

INNOVATION RADAR 2.0

Proposed by

Jiyao Chen
Kellogg School of Management
j-chen@kellogg.northwestern.edu

Mohanbir Sawhney
Kellogg School of Management
Mohans@kellogg.northwestern.edu

Priority changes suggested

- Employ probability sampling frame in six industries.
- Frame survey around the three innovation strategies based on the results of the initial survey on the twelve innovation dimensions.
- Add three types of customer value to explore connection between customer value and innovation strategy.
- Add organizational structure and capabilities to explore their connection with innovation strategy.
- Add contextual variables to the survey to explore innovation strategy effectiveness.

Potential advancement in understanding innovation

This proposal will provide a new practical tool to understand innovation and think about new innovation opportunities from a broad view, develop a new innovation measurement, and craft innovation approaches to success within different circumstances.

SUMMARY

The Innovation Radar 2.0 Survey serves as a follow-up of the initial Innovation Radar Questionnaire, which identified twelve innovation dimensions from a broad view. Based on the results of the initial questionnaire, this survey will explore patterns of innovation across companies and industries. It will examine whether companies innovate on a set of related innovation dimensions rather than on all twelve. This study will test the hypothesis that there are three generic innovation strategies, which are driven by three distinct routes to creating customer value. This study will also test a fit-as-moderation model that posits that overall firm performance is influenced by how well the organizational capabilities and structures complement alternative innovation strategies. The survey aims to generate insights into the most effective innovation strategy for specific industry contexts.

THE INNOVATION RADAR 2.0

The current literature takes a fairly narrowly defined and technology-oriented view of innovation. We contend that innovation is multifaceted and goes well beyond technology. A broader view of innovation was developed. Based on the discussions with managers leading innovation efforts at a number of large companies and a comprehensive survey of the academic literature on innovation, a tool called the Innovation Radar was developed. The Innovation Radar represents business innovation along twelve dimensions: offering, platform, solution, customer, customer experience, value capture, process, organization, supply chain, presence, network, and brand (2006). To measure those dimensions, a set of multi-item measures was created based on insights from field interviews and a review of the innovation literature, following well-accepted best practices in metrics and questionnaire design.

To validate empirically the Innovation Radar, initial data were collected through personal contacts at the business unit level from executives in different functional areas (strategy, operations, marketing, sales, research and development, and support). Data were collected through a Web-based questionnaire in 2005. A total of 765 responses were received from fifty-two business units at nineteen firms, including global corporations, such as GE, IBM, Kraft, Merck, Sears, Siemens Tyco, and Verizon. On average, each business unit had fifteen respondents from multiple functions. The initial data confirmed the validity of the twelve innovation dimensions.

The survey instrument is available online at:
http://www9.kellogg.northwestern.edu/main_admin/servlet/viewsflash?cmd=page&pollid=wolcott!Radar.

Based on the results of the initial data and further review of the literature, we have improved the questionnaire by reframing it on the three generic innovation strategies and by revising organizational performance measurements. We also add customer value, organizational capabilities and structures, and contextual and control variables into the survey. We plan to collect new data using a

stratified, random sample with the stratification based on SIC codes in 2009. The target population of interest is executives within business units, which is defined as any company or a subsidiary of a company listed in the sample frame with 500 or more employees. The sample frame will include drugs (SIC 283) and computers (SIC 357) in manufacturing, telephone communications (SIC 481) in transportation, department stores (SIC 531) in retail trade, hotels and motels (SIC 701), and advertising (SIC 731) in service. In addition, we will divide the sample frame into companies that do and do not have subsidiary units. If a company selected into the sample has one or more subsidiaries, we will include all of those subsidiaries in the sample up to a maximum of three instead of their headquarters.

We plan to employ a phone screen and mail survey method to collect data. We will first build initial contact information through the ReferenceUSA database. We then will screen respondents by phone to identify the appropriate target respondents and to ask their participation commitment and contact information at each business unit. We will mail the questionnaire, cover letter, and return envelope to 1600 executives (800 business units x 2 respondents) who promise to participate in the survey. About three weeks after the initial mailing, we plan to send one wave of postcard and one wave of phone reminders to all remaining non-respondents. Through the three rounds, we anticipate getting the no less than 480 completed responses from about 240 business units with a corresponding response rate of about 30 percent among those who promise to participate in the study.

