear (Argyres and McGahan 2002). Hamel and Prahalad (1994, p. 124) suggested that "any company that is a bystander on the road to the future will watch its structure, values, and skills become progressively less attuned to industry realities."

Numerous organizations, including many of the world's largest, have fallen victim to a lack of foresight. For example, both AT&T and IBM failed to anticipate the direction of the business landscape. AT&T had to pay a premium price for McCaw Cellular to enter the cellular phone business in the early 1980s (Hamel and Prahalad 1994). IBM's hesitancy to enter the

laptop business cost the company millions of dollars. Ironically, Louis Gerstner, who assumed the reins of IBM after the company posted losses of $9 billion, was quoted as saying that the last thing IBM needed was vision (Rich 2001).

In their best selling book *In Search of Excellence*, Peters and Waterman (1982) reported on 43 of the best-run companies in the US. Ironically, within two years of the book's completion, 14 of those companies were in financial trouble. *Business Week* (1984) reported that these 14 companies shared a common attribute—a failure to anticipate, react, and respond to changes in the marketplace. Other examples of firms possessing or lacking market foresight are highlighted in Table 2.

Developing Market Foresight

The examples noted above suggest that firms with market foresight are in a better position to define, develop, and cultivate new markets, while their counterparts often struggle for survival. However, this begs an important question. Why are some firms able to anticipate future market conditions, while others are not? How was Apple able to see the future of the personal computer industry, while IBM was not? Many would argue that companies such as Apple have better information as to the wants and needs of customers. Others have argued that this may not be the case, as the same information is readily available to everyone (Barney 1991; Hamel and Prahalad 1994). Because external information is ostensibly readily available to all firms, Barney (1991) asserted that information itself should not be a source of competitive advantage. While firms may possess identical information, they may not interpret or use this information in the same way. For instance, some managers may interpret a given situation as an opportunity, while others interpret the same situation as a threat (White, Varadarajan, and Dacin 2003).

Managers may also ignore information because it does not fit into the formal decision-making process (Wright et al. 2000). For example, it is reasonable to assume that US auto makers were all aware of the energy crisis of the 1970s. However, they may have failed to anticipate the implications of the energy crisis, viz., the shift in demand for automobiles from large, inefficient models, primarily manufactured in the U.S., to smaller, more economical models imported from Japan (Ansoff 1975). Although it is possible that US auto makers recognized the potential impact of the energy crisis, organizational factors may have prevented them from reacting quickly enough to change or address market trends. Nevertheless, if information is available for all firms to use, why are some firms able to see emerging trends and thus develop a competitive advantage, while others miss cues from the environment and struggle to catch up?

Researchers have proposed that what sets companies apart increasingly lies in their ability to *use* market information, not in their ability to *access* market information (Barabba and Zaltman 1991; Menon and Varadarajan 1992; Moorman, Zaltman, and Deshpandé 1992). Hart and Milstein (1999) wrote,

> Foresight is the key to survival. Managers able to perceive trends and weak signals where others see only noise and chaos can capitalize on the changing nature of the market to reposition their firms before new entrants become a serious threat. (p. 24)

This ability to detect and anticipate trends and events and identify market opportunities characterizes a firm's market foresight capability.

Recurring themes in the strategy literature suggest that the ability of firms to adapt to environmental shifts depends on their capabilities in learning (Day 1994b) or technological adoption (Srinivasan, Lilien, and Rangaswamy 2002). While each of these research streams provides valuable insight into surviving market shifts, in order to arm managers with the ability to anticipate future shifts, greater understanding of the determinants of market foresight is

needed. This knowledge will also improve managers' ability to initiate actions to satisfy, counter, and adapt to changing conditions. These actions include developing or acquiring the needed resources and capabilities that will be required to meet emerging customer needs, but may also include divestiture of an existing business unit.

In this dissertation, the fundamental premise is that a firm's market-sensing capability is enhanced by the ability to detect current market trends and the ability to anticipate future market trends. Firms that possess a superior market sensing capability will not be caught unaware by market shifts that may affect their survival. At the same time, a firm's market sensing capability will provide the opportunity to develop a long-term competitive advantage through the anticipation of future market shifts.

The remainder of this dissertation is organized as follows. In Chapter 2, I explicate the overall market-sensing model, including sensing current market trends and anticipating future market events. In Chapter 3, drawing on dynamic capability theory (Day 1994a; Leonard-Barton 1992; Narayanan et al. 2003; Teece, Pisano, and Shuen 1997) and a process of selecting dimensions of a firm's market foresight that strikes a balance between completeness and parsimony, I discuss the determinants of market foresight and propose hypotheses. Following this, I outline the influence of environmental turbulence, its potential impact on a firm's market foresight, and the effect of market foresight on a firm's success in developing new products is considered. In Chapter 4 I present the research design and methodology employed to test the hypotheses. This discussion includes the research setting, sample frame, and the development of the research instrument. In Chapter 5 I outline the research findings, including the results of the hypotheses testing. Finally, in Chapter 6 I discuss the overall findings of this research, along with the limitations and areas warranting future research.

CHAPTER TWO: THEORETICAL AND EMPIRICAL INSIGHTS

As was stated earlier, the ability of managers to make sense of their environment is an important aspect for firm survival, as is the ability to develop long-term competitive advantage (Day 1994a; Drucker 1986; Narver and Slater 1990; Rumelt 1984; Woodruff 1997). Further, as Chapter 1 discussed and Figure 1 displayed, market sensing has two distinct dimensions, each requiring unique processes, values, and organizational systems. Chapter 2 builds on this premise by outlining those elements that enable a firm to detect current market events and anticipate future market events. The overall market sensing model, including unique and shared antecedents to detecting current market events and anticipating future market events, is depicted in Figure 3.

The model presented in Figure 3 suggests that detecting changes to the present market and anticipating future markets have common underlying antecedents critical to the development of superior market knowledge. In describing market sensing, Day (1994a, p. 44) stated that

> [market driven firms] are distinguished by an ability to sense events and trends in their markets ahead of their competitors. They can anticipate more accurately the responses to actions designed to retain or attract customers, improve channel relations, or thwart competitors. They can act on information in a timely, coherent manner because the assumptions about the market are broadly shared. This anticipatory capability is based on superiority in each step of the process. (p. 44)

Day (1994a) outlined the factors required for a firm to develop its market sensing capability: open-minded inquiry, synergistic information distribution, mutually informed interpretations, and accessible memories.

Open-minded inquiry entails the activities organizations employ to gain knowledge concerning their environments. Day (1994a) concluded that organizations with heightened market sensing capability actively scan their environments, benchmark against nonpareils, continually experiment, and imitate direct competitors. These features are the cornerstone of market sensing in that they allow for superior information acquisition regarding customers, competitors, and other elements of the environment. Synergistic distribution of information requires organizational departments to collaborate in the collection and interpretation of information, in order to build on the total knowledge structure of the firm. Mutually informed interpretation determines how information is used by the organization, while accessible memory entails how knowledge is retained. These elements will be discussed in detail in Chapter 3. Next, those factors that are unique to detecting current events and trends are discussed.

Factors Primarily Critical to Sensing Current Trends

Some of the factors Day (1994a) described as necessary for the ability to detect current market shifts may in fact hinder a firm's market foresight. For example, Day (1994a, p. 44) suggested that firms wishing to increase their market sensing capability should "study their direct competitors so they can emulate successful moves." While the benefits of studying and keeping track of competitors is well documented in the literature (e.g., Glazer 1998; Narver and Slater 1990), negative consequences have also been reported. Researchers have concluded that too great a focus on competitors limits a firm's innovativeness or ability to address the unmet needs of customers (Deshpandé, Farley, and Webster 1993; Lukas and Ferrell 2000). Furthermore, seeking to imitate rivals may also hamper managers' focus on future events by creating a false sense of security about where those efforts should be focused. Similar arguments can be made

about the possible limitations associated with benchmarking against either rivals or nonpareils. While these activities can improve an organization's knowledge in the current environment, the ability of imitation or benchmarking to generate future knowledge is limited at best and may actually hamper the firm's anticipatory capability.

Shared Factors of Market Sensing Capability

Some factors described by Day (1994a) as critical to a firm's market-sensing capability provide support for both detecting current trends and anticipating future events. Day labeled this set of core processes as experimentation, active scanning, and interdepartmental connectedness. While these processes are important to a firm's overall market sensing capability, how they are viewed and used by the organization may differ based on the firm's relative emphasis on current trends versus future events. For example, experimentation is a critical element in both detecting and anticipating market trends. However, firms seeking to understand the current environment conduct internal-based experiments, which are designed to improve internal procedures and processes that enhance productivity or improve customer satisfaction with existing products (Day 1994a; Leonard-Barton 1995). On the other hand, the ability to anticipate the future requires firms to conduct market-based experiments seeking greater knowledge from customers (Brown and Eisenhardt 1997; Garvin 1993; Slater and Narver 2000). Market-based experimentation is especially critical in the development of innovative new products that address latent and emerging needs of customers (Hamel and Prahalad 1994; Lynn, Morone, and Paulson 1996; Slater and Narver 2000). The remaining factors, common to both current and future sensing (i.e., active scanning, interdepartmental connectedness, and learning orientation) will be addressed in detail in Chapter 3.

Factors Primarily Critical to Anticipating Future Trends

Prior research suggests that the ability to anticipate future events and trends requires several unique processes and orientations that were not specifically outlined by Day (1994a). However, these do fall under the general categories Day outlined. The inclusion of these factors completes the concept of market sensing by specifically benefiting the anticipatory capability of firms. I discuss these factors, namely lead user collaboration and future orientation, briefly in this chapter and more fully in Chapter 3.

Organizations wishing to anticipate the direction that markets will take gain significant insight from working with *lead users*. Von Hippel (1986) described lead users as those who exhibit strong preferences and needs that may become the standard in the future. By working with these users, organizations can derive a sense of how markets will be shaped in the future. It should be noted that a focus on lead users is not the same as a focus on lead customers. Lead users are not necessarily current customers of the organization but represent users who are on the cutting edge of the market with unique needs unmet by current offerings. Lead customers, on the other hand, are current customers of the organization, currently satisfied with the product offerings. Focusing on lead customers is critical to sensing current trends in the environment but can have a debilitating affect on firms' anticipatory capability.

Another factor that is suggested to enhance the firm's ability to anticipate future events is a *future orientation*. This focus on the future drives organizations to place a special emphasis on the future conditions of their markets relative to current market conditions. Chandy and Tellis (1998) suggested that organizations that have this vision will be more willing to cannibalize their current product offerings due to their ability to develop innovative new products. Chapter 3 will

further outline these elements of the market-sensing model, which are key determinants of the development of market foresight.

Relationship between Market Orientation and Market Sensing

There is a great deal of resemblance between the factors Day (1994a) outlined as antecedent to market sensing and the core elements of market orientation. Day even suggested that market sensing and market orientation share numerous similarities. However, research has demonstrated that firms that rely too heavily on market orientation may in fact be inhibiting their long-term growth (Baker and Sinkula 1999; Hurley and Hult 1998; Slater and Narver 1995). I posit that this inhibition of long-term growth may be the result of firms' inability to detect future market trends. Next, I will discuss and explain why I believe market orientation may hinder the firm's ability to anticipate market trends.

Market orientation has been defined by Kohli and Jaworski (1990, p. 6) as the "organizationwide generation of market intelligence pertaining to current and future customer needs, dissemination of the intelligence across departments, and organization wide responsiveness to it." This definition has led many to conclude that market orientation provides the requisite tools to detect both current and future market trends, based on the generation of superior information. However, empirical research has failed to demonstrate a link between market orientation and the ability to detect future market trends. Conceptualized as the implementation of the marketing concept, Kohli and his colleagues developed measures that focus on the activities undertaken by the firm in acquiring, disseminating, and responding to intelligence pertaining to customers and competitors (Kohli, Jaworski, and Kumar 1993).

However, a review of these scale items and others that have been proposed reveals a primary focus on current customer needs or events in the current environment.

Other conceptualizations of market orientation also exist in the literature. For example, Slater and Narver (1995, p. 67) defined market orientation as "the culture that places the highest priority on the profitable creation and maintenance of superior customer value while considering the interests of other stakeholders." Based on their earlier work, Narver and Slater (1990b) proposed that market orientation comprises three behavioral dimensions: customer orientation, competitor orientation, and interfunctional coordination. Deshpandé, Farley, and Webster (1993) concluded that market orientation and customer orientation are in fact synonymous. Synthesizing the previous work on market orientation, Deshpandé and Farley (1996) defined market orientation as "the set of cross-functional processes and activities directed at creating and satisfying customers through continuous needs-assessment."

The above discussion suggests that market orientation is both an organizational culture and a set of behaviors performed by the organization, and the primary benefit of developing a market orientation is the connection the firm has with the current environment. As mentioned previously, even though market orientation was originally conceived as gaining information about both current and future customer needs (e.g., Kohli and Jaworski 1990), no empirical evidence exists to support this notion. This absence of empirical evidence has led many scholars to interpret a market-oriented firm as simply being customer driven (Christensen and Bower 1996; Hamel and Prahalad 1994). Responding to shortcomings outlined in the literature, scholars have suggested that the presence of complementary concepts such as learning orientation (Baker and Sinkula 1999; Farrell 2000; Hurley and Hult 1998; Slater and Narver 1995) and entrepreneurial orientation (Matsuno, Mentzer, and Ozsomer 2002; Slater and Narver 1995) can

enhance the benefits associated with being market oriented. Several of these studies have suggested that elements of both learning and entrepreneurial orientations provide significant performance benefits to firms that possess a market orientation (Baker and Sinkula 1999; Hurley and Hult 1998; Narver, Slater, and MacLachlan 2000). For example, Baker and Sinkula (1999) found evidence that learning orientation enhances the relationship between market orientation and financial performance. They contended that the absence of a learning orientation may limit a market-oriented firm to merely adapt, rather than react, to the market. This line of research suggests that a market orientation, by itself, does not provide the requisite ability to develop competitive advantage (Han, Kim, and Srivastava 1998), as market orientation focuses on detecting, rather than anticipating, market trends (Dertouzos, Lester, and Solow 1989; Laverty 1996).

In response to the limitations outlined in the literature, Jaworski, Kohli, and Sahay (2000) and Narver, Slater, and MacLachlan (2000) readdressed market orientation in similar, but distinct, fashion. Jaworski, Kohli, and Sahay (2000) concluded that market orientation comprises two dimensions: market-driven and market-driving; while Narver, Slater, and MacLachlan (2000) suggested that the dimensions include reactive and proactive forms of market orientation. Each of these two perspectives will now be addressed, starting with the contrast between market-driven and market driving.

Market-driven vs. Market-driving

Customer-led or market-driven organizations accept the market structure as is and serve this market by listening to the wants and needs of customers (Jaworski, Kohli, and Sahay 2000). On the other hand, market-driving organizations proactively shape market structures through a

constructionist, deconstructionist, or functional-modification approach. Each of these three approaches alters the market by changing either the mixture of players in the market or the functions performed by players in the market. The constructionist and deconstructionist approaches suggest that firms modify the structure of the market by altering the number of players (i.e., competitors) in the marketplace. However, it is the functional modification approach that is of interest here, due to its ideation of customer needs.

The functional-modification approach, as outlined by Jaworski, Kohli, and Sahay (2000), suggests that firms can earn greater performance levels not by specifically uncovering and addressing latent needs but by shaping the perceived needs of customer. Shaping perceived needs entails altering, at least in the mind of customers, the perceived benefit they receive from a particular product. For example, instead of uncovering a latent need, a market-driving firm may convince buyers that they actually need a product or specific feature of the product, when in reality they may not (Narver, Slater, and MacLachlan 2000). While this approach can be an effective means of changing customer perceptions, the process can be lengthy and expensive as well as risky. In contrast, firms that discover latent or emerging needs are able to develop new products to address these needs and thus create superior customer value.

Reactive vs. Proactive Market Orientation

In response to Jaworski, Kohli, and Sahay's (2000) reconceptualization of market orientation, Narver, Slater, and MacLachlan (2000) argued that proactive market orientation is not about creating or altering customer preferences but rather entails the discovery of existing latent needs and the development of new products or processes to satisfy these needs. Similar to the traditional conceptualization of market orientation, or what the authors call “reactive market

orientation," proactive market orientation calls for firms to focus on an analysis of customer behavior. Narver, Slater, and MacLachlan argued that by dissecting the behavior of customers, firms are in a position to infer latent needs based on the gaps they discover from their analysis.

While recent extensions such as the delineation of proactive market orientation may serve to quell criticisms outlined by numerous authors (e.g., Berthon, Hulbert, and Pitt 1999; Christensen and Bower 1996), the fact remains that current customers and competitors are the primary focal point of attention. This focus may cause organizations to ignore the potential market opportunities that are created by environmental shifts, governmental regulations, and so on (Achrol 1991; Dickson 1992; Srinivasan, Lilien, and Rangaswamy 2002; Webster 1992). As a result, reliance on market orientation may leave a firm susceptible to environmental shifts that can erode the firm's core business. Furthermore, this focus may prevent a firm from addressing an even bigger market potential that may stem from the outer edges, or niche segments, of its customer base. This dissertation seeks to fill this void through a systematic examination of market foresight capability, which takes into account not only current customers and competitors but also other environmental elements that have the potential to influence a firm's new product development.

Researchers have also suggested that market-oriented firms are risk averse (Slater and Narver 1995) and are capable only of adaptive learning[1] (Hamel and Prahalad 1994; Hayes and Wheelwright 1984), which limits them from discovering the latent needs of customers (Slater and Narver 1995). Furthermore, because firms that are market oriented focus their knowledge explorations on current customers and competitors, they often miss signals that emanate from sources outside their traditional realm (Achrol 1991; Dickson 1992; Webster 1992). Baker and

[1] Adaptive, or single-looped, learning occurs when organizations detect errors in their thinking but make no changes to their present policies or goals.

Sinkula (1999) and Slater and Narver (1995) suggested that the absence of learning hinders market-oriented firms from anticipating environmental changes and thus allows for action only after changes have already occurred. Evidence of this limitation has been found recently under conditions in which firms with a market foresight capability may have anticipated these changes. For example, Grewal and Tansuhaj (2001) discovered that the benefits of market orientation are severely limited during a period of high turbulence, as in the case of an economic crisis. Their findings suggest that while market-oriented firms are able to identify and respond to customer needs, this identification is possible only after changes have occurred in the environment. This conclusion suggests that because market orientation focuses primarily on current customers and competitors, environmental factors that can significantly influence organizational performance are often overlooked. Voss and Voss (2000) found another boundary condition to market orientation when they discovered its limitation in an artistic environment. They found that in an artistic environment patrons may have difficulty expressing what types of plays, movies, or music they want to see or hear in the future. Their results suggest evidence of market orientation's limitations because of the focus on meeting customers' expressed needs.

Technological Opportunism

Partially in response to the problems associated with focusing on expressed needs, Srinivasan, Lilien, and Rangaswamy (2002) introduced the concept of technological opportunism, which they defined as the ability of firms to sense and respond to the availability of new technologies. Technological opportunism is conceptually related to anticipation of future market events in that firms actively search the environment for new technologies that in the future could impact their overall business environment. The new technologies discovered by

these opportunistic firms may be developed internally or may be found in the external environment. However, according to these authors, the discovery of an emergent technology does not imply that the firm will adopt this new technology, nor does it require the firm to apply the technology for commercial purposes.

While the sense-and-respond capability that exists within a technologically opportunistic firm does suggest a future orientation, market foresight is distinct in two ways. First, technology is but one factor that can influence the markets of the future, and a focus on a single environmental aspect inhibits managers from seeing the overall picture. Second, although researchers have concluded that firms that undertake radical innovation are more likely to have a future focus (Chandy and Tellis 1998), technological opportunism, by definition, limits its assessment to currently available new technologies. Although it can be argued that the technologies of today will influence the products of tomorrow, technological opportunism does not distinguish between technology adopted for the purpose of meeting future customer needs and technology to be used internally, such as for streamlining the production process.

This chapter outlined the theoretical and empirical aspects of market sensing and developed a model of market sensing based on the work of Day (1994). It delineated the two dimensions of market sensing, namely detecting current market trends and anticipating future market trends. It introduced the factors that are unique to each dimension, as well as those that are shared between the two. In addition, the chapter pointed up the distinction between market orientation and market foresight capability. The next chapter discusses the conceptual framework, including the determinants and new product outcomes of market foresight capability, and offers some hypotheses.

CHAPTER THREE: CONCEPTUAL MODEL AND HYPOTHESES

Figure 4 presents a conceptual model highlighting the determinants and new product development outcomes of market foresight. Table 3 provides a list of the constructs included in the model, along with their definitions. Grounded in dynamic capability theory, the model depicts active scanning, lead user collaboration, and market experimentation as determinants of market foresight capability. The relationship between these determinants and market foresight capability is moderated by interdepartmental connectedness, learning orientation, and future orientation. Market foresight capability is modeled to positively influence the creativity, speed to market, and market-entry timing of the firms' new products, and market foresight capability's relationships to these are moderated by organizational inertia. Finally, creativity, speed to market, and market-entry timing of new products positively influence the firm's new product performance. Although the relevant linkages are not depicted in the model, environmental turbulence and organizational size and age will be included as control variables.

Researchers have suggested that the capabilities of the firm provide the potential for the development of competitive advantage (Day 1994a; Eisenhardt and Martin 2000; Leonard-Barton 1992; Teece, Pisano, and Shuen 1997; Zollo and Winter 2002). More specifically, Teece, Pisano, and Shuen (1997, p. 516) argued that competitive advantage is the result of "the firm's ability to ability to integrate, build, and reconfigure internal and external competences[2] to

[2] In line with Day (1994a), competencies and capabilities will be used interchangeably.

address rapidly changing environments." They referred to this ability as a "dynamic capability."[3] Day (1994a, p. 38) defined these capabilities as "complex bundles of skills and accumulated knowledge, exercised through organizational processes that enable firms to coordinate activities and make use of their assets." Because market foresight capability is derived from multiple organizational capabilities, it can be considered a dynamic capability. In the following pages I describe the information processes, values and norms, and coordination/integration influences that collectively contribute to the creation of a unique resource (e.g., Day 1994a; Hunt and Morgan 1995), namely a firm's market foresight capability.

Determinants of Market Foresight Capability

This dissertation draws on diverse strategy literature streams such as market orientation, organizational learning and culture, the resource-based view of the firm, and new product development. The choice of the particular constructs selected as determinants of market foresight capability, however, followed from dynamic capability theory (Hamel and Prahalad 1994; Stalk, Evans, and Shulman 1992; Teece, Pisano, and Shuen 1997). I draw on dynamic capability theory because this body of knowledge focuses on the organization's information processes, values and norms, and coordination/integration influences that elevate lower-level capabilities of individuals and teams to an organization-level or dynamic capability (Day 1994a; Narayanan et al. 2003; Teece, Pisano, and Shuen 1997).

Numerous typologies exist in the literature outlining the various dimensions of organizational capabilities (Day 1994a; Leonard-Barton 1992), but these typologies are for the most part limited to a specific context, rendering them inappropriate for this research. However, a review of the dynamic capabilities literature reveals three central dimensions: information

[3] As pointed out by Zollo and Winter (2002), defining a capability as ability is almost tautological.

processes, values and norms, and the influence of coordination/integration (Day 1994a; Eisenhardt and Martin 2000; Leonard-Barton 1992; Narayanan et al. 2003; Teece, Pisano, and Shuen 1997). These dimensions will now be addressed.

Information Processes

Organizational processes have been cited as key determinants of the firm's ability to achieve desired goals (e.g., Menon and Varadarajan 1992; Moorman 1995). Stalk, Evans, and Shulman (1992) suggested that the capacity of the firm to compete depends on its ability to consistently transform key processes into strategic capabilities. Processes are patterns of behaviors or actions undertaken by the organization for the purpose of carrying out organizational activities (Day 1994a; Garvin 1998; Teece, Pisano, and Shuen 1997). Prior research (Day 1994a; Schroeder, Bates, and Junttila 2002; Slater and Narver 1995; Teece, Pisano, and Shuen 1997) suggests that the activities and processes organizations engage in provide the firm with the potential to create competitive advantage by allowing the firm to develop organizational capabilities that deliver superior customer value. This relationship is especially true with regard to "knowledge assets" such as information (Barabba and Zaltman 1991; Cohen and Levinthal 1990; Glazer 1991; Leonard-Barton 1992). Next, I discuss the impact of three information processes—active scanning, lead customer collaboration, and market experimentation—on market foresight capability.

Active Scanning

Active scanning is the purposeful and continuous search of the external environment, tapping diverse sources of information in search of new insights and opportunities (Beal 2000; Maier, Rainer, and Snyder 1997). Because scanning is the first link between a firm's perceptions and action, the development of market foresight capability requires firms to uncover latent evidence of emerging patterns within their environment. It has been suggested that for organizations to make such discoveries they must actively scan their environments (McDaniel 1997; Perreault, Green, and Malhotra 1992; Slater and Narver 1995).