WHY THE BROAD VIEW OF INNOVATION IS IMPORTANT

Innovation is the essential driver of the growth of organizations and countries. However, we lack a robust and systemic approach to defining and measuring business innovation. The literature on innovation has at least three limitations. First, innovation is very narrowly defined and technology-oriented (Howells and Tether, 2007; Sawhney, et al. 2006; Van de Ven, 1986). In this narrow view, innovation and innovation management focus on R&D, new product development, or the product/process dichotomy. One group of scholars defines innovation as the adoption and implementation of a new technology, mostly driven by R&D or invention. For example, Garcia and Calantone (2002) view innovation as an iterative process to explore the market potential of a technology-based invention through adoption and diffusion. Another group of scholars regards innovation narrowly as new product development or product innovation (Hauser et al, 2006). For example, Han, Kim, and Srivastava directly (1998:32) state that “[i]n marketing, the conventional meaning of the term innovation largely refers to new product-related breakthroughs.” The third group of scholars brings processes into innovation scope, thus, understanding innovation as product/process dichotomy. For example, Tushman and Nadler (1986:75) define innovation as “the creation of any product, service, and process, which is new to a business unit.” In this literature stream, process innovation is a means to create new ways to develop new products and to improve process efficiency. This view emphasizes delivering tangible things to meet customer needs. This dichotomy still is technology-oriented.

However, innovation is not limited to R&D, new product development, and technology innovation. For example, Dell Inc. has become one of the world’s leading personal computer manufacturers, not through R&D investments, but by bringing products to market more quickly and innovating on processes, such as direct selling, supply chain management, and manufacturing. Starbucks Corp. is regarded as a highly innovative company, not because of better-tasting coffee, but because the company is able to create an innovative customer experience referred to as “the third place”—a communal meeting place between home and work. Viewing innovation too narrowly blinds companies to opportunities and makes them vulnerable to competitors with broader perspectives (Sawhney, et al. 2006). A broad view of innovation is necessary.

In support of a broader view of innovation, Drucker (1977) states that non-technological innovations “are at least as important as technological innovation.” In reality, there are many more dimensions to innovation, including solution innovation, customer experience innovation, organizational innovation, business model innovation, and so on (DOC, 2008; Moore, 2004; OECD, 2005). Considering the limitations of the narrow view, innovation is regarded as the adoption and implementation of any new ideas relative to the organization. For example, Van de Ven (1986) defines innovation as “the development and implementation of new ideas by people, who over time, engage in transactions with others within an institutional order.” (p. 590). Recently, nontechnological innovation has caught more attention in the connected world (Djellal and Gallouj, 2001; Moore, 2004). Following this trend, OECD (2005) has broadened the concept of innovation to encompass marketing, internal organizational and external relationship innovation. Although there are different views and perspectives of innovation, a common theme in all definitions of innovation is that it is a

new idea that is put into practice while paying special attention to its usefulness—a theme that originated from Schumpeter (1934).

Therefore, we define innovation as *an initiative in any dimension(s) of the business system to create substantial new value for customers and the firm* (Sawhney, et al. 2006). This innovation definition emphasizes three points: originality (an initiative to create new value), a holistic view (an initiative in any dimension(s) of the business system), and customer outcomes (the value generated by the initiative for customers and the firm). These points are emphasized in the recent definition by the Advisory Committee to Department of Commerce (DOC 2008), where innovation is defined as, “The design, invention, development and/or implementation of new or altered products, services, processes, systems, organizational structures, or business models for the purpose of creating new value for customers and financial returns for the firm.”

A second limitation of the literature is the lack of a rich typology for innovation, with a few exceptions. (e.g. Damanpour, 1991; Djellal and Gallouj, 2001; Moore 2004) Past research has argued that distinguishing types of innovation is necessary for understanding organizations’ adaptation behaviors (Damanpour, 1991; Downs and Mohr, 1976). Although researchers have suggested numerous innovation typologies, such as incremental versus radical (Dewar and Dutton, 1986), continuous versus discontinuous (Tushman and Anderson, 1986), sustaining versus disruptive (Christensen, 1997), exploitative versus evolutionary innovation (Jansen, et al. 2006), most innovation typologies focus on the degrees or types of technological innovation in a dichotomized form limited to the narrow view (Garcia and Calantone, 2002; Gatignon, et al. 2002). We contend that innovation is multifaceted and goes beyond technology. A new innovation typology is needed.