Managers scan their environment to gain greater understanding of market events (Hambrick 1982), which may provide a source of opportunity if managers are able to pick up signals others have missed (Dutton and Freedman 1985) or if managers are able to read the signals before their competitors. The breadth and depth of environmental scanning varies with the manager and with the organization (Aguilar 1967). Daft, Sormunen, and Parks (1988) found that managers in higher performing firms had a greater scanning frequency and engaged in deeper and wider scanning activities than did managers in lower performing firms. Numerous researchers (e.g., Hambrick 1982; Rhyne 1985) have concluded that firms may attain a strategic information advantage based on their environmental scanning capabilities. For example, Hrebiniak and Joyce (1985), and later Jennings and Lumpkin (1992), argued that firms that seek a differentiation strategy tend to use a scanning activity that places more importance on evaluating opportunities and customer attitudes. However, it should be noted that active scanning does not imply simply a greater degree of scanning activity.

Active scanning is different from the traditional notion of scanning, which contends that organizations collect information based on a particular need, such as the yearly planning process

(Aaker 1983). As noted by Day (1992, p. 48), "active scanning involves more than just waiting for information to manifest itself—it [the firm] directly pursues insights." Organizations that actively scan their environments do so not seeking to find particular information per se, but rather continuously collect information from a broad range of sources, using the entire organization as information receptors. Furthermore, key pieces of information are often acquired not because of a specific search by the organization, but rather may obtained almost by chance (Ghoshal and Kim 1986). Thus, active scanning serves the organization by broadening the depth and breath of market knowledge, allowing for greater understanding of the elements that will influence future market conditions. These two aspects are critical because the utilization of a wide range of sources provides critical information that is focused not merely on current customers or competitors but on all elements of the environment that may generate insights into the future. In other words, while all organizations collect information from their environment, those that aggressively seek information from a broader spectrum have greater insight into the factors that will influence the shape of the market in the future. I posit that firms pursuing information by actively scanning their environment will have a greater understanding of pending environmental changes. Thus:

H1: The greater the level of a firm's active scanning practices, the greater its market foresight capability.

Lead User Collaboration

Developing insight into the shape of future markets requires the firm to maintain contact with lead users in order to obtain requisite feedback on new product and service offerings (Slater and Narver 2000; Tabrizi and Walleigh 1997). Working closely with lead users allows firms to

develop greater understanding of how customers use or misuse products.[4] Lead users, defined as those users "whose present strong needs will become general in the marketplace months or years in the future" (von Hippel 1986, p. 791), provide an opportunity for the firm to gain greater knowledge of latent and emerging customers needs, knowledge that is unavailable through traditional market research methods. Research by Wind and Mahajan (1997) demonstrated the potential of working with lead users. They reported that lead users account for numerous new product innovation ideas. Further empirical evidence was offered by Urban and von Hippel (1988), who found that 77% of the innovations for scientific instruments and 67% of those for semiconductors were developed based on ideas provided by lead users. These users may also be utilized to accurately describe product concepts, as well as to evaluate product designs (Li and Calantone 1998), which may serve to reduce risks as well as product-development costs. In their examination of firms that launched successful, innovative new products, Tabrizi and Walleigh (1997) found that successful firms took strong steps to identify those users who were at the forefront of new product usage, what they referred to as the 'pioneers and risk takers.' They also found that successful companies worked with more than current customers, also talking to prospective and former customers, thus helping to eliminate bias by the firm's largest or most supportive customers.

Working with lead users also provides the firm with the opportunity to gain knowledge about customers not available through traditional market-research techniques. For example, tacit knowledge can be gained by observing users during the day-to-day application of a firm's products. Researchers have concluded that knowledge can be divided into tacit and articulable knowledge (Nonaka 1994). Tacit knowledge is rich and personal but not easily communicated.

[4] Misuse of a product refers not to the inappropriate use of a product, but rather to situations in which customers are adapting current products for use in ways never imagined.

This type of knowledge is deeply rooted in a person's actions and is context specific (Dougherty 1992; Nonaka 1994). Articulable knowledge, on the other hand, is explicit, codifiable, and can easily be shared. By observing lead users in their natural settings, firms will be better able to gain tacit knowledge.

Hamel and Prahalad suggested that "customers are notoriously lacking in foresight" (1994, p. 99). Insights into emerging market trends may be gleaned from lead users, however, because their consumption habits place them at the leading edge of the market. As von Hippel described them, lead users are those that are advanced "with respect to a given important dimension which is changing over time" (1986, p. 798). As such, and because product uses most likely diffuse through the market over time (Rogers and Shoemaker 1971), organizations that work closely with lead users will be in better position to learn about new market opportunities. Furthermore, working with lead users can help ease the interface conflict between marketing and R&D departments (Gupta, Raj, and Wilemon 1986; Li and Calantone 1998) by providing a unique user perspective. In sum, gaining knowledge of the market, especially in terms of future conditions, requires firms to go beyond traditional market research activities. Therefore, it is proposed that firms that work closely with users on the cutting edge acquire the foresight that is required to address future needs of the entire market. Thus:

H2: The more a firm collaborates with lead users, the greater its market foresight capability.

Market Experimentation

Because the future is uncertain, gaining information through continuous market experimentation is critical for managers to be able to anticipate future events (Brown and Eisenhardt 1997). Market experimentation allows the firm to quickly assess new product and

service ideas and explore new growth markets on a limited scale (Eisenhardt and Martin 2000). These actions are designed to provide the organization with quick feedback, which may allow for the alteration of current products (Dougherty 1992), as well as provide insight into emerging market segments (Daft and Weick 1984). This quick feedback also allows the firm to add to or alter its existing knowledge structures, even though the knowledge may be situation specific (Eisenhardt and Martin 2000). In their study of the hypercompetitive computer market, Brown and Eisenhardt (1997) discovered that successful firms used experiments to probe into the future. They reasoned that experimentation allowed managers to have various options with regard to pending changes in the environment. This advantage prevented unanticipated changes from surprising successful firms. For example, in the early 1970s, Motorola conducted market experiments with the earliest model of their cellular phones. These probes led not only to a better understanding of the requirements of the market but also to the discovery of which markets to target (Lynn, Morone, and Paulson 1996).

Market experiments also have an influence on market foresight capability by heightening the learning capability of the firm. Because experiments can be viewed as "active intrusion" into the marketplace (Daft and Weick 1984), firms that conduct market-based experiments experience greater learning than their passive counterparts do. As a result, organizations that systematically experiment with their products and processes should have superior knowledge regarding the future needs of customers. Therefore:

H3: The greater the level of market experimentation undertaken by the firm, the greater its market foresight capability.

Values and Norms

Values and norms refer to the cultural orientations that are posited to influence a firm's market foresight capability. Organizational culture is defined as "the pattern of shared values and beliefs that help individuals understand organizational functioning and thus provide them norms for behavior in the organization" (Deshpandé and Webster 1989). The literature (e.g., Deshpandé, Farley, and Webster 1993) amply documents the influence that a firm's values and norms have on firm performance. At the organizational level, firms' shared core values and how those values influence the ways in which they conduct business (Barney 1986) explain the impact on financial performance. At the managerial level, and of direct importance to this dissertation, research suggests that organizational culture influences a manager's information processing and sense-making skills (Brown and Starkey 1994; Harris 1994; Moorman 1995; Weick 1995; White, Varadarajan, and Dacin 2003).

Numerous observers have called for additional research to incorporate organizational culture into the marketing strategy literature (Deshpandé and Parasuraman 1986; Mahajan, Varadarajan, and Kerin 1987; Moorman 1995; Walker and Ruekert 1987; White, Varadarajan, and Dacin 2003). For example, Deshpandé and Parasuraman (1986) suggested that future research should focus on the consequences of organizational culture and structure on the effectiveness of managers. This dissertation addresses this issue by suggesting that learning and external orientations will moderate the relationships between active scanning, lead user collaboration, market experimentation, and the firm's market foresight capability.

Learning Orientation

Learning orientation is defined as the degree to which the firm stresses the value of learning for the long-term benefit of the firm (Hult et al. 2000; March 1991; Sinkula, Baker, and Noordewier 1997). Hurley and Hult (1998) argued that a learning orientation can be manifest at various levels within the firm, including in its strategy, processes, structure, and culture. The benefits of learning orientation have received much attention in the strategy literature (e.g., Baker and Sinkula 1999; Day 1994b; Slater and Narver 1995). These benefits include faster market-information processing (Dickson 1996), faster development of new products (Stalk 1988), and superior performance (Baker and Sinkula 1999; Slater and Narver 1995). Researchers (Eisenhardt and Martin 2000; Zollo and Winter 2002) have contended that the learning mechanisms of the firm guide the evolution of dynamic capabilities, since companies develop new competencies by exploiting existing knowledge resources. Indeed, some marketing scholars have asserted that learning about emerging shifts in their environment faster than one's competitors may be the only source of competitive advantage (De Geus 1988; Dickson 1992).

Researchers have proposed that organizational learning takes place along a continuum ranging from adaptive to generative learning (Argyris and Schon 1978; Senge 1994). Adaptive learning occurs when individuals or firms operate within the confines of their preset constraints and incrementally learn to improve their performance according to changing circumstances without making changes to the deeper structure of the organization (Argyris and Schon 1978; Senge 1994; Slater and Narver 1995). This type of learning is consistent with incremental efforts that are involved in continuous improvement of the quality of existing products. Generative learning, on the other hand, takes place when individuals or firms question the basic assumptions that they have been using and acquire a different way of looking at their environment, using new,

radical methods of change (Argyris and Schon 1978; Senge 1994; Slater and Narver 1995). Both generative learning and adaptive learning benefit the organization. Where generative learning provides the firm with the ability to create innovative advances in the market (Slater and Narver 1995), adaptive learning provides the firm with the ability to respond to environmental changes through incremental innovations. However, adaptive learning does not afford the firm the opportunity to identify changing market conditions (Baker and Sinkula 1999).

Where traditional analysis examines each piece of data as a separate entity, firms with a heightened learning orientation possess the capability necessary to develop generative learning skills (Argyris and Schon 1978; Baker and Sinkula 1999; Senge 1994), which allows the firm to examine the interaction among often seemingly unrelated pieces of information. This capability provides benefits to the firm, because organizations whose employees better understand the dynamics of their environment reach different conclusions and can thus achieve higher performance levels (Sheth and Sisodia 2001). This holistic view occurs in organizations that are "flexible and adaptable to changing circumstances, emphasizing continuous improvement, reinvention, and innovation" (Sheth and Sisodia 2001, pp. 20–21).

Furthermore, organizations with higher commitment toward learning possess the requisite values needed to create and use knowledge (Sinkula, Baker, and Noordewier 1997), which in turn allows them to improve their understanding of the environment (Galer and van der Heijden 1992). The presence of a deep-seated learning orientation has the ability to influence a firm's market foresight capability by forcing it to challenge long-held assumptions about external elements such as customers and competitors, as well as internal factors such as a firm's structure and processes (Baker and Sinkula 1999). Day (1994b) contended that firms that excel in continuously learning about their markets will be in a better position to anticipate market

changes. In discussing the learning implications of experimentation, Brown and Eisenhardt stated, “Learning is critical because, while the future is uncertain, it is usually possible to learn something about it, making it easier for managers to anticipate and potentially even create the future” (1997, p. 21).

While the above suggests that both adaptive and generative learning provide benefits to the organization, it is argued that because of the ability to examine the environment from a holistic perspective, organizations that utilize generative learning capabilities will possess the ability to achieve greater understanding of their environments. This heightened learning capability is available only to those firms whose culture stresses the importance of learning (Baker and Sinkula 1999; Hult et al. 2000; Senge 1994). Therefore:

H4: The relationship between the determinants—active scanning, lead user collaboration, and market experimentation—and market foresight capability will be moderated by learning orientation such that the greater the learning orientation the stronger the relationship between market foresight capability and (a) active scanning, (b) lead user collaboration, and (c) market experimentation.

Future Orientation

The development of a market foresight capability requires organizations to place special emphasis on the future conditions of the market in relation to current market conditions (Narver and Slater 1990). This future orientation allows the firm to see past the current served market, focusing on what will be, rather than what already is. Chandy and Tellis (1998, p. 479) defined future orientation as “the extent to which a firm emphasizes future customers and competitors relative to current customers and competitors." However, this view, while being future oriented, suggests that only future customers and competitors have the potential to impact future market conditions. Srinivasan, Lilien, and Rangaswamy (2002, p. 55) addressed this narrow view in

defining a firm's future orientation as "the extent to which a firm emphasizes its future opportunities and capabilities relative to its current capabilities."

Although a future-oriented firm will have an interest in future profits, future customer segments, competitors, and other market-altering elements, it will not necessarily omit any action or emphasis on current markets. After all, without revenues generated by current customers the firm will be unable to capitalize on future opportunities. Compared to firms that focus on current or past markets, a future-oriented firm will be interested in those customers who will be the most attractive customers a year or more from now. These future-oriented firms will not be attached to their current customers or products but will be willing to cannibalize the current products or processes (Chandy and Tellis 1998; Srinivasan, Lilien, and Rangaswamy 2002) as well as their current customers. Therefore:

H5: The relationship between the determinants—active scanning, lead user collaboration, and market experimentation—and market foresight capability will be moderated by future market focus such that the greater the future market focus the stronger the relationship between market foresight capability and (a) active scanning, (b) lead user collaboration, and (c) market experimentation.

Coordination/Integration Systems

The process of building organizational capabilities relies on the coordination and integration between organizational actors (Day 1994a; Leonard-Barton 1992; Narayanan et al. 2003; Teece, Pisano, and Shuen 1997). For example, the ability of the organization to integrate newly acquired knowledge relies on how closely departments work together. The social interaction between team members, departments, and other firm-specific actors also influences the strategic direction undertaken by the firm. In addition, as noted by Teece, Pisano, and Shuen (1997), organizational capabilities involve coordination across multiple organizational subsystems. Thus, to understand

the development of market foresight capability, it is important to investigate horizontal influences (i.e., interdepartmental connectedness) of information coordination (Bower 1970; Burgelman 1983; 1994; Day 1994b; Narayanan et al. 2003; Teece, Pisano, and Shuen 1997). As discussed next, this dissertation extends extant research pertaining to the impact of social interaction within the organization on strategic decision-making by suggesting that the level of interdepartmental connectedness will significantly influence the firm's market foresight capability.

Interdepartmental Connectedness

A frequent topic of organizational research (e.g., Barclay 1991; Dyer and Song 1997; Jaworski and Kohli 1993; Walker and Ruekert 1987), interdepartmental connectedness is defined as the degree to which formal and informal communication and contact is possible between individuals from different functional areas in the firm (Jaworski and Kohli 1993; Sethi 2000b). Hamel and Prahalad (1994) addressed the importance of interdepartmental connectedness in enhancing a firm's strategic foresight, stating "concern for the future, a sense of where the opportunities lie, and an understanding of organizational change are not the providence of any group; people from all levels of a company can help define the future" (p. 127). Furthermore, because organizations can be conceptualized as interpretation systems (Daft and Weick 1984), the processing of information at various levels within the organization can assist the firm in making sense of, as well as anticipating changes in, the environment. Eisenhardt and Martin (2000) suggested that dynamic capabilities rely on the relationships between the external environment and the organization and also on the relationships between departments within the organization. They went on to state "a common feature across successful knowledge creation

processes is explicit linkages between the focal firm and knowledge sources outside the firm" (p. 1109).

The strategy literature (Kohli and Jaworski 1990) documented the benefits of departments' working closely together to achieve common goals. Because information flows into the firm through many different channels, active communication among departments will ensure that useful information is being used and shared throughout the organization. Lack of communication between departments significantly cripples the flow of information (Ruekert and Walker 1987), which then hampers the ability of the organization as a whole to learn and limits its ability to foresee pending market changes. As stated by Day (1991), "Market knowledge is not fully captured in a usable form until the lessons and insights are transferred beyond those who gain the experience" (p. 16).

One way in which the dissemination of information positively influences the organization's ability to foresee the future is through its mitigation of information overload. Managers are limited by their processing capabilities and, as a result, information overload can decrease decision-making performance (O'Reilly 1980). When all departments share the burden of acquiring and giving meaning to information, departments become highly interconnected, and the problem of information overload may decrease. In essence, management's primary role becomes capturing and exploiting the insights gained from knowledge acquisition processes that exist throughout the organization (Hamel and Prahalad 1984). Firms that have greater levels of interdepartmental connectedness because of the emphasis on the sharing of critical new information reap benefits in areas such as new product development (Fisher, Maltz, and Jaworski 1997; Gupta, Raj and Wilemon 1986) and customer service (Hutt and Speh 1984; Ruekert and Walker 1987).

In sum, because interdepartmental connectedness enhances information flow (Jaworski and Kohli 1993) and facilitates open discussion as to the meaning of the information, firms whose departments actively work closely together should have a greater ability to envision the future changes that are about to occur in the market. These firms will share common bonds in working together for the betterment of the organization, instead of attempting to protect their territorial interest. While these departments will still compete amongst themselves for organizational resources, they possess a competitive harmony in which they realize that by working together they are building a stronger organization. Therefore:

H6: The relationship between the determinants—active scanning, lead user collaboration, and market experimentation—and market foresight capability will be moderated by interdepartmental connectedness such that the greater the interdepartmental connectedness the stronger the relationship between market foresight capability and (a) active scanning, (b) lead user collaboration, and (c) market experimentation.

Outcomes of Market Foresight Capability

Research in the strategy literature suggests that performance differences across organizations can be attributed to asymmetries in knowledge (Dollinger 1984; Glazer 1991; Menon and Varadarajan 1992; Thomas, Sussman, and Henderson 2001), and anticipating the future means detecting changes in the environment that may significantly affect the marketplace (Simon 1993). Furthermore, firms that have the ability to anticipate pending changes in their environment have the potential to achieve superior performance (Hamel and Prahalad 1994) by positioning themselves to take advantage of environmental shifts (Dickson 1992). The superior performance advantage, which firms with heightened market foresight capability possess, is due

to their ability to compete more effectively in both existing and emerging markets. However, as pointed out by Eisenhardt and Martin (2000),

> Dynamic capabilities are not themselves sources of long-term competitive advantage. So where does the potential for long-term competitive advantage lie? It lies in using dynamic capabilities sooner, more astutely, or more fortuitously than the competition to create resource configurations that have that advantage. (p. 1117)

In other words, the firm does not profit from market foresight unless it is able to capitalize on that foresight through, for example, superior new product development.

This dissertation, focuses on the outcomes of market foresight capability suggested by the theory of competitive rationality—that is, the benefits that accompany the exploitation of new products and new markets. Simply put, firms with superior market foresight capability are in better positions to generate new product and service offerings that better address customers needs. Specifically, I shall argue that firms with superior market foresight capability enjoy the benefits of heightened creativity, faster response time, and better market-entry timing in their new product development process. In turn, these benefits result in superior new product performance. These implications for new product development will now be discussed.

New Product Creativity

Defined as the degree to which a new product is novel to customers, creativity has received a great deal of attention in the literature and has been exalted as the primary determinant of new product success (Cooper 1983b; Li and Calantone 1998; Sethi, Smith, and Park 2001). Definitions of new product novelty or creativity center on the extent to which customers perceive the new product as unique. Of course, uniqueness does not necessarily constitute usefulness to the customer, which is an important distinction that needs to be included when examining a firm's market foresight capability. For this reason, I borrow from Sethi, Smith, and Park (2001)

their concept of "meaningful uniqueness," which they define as "the extent to which the product differs from competing alternatives in a way that is meaningful to customers" (p. 74).

The possession of market foresight allows firms to learn of previously latent and emerging customer needs and hence develop new products that address these needs (Hamel and Prahalad 1994). As such, by addressing customers' latent and emerging needs, new products introduced by firms with market foresight capability are more likely to be meaningfully unique. Research in new product development has suggested that companies are increasingly introducing products with a "safe market growth" mentality (Murphy 1996). While many have argued that this fact is due to companies' wishing to minimize risks (Samli and Weber 2000; Schmidt 1995), it can equally be because most companies lack the foresight needed for developing breakthrough new products. This lack may be why the failure rate among radically new products is almost 80% (Samli and Weber 2000). The possession of market foresight capability should give firms the ability to develop creative new products that may be outside their current portfolios. Therefore:

H7: The greater the firm's market foresight capability, the greater the new product creativity.

New Product Temporal Boundaries

The concept of time in the new product development literature stems from two distinct areas. The first is the faster development of new products to introduce into the market in order to take advantage of the previously unmet or emerging needs of customers. The second is the concept of properly timing the launch of a new product to coincide with environmental conditions that are conducive to the success of the product. Market foresight can positively influence both the 'speed to market' and the 'market-entry timing' aspects of new product success.

Speed to Market

Researchers have concluded that firms that launch new products faster than their competitors gain significant economic rewards (Ittner and Larcker 1997). These financial gains stem from extending a product's sales life, as well as from the ability to charge a premium price. These facts are especially true in high-growth markets involving short product life cycles (Griffin 1997). Stalk, Evans, and Shuman argued that "competition is now a 'war of movement' in which success depends on anticipation of market trends and quick responses to changing customer needs" (1989, p. 57). Faster response time is critical, especially in environments characterized as hypercompetitive, since research has shown that through the use of superior market information, new product development cycle times are faster (Griffin 1997). Improved response time to changes or opportunities in the environment is critical for the firm to benefit from knowledge learned through its market foresight capability. Because information is not proprietary, at some point in the future other firms will become aware of the emerging market opportunities. Although research has suggested that first to market does not necessarily lead to a larger market share (Kerin, Varadarajan, and Peterson 1992; Lieberman and Montgomery 1988), findings by Datar et al. (1997) suggest that greater lead time in the conceptual stage is positively related to superior performance for firms in highly dynamic industries. This advantage remains with the firm even if competitors are able to close the gap during later stages of the product development process. Furthermore, Szymanski, Troy, and Bharadwaj (1995) proposed that the effect of order-of-entry on market share is moderated by the presence of firm-specific resources, which help the firm exploit pioneering opportunities. Therefore, organizations that are able to anticipate pending changes significantly ahead of competitors should be in position to gain a higher share of the market regardless of competitive moves by rivals.

Managers that make faster decisions have also been shown to possess the ability to simultaneously consider multiple alternatives. Eisenhardt (1989) suggested that with the aid of their heightened intuition, managers can react faster and more accurately to the changes in the environment. Her findings suggest that the use of real-time information, and not static or forecast data, is a primary reason managers make quicker decisions. The use of real-time information enables managers to enhance their intuitions about the environment, allowing for faster understanding of changes that have occurred (Eisenhardt 1989), which can lead to the early detection of opportunities (Eisenhardt and Martin 2000). Because market foresight can be thought of as "heightened intuition," response time to changes in the environment should be enhanced due to market foresight capability. Therefore:

H8: The greater the firm's market foresight capability, the faster the firm's speed to market in introducing new products.

Market-entry Timing

Market-entry timing is the degree to which new products are introduced into the market at a time when conditions in the environment are optimal for their introduction (Fahey and Narayanan 1986; Moorman 1995). Introducing a product to the market too early may have negative consequences for the firm (Ali 2000; Christensen, Suarez, and Utterback 1998). For instance, launching a new product that is well ahead of its time may overwhelm or alienate customers, who may bypass the product due to fears of economic loss, physical danger, or reliability problems. The idea that potential negative consequences are associated with premature introduction is supported by Bayus, Jain, and Rao (1997). In their examination of a radical new product, the PDA, they suggested that success or failure in being first to market depends greatly

on the ability of the firm to understand the market both in terms of market size and customer needs.

Launching a product at the proper time is consistent with what Abell (1978) called a 'strategic window,' which he described as the "limited periods during which the 'fit' between the key requirements of a market and the particular competencies of a firm competing in that market is at an optimum" (p. 21). This viewpoint is also consistent with the work of Christensen, Suarez, and Utterback (1998), who found that successful new products have a "window of opportunity" and that firms that launched new products too early or too late suffered greater failure rates. For example, several companies, including Peapod and Webvan, rushed into the online grocery market only to find the market potential on home grocery delivery insufficient. Each of these companies lost in excess of $500 million due to what many might consider a good idea launched at the wrong time. Because market foresight capability allows firms to better understand the elements of the environment that drive and shape demand, firms will introduce new products (both market and technologically driven) to customers at the optimal time. Therefore:

H9: The greater the firm's market foresight capability, the better the firm's market-entry timing.