In recognizing the importance of non-technological innovation, Drucker (1977) argues, “The best way to organize for systematic, purposeful innovation is as a business activity rather than as functional work. At the same time, every managerial unit of a business unit should have responsibility for innovation and define innovation goals.” (p. 57) Following this line of thinking, we believe that types of innovation should be related to business activity because by definition, innovation is an initiative in one or more dimensions (aspects) of the business system. Although the broad view of innovation originates from Schumpeter, this view rarely has found its way into typologies for innovation. Abell (1980) argues that a firm’s offering, customer, and operations are related to three primitive dimensions along which any business unit’s scope may be defined. Also, presence (how a firm takes its offerings to market) also is regarded as a key dimension in defining the core business (Zook and Allen, 2001). Therefore, we contend that a firm’s offering, customer, operation, and presence are the four key dimensions for defining business innovation. These dimensions broadly are consistent with the typologies proposed by some scholars and authors (Djellal and Gallouj, 2001; Moore, 2004; OECD, 2005).

A third limitation of the literature is a practical and robust measurement approach for business innovation, despite a long history of innovation research (Boston Consulting Group, 2006; DOC, 2008). There are two broad streams of research on measurement of innovation. One stream seeks to measure innovation through innovation inputs, such as R&D intensity, as well as through innovation outputs, such as patents and patent-related index (Cordero, 1990; Lanjouw and Schankerman, 2004; Qian, 2007). These measures capture a narrow subset of all possible innovation activities. However, the linkage between such measures and organizational innovativeness and economic growth are unclear. For example, empirical evidence suggests that R&D spending has no significant relationship with nearly all measures of business success, based on an analysis of the top 1,000 global innovation spenders (Booz, 2005). More recently, Bessen and Meurer (2008) show that patents are not only insufficient, but also unnecessary to explain cross-national innovation and growth rates according to the macro level evidence. Gittleman (2008) also strongly argues that the value of using patents as indicators of innovation is very limited at the micro level. The other stream on innovation measurement takes a macro level view. For instance, efforts in the European Union have been made to measure country innovation capabilities through objective economic measures, such as Oslo Manual (2005), European Community Innovation Survey (CIS-4), and the European Innovation Scoreboard (EIS 2007). Recognizing the limitations of current innovation measurement, the U.S. Department of Commerce established in 2006 an advisory committee to improve the measurement of innovation. The committee outlined its recommendation calling for actions to develop innovation measurement in the 21st century economy (DOC, 2008). A holistic and comprehensive measurement framework for business innovation still has to be developed and validated.

In summary, the definition and measurement of innovation has been too narrow, fragmented, and partial (Howells and Tether, 2007; Van de Ven, 1986). While the existing literature has provided useful insights into

specific aspects of innovation, the encompassing problems confronting general managers in managing innovation still remain unaddressed. Therefore, we believe that it is important to take a general manager's perspective of innovation rather than a functional perspective (Van de Ven, 1986). In addressing these gaps, we have developed a tool called the Innovation Radar that represents business innovation along a broader set of twelve dimensions. Further, we group these twelve dimensions into four categories: customer, offering, operation, and presence. Our initial data verified the validity of twelve dimensions and their relationships with organizational performance. The contributions of the initial study are to widen our perception and understanding of the innovation process; to craft an innovation typology to emphasize a much higher, integrated, and holistic view of innovative activities; and to provide a practical tool to benchmark innovation best practices, diagnose innovation, and think about new innovation opportunities. More interestingly, our research supports the notion that successful innovation regimes focus on a few high-impact vectors, rather than attempting a shotgun approach along many vectors at once, with significant implications for innovation portfolio strategy.

The results of the initial data raise several new questions: 1) Should a company pursue all dimensions of innovation or only focus on certain innovation dimensions? How should a firm choose the vectors of innovation to focus on in deciding its innovation strategy? 2) Are there a few generic patterns of successful innovation strategies? 3) How do these successful innovation patterns differ by industry, industry life cycle, environmental characteristics, or firm size? 4) How do the innovation patterns influence organizational performance? 5) Are there factors that moderate the relationship between innovation strategies and organizational performance? If so, what are they?

We argue that innovation activities should be based on the type of customer value the organization seeks to create because the ultimate purpose of innovation is to create value for customers and the firm. Customer value is defined as the customer perceived worth of the set of benefits given the total cost of an offering and available competitive offerings (Sawhney, 2003). Customer value has been recognized as a central concept in marketing (Woodruff, 1997), the fundamental basis for all marketing activities (Holbrook and Hirschman, 1982), and a key element of market orientation. Customer value creation has been suggested as the basic purpose of an organization (Slater, 1997). As Drucker (1977: 53) states, "there is only one valid definition of business purpose: to create a customer." Since there are three types of customer value: functional, economic, and emotional value (Sawhney, 2003); we suggest that there are three corresponding generic innovation strategies. Further, we argue that the three core dimensions that define a business in Abell's framework (1980) mentioned before—offering, customer, and operation—are consistent with the three types of customer value. Based on this trichotomy of customer value, we propose a trichotomy of innovation strategies: (1) offering innovation strategy that provides functional value, (2) experience innovation strategy that creates emotional value, and (3) operational innovation strategy that delivers economic value.

Our trichotomy of generic innovation strategies is consistent with the strategy literature in two aspects. First, the strategy literature recognizes the importance of value creation and of value creation activities (Porter, 1985). Second, the literature suggests that there are three choices in most strategy typologies. For instance, Miles and Snow (1978) propose a strategy typology that consists of three winning strategies (Prospectors, Defenders, Analyzers) and a losing strategy (Reactors). Porter (1980) proposes three generic strategies: differentiation, cost, and focus. Treacy and Wiersema (1993) define three value disciplines: product leadership, operational excellence, and customer intimacy. And, Hagel and Singer (1999) suggest three types of businesses: product innovation, infrastructure business, and customer relationship business. When we examine these different approaches, we find that these typologies surprisingly are consistent. This consistency is not only in the number of three, but also in the content of the three types of strategies. This is reminiscent of "The Six Blind Men and Elephant" story, where everyone talks about the same thing from different but complementary points of view. What differs across these approaches is the lens that the authors use to examine strategy. We contend that all these approaches to strategy and competitive advantage can be unified into one theme: There are three different ways to create value (e.g., functional, economic, and emotional). Further, there are three different innovation strategies based on the "route to value" that the firm chooses. The route to value moves from customer value to choice of innovation strategy, to organizational capabilities and structures, and finally to competitive advantages. Therefore, in this study, we hope to explore the route to value by grounding the definition of innovation strategy in customer value.

PRIORITY IMPROVEMENT 1

The purpose of our initial study is to embrace the broad view of innovation and develop an innovation typology encompassing such a view. Through a comprehensive literature review, we widen the innovation concept derived from Schumpeter's view and define innovation as an initiative in any dimension(s) of the business system to create substantial new value for customers and the firm (Sawhney, et al. 2006). Accordingly, we propose that the type of innovation should be related to dimensions of the business system. Much like a map, the Innovation Radar consists of four key dimensions that serve as business system anchors: the customers a business serves (who), the offerings it creates (what), the processes it employs (how), and the points of presence it uses to take its offerings to market (where). Within these anchor dimensions, we embed eight other dimensions of the business system that can serve as avenues for innovation. That is, offering innovation also includes platform and brand innovation; customer innovation also includes solution and customer experience; process innovation also includes value capture and organization innovation; and presence innovation also includes supply chain and networking innovation (Sawhney, et al. 2006). The Innovation Radar presents and relates all of the 'directions' in which a firm can look for innovative opportunities.