Moderating Effect of Organizational Inertia

The benefits associated with the development of market foresight capability will result in financial gains only if firms are able to exploit the knowledge gained, such as through the introduction of new products. The literature outlines two primary reasons why firms fail to capitalize on market opportunities—a lack of resources (Gilliland and Bello 1997; Gopalakrishnan and Dugal 1998; Yang, Leone, and Alden 1992) and organizational inertia (Agarwal et al. 2003; Bonoma 1981; Miller and Chen 1994; Narayanan et al. 2003). Lack of

resources includes not only the financial capital needed to invest in new product technologies or capabilities, but also the human and knowledge resources required to exploit the opportunity. Inertia, on the other hand, refers to the level of inactivity that a firm exhibits with regard to altering its competitive position (Miller and Chen 1994).

Researchers have suggested that organizational inertia results from organizations' lack of incentive to act, lack of competitive experience, and constraints on managerial actions. Incentive to act stems from the past successes of the firm and suggests that firms that are market leaders become content with the status quo and thereby become resistant to making strategic changes. In other words, managers may refrain from taking action so as to not risk their current market positions (Lant, Milliken, and Batra 1992; Lant and Montgomery 1987; Miller and Chen 1994). Conversely, opportunities in the environment may compel successful firms toward action, especially in the presence of slack resources gained from prior success.

Evidence suggests that organizations with limited experience in competing in diverse markets will be less willing to introduce new products (Levinthal 1991; Levitt and March 1988). However, it has also been argued that managers who compete in such static environments have limited knowledge as to environmental conditions. Furthermore, in such environments market foresight capability is of little use to the manager as stable conditions, caused by information symmetry, is often the norm rather than the exception.

The third factor that has been suggested to influence inertia is organizational constraints on managers. Researchers have suggested that the age and size of the firm will have a positive influence on organizational inertia, such that as firms grow and age the degree of inertia also increases (Hannan and Freeman 1984; Miller and Chen 1994). As such, organizational factors influence inertia by altering the attitudes and beliefs of managers. This fact is support by research

by Chandy and Tellis (1998), who stated that a firm's willingness to cannibalize its existing investments is an attitudinal trait held by the firms' top management team.

The above suggests that even though resource constraints play a role in limiting an organization's ability to respond to market opportunities, attitudinal factors, in the form of inertia, also act on the organization's ability to exploit fully the opportunities discovered through market foresight capabilities. In other words, organizations that suffer from inertia may react to knowledge gained from market foresight capabilities only by introducing less creative new products, without a sense of urgency or care for when the product reaches the market; therefore these firms have lower new product performance than firms that do not suffer from inertia. Thus:

H10: The relationship between market foresight capability and creativity, speed to market, and market-entry timing will be moderated by organizational inertia such that the greater the organizational inertia the weaker the relationship between market foresight capability and (a) new product creativity, (b) speed to market, and (c) market-entry timing.

Relationship between New Product Drivers and Performance

Moorman (1995) defined new product performance as the "degree to which organizational goals involving new product profits, sales, and share have been achieved" (p. 323). Organizations that possess market foresight capability should be in a better position to garner superior financial performance from the introduction of new products into the market due to their enhanced ability to deliver products that meet the needs of customers. As discussed above, market foresight should enhance the development of more creative new products, help speed these new products to the market, and guide managers as to the proper time in which to launch new products. Firms that create a new product category should enjoy financial returns that are associated with first-to-market products, at least in the short-run until competitors imitate or enhance the initial firm's

offerings. Because the firm has superior knowledge about the needs of customers, it may enjoy greater new product performance over the long term by developing the norms and standards for the offering, which may not be easily copied. To this, the following hypotheses are offered.

H11: Higher degrees of new product creativity in a firm will be associated with higher levels of new product performance.
H12: Higher degrees of speed to market in a firm will be associated with higher levels of new product performance.
H13: Higher degrees of market-entry timing in a firm will be associated with higher levels of new product performance.

A review of the hypotheses presented, along with the relevant literature that led to their development, can be found in Table 4. Next, I will outline the research design and methodology employed to test the model.

CHAPTER FOUR: RESEARCH DESIGN AND METHODOLOGY

This chapter outlines the research design and methodology used to test the proposed model. First the chapter presents the qualitative research undertaken to assist in the development of market foresight capability; then it presents a detailed description of the research setting, sample frame, and informants used in this study. This chapter then continues by addressing the process of developing the questionnaire, as well as the specific measures that were used in the study. The next part of the discussion outlines the survey procedures, including steps to increase response rates. Finally, the chapter presents the statistical analysis techniques and procedures for testing the hypotheses.

Qualitative Research

To establish the efficacy of market foresight capability, I interviewed numerous business executives in order to better explicate market foresight capability from a managerial perspective, as well as to provide a foundation for the development of the research instrument. Interviews took place either in person or via telephone and lasted between 20 minutes and one hour. Third parties provided access to interviewees through personal contacts or referrals. Prior to meeting with each executive, I initiated contact with potential candidates to inquire as to their knowledge regarding their firm's new product development process as well as their willingness to be interviewed. The initial pool of eleven executives resulted in seven interviews being conducted. The remaining executives were not interviewed for various reasons including no time (three

cases), lack of knowledge (one case), and inability to be contacted (two cases). The executive who claimed a lack of knowledge of his firm's new product development process directed the researcher to an associate who had the requisite knowledge, and she was subsequently interviewed. The executives held multiple positions within their respective firms, ranging from president/owner to marketing manager. Each confirmed that they were highly knowledgeable regarding their organization's marketing and new product development processes.

During these meetings, I asked interviewees to describe their new product development process in general, with specific questions directed toward the front-end processes used to develop new product ideas. The interviews allowed the executives to provide thoughts on developing the ideas for new products. Many interviewees, based on their vast experience, talked at length about various processes used in different organizations. In most interviews, executives answered general questions regarding the constructs of interest in this research. The information gleaned from these interviews was used in developing the research instrument, as well as to provide a clearer picture of market foresight capability. I invited interviewees to participate further in the development of the survey by offering their comments and suggestions on early drafts of the survey. All but one manager agreed to participate. The discussion of the survey development that follows presents additional information regarding these executives' participation.

Research Setting, Sample Frame, and Informants

This section presents the research setting, sample frame, and informants. In addition, the section presents issues related to tradeoffs between internal and external validity as they relate to the nature of the study, the sample frame, and the informants.

Research Setting

A cross-sectional survey was the setting for this study. Surveys are *ex-post-facto* scientific inquiries designed to afford researchers the opportunity to examine the relationships between variables. Cross-sectional studies attempt to provide an accurate representation of reality through the single administration of a research instrument (Churchill 1999). Cross-sectional surveys are the most frequently used descriptive design in marketing research (Malhotra 1996a).

Using a cross-sectional survey has both advantages and disadvantages. First, surveys allow for the collection of information from a relatively large sample and are the most flexible means of obtaining data from respondents (Malhotra 1996b). Second, when compared with experimental settings, surveys are strong in realism, which is important to the study of dynamic, real-life business situations (Kerlinger and Lee 2000). Furthermore, information obtained from survey research is very often accurate, because the measurement instrument is designed to address a specific research question. However, survey research may also be limited in several significant ways. Disadvantages include the practice of measuring relationships in an *ex-post-facto* manner, not studying the variables of interest over time, and the high costs and time involved in their completion. The difficulty of achieving a representative sample and controlling for threats to internal validity are also issues that must be taken into consideration when conducting survey research.

While the internal validity of field studies, such as a survey, is generally weaker than experiments (Cook and Campbell 1979), surveys provide the opportunity to examine theoretically expected relationships and disconfirm hypotheses, which is a basic prerequisite of any design used in testing theory. Further, the context of the present study ruled out an experimental design, given the cost and context of this dissertation. Therefore, a survey was

proposed as the best method to test the conceptual model. In the process of designing and completing this study, however, every effort was made to minimize the disadvantages associated with surveys.

Sample Frame

In selecting a sample frame, a researcher makes a decision whether to collect data across single or multiple industries. While each has benefits, a multiple-industry sample provides greater breadth of information with regard to the model proposed in this dissertation. In addition, multiple-industry studies also provide for more generalizable results than do single-industry studies (Dess, Ireland, and Hitt 1990). Single-industry studies are often unable to rule out the possibility that results are attributable to industry-specific characteristics. Furthermore, single-industry studies cannot take advantage of one of the biggest benefits to using a multiple-industry study, namely the ability to assess the impact of environmental turbulence, which is included as a control variable due to its influence on uncertainty (Achrol and Stern 1988; Boulton et al. 1982; Boyd and Fulk 1996; Duncan 1972; Huber, O'Connell, and Cummings 1975; Milliken 1987). Manufacturers are highly diversified with regard to their size and organizational characteristics. As such, all measures are at the organizational level. In the present study, if the organization comprised a single business unit (SBU), informants were asked to focus on the overall firm as the unit of analysis. If the organization had multiple SBUs, respondents were asked to focus on their SBU as the unit of analysis.

Informants

The informants for this study were marketing managers of manufacturers. Names and contact information of 2,000 marketing managers and their organizations were purchased from *infoUSA*, a national database merchant, and the initial contact was made via personal letter asking for cooperation with the study. This group was chosen as informants because managers are continuously seeking answers to enhance performance and because marketing is the link between the organization and the environment (Achrol 1991; Burke 1984). Furthermore, the firm's ability to anticipate changes in the environment, a critical part of market foresight capability, lay at the feet of the marketing manager (e.g., Glazer 1991; Webster 1992). Marketing managers are also well versed and active in the development of new products.

Two-thousand surveys is the minimum number of responses needed to test the proposed model. Based on the criteria that the number of responses must exceed 10 responses for each structural path directed at a particular construct, a minimum of 120 responses were required (Chin 1997). Furthermore, as previous researchers have reported lower-than-expected response rates when using lengthy surveys and targeting organizational managers, additional efforts were employed to exceed the recommendations of Chin (1997). These efforts included personalized cover letters, respondent access to the results, and a small monetary incentive. More in-depth details on the methods used to increase the response rate are discussed later in the text.

I employed multiple checks to ensure that respondents had an adequate level of knowledge regarding the new product development process of their organization. First, the survey contained a request that a senior manager, knowledgeable about the new product development process, complete the survey. Second, the survey requested the title of the respondent; those who it was felt might not have had the requisite knowledge of the subject were

dropped from the analysis. It is possible that a senior manager, who was the recipient of the survey, delegated the completion of the survey to a junior level manager. While one would hope that the recipient forwarded the survey to an underling who was knowledgeable about the organization's new product development activities, I examined each survey completed by someone other than a senior marketing manager on a case-by-case basis. This check entailed the examination of the respondent's job title, to whom the respondent reported, and the respondent's tenure within the organization. Respondents who were deemed not to have the requisite knowledge were not included in the analysis.

When a single informant provides data for both independent and dependent variables, common method bias could hinder the results of the study (Menon et al. 1999). Common method bias, a source of systematic variance, inflates type I errors, or errors of finding positive results when such results do not exist. Every effort was taken to control for and detect the presence of common method bias. To control for this possible effect, I designed the survey instrument so as to employ multiple methods, including maintaining the anonymity of respondents and decreasing the apprehension respondents may have had toward fully completing the survey (Podasakoff, et al. 2003). To test for the presence of common method bias, I collected secondary performance data from sources such as Compustat. To assess the potential impact of common method bias, I employed a method outlined by Sanchez and Brock (1996). According to this approach, a factor analysis was conducted using all variables from all constructs in questions. Common method bias would be evident if a single latent factor accounted for all manifest variables (McFarlin and Sweeney 1992; Podsakoff and Organ 1986).

One of the major concerns with most studies involving strategic issues is key informant bias. Key informant bias arises because informants are asked to provide information at the

aggregate or organizational unit of analysis, as in reporting on group or organizational properties, rather than their personal attitudes or behaviors (Seidler 1974). Researchers have suggested that multiple informants be used in studying organizational phenomenon. The use of two or more key informants also provides sources of errors (Kumar, Stern, and Anderson 1993), especially when informants disagree. Furthermore, minimal response rate based on multiple respondents of the same firm, which are common, call into question the overall reliability of a study's findings. This effect may be especially salient in studies such as the present one, as many of these activities are specifically germane to the marketing department, and while outsiders may provide information on numerous issues, their limited knowledge regarding marketing activities may severely limit the results. Although researchers have called for multiple respondents when examining dyadic relationships (e.g., Kumar, Stern, and Anderson 1993), this study involved individual firms with which the key informants were well familiar.

In order to minimize the possible effect of key informant bias, this study targeted marketing managers as informants. Typically, top-tier managers have a vantage point for providing data relevant to this study and are likely to be the most knowledgeable informants (Bagazzi and Phillips 1982). Relying on a single, knowledgeable informant is consistent with previous research studies (Zaheer and Venkatraman 1994).

Questionnaire Development

This study required the measurement of market foresight capability, its determinants, and its new product outcomes. This section describes the existing scales that were used as well as the processes taken to develop the new scales for active scanning, lead user collaboration, and market foresight capability. The development of the new scales strictly followed the procedures

for purification suggested by numerous authors (Anderson 1987; Bagozzi and Phillips 1982; Churchill 1979; Gerbing and Anderson 1988) to ensure unidimensionality, reliability, and discriminant validity.

In developing the scales used to measure market foresight, active scanning, and lead user collaboration, I defined the constructs, generated an item pool, and selected the measurement format. Three academic experts and four industry experts reviewed the initial item pool. After reviewing the comments from this expert panel, I reworded or dropped items from consideration and presented the items for review once more to a different panel comprising two academic and two industry experts. The industry experts held, either currently or previously, positions similar to that of the managers who would be contacted to participate in this study. These managers have had extensive experience in new product development and had an average of 28 years of industry experience. Based on their recommendations, I modified the instrument, prepared a draft of the research instrument, and mailed it to a pool of 100 marketing managers. This group of marketing managers was obtained from the same source, using the same criteria, as the informants mentioned above.

It was important to work closely with practitioners for two reasons. First, because practitioners are more deeply immersed in the business environment, the practical knowledge they possess should be deeper and can only assist in the development of any scale to measure said construct. Second, practitioners can assist in the development of any research instrument being developed through their feedback on wording, length, and style. The researcher incorporated the comments received from these informants into the final questionnaire.

Table 15 lists the items, alpha levels, and other pertinent information related to the scales used in this study. Appendix C contains a copy of the final questionnaire, along with the letters

and postcards mailed to potential respondents. The scales used to measure each construct are presented below, starting with the new scales that were specifically developed for this study.

Newly Developed Scales

Market foresight capability is defined as the organizational capability that allows the firm to anticipate emerging shifts in the market in time to influence the shape of the market. Items for this scale were developed based on a review of the literature and both formal and informal interviews with managers.

Active scanning is the degree to which the firm collects information from the external environment in search of a better understanding of market conditions that can influence future market conditions and thus firm performance (Beal 2000; Maier, Rainer, and Snyder 1997). Researchers have contended that measuring organizational scanning activities is problematic (Hambrick 1981a) because the actions managers take to scan their environment often fail to exhibit a systematic pattern (Aguilar 1967) and these actions cannot be easily quantified. However, much of the research on environmental scanning has been conducted based on the actions of managers, rather than on the organization as a whole (Daft, Sormunen, and Parks 1988; Hambrick 1981b; 1982). Active scanning, as it is defined here, is an organizational-level activity and must be measured as such. This issue was resolved through the construction of the items so as to capture the scanning activities of the organization, not that of the informants. The scale items were adapted from current research, including the work of Jaworski and Kohli (1993); Matsuno, Mentzer, and Ozsomer (2002); and Moorman (1995).

Lead user collaboration is conceptualized as working closely with lead users to gain insights into the ways in which they currently use products as well as their anticipated product

needs in the future. The scales to measure lead user collaboration were developed based on a review of the literature. Previous studies examining the positive influence of working with lead users (Herstatt and von Hippel 1992; Urban and von Hippel 1988) have been primarily case studies that sought to understand how lead users are identified. A primary concern in measuring lead user collaboration was to ensure that informants understand the true meaning of a lead user. Lead users can be current or former customers, as well as those who have never been customers of the organization.

Existing Scales

Market experimentation is the testing of new products or processes in the marketplace in hopes of gaining new information with regard to developing greater customer value (Garvin 1993; Slater and Narver 2000). Numerous authors have discussed the benefits of performing experiments to gain greater knowledge (Ahuja and Lampert 2001; Burke 1997; Garvin 1993; Slater and Narver 2000), but measures of this construct are limited. Slater and Narver (2000) used a four-item scale to measure the intelligence gained through experimentation. While the reliability of the scale is acceptable ($\alpha = .71$) some scale items do not accurately capture the concept of market experimentation (e.g., items such as "uses cross-functional teams or task forces") and thus this item was dropped from consideration.

Future orientation was previously defined as "the extent to which a firm emphasizes future customers and competitors relative to current customers and competitors" (Chandy and Tellis 1998). To measure future orientation of the organization, the researcher adapted a three-item scale used by Chandy and Tellis (1998) and later by Srinivasan, Lilien, and Rangaswamy (2002). The reported alpha level of .79 by Srinivasan, Lilien, and Rangaswamy indicates that the

scale has an acceptable level of internal consistency. A review of the literature suggests that when the scale has been adapted to a specific industry, problems have arisen. For example, Mols (2001) adapted the scale for his study of the Danish banking industry and retained only one item out of three. The scale was left in its original form for this study.

Learning orientation is the degree to which the firm stresses the value of learning for the long-term benefit of the firm (Hult et al. 2000; March 1991; Sinkula, Baker, and Noordewier 1997). The scale is adapted from Sinkula, Baker and Noordewier (1997) and consists of three dimensions: commitment to learning (four items), shared organizational vision (four items), and open-mindedness (three items). Research indicates that the scale has a high level of internal consistency as evidenced by its alpha level of .94. Past uses of measures of learning orientation had previously employed five-point scales. However, for reasons of reliability and validity (Churchill and Peter 1984) as well as for the ease of response and administration, seven-point scales were used. Prior studies have shown that a switch to seven-point scales has no effect on principal components analysis but often improves the reliability of answers (Harris and Ogbonna 2001).

Interdepartmental connectedness is the amount of contact that exists between employees in various functional departments (Jaworski and Kohli 1993). This contact can be formal, as in the case of planned meetings, or it can be of an informal nature, such as employees talking around the water cooler. For the present study, the researcher adapted the scale developed by Jaworski and Kohli (1993), which had a strong level of reliability ($\alpha = .80$). This scale has been used in numerous studies, each demonstrating its robustness either as an antecedent (e.g., Matsuno, Mentzer, and Ozsomer 2002; Menon, Jaworski, and Kohli 1997), as a moderator (Sethi 2000b), or as a covariate (Sethi, Smith, and Park 2001).

New product creativity is the degree to which a product introduced is novel or creative with regard to current offerings in the market. Moorman (1995) developed a seven-item semantic differential scale that has been shown to be highly reliable in capturing the intended meaning of new product creativity. In her initial development of the scale, Moorman reported an alpha level of .85, and later studies using this scale have reported even greater degrees of reliability ranging from .92 to .96 (Brockman and Morgan 2003; Rindfleisch and Moorman 2001).

S*peed-to-market* is the time needed to bring a product to the market from the idea conception stage. Market foresight influences the speed at which a product is introduced because it provides greater understanding as to the exact products that customers are willing to buy. Griffin (1993) and McDonough and Barczak (1991) developed prior scales that have been used to measure new product speed-to-market, and these were adapted for this study. The scale focuses on the speed at which firms have been able to develop new products compared with their norms and expectations. Rindfleisch and Moorman (2001) reported an alpha level of .81 in their use of a scale based on these references.

Market- entry timing is the degree to which new products are introduced into the market at a time when conditions in the environment are receptive to their introduction (Fahey and Narayanan 1986; Moorman 1995). I adapted the scale developed by Moorman (1995), a semantic differential scale querying informants on how timely and opportune the product launch occurred. The reliability for these measures was high ($\alpha = .92$) indicating the robustness of this scale. I examined other scales that measure the timing of new products entry into the market but dropped them from consideration. For example, Atuahene-Gima and Ko (2001) asked respondents whether the new product in question was the first to market, an early follower, a late follower, or a late entrant. While this scale may have been appropriate for the specific research

question posed by the authors, problems with respondent interpretability precluded its use in the current study.

New product performance is the degree to which the new product achieved results based on predetermined goals (Moorman 1995). These new product goals are based on various performance measures, including market share, sales, return on assets (ROA), etc. The five-item scale developed by Moorman (1995) inquires as to how well the new product performed based on financial performance objectives established by the organization prior to the introduction of the new product. This scale has been shown to be highly reliable with alphas being reported that range from .83 to .88 for modified versions of the scale (Baker and Sinkula 1999; Stewart, Mullarkey, and Craig 2003) to .95 as reported by Moorman (1995).

While self-assessed measurement of performance goals can create potential bias, they are the most commonly used form of performance assessment in marketing strategy literature (Gatignon and Xuereb 1997). While more objective financial measures may be preferred, these measures also can be biased because of the ulterior motives for which they are produced (Saunders, Brown, and Laverick 1992). Additional problems also arise in collecting objective financial data on specific new products. The use of self-assessment measures is well received in the literature and researchers have demonstrated the convergent validity of such scales (Dess and Robinson, 1984; Doyle, Saunders, and Wright, 1989; Venkatraman and Ramanujam, 1986). Based on the above and the fact that marketing managers possess the requisite knowledge regarding new products and their performance, the chosen measures are appropriate.

Organizational inertia. Miller and Chen (1994, p. 2) defined inertia as the level of activity that a firm demonstrates in altering its competitive stand. They measured organizational inertia through the development of an index designed to capture the competitive moves made by

executives in the airline industry, as well as organizational variables they felt were adequate proxies for inertia that included size, market diversity, age, market growth, and breadth of experience. This information was captured from secondary sources germane to the airline industry. While this index may be an adequate measure for organizational inertia, this method would not be appropriate in a multiple-industry study such as the one offered here. The reasoning is that the availability of information would most likely be limited with regard to secondary data on firms' competitive moves. However, because inertia is the result of attitudinal influences imposed on managers by organizational factors, the willingness-to-cannibalize scale, developed by Chandy and Tellis (1998), can be adapted for this study. Chandy and Tellis (1998, p. 475) defined willingness to cannibalize as the "extent to which a firm is prepared to reduce the actual or potential value of its investments." The scale has been used in the fast-paced technological sector (Chandy and Tellis 1998) and in the banking sector (Mols 2001) with acceptable results.

Control Variables

To parse out industry and organizational effects, the model includes control variables. These variables are environmental turbulence, organizational age, and size. The latter two variables are single-item measures, while organizational turbulence is a multi-item scale. *Environmental turbulence* is the degree to which changes are occurring in the environment due to the introduction of new technology and shifting customer preferences. Jaworski and Kohli (1993) measured technological and market turbulence using two scales of five items each. Menon et al. (1999) used a single seven-item scale to measure the degree of turbulence in the firm's environment during the past three years. However, I feel that while this scale is acceptable as an overall measure of environmental turbulence, it is limited with regard to addressing the current

research question, as technological and market turbulence are captured by only two and one item respectively. Therefore, I used the Jaworski and Kohli (1993) scale for the current study. This scale has been widely adopted in the literature and results indicate a high degree of internal consistency.

Survey Procedures

I collected data using a self-administered questionnaire. In order to achieve the highest response rate, I employed a modified form of the "total design method" (Dillman 1978). Higher response rates allow for the control for non-response bias, which raises questions regarding whether those who did not respond are different from those who did respond (Churchill 1999). A basic premise of the total design method (TDM) is that the questionnaire is a social exchange between researcher and informant. Social exchange theory suggests that informants will return the questionnaire, completed, if the benefits of doing so outweigh the costs associated with completing the questionnaire. As time and effort are the biggest costs associated with completing the questionnaire, efforts must be made to limit these effects by carefully designing the research instrument. Numerous authors (e.g., Churchill 1979; Dillman 1978; Faria and Dickinson 1992) have argued that achieving satisfactory response rates hinges on the efficient and effective administration and implementation of a survey. Furthermore, in order to improve content validity, response reliability, and response rates, I followed the techniques suggested by Churchill (1999) and Dillman (1978). These recommendations cover such areas as the design, layout, and pretesting of the questionnaire; response initiative; and pre-notification and post-survey follow-up reminders.

Prior to mailing the questionnaire, I contacted the informants by personalized letter, in an attempt to elicit their cooperation. The letter described the study, identified the lead researcher as a doctoral candidate, and informed them that a survey would be arriving shortly. Studies have indicated that prenotification of informants significantly increases their likelihood of completing a questionnaire (Faria, Dickinson, and Filipic 1990; Goldstein and Jennings 2002; Haggett and Mitchell 1994). Prenotification of informants also allows for a determination whether those who opted out of the sample were significantly different from those who chose to participate. Informants who indicated they were unwilling, or unable, to complete the questionnaire, were deleted from the sample frame, as were those whose contact letter was returned as non-deliverable.