We have developed 100-plus measures to gauge the twelve innovation dimensions in the initial stage. Each concept is measured by six to ten questions. For example, solution innovation is measured by nine questions, as shown in the following:

Please mark to what extent the following statements describe your business unit relative to your peers or the status quo in your industry:

1. More so than our competitors, we have augmented our products with innovative complementary services.
2. We have an explicit process(es) for defining and designing end-to-end customer solutions.
3. We take on the responsibility of combining products and services from various vendors to create integrated solutions for our customers.
4. We have a solution marketing and sales organization organized around specific industries or customer segments.
5. We lead our industry in creating new ways to provide the most customized solutions for our customers.
6. More so than our competitors, we are innovative in creating flexible offerings that can be tailored to individual customer requirements.
7. More so than our competitors, we base the design of our solutions on a deep understanding of customer activities and outcomes.
8. We have a well-defined process for creating solutions for specific industries or vertical markets.
9. We have been innovative in our approach to delivering and implementing solutions for our customers.

In the follow-up research, we propose that there essentially are three generic innovation strategies, which correspond to three types of customer value. We classify innovation strategies based on the route to customer value: 1) offering innovation strategy that provides functional value, 2) experience innovation strategy that creates emotional value, and 3) operational innovation strategy that delivers economic value. Each innovation strategy includes four types of innovation. Offering innovation strategy consists of technology, product, platform, and solution innovation. Experience innovation strategy includes customer, interaction, design, and presence innovation. Operational innovation strategy encompasses process, organization, supply chain, and ecosystem innovation. According to the rationale of the proposed research study, we revised the Innovation Radar framework in three ways.

A). We reduced the number of items of each measure to four or five as the initial data confirmed the reliabilities of these measurements, keeping the major concepts unchanged, such as platform, solution, customer, process, organization, supply chain, and presence. For example, solution innovation is measured by five items as follows:

1. We have combined products and services to create integrated solutions for our customers.
2. We lag behind our competitors in creating integrated solutions for our customers.
3. We lead our competitors in offering customized solutions for customers.
4. We have an explicit process for developing new customer solutions.
5. We find it difficult to accommodate individual customers' specific requirements.

B). We relabeled some concepts. For instance, “customer experience” was relabeled as “interaction.” We believe that the customer experience is the *outcome* of innovation, particularly of interaction innovation. Customer experience is an internal and subjective response that customers have to any direct or indirect contact with a company and products (Meyer and Schwager, 2007). To date, the topic of customer experience has been studied primarily in the marketing and psychology literature. A central issue is how to produce customer experience from the management perspective. Interaction innovation is an initiative on the interface between customers and company that improves the customer experience (Moore, 2004). Essentially, it creates emotional value for customers and makes customers enjoy the hedonic experience while interacting with the company and its products. Therefore, we believe that interaction innovation, which *leads* to delightful customer experiences is a better description of the innovation from the perspective of the firm. Through interaction innovation, the company emphasizes facilitating customer control, customer convenience, and customer choice when customers interact with the company and its products. Further, companies need to provide an innovative platform or interface to facilitate customer involvement and engagement in product design, development and usage.

Interaction innovation is measured by the following five items:

1. We have created new ways of improving the total customer experience.
2. We lead our competitors in personalizing the customer experience for each customer.
3. Customers feel good when they interact with our company and products.
4. We lag behind our competitors in managing customer interactions with our company.
5. We have created a single face for interacting with customers through different channels.

We also substituted ecosystem innovation for networking innovation. An innovation in networking is a change in the way you augment your customer interaction or improve functionality of your offerings through network-based intelligence. This concept emphasizes the importance of physical network in process effectiveness. However, a deeper examination of this concept suggests that relationships among ecosystem partners that are more important to create value for customers. Innovation in ecosystem involves the implementation of new organizational relationships with other firms or organizations, such as the establishment of new types of alliances, outsourcing, and collaborative sourcing of business activities. This network of relationships can lead to a new type of organization called the “relationship-based organization” (Gulati and Kletter, 2005). In this sense, the ecosystem becomes an extension of organizational structure and process. A similar concept, relational innovation, has been examined in the context of service innovation as “external relationship innovation,” defined as the establishment by a firm of a particular relationship with partners (customers, suppliers and public authorities, or competitors) (Djellal and Gallouj, 2001; Drejer, 2004).

Finally, we also relabeled “offerings” as product innovation because offerings could include product, platform, and solution; therefore, we substitute product innovation for offering innovation, making this type of innovation more precise.