I employed a three-wave mailing system. The first mailing included a personalized cover letter, questionnaire, and postage-paid return envelope. The second mailing was a reminder postcard, which was mailed three weeks later. Three weeks after the postcard, I sent the third mailing, which included another cover letter, questionnaire, and postage-paid envelope. Before the second and third mailings took place, I removed from the mailing list those informants who either responded with a completed survey or declined to participate.

Prior research has indicated that the use of various appeals helps to increase response rates in mail surveys (Faria and Dickinson 1992; Tyagi 1989). For example, the cover letter stressed the usefulness of the study as well as the importance of the informants to the success of the study. In addition, the personalized cover letter assured informants that their responses would be held in strict confidence. The cover letter included the signature of the lead researcher. Confidentiality and personalization have been shown to be significant in increasing response rates (Clark and Kaminski 1989; Faria and Dickinson 1996; Tyagi 1989). The questionnaire also

displayed the university logo to lend credibility to the study (Cavusgil and Elvey-Kirk 1998; Faria and Dickinson 1996; 1992). As suggested by Dillman (1978), the researcher sent the envelopes by first-class mail and included the phone number and e-mail address of the lead researcher so respondents could ask questions.[5]

Previous research has shown that small incentives can increase response rates in mail surveys (Furse, Stewart, and Rados 1981; McDaniel and Rao 1980). This study used two incentives in an attempt to increase responses, as well as to test their effects on response rates. The first incentive, a summary of the findings from this study, was offered to all informants. Researchers have reported mixed findings as to the effect of sharing survey results with participants. The second offer, a small monetary incentive, was offered to one-half of informants. Before the initial mailing of the survey, the researcher divided the sample randomly into two groups of 1,000 each to examine the effects of an incentive being offered to respondents. This incentive was in the form of a $1 bill attached to the survey. The second group received the exact same mailing, without the incentive.

Data Analysis Procedures: Hypothesis Testing

This section describes the data analysis procedures that were used to test the hypotheses. A multi-step approach to data analysis was employed for this research. First, I checked potential non-response bias by comparing firm characteristics of early and late responders, as well as by performing the Kolmogorov-Smirnoff two-sample test. Second, I analyzed the descriptive statistics in order to diagnose and address potential non-normality issues. Third, I examined all individual items and their loadings to ensure that all loadings were greater than the minimum cut-off recommended by Hulland (1999). Using the internal consistency measure developed by

[5] Information regarding response rates and assessment of nonresponse bias are reported in Chapter Five.

Fornell and Larcker (1981), I checked convergent validity. To assess discriminant validity, I employed the average variance extracted measure proposed by Fornell and Larcker (1981). I performed a further check of discriminant validity by examining the cross-loadings of the items.

Finally, I tested the overall model using Partial Least Squares (PLS). The justification for this technique follows. PLS and Structural Equation Modeling (SEM) are similar in that both methods account for unreliability in the measurement of latent variables, while estimating complex models comprising systems of equations. However, the differences are important for this study. The first major difference is that the goal of the SEM approach is to model the covariances among variables, whereas PLS maximizes predictive accuracy (Wold, 1982). Second, PLS imposes minimal demands on measurement scales, sample size, and distributional assumptions, thereby avoiding two serious problems of SEM: inadmissible solutions and factor indeterminacy (Fornell and Bookstein 1982). Finally, PLS provides great flexibility in estimating multiple interaction effects (Sarkar, Echambadi, and Harrison 2001).

Summary

This chapter described the development and execution of a cross-sectional field survey. The sample frame for this study was manufacturing firms with marketing managers serving as the key informants. The survey procedures used a modified version of Dillman's (1978) total design method, and the hypotheses were tested using Partial Least Squares. The next chapter outlines the findings from the data analysis.

CHAPTER FIVE: ANALYSIS AND FINDINGS

This chapter outlines the findings from the data collection, as well as the procedures used in the analysis. First, I calculate the response rate and describe the characteristics of the sample. Second, I examine measurement issues, including potential non-response bias and the psychometric properties of the constructs. Specifically, I assess data quality, followed by tests for construct reliability and validity. Finally, I present the results of the hypothesis tests.

Response Rate and Sample Characteristics

The sample frame comprised marketing managers of manufacturing firms included in Standard Industrial Classification (SIC) Division D. As outlined earlier, I mailed personalized, prenotification letters to 2,000 marketing managers requesting their participation. Appendix A shows a copy of this letter. Two weeks later I sent the survey, a postage-paid return envelope, and a personalized cover letter via first-class mail.

Three weeks after the surveys were delivered, I mailed a reminder postcard (see Appendix A). The reminder postcard was followed three weeks later by another letter (see Appendix A), with a second survey mailed to those respondents who had not yet replied. Each phase of the mailings resulted in a reduction in the effective sample size through mail being returned as undeliverable or respondents' notification as to their inability or unwillingness to participate. Mailings to 60 firms were returned as undeliverable, while 28 managers indicated their unwillingness or inability to respond. This resulted in an effective sample frame of 1,912.

The received questionnaires were carefully examined to assess the completeness of responses. Six surveys were found to have missing data, primarily where respondents declined to provide information regarding sales or the number of employees of the firm. This data had already been collected from secondary sources and was collected to assess key informant bias. However, the missing data was not essential in testing the model, and hence all questionnaires were included in the analysis. Two-hundred-fifty-seven informants returned completed questionnaires, for an overall response rate of 13.4%.

Small sample sizes are not unusual when the population surveyed consists of managers (Goolsby and Hunt 1992), and the problem is exacerbated even more when respondents are high-level managers (Alreck and Settle 1985; Homburg and Pflesser 2000). For example, Murray and Heide (1998) reported a 17% response rate from managers, despite having received initial agreement to participate from respondents. Workman, Homburg, and Jensen (2003) obtained a 14.6% response rate among US sales managers using a process similar to the one employed for this study. Although the response rate for this study is less than desirable, it is in line with previously published research examining complex organizational phenomena (Harzing 1997; Kahn and Mentzer 1998; Menon, Jaworski, and Kohli 1997).

Assessment of Nonresponse Bias

In order to allow for generalizability of the findings, nonresponse bias must be established. Nonresponse bias reflects the fact that those who did not participate in the study may be significantly different from those who did. To assess nonresponse bias, the researcher divided the received questionnaires into two groups based on whether the data were received via the first or second wave of survey mailing. To facilitate this split, the researcher coded each survey with a

unique number that indicated whether the survey was from the first or second mailing. The researcher split the surveys into two groups, early and late responders, with group sizes being 147 and 110, respectively. To test for nonresponse bias, the researched used a two-step approach. The first step examined differences between respondents and nonrespondents using secondary data. The second step was the technique outlined by Armstrong and Overton (1977).

In the first step, the researcher compared data on the sales level and number of employees from respondents versus nonrespondents. If no significant differences was found on the variables "sales level" and "number of employees" it could be argued that respondents and nonrespondents shared some degree of commonality, a critical argument as to the absence of nonresponse bias. The data used for this analysis was procured at the same time as the contact information that was purchased from *infoUSA*. To control for the data being skewed based on the presence of several abnormally large firms in the sample, the researcher smoothed the data using a log transformation (Lg10). The result of the analysis, shown in Table 1, suggests no significant difference between firms that responded and those that did not.

Table 1
Assessment of Nonresponse Bias: Respondents vs. Nonrespondents

	Respondents[a] (n = 191)	**Non-Respondents (n=1809)**	**Significance Level (p-value)**
Sales (000)	7.455[c]	7.553	6.805 (p=.009)
# of Employees [b]	2.154	2.238	3.950 (p=.047)

[a] A total of 66 firms responded anonymously, reducing the number of responses from 257 to 191. [b] Secondary data on the number of employees was not available for all firms included in the sample. In addition to the 66 anonymous questionnaires mentioned previously, the sample size was reduced to a final total of n=186 for respondents and n=1,779 for nonrespondents. [c] Mean values of the Log.

As the first step provided evidence that respondents were similar to nonrespondents, the second step tested for differences between respondents and nonrespondents based on their responses to specific constructs. To check for the presence of any systematic bias that could be attributed to nonresponse, I conducted an independent sample t-test between early and late respondents. Armstrong and Overton (1977) suggested that respondents fall on a continuum with early respondents anchoring one end and nonrespondents anchoring the other. They argued that late respondents are more similar to nonrespondents, and, as such, a non-significant result suggests that it is appropriate to treat the data from each group of respondents as if they belong to the same population. Five key variables were chosen for this test, the four performance measures (new product creativity, speed to market, market-entry timing, and financial performance expectations), and the main variable of interest, market foresight capability. The test failed to find any evidence of systematic difference between the two samples; therefore I merged the data obtained from the two groups. Table 2 displays the results for this test.

Table 2
Assessment of Nonresponse Bias

	Early Respondents	Late Respondents	2-tail significance level
Creativity	3.22	3.17	.787
Speed to Market	4.25	4.17	.562
Market-entry Timing	3.01	3.11	.563
Performance	4.57	4.76	.209
Market Foresight Capability	3.25	3.38	.223

Sample Characteristics

I asked respondents to provide information describing their official job title, the title of the person to whom they report, the length of their employment within the firm, and their industry tenure. Other demographic variables requested included gender, age, and level of education attained. Of all returned questionnaires, the President or CEO of the organization completed 8.6%. An additional 54.9% of respondents indicated that they held the position of Vice President. Marketing, sales, or regional managers completed 31.1% of the questionnaires. The remaining respondents, accounting for 2.7% of the total, included positions relevant to a firm's new product development process such as engineering director, technical manager, or product manager. When indicating the position they directly report to in the organization, over 69% of respondents indicated they reported directly to the positions of CEO or president. The remaining respondents indicated they reported to a member of the firm's top management team, primarily that of executive vice president (22.5%), or to a district or regional manager (7.8%). Table 3 presents a profile of respondents.

Table 3
Respondents Title and to Whom They Report

Characteristic	Specifics	Responses	Percent
Respondent Title (n=144)	Chairman/CEO/President	22	8.6
	Vice President (Executive or Senior) /Director/GM	141	54.9
	Manager (Marketing, Sales, or Regional)	80	31.1
	Manager (Product, Coordinator)	7	2.7
To Whom Respondents Report to (n=143)	CEO/President	176	68.5
	Executive VP / General Manager	53	20.6
	District/Regional Manager	17	6.6

Based on the job title that respondents furnished, it appears that the quality of the sample is high. The job titles given suggest that respondents possess the requisite knowledge regarding their firms' new product development processes. However, job titles of 11.3% of the sample (CEOs/presidents and product manager/coordinator) do not fall within the range of the intended sample population. It can be argued that these specific respondents do have an adequate degree of knowledge regarding the context of the survey. For example, CEOs and presidents are well versed in the new products that their organizations develop and ultimately bring to market and as such can respond concerning the efforts undertaken. Additionally, the remaining managers in question, based on their specific job titles, appear to hold positions that directly relate to the new product development processes of their firm. To provide further evidence as to the high quality of the sample, I split the data by job title and analyzed the four performance variables (new product creativity, speed to market, market-entry timing, and financial performance expectations) and market foresight capability. The results, shown in Table 4, indicate no significant differences between the four groups on these measures.

Table 4
Assessment of Sample Quality

	CEO / President	Vice President	Manager (Marketing)	Manager (Product)	2-tail significance level
Market Foresight Capability	3.45	3.25	3.30	4.05	.319
Creativity	3.27	3.31	2.93	3.76	.897
Speed to Market	4.02	4.36	4.02	4.21	.214
Market-entry Timing	3.06	3.00	3.10	3.67	.859
Performance	4.53	4.64	4.81	4.26	.687

The average length of employment was just under 13 years. Most respondents have remained in their respective industry longer than their tenure with their current organization, as evidenced by the average industry tenure of 18 years. These tenure findings are not surprising considering that a large majority of respondents are members of the top management team of their respective firms. With regard to gender, 83% of respondents were male, which keeps with the above findings. As expected, and based on these findings, the average age of respondents is just over 48 years old, with approximately 80% of respondents being over the age of 40. Education was measured categorically; over 87% of respondents reported earning a bachelor's degree or higher. A profile of respondents, based on their organizational tenure and industry tenure is presented in Table 5.

Table 5
Organizational and Industry Tenure of Respondents

Characteristic	Specifics	Responses	Percent
Organizational Tenure (n=255)	Less than 5 years	51	20.0
	5 – 10 years	77	30.2
	11 – 20 years	59	27.1
	More than 20 years	66	22.7
Industry Tenure (n=253)	Less than 5 years	26	10.3
	5 – 10 years	49	19.3
	11- 20 years	78	30.9
	More than 20 years	100	39.5

In addition, respondents were requested to indicate their organizations' 2003 sales volume, the number of employees, and the year that the organization was founded. The average 2003 sales volume was $170.4 million, with a range of $3 million to $1.6 billion. The average organization employed 708 employees, with the least number of employees being 22 and the highest total being 60,000. The average year that these organizations were founded was 1953, with the oldest coming into existence in 1849 and the youngest in 1998.

Respondents were also asked to indicate the number of new products their firms introduce each year, the number of new products they classified as line extensions, and the self-reported market position of their core product. On average, respondents indicated that their firms or divisions introduced 12 new products each year. However, the several firms that reported launching greater than 100 new products per year upwardly skewed this figure. The results indicate that 84% of responding firms introduced fewer than 10 new products per year.

Most of the new products launched by responding firms appear to be extensions of their current products, with the average number of these products being nine. In order to gain additional insight into the new product/line extension analysis, I calculated a ratio of the line extensions to new product introductions. The findings indicate that approximately 88.7% of the new products introduced by responding firms are in the form of line extensions. In only 11.3% of the cases were line extensions not a major portion (i.e., less than 33% of all new products introduced) of the new products introduced by those firms who responded. Concerning the market position of the firms, the findings indicate that on average, responding firms held the number-two positions in their core product category. Interestingly, 44.2% of respondents indicated that their firms were the market leader, while 13.5% reported their position as fourth or

lower. Table 6 outlines the new product introductions and line extensions reported by the respondents.

Table 6
New Products Introduced and Reported Market Position

Characteristic	Specifics	Responses	Percent
New Products Introduced per year (n=248)	3 or fewer	137	55.2
	4 – 10	73	29.5
	11 – 50	24	9.5
	More than 50	9	5.6
Market Position (n=244)	#1	108	44.2
	#2	55	22.5
	#3	46	18.9
	#4 or lower	33	13.5

Psychometric Assessments

To assess the quality of the data, I examined the means, standard deviations, kurtosis, and skewness of each item. The results show that all variables fall within the acceptable range. The largest kurtosis value of -1.15 is well within the acceptable range. The skewness of all items is acceptable, with only three items having absolute value greater than one. Since the model was tested using PLS, which is robust under conditions of mild non-normality, manipulations to the data are not warranted. For the multiple-item scales, I assessed reliability (i.e., the extent to which a scale produces internally consistent results) and validity (i.e., the extent to which differences in observed scale scores reflect true differences among subjects on the characteristic

being measured, rather than by systematic or random error) following recommendations by Churchill (1979).

Assessments of Reliability

Following Churchill (1979), I examined the item-to-item correlation for each item in the proposed scales and eliminated those with low correlations if they tapped no additional domain of interest. Using the computation method developed by Fornell and Larcker (1981), I assessed initial reliabilities. Analogous to Cronbach's alpha, and shown in Table 7, the internal consistency measures of all scales exceed the suggested .7 criteria (Nunnally 1978). Appendix Table 15 outlines the scales that were specifically developed for this research, while Appendix Table 16 includes the remaining scales used in this study. All factor loadings for these constructs are greater than the minimum cut-off recommended by Hulland (1999), indicating adequate reliability of the scales. Another indication of a scale's reliability can be determined by examining the average variance extracted of the latent variable. Fornell and Larcker (1981) suggested that a criterion of .5 or greater indicates internal consistency reliability. All constructs exceeded this level, ranging from .74 to .94.

As Table 7 shows, all reliability coefficients are above .85. Although no hard-and-fast rules exist for evaluating the magnitude of reliability coefficients, the marketing literature frequently cites the work of Nunnally (1978), who suggested that reliabilities in the range of .5 to .6 are sufficient for the early stages of research, a mark that was easily met. Further evidence of the strength of these scales comes from Nunnally and Bernstein (1994), who suggested that a scale with as few as three items (with a low coefficient alpha) may in fact demonstrate greater internal consistency than a scale with twenty or more items (with a rather high coefficient alpha).

Table 7
Construct-level Measurement Statistics and Correlation of Constructs

	Construct	Internal Consistency	# of Items	1	2	3	4	5	6	7	8	9	10	11	12
1	Active Scanning	.880	4	**.803**											
2	Experimentation	.854	3	.377	**.813**										
3	Lead User Collaboration	.922	3	.475	.390	**.893**									
4	Learning Orientation	.934	6	.479	.412	.400	**.839**								
5	Future Market Focus	.891	3	.357	.236	.180	.458	**.855**							
6	Interdepartment Connect	.857	5	.665	.374	.406	.452	.219	**.739**						
7	Market Foresight Capability	.907	5	.324	.225	.346	.328	.181	.470	**.813**					
8	Creativity	.944	7	.241	.370	.315	.216	.240	.174	.275	**.840**				
9	Speed to Market	.910	4	.260	.243	.168	.351	.269	.163	.266	.285	**.847**			
10	Market-entry Timing	.959	3	.167	.294	.257	.307	.316	.115	.338	.483	.475	**.941**		
11	New Product Performance	.935	5	.153	.367	.203	.275	.204	.246	.151	.347	.379	.407	**.861**	
12	Organizational Inertia	.886	5	.264	.157	.173	.298	.225	.204	.076	.214	.339	.119	.193	**.784**
		Mean		4.46	3.66	5.00	5.19	4.75	4.56	4.88	4.80	3.79	4.94	4.65	4.27
		SD		1.12	1.39	1.34	1.15	1.20	1.12	1.18	1.37	1.14	1.35	1.15	1.19
		Range		2 – 7	1 – 7	1 – 7	1 – 7	1 – 7	1 – 7	1 – 7	1 – 7	1 – 7	1 – 7	1 – 7	1 – 7

[a] Diagonal elements in bold are square roots of average variable extracted (Hulland 1999).

As outlined above, the research instrument meets the requirements for reliability and consistent factor structure. However, while reliability and internal consistency are necessary conditions for construct validity (i.e., the extent to which a scale fully and unambiguously captures the underlying, unobservable construct it is intended to measure), these conditions are not sufficient. Qualitative assessment of the construct, namely in the form of content validity, is required (Nunnally 1978; Churchill 1979). Content validity implies that the instrument considers all aspects of the construct being measured. For this study, content validity was established through an in-depth literature search, multiple rounds of review by expert panels, and a pretest of the instrument. This process keeps with the recommendations made by Churchill (1979, p. 70) who stated, "specifying the domain of the construct, generating items that exhaust the domain, and subsequently purifying the resulting scale should produce a measure which is content or face valid and reliable."

Construct validity refers to the examination of nomological and discriminant validity. A scale is said to have construct validity if the construct that is intended to be measure is actually being measured. Nomological validity refers to the extent to which a scale correlates in theoretically predicted ways with measures of different, but related, constructs (Malhotra 1996b). The testing of the conceptual model thus constitutes a confirmatory nomological validity assessment (Anderson and Gerbing 1988). Malhotra (1996b, p. 307) defined discriminant validity as the extent to which a measure does not correlate with other constructs from which it is supposed to differ. Discriminant validity was examined through analysis of the correlations among exogenous and endogenous variables. Variables are considered to exhibit discriminant validity when each correlation is less than 1.0 by an amount greater than twice its respective standard error (Bagozzi and Warshaw 1990). In other words, discriminant validity exists when

the following condition is satisfied: $(1 - \rho) > 2(\sigma_{xy})$. Greater shared variation is expected with the use of similar methods, which inflates correlation among measures, making this method a stringent test of discriminant validity. Table 7 reports the correlations for the constructs. Based on the aforementioned criterion, all constructs exhibit satisfactory discriminant validity.

Harmon's one factor test was conducted to test for common method bias. If common method bias is an issue, a single or general factor would be expected that would explain most of the covariance in the independent and dependent variables (Podsakoff and Organ 1986). I performed a factor analysis, using varimax rotation on the eleven constructs outlined in this study. Eleven distinct factors were extracted with eigenvalues greater than 1 and the variance explained was 74.46%. As I did not observe a common factor underlying the data and one general factor accounted for a majority of the variance, I found no factor representing common or spurious variance. Findings from this test are found in Table 8.

Table 8
Results of Harmon's One Factor Test

Factor	% of Variance	Cumulative %
1	29.46	29.46
2	9.59	39.06
3	6.89	45.95
4	5.53	51.47
5	4.44	55.92
6	3.91	59.83
7	3.77	63.60
8	3.22	66.82
9	3.02	69.84
10	2.50	72.34
11	2.12	74.46

In addition, I investigated the relationship between the perceptual measures "sales" and "number of employees" as reported by respondents and archival data. In order to conduct this test, three pieces of information were required. First, identification of the responding organization was required so that the perception data and that obtained from archival data could be matched. Second, informants had to have provided the sales and number of employees for their organization. Finally, the archival data for each organization had to be available. An examination of the data revealed that 63%, or 162 responses, were available to test for difference between perceptual and archival sales data. The correlation between the respondents' perceptual sales figure and the archival data was .173 and was significant at the .05 level.[6]

I also examined data on the number of employees. For this test, 190 observations met the criteria. The correlation between the number of employees managers' reported and the data obtained through archival data was .372, which is significant at the .01 level. The results of these two tests indicate that common method bias is not an issue.

Evidence of Discriminant Validity between Related Concepts

As noted in prior chapters (especially Chapters 1 and 2), market foresight capability builds on the market orientation literature. However, it was further argued that market foresight capability and market orientation are two distinct constructs. In order to provide evidence of this tenet, discriminant validity must be established. In establishing discriminant validity, the evidence must show that measures that should not be related are in fact not related. The following section

[6] Initial results found no significant correlation between managers' perceptual data and the archival data. Subsequent analysis of the data revealed a major discrepancy for two firms. The responses from these four managers suggested they were reporting at the firm level, while the archival data was at the business unit level. An examination of the means, including these four cases, found a $46.5 million difference between perceptual and archival sales data. To correct for this, the log of the perceptual and archival data was used.

provides evidence that market foresight capability and market orientation are two distinct constructs.

In contrast to market orientation's conceptual focus on the detection of current market trends, market foresight purports to measure the organization's ability to anticipate future market conditions. In addition, recall that the nomological framework developed in this dissertation is intended to be complementary to, rather than competing with, extant models of market orientation. While distinct differences have been outlined above, it should be restated here that market foresight capability and market orientation are two dimensions of market sensing. Where market orientation informs the organization as to the current state of the environment (e.g., Narver and Slater 1990; Ruekert 1992), market foresight capability provides the ability to see what changes will be occurring in the future. As such, it is argued that while market foresight capability and market orientation are related to each other, as dimensions of the market sensing nomological network, they are unique and distinct domains. Even though some correlation between market foresight capability and market orientation was expected, I included a market orientation scale (MO-REF), as refined by Matsuno, Mentzer, and Rentz (2000), in the questionnaire and tested for discriminant validity.

I selected the MO-REF scale for inclusion in this study based on multiple issues. First, researchers have recently raised concerns as to the psychometric properties of the existing market orientation measures (e.g., Homburg and Pflesser 2000; Pulendran, Speed, and Widing 2003; Ruekert 1992). Numerous attempts have been made to rectify the weaknesses of the market orientation measures with the work by Matsuno, Mentzer, and Rentz (2000) showing great promise. The measures were subjected to standard reliability and validity checks and the findings revealed significant psychometric weaknesses. For example, while market orientation

has been conceptualized as having three dimensions (information generation, information dissemination, and responsiveness), confirmatory factor analysis (CFA) and exploratory factor analysis (EFA) each returned seven-factor solutions. Even when forced into a three-factor solution, the findings are less than acceptable due to factor indistinction and multiple cross-loadings. Others (Deshpande and Farley 1998; Homburg and Pflesser 2000) have argued that market orientation is a single-factor model and have found more promising results combining the three factors into a single factor.

Upon my further investigation into previous research, I discovered weaknesses as loadings ranged from a low of .210 to a high of .739. Only three items exceeded the recommended cut-off of .7, with most falling in the .3 to .5 range. I looked at two additional CFAs with the items from the market foresight scale included in the analysis. I forced the models into two-factor and four-factor solutions. Each of these tests showed market foresight as a separate and distinct factor from the MO-REF measures. Furthermore, low item-to-item correlations (.020 - .447) indicated a lack of convergent validity. As such, I removed six items from the MO-REF scale (all with factor loadings below .3) to strengthen the reliability of the scale. The MO-REF scale still exhibited psychometric weaknesses after removing these items, but these weaknesses were mild in nature. I calculated the internal consistency for this 16-item scale to be .811 and performed an additional CFA with the remaining 16 items. In line with existing research, three factors emerged.