C). We removed brand innovation as it is a vague concept. Instead, we added a new dimension of innovation—design innovation. Design innovation is the introduction of new or significantly changed product forms, appearances and packaging that do not alter the product’s functional or user characteristics. Examples include the Flip mini-video recorder with no wires or W Hotel’s unique ambiance that uses cultural influences from fashion to music and arts. Design innovation is linked to product symbol or aesthetics resulting in an emotional value to customers. The main goal of design innovation is to provide emotional value. Design innovation could include changes in the packaging of products, such as foods and detergents, for example, the use of a new bottle design for beverages and perfumes, or changes in product color, for example, the white color of Apple’s personal computers (OECD, 2005). Research suggests that emotional value linked to design innovation is the major driver of customer preferences in their decision-making (Pink, 2005). Design innovation also involves the use of new concepts for promoting and advertising a firm’s offerings. For example, the development and introduction of a new brand symbol, which intended to position the product on a new market or give the product a new image.

Design innovation is measured by the following six items:

1. Our customers view our product design to be aesthetically pleasing.
2. We introduce new product designs that have a clear sense of style.
3. We have made a significant effort to change the appearance of our products.
4. We have introduced significant changes to the aesthetic design of our products.
5. We have introduced significant changes to the packaging of our products.

6. We have completely changed our product designs in the past three years.

IMPLICATION OF IMPROVEMENT 1

The data collected through the revised questionnaire will test further the validity and reliability of the innovation measurement defined from the broad perspective, verify the nature of multidimensional innovation construct, and examine the relationship among these dimensions based on a large number of random samples. Basically, the data will address the following research questions: 1) Is innovation a multidimensional concept? 2) Can these dimensions be classified into three meta-factors (second-order factors), which we regard as innovation strategies?

To the best of our knowledge, this is the first innovation measurement of this type. The innovation measure we propose could serve as a foundation for understanding the relationship between business innovation and performance. Our questionnaire will provide a diagnostic tool that captures where an organization excels and where it lags in the business system. The Innovation Radar creates a visually compelling profile of the firm's current innovation strategy through our measurement of all twelve vectors. The Innovation Radar profile helps to create better alignment on innovation strategy across functional areas and seniority levels in management. It also gives us a tool to guide a firm to opportunities for innovation they might not have considered before.

COST ESTIMATE OF IMPROVEMENT 1

The total data collection cost is \$148,778, based on the cost estimation of Survey Research Laboratory of the University of Illinois at Chicago. It is broken down as follows:

A. Data Collection Staff Salaries	\$37,438
B. Research Assistant Salaries	\$761
C. Interviewer wages	\$26,728
D. Student wages (coders)	\$2,225
E. Expenses	\$14,285
F. Benefits (30.55% of A, 2.37% of B, 7.7% of C, D)	\$13,685
G. Total Direct Cost	\$95,400
H. Facilities & Administration (57%)	\$53,378
I. Total Project Cost	\$148,778

PRIORITY IMPROVEMENT 2

Normative theory assumes that managers not only can isolate distinct innovation practices they believe to be valuable, but they also can empirically link these innovation practices with superior business performance. The purpose of this study is not only to build an innovation measurement and generic innovation strategies, but also to examine their effectiveness on organizational performance. There are two seemingly contradictory views on the relationship of different types of innovation and their impacts on performance. On the one hand, some literature suggests that different types of innovation strategies might not be compatible. The initial results confirmed that there are twelve innovation dimensions. This raises a question whether a company needs to pursue all twelve innovation dimensions to create a competitive advantage. We believe that, overall, it is better for companies to focus on certain types of innovation rather than to pursue innovation in all directions because different types of innovation have different foci and requirements that may conflict (Hagel and Singer, 1999). Also, broad innovators need to invest their resources in many directions and may lack a consistent strategic orientation. This notion is consistent with Miles and Snow's notion (1978) on specialist versus generalist and with Porter's theory (1980) that a firm pursuing one type of generic strategy will outperform firms that are "stuck in the middle." Therefore, we propose that some dimensions of innovation might not be complementary. Companies that pursue all categories of innovation are called broad innovators. In contrast, companies that only focus on certain categories of innovation are called focused innovators. Based on the notion that certain types of innovation strategies are incompatible, we hypothesize that focused innovators will outperform broad innovators overall.