I tested discriminant validity using the method suggested by Bagozzi and Warshaw (1990). One issue that arose during this step of the process was whether discriminant validity should be tested with market orientation as three factors or as a single factor. Previous research has tested discriminant validity as a single factor, where the sub-constructs were collapsed into a

single-factor model (Deshpandé and Farley 1998; Homburg and Pflesser 2000; Pulendran, Speed, and Widing 2003). I collapsed the 16-item MO-REF scale into a single variable and calculated the correlation between this measure and the market foresight capability scale. In addition, I tested the 16-item MO-REF scale for discriminant validity. The average variance extracted, along with the correlation between the constructs, is included in Table 9. The findings provide only marginal evidence that market foresight capability and market orientation are capturing distinct dimensions. As stated earlier, some degree of correlation was expected between these two constructs. Because of the weakness in the market orientation scale, based on the psychometric properties, empirically showing discriminant validity may be difficult. Based on the marginal evidence presented here and *prima facie* evidence, it can be concluded that market foresight capability and market orientation are two distinct constructs.

Table 9
Evidence of Discriminant Validity between
Market Foresight Capability and Market Orientation

	Internal Consistency	# of Items	1	2	3	4	5
1. Market Foresight Capability	.907	5	**.813**				
2. Information Generation	.786	5	.292	**.653**			
3. Information Sharing	.857	5	.473	.482	**.739**		
4. Responsiveness	.854	6	.635	.217	.460	**.703**	
5. Market Orientation	.859	16	.557	.668	.443	.619	**.563**

[a] Diagonal elements in bold are square roots of average variable extracted (Hulland 1999)

Test of Hypotheses

I tested the proposed structural model using partial least squares (PLSGRAPH v.3.00). PLS is similar to LISREL in that both examine the structural relationships among latent variables, and relationships between latent variables and observed variables may be modeled, but PLS has two advantages for this study. First, PLS is suitable for the analysis of small samples sizes such as the case with this study (Barclay and Smith 1997; Wold 1985). Second, PLS has a greater capacity for testing interactions among constructs.

Although PLS estimates both factor loadings and structural paths simultaneously, the procedure proposed by Hulland (1999) to evaluate PLS models was employed. It should be noted that PLS does not attempt to minimize residual item covariance; therefore unlike SEM techniques, no summary statistic that measures the overall fit is calculated. It uses a bootstrapping method of sampling with replacement and computes standard errors based on 500 bootstrapping runs.

Of the hypothesized relationships, 12 were found to be significant at least at the $p < .05$ level. The remainder of this chapter is organized as follows. First, I discuss the effects of the antecedents of market foresight capability (viz., active scanning, lead user collaboration, and market experimentation). Second, I outline the moderating effect of learning orientation, future orientation, and interdepartmental connectedness. Third, I examine the influence that market foresight capability has on the drivers of new product performance, along with the proposed moderating effect of organizational inertia. Finally, I discuss the relationship between drivers of new product performance (creativity, speed to market, market-entry timing) and new product performance.

Determinants of Market Foresight Capability

It was predicted that active scanning, lead user collaboration, and market experimentation would each positively influence a firm's market foresight capability. Furthermore, it was also hypothesized that the relationship between these antecedents and market foresight capability would be enhanced in the presence of three moderating variables: learning orientation, future market focus, and interdepartmental connectedness. The results of these hypotheses are shown in Table 10. These findings will now be presented.

Active Scanning. Hypothesis 1 predicted that higher levels of active scanning would results in greater market foresight capability. The results support this prediction ($\beta = .156$ (2.242), $p < .05$), as the more firms undertake an active scanning approach the more likely they are to have superior market foresight. Therefore, Hypothesis 1 is supported.

Lead User Collaboration. Hypothesis 2 argued that working closely with lead users would positively influence a firm's market foresight capability. Based on the finding ($\beta = .253$ (4.528), $p < .01$), this hypothesis is supported. The results indicate that lead user collaboration significantly and positively enhances market foresight capability.

Market Experimentation. Hypothesis 3 proposed that firms that conducted higher levels of market experiments would garner the benefits of having greater market foresight capability. Based on the results ($\beta = .034$ (0.606), $p > .10$), it can be concluded that market experimentation does not have a direct influence on the market foresight capabilities of a firm. Therefore, Hypothesis 3 is not supported.

As stated earlier it was proposed that the relationships between the three preceding antecedents and market foresight capability would be influenced by the presence of learning orientation, future market focus, and interdepartmental connectedness. The findings reveal that

both future orientation (β = .373 (5.544), $p < .01$) and interdepartmental connectedness (β = .204 (3.325), $p < .05$) significantly influence market foresight capability. The results further show that learning orientation (β = .055 (0.658), $p > .10$) does not significantly lead to the development of market foresight capability.

Table 10
PLS Path Analysis Results: Market Foresight Capability

Exogenous Variables	**H_0**	**β**	**t-value**	**Result**
Active Scanning	H_1	.156	2.242**	s
Lead User Collaboration	H_2	.253	4.528***	s
Experimentation	H_3	-.034	0.606	ns
Construct R^2	.32			
Learning Orientation		.055	0.658	
Future Market Focus		.373	5.544***	
Interdepartmental Connectedness		.204	3.325***	
Construct R^2	.47			
Learning Orientation				
* Active Scanning	H_{4a}	-.074	0.979	ns
* Lead User	H_{4b}	.303	3.580***	s
* Experimentation	H_{4c}	.009	0.080	ns
Future orientation				
* Active Scanning	H_{5a}	-.052	0.897	ns
* Lead User	H_{5b}	-.285	3.667***	ns
* Experimentation	H_{5c}	.110	1.318**	s
Interdepartmental Connectedness				
*Active Scanning	H_{6a}	.210	1.932**	s
* Lead User	H_{6b}	.187	2.842***	s
* Experimentation	H_{6c}	.035	0.398	ns
Construct R^2	.55			

Path coefficients (t-values) *** p < .01 ** p <.05

s – Hypothesis Supported; ns – Hypothesis Not Supported

To test for these relationships the moderating variables, in addition to the main effects, were included in the model. The testing of the interactions is one of the primary benefits of using PLS for this research. Previous research has suggested that under conditions of measurement error, traditional analysis techniques, such as multiple regression, may fail to accurately estimate interactions (McClelland and Judd 1993). As in regression analysis, the predictor and moderator variables are multiplied to obtain the interaction terms. In addition, the indicators were mean centered prior to the creation of the interaction terms (Chin, Marcolin, and Newsted 2003; Sarkar, Echambadi, and Harrison 2001).

Learning Orientation. It was proposed in Hypothesis 4a that the relationship between active scanning and market foresight capability would be enhanced in the presence of higher levels of commitment toward learning. The results show (β = -.074 (0.979), $p > .10$) no evidence of this impact. Similarly, in Hypothesis 4b learning orientation was also argued to positively influence the relationship between lead user collaboration and market foresight capability. The findings indicate (β = .303 (3.580), $p < .01$) that there is a additive effect between lead user collaboration and learning orientation and the level of market foresight capability. Hypothesis 4c suggested that learning orientation would positively enhance the relationship between market experimentation and market foresight capability. Based on the findings, (β = .009 (0.080), $p > .10$) this interaction effect is non-existent. Thus, Hypotheses 4a and 4c are not supported, while Hypothesis 4b is supported.

Future Orientation. Hypothesis 5a predicted that the relationship between active scanning and market foresight capability would be positively influenced in the presence of greater future orientation. The results show (β = -.052 (0.897), $p > .10$) this interaction to be non-significant. A similar prediction was made in Hypothesis 5b as to the effect that future orientation would have

on the relationship between lead user collaboration and market foresight capability. The evidence (β = -.285 (3.667), $p < .01$) presents a significant, but unexpected negative relationship, which means Hypothesis 5b was not supported. This finding is discussed in greater depth below. In Hypothesis 5c, it was suggested that future orientation would significantly influence the relationship between market experimentation and market foresight capability. The findings (β = .110 (1.318), $p < .05$) indicate that this relationship is in fact significantly enhanced due to higher levels of future orientation. Based on these findings, Hypotheses 5a and 5b are not supported, while support was found for Hypothesis 5c.

Interdepartmental Connectedness. It was proposed in Hypothesis 6a that interdepartmental connectedness would significantly moderate the relationship between active scanning and market foresight capability. The findings revealed (β = .222 (2.932), $p < .05$) that this relationship is indeed enhanced by departments working closely together. In Hypothesis 6b, it was suggested that interdepartmental connectedness would also significantly moderate the relationship between lead user collaboration and market foresight capability. The evidence shows (β = .187 (2.842), $p < .01$) that interdepartmental connectedness has a positive influence on the relationship between lead user collaboration and market foresight capability.

Hypothesis 6c proposed that higher levels of interdepartmental connectedness would significantly elevate the relationship between market experimentation and market foresight capability. The results (β = -.035 (0.398), $p > .10$) failed to show evidence of this relationship. The evidence shows that interdepartmental connectedness has a positive effect on the relationship between active scanning and market foresight capability but not with regard to the relationships between lead user collaboration and market experimentation and the endogenous

variable, market foresight capability. Therefore, Hypotheses 6a and 6b are supported, while Hypothesis 6c is not supported.

Influence of Market Foresight Capability on New Product Performance Drivers

With the evidence as to the drivers of new product performance established, this section examines the relationship between market foresight capability and these drivers, namely creativity, speed to market, and market-entry timing. Table 11 outlines these findings as well as the moderating effect that organizational inertia has on these relationships. These results will now be presented.

Creativity. Hypothesis 7 proposed that market foresight capability would significantly enhance the creativity of a firm's new products. The findings reveal this to be the case ($\beta = .440$ (7.352), $p < .01$), thereby supporting Hypothesis 7. In addition, 21.4% of the variance in creativity is explained by market foresight capability.

Speed to Market. It was offered in Hypothesis 8 that market foresight capability would have a positive effect on the speed at which new products move from conception to the marketplace. Based on the evidence ($\beta = .375$ (6.776), $p < .01$), Hypothesis 8 is supported. Furthermore, 16% of the variance in speed to market is explained by market foresight capability.

Market-entry timing. It was argued in Hypothesis 9 that market foresight capability would positively enhance market-entry timing. This hypothesis is supported ($\beta = .411$ (7.437), $p < .01$). In addition, market foresight capability accounts for 19% of the variance of market-entry timing.

Moderating Effect of Organizational Inertia. It was proposed in Hypothesis 10 (a–c) that the relationship between market foresight capability and the performance drivers of creativity,

speed to market, and market-entry timing, would be weakened in the presence of organizational inertia. Test results failed to provide support for this set of hypotheses. As shown in Table 11, the presence of organizational inertia does not significantly influence the relationship between market foresight capability and creativity, speed to market, and market-entry timing. This finding is not surprising in light of a post hoc examination of the data. The analysis indicates that over 70% of reporting firms showed little or no signs of organizational inertia (i.e., average score of equal to or greater than 4.0 on a 7-point scale).

Table 11
The Effect of Market Foresight Capability on Creativity, Speed to Market, and Market-Entry Timing

Exogenous Variables	H_0	β	t-value	Result
Endogenous Variable: Creativity				
Market Foresight Capability	H7	.440	7.352***	s
Organizational Inertia		.091	1.107	
Market Foresight Capability * Organizational Inertia	H10a	-.071	0.789	ns
Construct R^2	.214			
Endogenous Variable: Speed to Market				
Market Foresight Capability	H8	.375	6.776***	s
Organizational Inertia		.095	1.023	
Market Foresight Capability * Organizational Inertia	H10b	-.019	0.221	ns
Construct R^2	.160			
Endogenous Variable: Market-entry Timing				
Market Foresight Capability	H9	.411	7.437***	s
Organizational Inertia		.095	0.984	
Market Foresight Capability * Organizational Inertia	H10c	-.039	0.433	ns
Construct R^2	.190			

*** $p < .01$ ** $p < .05$

Drivers of New Product Performance

The drivers of new product performance (viz., creativity, speed to market, and market-entry timing) are expected to positively influence new product performance. The results largely support this position.

Creativity's influence on new product performance. Hypothesis 11 proposed that creativity would have a positive impact on the financial performance of a firm's new products. The findings indicated (β = .158 (2.304), $p < .01$)[7] that greater levels of creativity are positively associated with performance of new products. Therefore Hypothesis 11 is supported.

Impact of speed to market on new product performance. Hypothesis 12 suggested that new product performance would be positively impacted by the speed at which new products were introduced in the market. The evidence shows strong support for this notion (β = .201 (2.846), $p < .01$); therefore Hypothesis 12 is supported.

Market-entry timing and new product performance. Hypothesis 13 proposed that superior market-entry timing would have a positive effect on new product performance. The results reveal that market-entry timing significantly influences new product performance (β= .208 (2.642), $p < .01$); therefore Hypothesis 13 is supported.

These findings provide strong evidence that creativity, speed to market, and market-entry timing significantly and positively influence new product performance. These findings are consistent with previous research on the benefit of introducing more creative products (Cooper 1983b; Li and Calantone 1998; Sethi, Smith, and Park 2001), as well as those associated with introducing these products in the marketplace faster (Ittner and Larcker 1997) and at the proper time (Abell 1978; Christensen, Suarez, and Utterback 1998). Table 12 outlines these results.

7 All β statistics are standardized with t-values being in parenthesis.

Table 12
Effect of Creativity, Speed to Market, and Market-entry Timing on New Product Performance: Standardized PLS[a] Coefficients

Dependent Variable	Independent Variable	H_0	β	t-value	Result
New Product Performance	Creativity	H11	.158	(2.304)***	s
	Speed to Market	H12	.201	(2.846)***	s
	Market-entry Timing	H13	.208	(2.628)***	s
Construct R^2		.264			

NOTE: H = Hypothesis; a. PLS = Partial Least Squares
Path coefficients (t-values) *** p < .01 ** p <.05 * p<.10

Summary of results. An overview of the results is found in Figure 2. To summarize the findings of the analysis, Hypotheses 1 and 2 were supported: active scanning and lead user collaboration do significantly contribute to the development of market foresight capability. These findings outline the importance of non-traditional methods of information generation. The source of their benefits resides in the fact that organizations must take a proactive stance in the generation of information. However, not all methods of information generation proved to enhance a firm's market foresight capability; Hypothesis 3 was not supported. On its own, market experimentation does not significantly enhance a firm's ability to anticipate future events. In retrospect, this finding is not surprising. In the context of this study, it was suggested that market experiments would benefit the organization in the development of greater market foresight capability. However, before the experiment can be conducted, the new product idea may already be in the development stage. Therefore, while conducting experiments may provide organizations with insights, the information that is acquired may be beneficial only to enhance current offerings, rather than as a catalyst to new product opportunities.

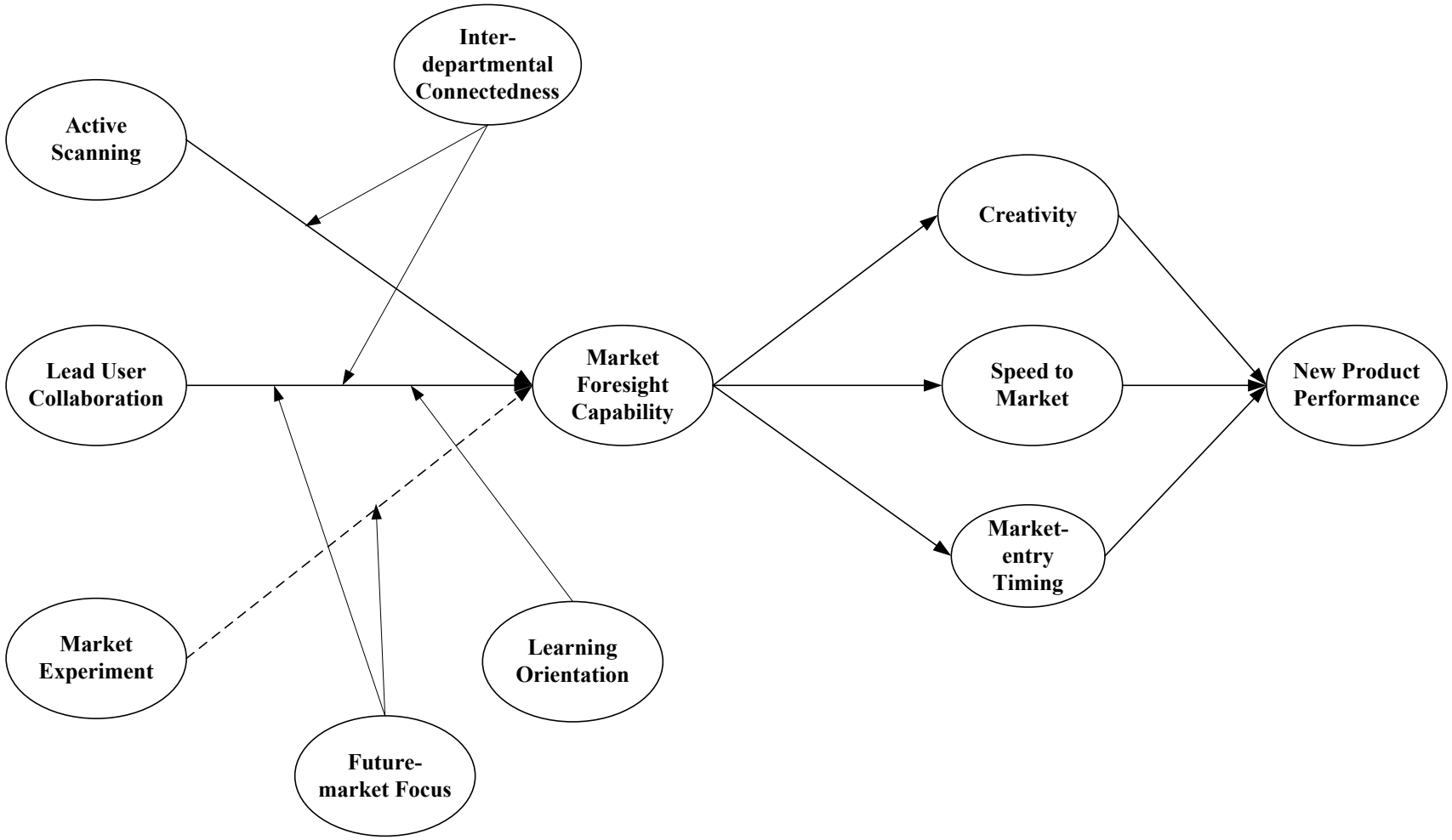

Figure 2: Determinants and Outcomes of Market Foresight Capability

It was further hypothesized that the relationships between the three information processing variables and market foresight capability would be enhanced based on the values and norms of the organization. The values and norms selected for this study were learning orientation, future orientation, and interdepartmental connectedness. The results of these findings will now be outlined.

Learning orientation, the degree to which the firm values learning, positively influences the relationship between lead user collaboration and market foresight capability. Therefore, Hypothesis 4b was supported. However, Hypotheses 4a and 4c were not supported. Learning orientation does not have a significant effect on the relationships between active scanning or market experimentation and market foresight capability. On the surface, these findings are somewhat surprising and lead to the question of why would learning positively influence the relationship between lead user collaboration and market foresight capability but not have a similar influence on active scanning or market experimentation? With regard to active scanning, it is important to keep in mind that this activity entails the acquisition of information with no specific goal in mind. Information is collected solely to gain additional knowledge or, stated differently, so that the organization can learn. As such, it can be argued that the influence of learning is already being captured by active scanning.

As stated previously, market experimentation does not significantly enhance the organization's market foresight capability. This relationship did not change even in the presence of a learning orientation. The reasoning behind this lack of influence may stem from the fact that the learning entails the use of both adaptive and generative learning, and experimentation may only confirm previously held assumptions about products or processes. In reexamining the literature, I uncovered similar findings. For example, Baker and Sinkula (1999) empirically

showed that learning orientation negatively influences the relationship between market orientation and new product success. They reasoned that organizations with higher learning orientations may be engaged only in innovative learning. This finding offers additional evidence for the benefits of working with lead users, based on lead user collaboration's generative learning capabilities.

In Hypothesis 5c, market experimentation was shown to enhance market foresight capability if the organization had a future orientation. As suggested previously, if market experiments are conducted merely to confirm or disconfirm previously held findings, benefits do not accrue with regard to market foresight capability. However, if the organization has the desire to seek future opportunities, then the benefits of experimenting greatly aid in the development of market foresight capability. Hypothesis 5b proposed that future orientation would positively influence the relationship between lead user collaboration and market foresight capability. While a significant relationship was found, the effect was in fact negative. Organizations that had higher levels of future orientation significantly reduced the benefits accrued from collaborating with lead users. Therefore, Hypotheses 5b was not supported.

This finding is especially surprising given the fact that both future orientation and lead user collaboration each are geared toward seeing future changes. One explanation for this finding could be similar to information overload. While information overload typically occurs by having too great a quantity of data, in this case it takes the form of having too much information regarding the future direction of the market. The result may be paralysis if the information gained from lead users conflicts with previously held assumptions or from the signals obtained from other sources. As such, organizations that are more forward looking hamper the

development of market foresight capability by the presence of the information acquired from lead users.

Future orientation also did not have a significant influence on the relationship between active scanning and market foresight capability. As such, Hypothesis 5a was not supported. Upon further reflection, this lack of influence by future market focus is reasonable. It is important to note that the primary reason organizations actively scan their environments is to be aware of latent evidence of emerging patterns. Therefore, just as it was argued previously that active scanning contains the values of learning orientation, so too does it possess a focus on understanding the future rather than the present.

Hypothesis 6a, which proposed that higher levels of interdepartmental connectedness would significantly elevate the relationships between active scanning and market foresight capability, was supported. Organizations whose departments work closely with each other and share information acquired from their scanning activities do experience an increase in their ability to anticipate pending changes in their environment. The positive influence of interdepartmental connectedness was also found in the relationship between lead user collaboration and market foresight capability. Organizations that worked closely with lead users and shared the information gained during these activities were rewarded with greater levels of market foresight capability. Therefore, Hypotheses 6b was supported.

The relationship between market experimentation and market foresight capability was not enhanced by departments working closely together. As such, no support was found for Hypothesis 6c. The evidence suggests that organizations that conduct market experiments do not see a positive influence in their development of market foresight capability if the separate functional areas work closely together. The reasoning behind this may be that market-based

experiments are conducted to assess new product ideas. In many cases, experiments may only prove or disprove previously held assumptions about the product and the market. This finding provides some level of support to the work of Eisenhardt and Martin (2000), who suggested that although experiments provide quick feedback for the firm, the knowledge gained may be only situation specific. This knowledge may therefore not be beneficial to other functional departments.

The presence of superior market foresight capability does lead to the development of new products that are more creative, arrive on the market faster, and are introduced at the most ideal time. Therefore, Hypotheses 7, 8, and 9 were supported. Furthermore, creativity, speed to market, and market-entry timing each had a significant and positive influence on the financial performance of new products. As such, Hypotheses 11, 12, and 13 were supported. Hypotheses 10a, 10b, and 10c argued that under conditions of high organizational inertia, the relationship between market foresight capability and the outcome variables would be weakened. These hypotheses were not supported. Post hoc analysis revealed that inertia was not a widespread issue for the organizations contained in the sample.

The concluding chapter provides a discussion of the results, implications for managers and researchers, and suggestions for future research, which are based on limitations of the study.

CHAPTER SIX: DISCUSSION AND IMPLICATIONS

The findings from this dissertation research offer a number of insights into the development of market foresight capability, an area that is increasingly becoming important from both a theoretical and managerial perspective. In this final chapter I discuss the results, the theoretical and managerial contributions of the study, and the limitations and suggested areas for future research.

Discussion of Findings

The purpose of this dissertation was to investigate the determinants and outcomes of market foresight capability. The focus of the research and specific research objectives were guided by a review of the relevant literature that revealed gaps in our knowledge regarding the concept of market sensing, specifically with regard to anticipating future market events and trends. To address these gaps, this dissertation drew on dynamic capability theory to outline the information processes, values and norms, and coordination/integration systems that lead to a greater understanding of the direction markets may take in the future. In addition, the dissertation detailed the outcomes of market foresight capability in the context of new product development.

The findings from this study provide empirical support for the treatise of Rumelt (1984), who suggested that organizations that recognize market changes before competitors would see their competitive positions increase. Researchers from various literature streams have offered

similar arguments, but to date no systematic, empirically driven research has been conducted. This study showed that gains in competitive position are the result of introducing products that are more creative, are introduced faster, and are introduced at the optimal time. The next section discusses the findings with respect to each of the constructs in the model.

Determinants of Market Foresight Capability

Direct Effects

Under a dynamic capability framework, this study investigated the organizational activities, values, and processes that lead to the development of market foresight capability. The findings indicate that the ability to anticipate future market events is greatly enhanced through two unique information processes, namely active scanning and lead user collaboration. Both help the organization to build greater understanding as to the future direction of their markets through the acquisition of superior knowledge not easily or readily available. These types of focused and disciplined searches allow for the discovery of both latent and emerging customer needs (Leonard and Rayport 1997). Both require directed effort on the part of the firm, which could be a major source of their contribution. While researchers (e.g., Barney 1991; Hamel and Prahalad 1994) have contended that information is freely available in the environment, the present research finds that firms that actively seek information through the unique means of active scanning and lead user collaboration will have greater opportunities to develop the requisite knowledge regarding pending market changes.

Active scanning emerged as a critical element in the development of market foresight capability. Conceptualized as the purposeful search of the external environment, active scanning provides the organization with critical pieces of information ahead of its counterparts who wait

for information to manifest itself. Firms who use an active scanning process gather information from the environment without a specific purpose in mind, holding the belief that by searching for information, greater insights are gained. Firms that employed active scanning processes reaped benefits through heightened market foresight capability, which can lead to the discovery of the latent needs of customers. Previous researchers, including Day (1984), Daft, Sormunen, and Parks (1988), and Hambrick (1982), have extolled the benefits of superior scanning activities, to which the findings from this study provide empirical support.

Working closely with *lead users* was also found to be a major contributor in the development of a firm's market foresight capability. The findings suggest that organizations can gain greater insight into the market spaces of tomorrow by identifying and collaborating with lead users. As was pointed out in Chapter 3, lead users are not necessarily an organization's lead customers (i.e., largest purchasers), but are rather those customers who may have unique needs that are not being currently satisfied. By understanding and addressing the needs of this select group of users, organizations can identify new product opportunities, as well as new markets that currently may not be large enough to appear on the firm's radar screen but may become the organization's core customers at some future point in time.

The importance of working with lead users has surfaced in the literature, primarily in the works by von Hippel (1988) and Barabba (1995), who identified and outlined the benefits associated with lead user collaboration. The results from this study, in general, support the work of these researchers. Specifically however, this research took a different perspective from that of previous studies, since it developed a three-item scale measuring an organization's involvement with lead users rather than following a case study. The scale items measured the degree of

contact organizations have with lead users, as well as the perceived benefits this contact provides.

Contrary to expectations, *market experimentation* did not have a positive, direct influence in the development of market foresight capability. One explanation for this result could be that organizations conduct experiments to confirm beliefs rather than to gain new insights. However, before discarding the importance of market experimentation, it is necessary to investigate its impact with regard to the intervening variables.

Moderated Effects

Next, this study investigated the moderating influence that two dimensions of organizational values and norms and a single aspect of organizational coordination would have on the relationship between the three information processes and market foresight capability. The findings show that interdepartmental connectedness, learning orientation, and future orientation can both strengthen, as well as weaken, the relationships between market foresight capability and information processes—active scanning, lead user collaboration, and market experimentation.

Learning orientation. The evidence indicates that the benefit of a learning orientation, with respect to market foresight capability, is felt only when the organization works with lead users. In other words, firms that seek information from lead users and value learning will see their market foresight capability increase, as opposed to those that work with lead users and do not possess a learning orientation. Interestingly, in the presence of two other information processes—active scanning and market experimentation—organizations that value learning did not see a positive impact in their market foresight capability.

Future orientation. Earlier results indicated that firms that conduct market experimentation do not see a significant enhancement in their market foresight capability. However, the findings indicate that in firms whose organizational values include a future orientation, conducting market-based experiments positively impacts their ability to foresee future events. In other words, conducting experiments merely for the sake of experimenting provides little benefit in the development of market foresight capability, unless these experiments are conducted with an eye toward the future.

An unexpected but interesting result emerged based on the impact future orientation had on the relationship between lead user collaboration and market foresight capability. Although the findings indicate that this relationship was significantly influenced in firms that are future oriented, the direction of this effect is negative. Stated differently, firms that to a higher degree focus on the future and work too closely with lead users may in fact weaken their ability to see pending changes. This relationship indicates that there are limits as to how much time organizations should spend interacting with lead users. Although lead users provide valuable insights into the future of a market (as evidenced by the strong direct effect), organizations must be cautious not to over-rely on this source of information. Firms that focus a great deal of their efforts on future outcomes must strike a careful balance between the time spent with lead users and time spent acquiring information from other equally valuable sources of information.

Interdepartmental connectedness. The benefits of undertaking the activities associated with active scanning are even more beneficial when coupled with interdepartmental connectedness, which is the degree to which various departments within the organization interact. This effect suggests that firms that actively scan for greater information and willingly share this information have greater knowledge regarding pending events and trends than do their

counterparts. This finding keeps with previous research that has found that higher levels of interdepartmental connectedness provide numerous benefits, including greater learning within the firm (Achrol and Kotler 1999; Sinkula, Baker, and Noordewier 1997) and higher product quality (Menon, Jaworski, and Kohli 1997; Sethi 2000a). As was argued in Chapter 3, departments that work closely together sharing information gained through their active scanning activities earn superior benefits in the form of enhanced market foresight capability. However, close interaction among co-workers does not always translate into a positive benefit. It appears, based on these findings, that any informational benefit derived from interdepartmental connectedness is dependent on the type and source of information. For example, the results failed to show an additive effect from interdepartmental connectedness when information was gathered by working with lead users or through conducting experiments, but they did show an additive effect when the information was acquired through active scanning.

One explanation could be the degree to which departments work together. For example, under active scanning, departments work closely together interpreting received information. In the cases of lead user collaboration and market experimentation, departments may be working together collecting information. For example, members of different departments could be jointly interviewing lead users, each seeking information related to their particular functional area rather than knowledge concerning product uses and needs. As such, the value of such activity may provide little benefit in developing insights into the future and in fact may be detrimental to its development.

In summary, the findings show that organizations develop market foresight capability through actively scanning their environments and working closely with lead users to gain previously undetected opportunities. Each of these information processes is heightened in the

presence of moderating influences. For active scanning, the influence of interdepartmental connectedness positively heightens market foresight capability, but greater levels of learning orientation or future orientation fail to add any benefits. The relationship between lead user collaboration and market foresight capability is positively influenced in the presence of learning orientation and interdepartmental connectedness but is negatively impacted by a future orientation. Although conducting market experiments provided no direct benefit in developing market foresight capability, a positive effect was detected in firms whose values include a future orientation. Together, these determinants account for the majority (60.7%) of the development of market foresight capability, which is discussed next.

Outcomes of Market Foresight Capability

This study examined the benefits derived from having superior market foresight capability in a new product development context. I chose the area of new product development because of its importance in determining an organization's long-term financial performance. The results show that market foresight capability positively influences three important dimensions of new product development—creativity, speed to market, and market-entry timing. It was further argued that these three dimensions would lead to greater new product performance based on financial objectives. Next I discuss the findings with respect to each of these dimensions.

Researchers have proposed that *creativity* is a critical determinant of the success of new products (Cooper 1983b; Li and Calantone 1998; Sethi, Smith, and Park 2001). It has further been argued that creativity is influenced by organizational-level information processes (Day 1994b; Dickson 1992; Moorman 1995b; Narver and Slater 1990). The findings in this study support these propositions, as firms with higher levels of market foresight capability develop

new products that are perceived to be more creative. A higher degree of creativity has been associated with problem identification as well as a systematic search for solutions, each of which occurs in forms of active scanning and lead user collaboration. Similarly, theories in strategic management have argued that successful organizations rely on information capabilities to detect emerging market opportunities and to develop creative solutions to address these opportunities (Aguilar 1967; Fahey and Naraynan 1986).

As is the case with creativity, market foresight capability is positively associated with *speed to market*. Although much research investigating the speed at which new products are introduced outlines internal factors (e.g., organizational bottlenecks, empowering project teams) that may delay product development times (Eisenhardt 1989; Schoonhoven, Eisenhardt, and Lyman 1990), an emerging stream of research examines external factors (e.g., superior market knowledge) that influence new product speed (e.g., Griffin 1997). For example, Cooper and Kleinschmidt (1994) suggested that processes that occur in the early stages of new product development can greatly benefit the speed at which new products move from ideation to product launch. These early stages include greater understanding of the needs of the market, which reduces time to market by sharpening product definition as well as confirming the design of the product (Cooper and Kleinschmidt 1995), thereby reducing alterations to the product as it moves through the process.

The findings from this dissertation support the basic tenets held by this group of researchers. Superior market foresight capability can lead to faster new product development due to its ability to minimize conceptual utilization of information (Moorman 1995). Conceptual information use requires managers to think through market data, largely to ensure that key questions about the markets are addressed. Organizations that possess greater organizational

information processes, such as is the case with market foresight capability, better understand market needs and are able to move new product ideas through to the market faster.

A higher level of market foresight capability is positively associated with *market-entry timing*. Launching the product into the market at the most opportune time occurs because organizations have greater knowledge about customers and other market players, based on informational processes such as active scanning and lead user collaboration processes. Previous empirical research failed to find a positive relationship between an organization's acquisition and transmission of information on the strategic timing of new products (Moorman 1995).

In a study investigating the impact of organizational cultures on the utilization of market information and its effect on new product outcomes, Moorman (1995) found that information acquisition and transmission processes were not related to new product performance, creativity, or market-entry timing. The findings from the present research, in part, disagree with the argument made by Moorman (1995, p. 329) who stated, based on the results of her study, "models of organizational information processing and learning should downplay the importance of acquisition and transmission processes in assessing their impact on new product outcomes." It is argued here that information acquisition and the dissemination of information are critical to new product outcomes, but only through the development of market foresight capability.

One explanation Moorman (1995) offered for the lack of a relationship between information processes and new product outcomes was that information utilization might mediate the relationship between information and new product outcomes. The findings in this study strongly support her conjecture. Information utilization, in the form of market foresight capability, does serve to mediate the relationship between information processes and new product outcomes. Moorman further suggested that the non-findings were the result of too much

information entering into the organization, resulting in information overload. As stated earlier, market foresight capability, while leading to the acquisition of sufficient quantities of data, may temper the effects of information overload by having the organization as a whole act as receptor and interpreter of information.

New Product Financial Performance

This study proposed that creativity, speed to market, and market-entry timing would each have a positive impact on the financial performance of new product offerings. The results indicate that creativity, speed to market, and market-entry timing are significant predictors of the financial performance of new products. These results were expected, based on the benefits of market foresight capability that were outlined earlier. The ability to anticipate future market conditions provides the organization with the opportunity to develop new products by satisfying the latent needs of customers. By definition, any new product that satisfies a need that customers were previously unable to express is creative and will lead to greater financial performance of the organization.

This study confirms previous research that extolled the virtues of getting products to the market faster and at the proper time. The results demonstrate that speed to market and market-entry timing are positively associated with higher levels of new product performance. This finding may be paradoxical, as these two concepts have competing goals. Although benefits accrue by introducing a product in the market faster, the timing for this product launch may not be at the optimal time. On the other hand, due to shorter product life cycles, organizations may feel that introducing the product as soon as the product is ready really is the optimal time. It would be rare if an organization would push a product through the new product development

process quickly only to hold the product back from introduction because the timing was not optimal.

Implications for Managers and Researchers

The results reported in this chapter yield insights into the development of market foresight capability. Based on the findings from this dissertation, there is a disparity between organizations that possess superior levels of market foresight capability and those that possess low levels, specifically with regard to the outcomes associated with new product development. Greater creativity, faster development time, and superior knowledge regarding properly timed product introductions are all enhanced in the presence of higher levels of market foresight capability.

Implications for Managers

The managerial relevance of this study stems from the discovery of the outcomes and the determinants of market foresight capability. However, before the managerial implications of this research are addressed, an important caveat is required.

While market foresight capability is shown to enhance new product performance by allowing the organization to anticipate future market events, possessing the antecedents of market foresight capability does not guarantee that foresight will magically appear within the minds of managers. Managers can detect only what can be seen. As stated earlier, market foresight capability is defined as the organizational capability that allows the firm to anticipate emerging shifts in the market in time to influence the shape of the market. Although it can be argued that detecting a shift earlier than later is always preferred, for the most part it does not

matter when the shift in known so long as it is known in time to influence the market. By possessing market foresight capability, organizations are in such a position.

Managers who wish to develop or enhance the market foresight capability of their organization are encouraged to take the steps necessary to implement the determinants outlined in this dissertation. For many organizations, this implementation will require only minor modifications, such as seeking out and working with lead users in their industry or enhancing their active scanning processes. As all organizations scan their environment to some degree, stepping up active scanning efforts may be the simplest step to undertake. For other activities outlined in this study, the task is more difficult, as many of the elements outlined will require radical changes to the organization. For example, instituting a future-market focus or learning orientation will require the support of upper management and cannot be put into place overnight. The same can be said for departments' working closely together. Some organizations have inherent cultures that prevent this type of interaction. While it may be difficult to institute changes among cultural elements, this difficulty does not preclude the enhancement of market foresight capability, as both active scanning and lead user collaboration are important precursors to its development.

To assist managers in better understanding their organizations' anticipatory capability, this study developed scales for measuring market foresight capability, active scanning, and lead user collaboration. Managers should use these scales to measure the degree to which their organizations perform these activities.

Implications for Researchers

The insights gleaned from this study generate implications for researchers investigating organizational phenomena related in general to market sensing and specifically to new product development. Furthermore, the results of this study provide implications relevant to the area of dynamic capability theory.

While the concept of market sensing has been the subject of some investigation, the findings of this study outline an important aspect of this research stream that has been overlooked. To date, the majority of research in the marketing literature has considered only one dimension, the detection of current conditions. This concentration on the detection of current conditions has led many to equate market sensing with market orientation. Any investigation of market sensing that does not include both dimensions, which are (1) detecting the present and (2) anticipating the future, may be seriously underspecified. Furthermore, it is critical that researchers, depending on the nature of the research question, not overlap these two distinct dimensions. Based on its original conceptualization, market orientation is appropriate when researchers are interested in current market conditions and its influence on the organizations current customers. Market foresight capability is appropriate when the area of interest is anticipating future market conditions and its influence on both current and future customers. Expanding one or the other outside its intended domain can lead to confusion and may provide managers with less understanding of their market, rather than more.

The findings from this study add to our knowledge of dynamic capability theory by demonstrating the moderating effect that organizational values and norms, as well as coordination and integration efforts, have on information processing. By explicating the manner in which organizational competencies interact with each other, researchers will be in a better

position to examine additional elements and how they lead to the development of dynamic capabilities. This dissertation presents some of the first empirical evidence of dynamic capability theory in the marketing literature and adds to the overall dynamic capabilities literature by providing support for the theory's robustness.

This study demonstrates the benefits associated with superior information acquisition techniques, through the introduction and development of active scanning and lead user collaboration scales. Researchers seeking to understand organizational outcomes based on the information capabilities of the firm are advised to consider the inclusion of active scanning and lead user collaboration. Traditional measures of information acquisition may be too limited, based on their view as to the degree to which organizations acquire information. For example, current scales often attempt to measure the depth and breadth of the organization's information acquisition process through generalities rather than specifics. By measuring specific scanning actions, such as active scanning or lead user collaboration, researchers will be able to parse out those organizations that scan because they want to gain better knowledge from those that scan merely due to organizational norms.

By addressing researchers' calls for investigation into antecedents that improve the new product development process, this study has implications for research pertaining to the "fuzzy front end" (cf., Reid and Brentani 2004) of new product development. Much research in the new product development literature takes a more traditional approach, whereby new product ideas are the result of internal forces, such as R&D, the product champion, or a team-based approach. This dissertation takes the approach that pending market shifts dictate which new products should be developed, thereby adding to the growing research on market-based new product development.

Market foresight capability provides additional benefits in the new product development process. For example, researchers have sought greater understanding as to how products can be moved through the new product development process at a faster rate of speed. A greater understanding of market forces may eliminate the traditional stage-gate process where decisions must be made at certain times to continue or cancel a project. By understanding what products will be needed in the future, organizations will find the decision-making to be more clear-cut, thereby eliminating the need for go / no-go decisions. This study demonstrates that by organizations' having better knowledge as to what products will be successful in the market, the speed at which new products are conceived and introduced can be significantly enhanced.

Limitations and Directions for Future Research

One limitation of this study was the less-than-ideal response rate. While the problems of organizational research, especially those targeting upper-level managers, are well documented, a larger number of responses would increase the power of the tests. This increased sample size, in turn, would allow for a greater degree of confidence in the results. One reason for the low response rate was the length of the survey. The length of the survey can directly be attributed to the nature of this dissertation, as the development of multiple new scales was required. Future research will benefit from the efforts taken during this study, primarily based on the development of these scales, which should result in shorter surveys in the future.

Single informants were used as the source of organizational information. This choice was made by design for multiple reasons, including the length of the questionnaire and the selection of marketing managers as the target. As pointed out earlier, low response rates are prevalent in studies such as the one undertaken in this dissertation. The use of multiple respondents, with a

lengthy questionnaire, would have significantly reduced the effective response rate. Although tests for issues surrounding the use of single informants failed to find evidence of response bias or common method bias, the use of multiple informants in future studies could enhance the validity of the findings.

Although a broad spectrum of industries was included, the sample was limited to industrial manufacturers. Additional studies should examine additional sectors, including the service industry and consumer-goods manufacturers. These efforts will expand the generalizability of market foresight capability. It is anticipated that other sectors and industries will yield similar findings. However, the strength of the determinants may be altered based on a different sample in a different market sector. For example, where market experimentation did not positively influence market foresight capability in an industrial setting, its benefits cannot be ruled out until additional market sectors are researched. Its effect may very well prove to be critical in the development of market foresight capability in, for example, the services industry. Similarly, identifying and collaborating with lead users may be more difficult in the consumer-products arena, but the knowledge gained may provide even greater benefits than those outlined.

Future research is needed to extend this work in numerous ways. First, as this dissertation was an exploration into the development of market foresight capability, the determinants outlined are by no means exhaustive. Future studies should examine additional main effects, as well as other moderating influences that enhance market foresight capability. For example, this dissertation outlined three sources for acquiring information: active scanning, lead user collaboration, and market experimentation. What other informational activities could organizations use to heighten their market foresight capability?

Furthermore, different types of information flow into different functional areas of the organization. For example, front-line employees are in contact with current customers, gaining insights into problems they face, and often learn solutions to these problems. Does information of this type benefit the organization in the development of better new products? Researchers such as Hamel and Prahalad (1994) and others have advocating ignoring the "voice of the customer." Future research can make an important contribution to the literature by providing greater understanding as to when and when not to include customers in the new product development process.

What effect does organizational memory play in the development of market foresight capability? As Chapter 2 outlined, market foresight capability allows the organization to anticipate changing market conditions, thereby allowing the organization to develop new products that satisfy the needs created due to this change. However, all information does not appear in the environment, nor is it acquired, at the same time. As information is acquired at various times, from various sources, the organizational must be able to store information. The ability of organizations to store and retrieve information will have an impact on the development of market foresight capability. Future research should examine this impact. A good place to start this inquiry would be with the work of Cross and Baird (2000), who examined the effects of organizational memory on financial performance. More relevant to the current study is the work by Moorman and Minor (1997), who examined the relationship between organizational memory and new product creativity and studied organizational memory's effect on new product performance.

Another fruitful area for future research is an investigation into which activities or organizational values hinder the development of market foresight capability. This study found

one such condition, namely that the organizations whose values include a future orientation may see their anticipatory capability diminished by collaborating with lead users. Are there other forces that can limit the ability to foresee pending changes?

Finally, future research should investigate additional outcomes associated with market foresight capability. This study investigated benefits at the product level. Market foresight capability should also provide benefits at the organizational level. For example, knowledge as to changing market conditions may allow the organization to take the steps necessary to prepare for pending changes, including developing alliances with firms that have specific capabilities not available to the organization.

Conclusions

Although the marketing literature has previously conceived the notion of market sensing to be similar to market orientation, this dissertation broadens the scope of market sensing to include a future element, namely market foresight capability. Drawing on diverse research, including literature in dynamic capability theory and new product development, this study developed and tested a model of market foresight capability. The findings from this dissertation advance the growing streams of literature concerned with market sensing, dynamic capabilities, and new product development. The results show that organizations can employ their capabilities to anticipate future market conditions and thus benefit from this information by developing new products to meet these changing market conditions. Benefits to the organization are in the form of faster product development time, heightened creativity, and better timing of new product introductions. The development of market foresight capability stems from informational processes of active scanning and lead user collaboration, which are further heightened, or

diminished, in the presence of learning orientation, future orientation, and interdepartmental connectedness.

APPENDIX A

TABLES AND FIGURES

Table 13
Quotes Pertaining to Market Foresight

Source	Quote	Reference
Edward A. Filene (in 1924)	[B]usiness successes during the next 10 or 20 years will be made by the men who are now best able to anticipate the changes that are coming in business and industry and who most wisely adjust their policies to them.	1994, *Directors & Boards*, 19 (1), p 28
Richard P. Rumelt	The opportunities for strategic change occur infrequently, and their timing is largely beyond the control of management. The chance to substantially improve one's competitive position does not arise out of pricing or advertising tactics, but the recognition of change in some underlying factor. The routine component of strategy formulation is the constant search for ways in which the firm's unique resources can be deployed in changing circumstances.	1984, *Competitive Strategic Management*, Englewood Cliffs, NJ: Prentice-Hall.
George Stalk, Philip Evans, and Lawrence E. Shulman	"Competition is a war of movement in which success depends on anticipation of market trends, and quick responses to changing customer needs."	1992, *Harvard Business Review*, 70 (2), 57-69.
Herbert A. Simon	The most important skills required for survival and success in the kind of uncertain, rapidly changing world in which we live are … skill[s] in anticipating the shape of an uncertain future.	1993, *Strategic Management Journal*, 14 (SI), p.134
Gary Hamel	"The future is predictable, but few people predict it." "This skill is rare."	1994, *Planning Review*, 22 (5), p. 39-43
Gary Hamel and C.K. Prahalad	"We did not know we wanted minivans, mid-size Japanese cars of unrivaled quality, 24-hour TV news, walkmans, or sensibly priced computers sold without hype until innovative companies put them in our hands" (p.65). … "Customers are notoriously lacking in foresight, … marketing only the articulated needs of customers you already serves cedes vast opportunities to more foresighted competition."	1994, *Competing for the Future*, Boston, Mass: Harvard Business School Press, p. 67
Arno Penzias, AT&T Bell Laboratories	"Innovation takes much more than just invention… You have to look at the whole environment in which innovation is going to take place. Inventions are easy. There are a lot of inventions out there all of the time, but only a few of them become innovations."	1995, *Industry Week*, v244 (15), p.49-50
Andrew S. Grove, Intel	The ability to change directions quickly, grasp new technological challenges, and move the industry forward the pace we have maintained is the PC industry demands the kind of innovation that is traditionally associated with entrepreneurs.	1995, *Industry Week*, v244 (15), p.45-6

Source	Quote	Reference
Carol Bartz, CEO, Autodesk, Inc.	Leaders and manager have to constantly redefine their organizations and their businesses in order to stay ahead.	1995, *Industry Week*, v244 (15), p.41
Charles B. Wang, Computer Associates	"… don't be afraid to make mistakes. And let your people know they shouldn't be afraid to fail either. Create a learning organization that allows you and your employees to try new things, make mistakes, and learn from them."	1995, *Industry Week*, v244 (15), p.59
George Heilmeier, Bellcore	Worked on LCD technology with RCA in the 1960s, even developing prototypes demonstrating the potential they had. "However, because some managers saw LCDs as a threat to their status quo, we were unable to "transfer" a technology success into a business success. Our Japanese competitors were more willing to take a longer view and as a result, Japanese firms are still benefiting from their decision of three decades ago to drive the market for LCD technology." [the past 25 years have seen numerous changes and] "industries that failed to predict the speed and scope of these changes are now struggling to keep up, or have disappeared altogether. They will find it increasingly difficult to create the competitive products and services needed for survival unless they one again learn to anticipate where technology will be five years, 10 years, and longer down the road."	1995, *Industry Week*, v244 (15), p.46-7
Jerry Jasinowski, President, National Assn. of Manufacturers	[The biggest lesson of the last 25 years is a simple one] harnessing the innate American capacity to change and innovate. We have learned that in order to beat the competition U.S. firms must continuously change, innovate and improve our organizations."	1995, *Industry Week*, v244 (15), p.47
Joel A. Barker	I think the challenge for management in the future is to substantially improve its ability to anticipate change." There are two aspects of this: "one is to be able to spot a paradigm shift in its early formation" and "the second thing is to understand the long-term implications of a new change when you find it."	1995, *Industry Week*, v244 (15), p.41
John L. Marriott, Enterprise Group	The future changes unpredictably, and these changes profoundly impact people and industries. Knowledge is power. Education and information, combined with experience, is the source of knowledge. This is the *new competitive advantage*.	1995, *Industry Week*, v244 (15), p.48-9
John F. Smith, Jr. CEO, GM	If you want to survive and thrive, you've got to understand what's happening in the competitive arena and be constantly changing your business strategies.	1995, *Industry Week*, v244 (15), p.58
Newt Gingrich, former Speaker of the House or Representatives	The biggest lesson of the past 25 years is to be focused on the customer and to be aware of dramatically changing markets.	1995, *Industry Week*, v244 (15), p.45

Source	Quote	Reference
Robert W. Galvin, Motorola	[For firms to grow and prosper over the next 25 years, means] involving and empowering the people who have the ability to anticipate.	1995, *Industry Week*, v244 (15), p.43
Robert Palmer, Digital Computer	We were slow to adapt to changes in the industry. (stated after taking over Digital, which had posted losses of $3 billion.)	1996, *Fortune*, 133 (March 4), Anne B. Fisher, p. 90-98
Henk Wijtze Volberda	[I]n hypercompetitive environments, in which change is frequent and disruptive, metaflexibility requires the development of a supporting monitoring or learning system, particularly the intelligence-gathering and information-processing functions of management. Such a system may contribute to the firm's vision of where the next advantage will be discovered, where the company should focus its disruption, and which capabilities it does or does not need.	1998, *Building the Flexible Firm: How to Remain Competitive*, New York: Oxford University Press.
Grady Means, CEO PriceWaterhouseCooper strategy consulting practice	"They have to learn to anticipate," (response when asked how can company's take advantage of the disruptive nature of technology.)	1999, *Strategy & Leadership*; Chicago; Oct-Dec.; Anonymous;
Stuart L. Hart and Mark B. Milstein	Foresight is the key to survival. Managers able to perceive trends and weak signals where others see only noise and chaos can capitalize on the changing nature of the market to reposition their firms before new entrants become a serious threat.	1999, *Sloan Management Review*, 41 (1), p 24
Don Lehmann, MSI Executive Director	[Understanding customers] had as [a] key element anticipating future needs… interestingly, however, an element of futurism was identified as a critical research need. Proactive understanding clearly is on managers' minds.	2002, *Marketing Science Institute Review*, Winter 2002 – 2003
Michael Porter	Firms that are unable to anticipate and respond to environmental shifts may see their competitive advantages quickly disappear.	2002, As quoted in Argyres and McGahan
Vence	The ability to identify changes in the marketplace is one of the most valuable skills that executives can possess.	2003, *Marketing News*, Feb. 03, p 13

Table 14
Industry Examples of Market Foresight

Apple Computer
To a packed house at a computer conference in San Francisco, Stanford Research Institute's Douglas Engelbart made a dramatic presentation that included first-time demonstrations of onscreen “windows,” teleconferencing and a wooden stylus device he called a “mouse.” Engelbart did not see much value in the peripheral, and neither did Stanford Research, which owned the patent and later licensed it to companies like Apple Computer for a $45,000 one-time fee.