On the other hand, other scholars believe business innovation consists of related (but independent) dimensions. The interdependence and complementarities in innovation tends to be ignored in the innovation literature (Drejer, 2004; Howells and Tether, 2007). Some researchers have found a positive relationship between product and process innovation, suggesting that these two types of innovation are complementary

(Damanpour and Gopalakrishnan, 2001). In addition, a firm needs to design the appropriate organization to facilitate certain types of innovation. For example, Christenson (1997) argues that an autonomous team or organization is necessary to develop disruptive innovations. Treacy and Wiersema (1993) also argue that what sets market leaders apart from their competitors is the sophistication and coherence of their operational model. Therefore, an organization should develop a coherent business model that properly integrates certain dimensions of innovation.

We think both views are partially correct. We believe that there are distinct patterns of innovation strategies that consist of only certain types of innovations. Within a specific innovation strategy, the different types of innovation are complementary, whereas different types of innovation between innovation strategies may not be complementary.

In order to test the relationship between innovation strategies and organizational performance, we need a valid and reliable organizational performance measurement. The existing questionnaire includes overall performance, which was measured by the following four items:

1. We lead the industry in terms of profit margins.
2. We enjoy a better return on assets than our competitors.
3. We have increased our market share in the past twelve months.
4. We have achieved faster organic revenue growth than our competitors.

Although these questions are well-defined, they are new to the literature and lack comparability with measures in the previous research. Therefore, we will adopt the existing, well-accepted measures of organizational performance, such as Olson et al. (2005) financial performance. Literature suggests that business innovation also may influence other aspects of organizational performance, such as customer and employee satisfaction (Vorhies and Morgan, 2005), future cash flow (Gruca and Rego, 2005), and that different innovation strategies may have stronger impact on different aspects of financial performance (Kaplan and Norton, 2008). These measures will be included in the survey.

IMPLICATION OF IMPROVEMENT 2

The data to be collected can help us examine the effectiveness of the Innovation Radar to see if all innovation dimensions have a unique contribution to organizational performance. It also will test the relationship between innovation strategy and several dimensions of organizational performance. Several research questions might be addressed through the improved questionnaire: Do all innovation strategies lead to better financial performance? Do focused innovators have better performance relative to broad innovators? Do different innovation strategies have stronger impact on different aspects of financial performance?

The Innovation Radar gives us a tool to benchmark best practices of top innovators and help a firm to prioritize innovation vectors strongly associated with business success. A firm should leverage its distinctive capabilities or identify critical new capabilities. Which components of your business system might have the most meaningful impact on customer value and business success? On the one hand, a firm's existing capabilities might suggest opportunity vectors. Being particularly good at something should not only mean executing well. It also should reflect the firm's ability to innovate on that dimension more effectively than competitors. On the other hand, the Innovation Radar suggests areas of increased investment, as a result of benchmarking or a desire to pursue new competitive directions. When firms select neglected opportunity vectors, they can change the basis of competition.

PRIORITY IMPROVEMENT 3

We believe that innovation activities should be grounded in the type of customer value. In other words, a company that focuses on a different customer value should pursue different types of innovation activities. Therefore, how to classify customer value is an important issue. However, there is no well-accepted customer value typology. It is classified into two, three, four, five, and eight types in the literature (Smith and Colgate, 2007; Sweeney and Soutar, 2001). Based on the Sheth et al. typology, including social, emotional, functional, epistemic and conditional value (Sheth, et al. 1991), Sweeney and Soutar (2001) classify customer value into four dimensions: functional, emotional, social, and cost/sacrifice by adding economic value and removing conditional and epistemic value. Smith and Colgate (2007) offer a similar typology. Cost/sacrifice value is the utility derived from the product due to the reduction of its perceived short-term and long-term costs. In their typologies, they contend that emotional value and social value are separate; however, social value is linked highly to emotional value. For example, Smith and Colgate (2007) specify

symbolic/social value of products into self-concepts (the products make customers feel good about themselves), self-expression (the products allow customers to reflect or express their personalities, tastes and value), social meaning (the products reflect customers' prestige, status, or image), and conditional meaning (symbolism relating to social-cultural ethnic events and traditions), which are exactly elements of experiential/emotional value. Actually, Smith and Colgate use similar terms to describe the two types of customer value, such as social-relational value in experiential/emotional value versus social meaning or self-expression in symbolic/social value.