Charles Schwab
It is unlikely taxi drivers would have turned into day traders had it not been for Charles Schwab. He positioned his company as the anti-Wall Street firm, dumping all the trappings of a typical brokerage house--the commissions, front-end loads, markups, and fees--in exchange for simple, low-priced, per-trade fees. Today his San Francisco-based outfit serves 8 million investors who control $800 billion in assets

Encyclopedia Britannica
Encyclopedia Britannica's management disregarded the threat of CD-ROM technology and experienced loss of sales and profit. Interestingly, the 200-year-old company had the CD-ROM technology in its Compton’s unit but did not recognize its importance in the marketplace, even though 7 million US households had computers with CD-ROM drives. Britannica lost money every year during the 1990s.

IBM
Oxford-trained mathematician Edgar F. (Ted) Codd developed the concept of the relational database while working as an IBM researcher in 1970. Earlier computer databases had fields of data arranged in a rigid way; Codd's notion was that disparate data sets could be combined by linking fields they have in common (say, a customer number). Codd clashed with his bosses at IBM, who were pushing a more primitive system. But the relational database is now standard.

Keds
Sneaker manufacturer Keds failed to anticipate the shift in their market, with consumers seeking jogging and other athletic shoes becoming the norm. Keds still has not achieved any level of share of this market.

Keuffel & Esser
In 1967 slide rule manufacturer Keuffel & Esser, commissioned a study of what the future would hold in 100 years. While the study produced many facts that later came true, the firm failed to foresee that the electronic calculator would render the slide rule obsolete within five years (Liston 1978).

Polaroid
Polaroid did not foresee the growth of the digital camera market which has rendered its instant photo distinctive capability practically useless.

Sears
In the early 1940s, Sears Roebuck and Montgomery Ward were almost equals in the retail industry. At the end of World War II it was the management of Sears who had the foresight to expand into the suburbs, predicting that Americans would be eager to begin buying again after years of rationing had limited their purchasing. Montgomery Ward executives on the other hand believed that the lack of buying on the part of consumers would continue for some time to come. As a result, Sears tripled it business while to some, Montgomery Ward never recovered.

SWATCH
Once the leader in their industry, Swiss watch manufacturers failed to see the effect that LCDs would have on their businesses. However, later, SWATCH foresaw the coming trend that consumers would come to regard the watch as more than a time piece, but as a fashion statement as well.

Wal-Mart
Stalk, Evans, and Shulman (1989), outline how Wal-Mart was able to grow into the largest retailer in the world due to their foresight in developing their inventory replenishment system, which provides superior customer value. They further explain that Wal-Mart determined the needs of their customers and then set out to develop a means of meeting these needs. They further state, "Wal-Mart's goals were simple to define but hard to execute: to provide customers access to quality goods, to make these goods available when and where customers want them, [and] to develop a cost structure that enables competitive pricing (Stalk, Evans, and Shulman 1992, p. 58)."

Table 15
Market Foresight Capability Constructs and Definitions

Construct	Definition
Market Foresight Capability	The organizational capability that allows the firm to anticipate emerging shifts in the market before they are evident to competitors
Active Scanning	The purposeful search of the external environment, including customers, competitors, and suppliers, as well as political, economic, technological. and regulatory issues that can influence a firm's performance, as well as future market conditions.
Lead User Collaboration	The identification of, and jointly working with, lead users in order to gain new knowledge of their needs.
Market Experimentation	Actions undertaken by the firm to gain knowledge through testing new products on limited samples of customers.
Future orientation	The extent to which a firm emphasizes its future opportunities and capabilities relative to its current capabilities.
Learning Orientation	The degree to which the firm stresses the value of learning for the long-term benefit of the firm.
Interdepartmental Connectedness	The degree to which formal and informal communication and contact is possible between individuals from different functional areas in the firm.
New Product Creativity	The degree to which a new product is novel to customers.
New Product Speed to Market	The amount of time required to move a product from conception to the marketplace.
Market-entry Timing	The degree to which new products are introduced into the market at a time when conditions in the environment are receptive to their introduction.
New Product Performance	The degree to which organizational goals involving new product profits, sales, and share have been achieved.
Organizational Inertia	The level of inactivity that a firm exhibits with regard to altering its competitive position.

Table 16
Research Hypotheses

	Hypotheses	Supporting Literature
H_1	The greater the level of a firm's active scanning practices, the greater its market foresight capability.	Beal 2000; Day 1992; Daft, Sormunen, and Parks 1988; McDaniel 1997
H_2	The greater the level of lead user collaboration undertaken by the firm, the greater its market foresight capability.	Slater and Narver 2000; Von Hippel 1988; Wind and Mahajan 1997
H_3	The greater the level of market experimentation undertaken by the firm, the greater its market foresight capability.	Brown and Eisenhardt 1997; Daft and Weick 1984; Garvin 1993
H_4	(a-c) The relationship between the determinants—active scanning, lead user collaboration, and market experimentation—and market foresight capability will be moderated by learning orientation such that the greater the learning orientation the stronger the relationship between market foresight capability and active scanning, lead user collaboration, and market experimentation.	Baker and Sinkula 1999; Day 1994b; Sinkula, Baker and Noordewier 1997; Dickson 1996
H_5	(a-c) The relationship between the determinants—active scanning, lead user collaboration, and market experimentation—and market foresight capability will be moderated by future orientation such that the greater the future orientation the stronger the relationship between market foresight capability and active scanning, lead user collaboration, and market experimentation.	Chandy and Tellis 1998; Srinivasan, Lilien, Rangaswamy 2002
H_6	(a-c) The relationship between the determinants—active scanning, lead user collaboration, and market experimentation—and market foresight capability will be moderated by interdepartmental connectedness such that the greater the interdepartmental connectedness the stronger the relationship between market foresight capability and active scanning, lead user collaboration, and market experimentation.	Barringer and Bluedorn 1999; Lumpkin and Dess 1999; Menon and Varadarajan 1992
H_7	The greater the firm's market foresight capability, the greater the new product creativity.	Gatignon and Xuereb 1997; Hamel and Prahalad 1994a; Sethi, Smith, and Park 2001
H_8	The greater the firm's market foresight capability, the faster the response time of the firm in introducing new products.	Eisenhardt 1989; Datar et al. 1997; Griffin 1997; Stalk, Shuman, and Evans 1989

	Hypotheses	Supporting Literature
H_9	The greater the firm's market foresight capability, the better the firm's market-entry timing.	Abell 1978; Ali 2000; Bayus, Jain, and Rao 1997; Fahey and Narayanan 1986; Moorman 1995
H_{10}	(a-c) The relationship between market foresight capability and creativity, speed to market, and market-entry timing will be moderated by organizational inertia such that the greater the organizational inertia the weaker the relationship between market foresight capability and new product creativity, speed to market, and market-entry timing.	Lant, Milliken and Batra 1992; Miller and Chen 1994; Agarwal et al. 2003; Hannan and Freeman 1984
H_{11}	Higher degrees of new product creativity in a firm will be associated with higher levels of new product performance.	Moorman 1995; Li and Calantone 1998
H_{12}	Higher degrees of speed to market in a firm will be associated with higher levels of new product performance.	Rindfleisch and Moorman 2001;
H_{13}	Higher degrees of market-entry timing in a firm will be associated with higher levels of new product performance.	Moorman 1995; Li and Calantone 1998

Table 17
Market Foresight Capability, Active Scanning, and Lead User Collaboration Scales

Item	Mean	Loading	α[1]
MARKET FORESIGHT CAPABILITY			**.907**
We are often caught off guard by the entry of new products that have features our customers have never requested. (r)	4.97	.8218	
We are slow to detect changes in our customers' product preferences. (r)	4.85	.8702	
Our competitors often launch successful products we did not know customers wanted. (r)	5.00	.8451	
We are slow to detect fundamental shifts in our industry. (r)	5.11	.7436	
Based on our knowledge of the market we are able to develop new products before customers ask for them.	4.49	.7969	
We understand what direction our market will take in the future.*	4.69	---	
Changes in our market seldom take us by surprise.*	4.89	---	
ACTIVE SCANNING			**.880**
We don't wait for information to come to us; we are constantly in pursuit of new insights.	4.97	.8599	
We continuously scan the environment looking for emerging threats and opportunities.	5.06	.7771	
We strive to scan widely tapping diverse sources of information.	4.43	.8078	
We actively seek new insights through the use of unique data collection techniques.	3.38	.7471	
Key pieces of information are often acquired not as a result of a specific search, but almost by chance. (r) *	4.37	---	
We often commission special studies to provide us with richer data. *	5.36	---	
We generally collect the same type of information year after year. (r) *	4.16	---	
LEAD USER COLLABORATION			**.922**
We often contact lead users for their input on new product ideas.	4.81	.9039	
We actively seek to identify customers that can be considered experts in the uses and functions of many of the products we sell.	4.95	.9140	
Working with lead users has allowed us to better understand the needs of our customers.	5.25	.8478	
Lead users often tell us about problems and needs that no product on the market can satisfy.*	4.74	---	

(r) – Item was reverse coded before analysis; * - Item was removed from consideration
[1] – Denotes composite reliability (internal consistency) of reflective measures (Fornell and Larcker 1981). Composite reliability is calculated as follows: $((\Sigma\lambda_{yi})^2 / ((\Sigma\lambda_{yi})^2 + \Sigma \text{var}(\varepsilon_i))$ where $\text{var}(\varepsilon_i) = 1 - \lambda_{yi}$

Table 18
Means, Loadings, and Alpha Level of Existing Scales Used in this Study

Item	Mean	Loading	α
Market Experimentation			**.854**
We often conduct small, market-focused experiments	3.58	.8530	
We often conduct small, internally focused experiments	3.97	.7557	
We frequently vary our competitive methods to assess their relative effectiveness	3.44	.8280	
Future orientation			**.891**
Our planning activities are more oriented toward the future	5.01	.8670	
Our future plans are based more on past performance rather than future potential. (r)	4.21	.8057	
We plan actively for the future instead of resting on past successes.	5.05	.9075	
Learning Orientation			**.934**
Managers basically agree that our organization's ability to learn is the key to our competitive advantage.	5.42	.8501	
The basic values of this organization include learning as key to improvement.	5.36	.8961	
The sense around here is that learning is an investment, not an expense.	5.20	.8833	
Learning in my organization is seen as a key commodity necessary to guarantee organizational survival.	5.13	.8939	
We are not afraid to reflect critically on the shared assumptions we have made about our customers.	5.25	.7973	
Personnel in this enterprise realize that the very way they perceive the marketplace must be continually questioned.	4.78	.6794	
Rarely do we collectively question our own biases about the way we interpret customer information.* (r)	3.81	--	

(r) – Item was reverse coded before analysis; * - Item was removed from consideration

[1] – Denotes composite reliability (internal consistency) of reflective measures (Fornell and Larcker 1981). Composite reliability is calculated as follows: $((\Sigma\lambda_{yi})^2 / ((\Sigma\lambda_{yi})^2 + \Sigma \text{ var}(\varepsilon_i))$ where $\text{var}(\varepsilon_i) = 1 - \lambda_{yi}$

Item	Mean	Loading[1]	α
Interdepartmental Connectedness			**.857**
Marketing personnel in our business unit spend time discussing customers' future needs with other functional departments.	5.25	.6714	
We frequently have cross-functional meetings to discuss market trends and developments (e.g. customers, competitors, suppliers).	5.08	.7844	
Market information spreads quickly through all levels in this business unit.	4.75	.7685	
We regularly have interdepartmental meetings to update our knowledge of regulatory requirements.	3.98	.6754	
Technical people in this business unit spend a lot of time sharing information about new product technology with other departments.	4.18	.7470	
Our business unit periodically circulates documents (e.g. reports, newsletters) that provide information on our customers.	4.63	--	
Creativity			**.944**
Very novel for this category -Very ordinary for this category (r)	3.39	.8479	
Challenged existing ideas for this category - Did not challenge existing ideas for this category (r)	3.46	.8231	
Offered new ideas to this category - Did not offered new ideas to this category (r)	3.23	.8523	
Creative - Not creative (r)	3.07	.8877	
Interesting – Uninteresting (r)	2.89	.8898	
Generated new ideas for other products - Did not generated new ideas for other products (r)	3.25	.7392	
Encouraged fresh thinking - Did not encourage fresh thinking (r)	3.07	.8201	

(r) – Item was reverse coded before analysis; * - Item was removed from consideration

[1] – Denotes composite reliability (internal consistency) of reflective measures (Fornell and Larcker 1981). Composite reliability is calculated as follows: $((\Sigma\lambda_{yi})^2 / ((\Sigma\lambda_{yi})^2 + \Sigma \text{var}(\varepsilon_i))$ where $\text{var}(\varepsilon_i) = 1 - \lambda_{yi}$

Item	Mean	Loading[1]	α
Speed to Market			**.910**
Far ahead of our time goals - Far behind our time goals (r)	4.48	.9056	
Faster than the industry norm - Slower than the industry norm (r)	3.88	.8577	
Much faster than we expected- Much slower than we expected (r)	4.44	.8775	
Faster than our typical product development time - Slower than our typical product development time (r)	4.05	.7487	
Market-entry Timing			**.959**
Timely – Untimely (r)	3.17	.9384	
Opportune – Inopportune (r)	2.86	.9331	
Well timed – Poorly timed (r)	3.12	.9493	
New Product Performance			**.935**
Market share relative to its stated objectives	4.51	.8314	
Sales relative to its stated objective	4.62	.8632	
Return on assets relative to its stated objectives	4.70	.8936	
Profit margin relative to its stated objectives	4.74	.7975	
Return on investment relative to its stated objectives	4.71	.9177	

(r) – Item was reverse coded before analysis;
[1] – Denotes composite reliability (internal consistency) of reflective measures (Fornell and Larcker 1981). Composite reliability is calculated as follows: $((\Sigma\lambda_{yi})^2 / ((\Sigma\lambda_{yi})^2 + \Sigma \text{ var}(\varepsilon_i))$ where $\text{var}(\varepsilon_i) = 1 - \lambda_{yi}$

Item	Mean	Loading[1]	α
Organizational Inertia			**.886**
We can easily make changes within our organization to fit the needs of new products.	4.68	.8876	
We find it difficult to change established procedures to cater to the needs of a new product. (r)	4.42	.6608	
We can easily replace one set of abilities with a different set of abilities to adopt a new technology.	4.02	.8768	
We can easily change the manner in which we carry out tasks to fit the needs of a new product.	4.25	.8951	
Our firm supports projects even if they could potentially take away from sales of existing products.	4.53	--	
We are very willing to sacrifice sales of existing products in order to improve sales of our new products.	4.02	--	
We will not aggressively pursue a new technology that causes existing investments to lose value. (r)	4.30	--	
Control Variables			
Environmental Turbulence			**.828**
In our industry, customers' product preferences change quite a bit over time.	3.59	.7207	
Our customers tend to look for new products all the time.	4.21	.6867	
Technological changes provide major opportunities in our industry.	5.11	.7205	
Technological developments in our industry evolve slowly. (r)	3.07	.6425	
A large number of new product ideas has been made possible through technological breakthroughs in our industry.	4.34	.7276	
We cater to many of the same customers that we have in the past. (r)	2.02	--	
New customers tend to have product-related needs that are different from those of our existing customers.	3.69	--	

(r) – Item was reverse coded before analysis;

[1] – Denotes composite reliability (internal consistency) of reflective measures (Fornell and Larcker 1981). Composite reliability is calculated as follows: $((\Sigma\lambda_{yi})^2 / ((\Sigma\lambda_{yi})^2 + \Sigma \text{var}(\varepsilon_i))$ where $\text{var}(\varepsilon_i) = 1 - \lambda_{yi}$

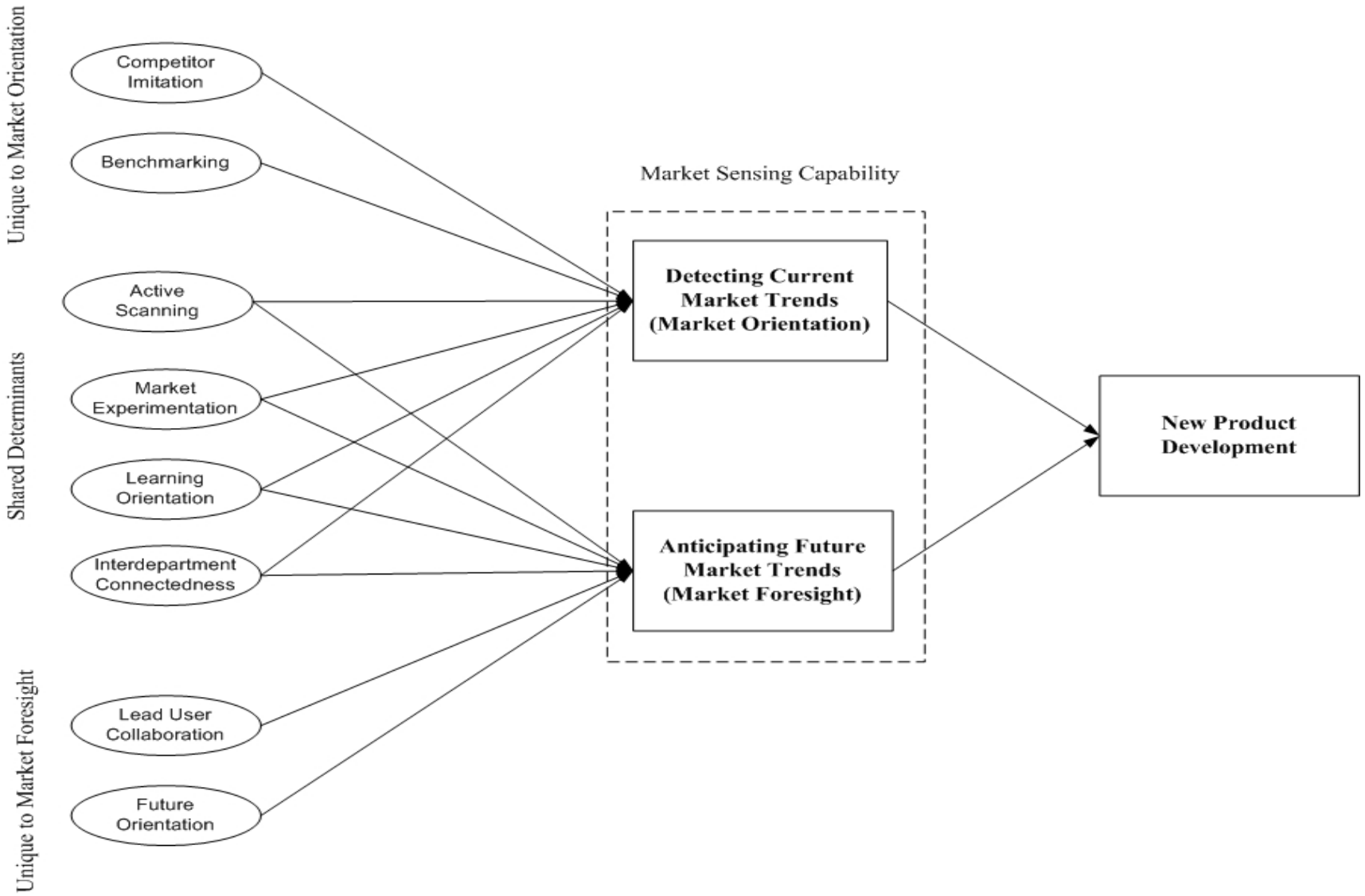

Figure 3: Determinants of Market Sensing

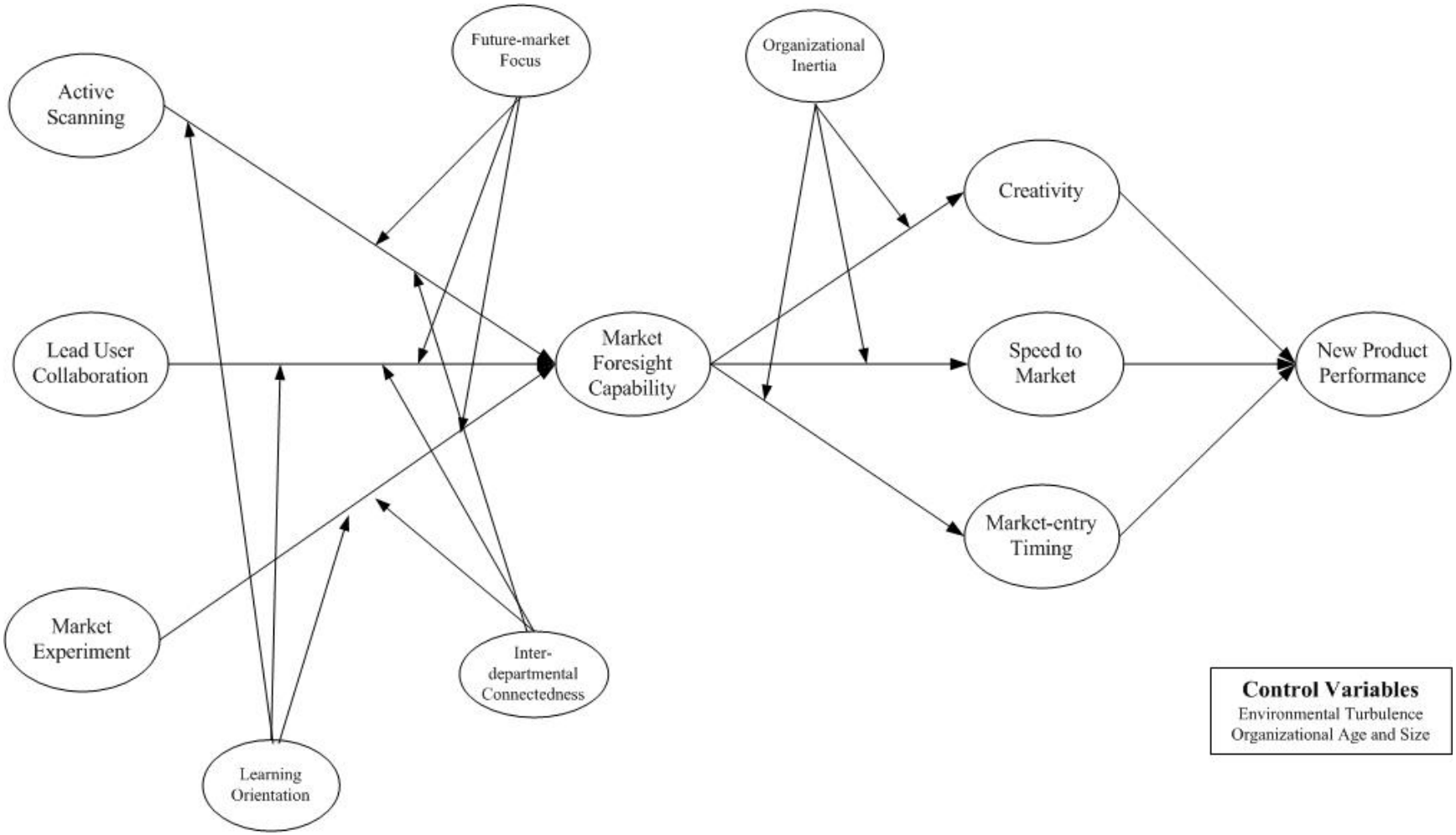

Figure 4: Proposed Market Foresight Capability Model

APPENDIX B

IRB APPROVAL LETTER

Revised 11/03

THE UNIVERSITY OF CENTRAL FLORIDA
INSTITUTIONAL REVIEW BOARD (IRB)

IRB Committee Approval Form

PRINCIPAL INVESTIGATOR(S): Michael McCardle

PROJECT TITLE: Market Foresight Capability: Determinants and New Product Outcomes.

Committee Members:

Dr. Theodore Angelopoulos: _____
Ms. Sandra Browdy: _____
Dr. Jacqui Byers: _____
Dr. Ratna Chakrabarti: _____
Dr. Karen Dennis: _____
Dr. Barbara Fritzsche: _____
Dr. Robert Kennedy: _____
Dr. Gene Lee: _____
Ms. Gail McKinney: _____
Dr. Debra Reinhart: _____
Dr. Valerie Sims: _____

[ ] Contingent Approval
Dated: _____

[ ] Final Approval
Dated: _____

[X] Expedited
Dated: 27 Apr 2004

[ ] Exempt
Dated: _____

Chair, IRB

Signed: _____
Dr. Sophia Dziegielewski

NOTES FROM IRB CHAIR (IF APPLICABLE): _____

_____

_____

APPENDIX C

SURVEY CONTACT DOCUMENTATION

SURVEY PRE-NOTIFICATION LETTER

May 26, 2004

Name of Marketing Manager
Company Name
Street Address
City, State, Zip

As competition in the marketplace becomes increasingly intense, decisions about the new products firms introduce are becoming more important than ever before. And yet, surprisingly little is known about why **some firms are better than others at anticipating the new product needs of their customers.** As a skilled and experienced **manager**, you can help us better understand how new product ideas are developed in today's dynamic environment by participating in our nationwide study.

We are asking you to participate in our study by completing the enclosed survey. The survey asks questions about your firm's new product development process such as how information is obtained and shared within your firm, the environment your firm competes in, and how well your new products perform based on the objectives you set. The survey does *not* request **proprietary information or** information that might require a review of budget or financial documents.

We understand that your time is valuable and as such we have made every effort to minimize the time required to complete the survey. **Managers** who have participated in the development of this survey report that the time required to complete it is reasonable. Based on the average response time this survey should take between 20 and 25 minutes. Your participation is very valuable to us and in return for completing the survey **we will send you** an executive summary reporting the aggregated results and managerial implications. In addition, we will also provide a **detailed** report benchmarking your **organization's** new product development processes against others in your industry. To receive a copy of the executive summary and the benchmark report, simply enclose a business card along with the survey.

The enclosed survey has an identification number for mailing purposes only. This is so that we may check your name off the mailing list when it is returned. Your name will never be placed on the survey or associated with your responses at any time. Further, only aggregated responses will ever be reported. In other words, neither you nor your firm will be identified in any discussions of the findings. Your responses will be held in strict confidence.

We look forward to the receipt of the completed survey from you. If you have any questions feel free to call (407) 823-1409 or email mmccardle@bus.ucf.edu. Your participation in this study will be greatly appreciated.

Sincerely,

Mike McCardle
University of Central Florida
Ph.D. Candidate in Marketing

Dr. J. Chris White
Michigan State University
Assistant Professor of Marketing

Dr. Ronald Michaels
University of Central Florida
Professor of Marketing

SURVEY COVER LETTER (FIRST MAILING)

June 27, 2004

Name of Marketing Manager
Company Name
Street Address
City, State, Zip

Dear Marketing Manager,

Recently we sent you a letter enlisting your support for our national research project that seeks to explain why some firms are better than others at anticipating the new product needs of their customers. Enclosed you will find a copy of the survey we outlined in our earlier letter.

Your assistance with this research project is invaluable. Your insights into the new product development process of your firm will allow us to better understand how new product ideas are developed in today's dynamic environment. The survey does *not* request **proprietary information** or information that might require a review of budget or financial documents.

We understand that your time is valuable and we have made every effort to minimize your time requirements. Managers who have participated in the development of this survey report that the time required for its completion is reasonable, averaging between 18 to 26 minutes. If you so choose, you may also complete this survey online, which in many cases will be a bit faster. The web address for the online version of the survey is www.bus.ucf.edu/mmccardle/survey.asp.

Your participation is very valuable to us and in return for you assistance we will gladly provide you an executive summary of our findings, as well as the managerial implications. In addition, we will also provide a detailed report benchmarking your organization's new product development processes against others in your industry. To receive a copy of the executive summary and the benchmark report, simply enclose a business card along with the survey, or provide this information at the end of the online version.

The enclosed survey has an identification number for mailing purposes only. This is so that we may check your name off the mailing list when it is returned. Your responses will be held in strict confidence. Your name will never be placed on the survey or associated with your responses at any time. Furthermore, only aggregated responses from all surveys received will be reported.

We greatly appreciate your assistance with this research. If you have any questions feel free to call (407) 823-1409 or email mmccardle@bus.ucf.edu.

Sincerely,

Mike McCardle
University of Central Florida
Ph.D. Candidate in Marketing

Dr. J. Chris White
Michigan State University
Assistant Professor of Marketing

Dr. Ronald Michaels
University of Central Florida
Professor of Marketing

REMINDER POSTCARD

Anticipating the New Product Needs of Customers

Recently we enlisted your assistance with a research project that examines why some firms are better than others at anticipating the new product needs of their customers. If you have returned your questionnaire, please accept our thanks. Your benchmark report will be mailed to you as soon as it is completed.

If you have not returned the questionnaire, won't you please assist us with this research by completing it today. If you need an additional copy of the survey, a secondary mailing for those we have not heard from is being prepared now and will be arriving shortly. If you prefer, you may complete this questionnaire online by directing your browser to the web address below.

www.bus.ucf.edu/mmccardle/survey.asp

Thank you! Mike McCardle, Project Director

Questions or comments? Send an email to: mmccardle@bus.ucf.edu

SURVEY COVER LETTER (SECOND MAILING)

August 30, 2004

Name of Marketing Manager
Company Name
Street Address
City, State, Zip

Greetings,

A number of weeks ago we enlisted your participation in a nationwide research study regarding why some firms are better than others at anticipating the new product needs of their customers. If you have returned your survey, we appreciate your assistance with this project. For those who requested it, your benchmark report will be mailed to you as soon as it is completed.

We are asking you to participate in our study by completing the enclosed survey. The survey asks questions about your firms new product development process, such as how information is obtained and shared within your firm, the environment your firm competes in, and how well your new products performed based on the objectives you set. The survey does *not* request **proprietary information** or information that might require a review of budget or financial documents.

We understand that your time is valuable and we have made every effort to minimize your time requirements. Managers who have participated in the development of this survey report that the time required for its completion is reasonable. Based on the average response time this survey should take between 20 and 25 minutes. Your participation is very valuable to us and in return for completing the survey we will send you an executive summary reporting the aggregate results and managerial implications. In addition, we will also provide a detailed report benchmarking your organization's new product development processes against others in your industry. To receive a copy of the executive summary and the benchmark report, simply enclose a business card along with the survey.

The enclosed survey has an identification number for mailing purposes only. This is so that we may check your name off the mailing list when it is returned. Your name will never be placed on the survey or associated with your responses at any time. Further, only aggregated responses from all surveys received will be reported. Your responses will be held in strict confidence

We look forward to the receipt of the completed survey from you. If you have any questions feel free to call (407) 823-1409 or email mmccardle@bus.ucf.edu. Your participation in this study will be greatly appreciated.

Sincerely,

Mike McCardle
University of Central Florida
Ph.D. Candidate in Marketing

Dr. J. Chris White
Michigan State University
Assistant Professor of Marketing

Dr. Ronald Michaels
University of Central Florida
Professor of Marketing

APPENDIX D

SURVEY

Anticipating the New Product Needs of Customers

A Study of Leading Edge Business Practices

UNIVERSITY OF CENTRAL FLORIDA
COLLEGE OF BUSINESS ADMINISTRATION

&

MICHIGAN STATE
UNIVERSITY

The objective of this research study is to understand why some firms are better than others at anticipating the new product needs of their customers. This survey should be filled out by a senior manager who is well versed in the new product development processes in your organization. If you feel someone else in your organization is better qualified to answer these questions, please pass this questionnaire on to that person.

If you wish to make comments on any of the questions, or qualify your answers, please feel free to use the space in the margins. Also, there is space at the end of the questionnaire that you may use for additional comments.

ALL INFORMATION WILL BE TREATED AS STRICTLY CONFIDENTIAL.
ALL DATA WILL BE AGGREGATED PRIOR TO ANALYSIS.

YOUR ASSISTANCE IN THIS RESEARCH IS VALUED AND VERY MUCH APPRECIATED.

Mike McCardle and Dr. Ronald Michaels
Department of Marketing
University of Central Florida
Orlando, FL 32816

Dr. J. Chris White
Department of Marketing
Michigan State University
East Lansing, MI 48824

Please return your completed questionnaire in the enclosed envelope to:

Mike McCardle - Doctoral Candidate/Project Director
Department of Marketing • University of Central Florida
Orlando, FL 32816 • 407-823-1409 • 407-823-3891 (Fax)
MMcCardle@bus.ucf.edu

This survey can also be completed online www.bus.ucf.edu/mmccardle/survey.asp

IMPORTANT

We recognize that your company may be highly diversified and that you may be associated with a particular division. If so, please reply to all questions in the context of your strategic business unit (SBU). Otherwise, please reply to all questions in the context of your overall company.

Please check below the one statement that applies in your case:

( ) My responses will be in the context of my SBU, which is _____

( ) My responses will be in the context of my overall company.

Section 1: Scanning the Environment

The first part of the questionnaire is concerned with how your firm monitors the external environment. Please indicate how strongly you agree or disagree with the following statements, by circling the appropriate number.

A: Scanning Focus

	Strongly Disagree						Strongly Agree
Rather than focusing on collecting information for a specific need, (e.g. the yearly planning process), we generally collect information on a continuous basis.	1	2	3	4	5	6	7
We maintain contact with officials of government and regulatory bodies in order to collect and evaluate pertinent information.	1	2	3	4	5	6	7
We collect and evaluate information concerning general social trends (e.g.,emerging lifestyles) that might affect our business.	1	2	3	4	5	6	7
Our scanning activities tend to focus on learning about threats or opportunities to our current products.	1	2	3	4	5	6	7
We spend time with our suppliers to learn more about various aspects of their business (e.g., manufacturing processes, industry practices, clientele).	1	2	3	4	5	6	7
When we scan the environment, we often look outside both our organization and our industry for ideas.	1	2	3	4	5	6	7
We frequently collect and evaluate general microeconomic information (e.g., interest rates, industry growth, etc).	1	2	3	4	5	6	7
We tend to focus our information search on issues that we are currently facing.	1	2	3	4	5	6	7

B: Scanning responsibility

	Strongly Disagree						Strongly Agree
A specific department is responsible for the majority of information acquired in our firm.	1	2	3	4	5	6	7
Useful information is being acquired by multiple departments in our firm.	1	2	3	4	5	6	7
Gathering information that can help us better understand our customers is the responsibility of everyone in our organization.	1	2	3	4	5	6	7
Only a few people in our organization are collecting competitor information.	1	2	3	4	5	6	7
Intelligence on competitors is generated independently by several departments.	1	2	3	4	5	6	7

Section 1: Scanning the Environment - continued

C: Scanning intensity

	Strongly Disagree						Strongly Agree
We periodically review the likely effect that changes in our business climate (e.g., regulation) will have on customers.	1	2	3	4	5	6	7
We don't wait for information to come to us; we are constantly in pursuit of new insights.	1	2	3	4	5	6	7
Key pieces of information are often acquired not as a result of a specific search, but almost by chance.	1	2	3	4	5	6	7
We continuously scan the environment looking for emerging threats and opportunities.	1	2	3	4	5	6	7
We strive to scan widely tapping diverse sources of information.	1	2	3	4	5	6	7
We actively seek new insights through the use of unique data collection techniques.	1	2	3	4	5	6	7
We often commission special studies to provide us with much richer data.	1	2	3	4	5	6	7
We generally collect the same type of information year after year.	1	2	3	4	5	6	7
We poll end users at least once a year to assess the quality of our products.	1	2	3	4	5	6	7

Section 2: Information Sharing in Your Organization

The following questions pertain to the sharing of information. Please indicate how strongly you agree or disagree with the following statements, by circling the appropriate number.

	Strongly Disagree						Strongly Agree
Marketing personnel in our business unit spend time discussing customers' future needs with other functional departments.	1	2	3	4	5	6	7
Our business unit periodically circulates documents (e.g., reports, newsletters) that provide information on our customers.	1	2	3	4	5	6	7
Market information spreads quickly through all levels in this business unit.	1	2	3	4	5	6	7
We regularly have interdepartmental meetings to update our knowledge of regulatory requirements.	1	2	3	4	5	6	7
Technical people in this business unit spend a lot of time sharing information about new product technology with other departments.	1	2	3	4	5	6	7
We frequently have cross-functional meetings to discuss market trends and developments (e.g., customers, competitors, suppliers).	1	2	3	4	5	6	7

Section 3: Organizational Values and Beliefs

These questions help us understand the shared values and beliefs in your organization. Please indicate how strongly you agree or disagree with the following statements, by circling the appropriate number.

A: Learning

	Strongly Disagree						Strongly Agree
Our managers basically agree that our organization's ability to learn is a key to our competitive advantage.	1	2	3	4	5	6	7
The basic values of this organization include learning as key to improvement.	1	2	3	4	5	6	7
The sense around here is that employee learning is an investment, not an expense.	1	2	3	4	5	6	7
Learning in my organization is seen as a key commodity necessary to guarantee organizational survival.	1	2	3	4	5	6	7
We are not afraid to reflect critically on the shared assumptions we have made about our customers.	1	2	3	4	5	6	7
Personnel in this enterprise realize that the very way they perceive the marketplace must be continually questioned.	1	2	3	4	5	6	7
Rarely do we collectively question our own biases about the way we interpret customer information.	1	2	3	4	5	6	7

B: Product / market opportunities

	Strongly Disagree						Strongly Agree
We firmly believe that a change in the market creates a positive opportunity for us.	1	2	3	4	5	6	7
Top managers here encourage the development of innovative marketing strategies, knowing that some will fail.	1	2	3	4	5	6	7
We value the orderly and risk-reducing management process much more highly than leadership initiatives for change.	1	2	3	4	5	6	7
Top managers in this business unit like to "play it safe."	1	2	3	4	5	6	7
Top managers around here like to implement plans only if they are very certain that they will work.	1	2	3	4	5	6	7
When it comes to problem solving, we value creative new solutions more than the solutions of conventional wisdom.	1	2	3	4	5	6	7
Members of this business unit tend to talk more about opportunities rather than problems.	1	2	3	4	5	6	7

Section 4: Change Orientation

These questions help us understand your organizations's orientation toward change. Please indicate how strongly you agree or disagree with the following statements, by circling the appropriate number.

A: Changes in your products

	Strongly Disagree						Strongly Agree
Our firm supports projects even if they could potentially take away from sales of existing products.	1	2	3	4	5	6	7
We can easily make changes within our organization to fit the needs of new products.	1	2	3	4	5	6	7
We find it difficult to change established procedures to cater to the needs of a new product.	1	2	3	4	5	6	7
We can easily replace one set of abilities with a different set of abilities to adopt a new technology.	1	2	3	4	5	6	7
We are very willing to sacrifice sales of existing products in order to improve sales of our new products	1	2	3	4	5	6	7
We can easily change the manner in which we carry out tasks to fit the needs of a new product.	1	2	3	4	5	6	7
We will not aggressively pursue a new technology that causes existing investments to lose value.	1	2	3	4	5	6	7

B: Responding to changes

	Strongly Disagree						Strongly Agree
For one reason or another, we tend to ignore changes in our customers' product or service needs.	1	2	3	4	5	6	7
The product lines we sell depend more on internal politics than real market needs.	1	2	3	4	5	6	7
We are slow to start doing business with new suppliers even though we think they are better than existing ones.	1	2	3	4	5	6	7
If a major competitor were to launch an intensive campaign targeted at our customers, we would respond immediately.	1	2	3	4	5	6	7
The activities of different departments in this business unit are well coordinated.	1	2	3	4	5	6	7
Even if we came up with a great marketing plan, we probably would not be able to implement it in a timely fashion.	1	2	3	4	5	6	7
If a special interest group (e.g., environmental group) were to publicly accuse us of harmful business practices, we would respond to the criticism immediately.	1	2	3	4	5	6	7
We tend to take longer than our competitors to respond to a change in regulatory policy.	1	2	3	4	5	6	7

Section 5: Anticipating the Future

These questions help us understand your organization's ability to plan for and anticipate changes in future market conditions. Please indicate how strongly you agree or disagree with the following statements, by circling the appropriate number.

A: Planning for the future

	Strongly Disagree						Strongly Agree
Our planning activities are more oriented toward the future.	1	2	3	4	5	6	7
Our future plans are based more on past performance rather than future potential.	1	2	3	4	5	6	7
We plan actively for the future instead of resting on past successes.	1	2	3	4	5	6	7

B: Anticipating customers' needs

	Strongly Disagree						Strongly Agree
We are often caught off guard by the entry of new products that have features our customers have never requested.	1	2	3	4	5	6	7
We are slow to detect changes in our customers' product preferences.	1	2	3	4	5	6	7
Our competitors often launch successful new products we did not know customers wanted.	1	2	3	4	5	6	7
Based on our knowledge of the market we are able to develop new products before customers ask for them.	1	2	3	4	5	6	7
We understand our customers needs even before they are able to clearly express them.	1	2	3	4	5	6	7

C: Anticipating changes in the marketplace

	Strongly Disagree						Strongly Agree
We often understand the direction our market will take in the future.	1	2	3	4	5	6	7
Changes in our market seldom take us by surprise.	1	2	3	4	5	6	7
We are slow to detect fundamental shifts in our industry.	1	2	3	4	5	6	7

Section 6: New Product Development Process

These questions help us understand your new product development process. Please indicate how strongly you agree or disagree with the following statements, by circling the appropriate number.

A: Working with Lead Users

Lead users are those customers, both current or potential, whose present strong needs will become general in the marketplace months or years in the future. You may also consider lead users to be experts and opinion leaders due to their advanced product knowledge and use.

	Strongly Disagree						Strongly Agree
We often contact lead users for their input on new product ideas.	1	2	3	4	5	6	7
We actively seek to identify customers who can be considered experts in the uses and functions of many of the products we sell.	1	2	3	4	5	6	7
Lead users often tell us about problems and needs that no product on the market can satisfy.	1	2	3	4	5	6	7
Working with lead users has allowed us to better understand the needs of our customers.	1	2	3	4	5	6	7

B: Working with frontline employees

Frontline employees refer to employees such as customer service representatives and salespeople who are in direct contact with customers.

Our frontline employees often acquire new product ideas through their direct contacts with customers.	1	2	3	4	5	6	7
New product ideas that frontline employees receive from our customers are passed on to upper management.	1	2	3	4	5	6	7
Our frontline employees are motivated to inform management of any new product ideas they acquire from their contacts with customers.	1	2	3	4	5	6	7
Current or potential customers often request new products or services by contacting our frontline employees.	1	2	3	4	5	6	7
Our sales personnel are usually the first in the organization to learn about changes in our customers' needs.	1	2	3	4	5	6	7

D: Experimenting with new product ideas

We often conduct small market-focused experiments.	1	2	3	4	5	6	7
We often conduct small, internally focused experiments.	1	2	3	4	5	6	7
We frequently vary our competitive methods to assess their relative effectiveness.	1	2	3	4	5	6	7

Section 7: Changes in the Environment

We are interested in learning about the environment in which you compete. Please indicate how strongly you agree or disagree with the following statements, by circling the appropriate number

	Strongly Disagree						Strongly Agree
In our industry, customers' product preferences change quite a bit over time.	1	2	3	4	5	6	7
Our customers tend to look for new products all the time.	1	2	3	4	5	6	7
We cater to many of the same customers that we have in the past.	1	2	3	4	5	6	7
New customers tend to have product-related needs that are different from those of our existing customers.	1	2	3	4	5	6	7
Technological changes provide major opportunities in our industry.	1	2	3	4	5	6	7
Technological developments in our industry evolve slowly.	1	2	3	4	5	6	7
A large number of new product ideas has been made possible through technological breakthroughs in our industry.	1	2	3	4	5	6	7

Section 8: New Product Performance

The following questions are related to the performance of new products for which your business unit or division is responsible. In answering this series of questions please focus on the most recent product that has been in the market for a minimum of 12 months.

In thinking about this new product, please rate it on the following dimensions:

Very novel for the category	1	2	3	4	5	6	7	Very ordinary for the category
Challenged existing ideas for the category	1	2	3	4	5	6	7	Did not challenge existing ideas for the category
Offered new ideas to the category	1	2	3	4	5	6	7	Did not offered new ideas to the category
Creative	1	2	3	4	5	6	7	Not creative
Interesting	1	2	3	4	5	6	7	Uninteresting
Generated new ideas for other products	1	2	3	4	5	6	7	Did not generate new ideas for other products
Encouraged fresh thinking	1	2	3	4	5	6	7	Did not encourage fresh thinking

Section 8: New Product Performance - Continued

A. Speed to market

Based on the following dimensions how would you assess the speed at which this new product was introduced?

Far ahead of our time goals	1	2	3	4	5	6	7	Far behind our time goals
Faster than the industry norm	1	2	3	4	5	6	7	Slower than the industry norm
Much faster than we expected	1	2	3	4	5	6	7	Much slower than we expected
Faster than our typical product development time	1	2	3	4	5	6	7	Slower than our typical product development time

B. Market entry timing

Often, new products are introduced in the market either too early or too late. How would you describe the introduction of this product into the marketplace?

Timely	1	2	3	4	5	6	7	Untimely
Opportune	1	2	3	4	5	6	7	Inopportune
Well Timed	1	2	3	4	5	6	7	Poorly Timed

C. Performance expectations

Please rate the performance of the product based on the financial objectives that were established prior to the introduction of the new product.

	Low						High
Market share relative to its stated objectives	1	2	3	4	5	6	7
Sales relative to its stated objective	1	2	3	4	5	6	7
Return on assets relative to its stated objectives	1	2	3	4	5	6	7
Profit margin relative to its stated objectives	1	2	3	4	5	6	7
Return on investment relative to its stated objective	1	2	3	4	5	6	7

Section 9: Demographic Information

In this final section, we need some demographic information about you and your organization.

Job Title: _____

To whom do you report? _____

How many years have you worked in this organization? _____ ; In this industry _____?

What is your gender? ___ Female ___ Male What is your age? _____

Which best describes the highest level of education you have completed?

___ High School or Less ___ Some College ___ Bachelors Degree ___ Masters Degree ___ Doctorate

Please estimate your organization's:

Sales volume in 2003? $ _____ ; No. of employees _____ ; Year Founded _____

On average, how many new products does your business unit introduce each year? _____

Of these new products, how many would be classified as extensions of current products? _____

What is your market position in your core product category?

___ Market leader (No. 1) ___ No. 2 ___ No. 3 ___ No. 4 or below

Thank You!!

We appreciate you taking the time to assist us in this valuable research. If you would like an executive summary of this study, along with a report benchmarking your firm's new product development process please include your business card with the completed survey. You may use the back of this page for any comments you have for the researchers regarding this survey, or if you so choose you may provide additional insights into your firm's new product development processes.

Please return your completed questionnaire in the enclosed envelope to:

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