By synthesizing previous value typologies, we believe there are three fundamental types of customer value: functional, economic, and emotional (Sawhney, 2003). Functional value is the value of an offering's features and functions, that is, the extent to which an offering has desired features and characteristics, is useful, or performs a desired function. Economic value is what the offering benefits are worth in terms of money and time, that is, the extent to which the benefits in saving costs in the purchase, ownership, and use of the offering relative to alternatives. Emotional value is the psychological benefit that customers get from buying and using the offering, that is, the extent to which the offering creates appropriate experiences, feelings, emotions, and psychological meaning.

We believe that offering innovation provides functional value to customers, that the main purpose of experience innovation is to create emotional value, and that the main purpose of operational innovation is to deliver economic value. Therefore, it is important to explore the existence of a relationship between the customer value that a company provides and the innovation activities it pursues, and, further, to examine if this relationship leads to better performance.

Based on the customer value measurement of Sweeney and Soutar (2001) and the notions of Smith and Colgate (2007), we developed a new measurement of three types of customer value, as shown below.

The following are several statements as to why customers buy your products and services. To what extent do you agree with the following statements?

Functional value

1. Customers buy our offerings because of their high quality.
2. Customers buy our offerings because of their unique features.
3. Customers buy our offerings because they offered the most innovative functionality.
4. Customers buy our offerings because of their new technology.

Economic value

1. Customers buy our offerings because of their low prices.
2. Customers buy our offerings because of their value for the money paid.
3. Customers buy our offerings because they are affordable.
4. Customers buy our offerings because we save them money.

Emotional value

1. Customers buy our offerings because they are well-designed.
2. Customers buy our offerings because they are easy to use.
3. Customers buy our offerings because they make a good impression on other people.
4. Customers buy our offerings because our offerings represent their status.
5. Customers buy our offerings because our customers identify with the brand.

In addition, configuration theory holds that organizational structures and processes should fit the implementation requirements of a business strategy, which enhances performance (Olson, et al. 2005; Vorhies and Morgan, 2003). We posit that overall firm performance is influenced by how well the organizational capabilities and structures complement alternative innovation strategies. Organizational structure variables, such as centralization, formalization, and specialization (Vorhies and Morgan, 2003) and organizational capabilities, such as technological capabilities, marketing capabilities, and operational capabilities (Desarbo, et al. 2005) will be added into the survey.

IMPLICATION OF IMPROVEMENT 3

The data to be collected can examine the following research questions: 1) Is customer value a multidimensional concept? 2) Does a relationship exist between the types of customer value and the types of innovation strategy? 3) Does the relationship lead to better organizational performance? 4) Does the

connection between innovation strategy and organizational structure and capabilities enhance performances?

The verified customer value typology might be the foundation of market segmentation. Although some scholars call for need-based segmentation, the main view of market segmentation is based on the customer demographic characteristics. Our research findings might give a general guideline for companies to pursue need-based segmentation and to conduct corresponding marketing and innovation activities because different types of customers have different customer value requirements.

If our hypothesis on customer value and innovation strategy is supported, the Innovation Radar can be used to guide companies to pursue innovation activities and to create a more coordinated and coherent innovation strategy centered on the type of customer value provided. Innovating on one vector often influences choices on other vectors of a firm's business system. For example, changing the customers you serve often requires innovating on vectors, such as presence (how you go to market with your offerings). Selecting and acting on vectors that define a firm's innovation strategy become a deliberate, portfolio-based approach to innovation positioning. And, clarity regarding a firm's innovation positioning enables clear communication within the firm and to external constituents.

PRIORITY IMPROVEMENT 4

The impact of the contextual variables on innovation and performance is acknowledged widely (Jansen, et al. 2006). We propose that different innovation strategy will perform differently within different contexts. Innovation effectiveness may depend on industry types, stage of the industry life cycle (Moore, 2004), and environmental characteristics. Therefore, we will add environmental variables such as technological uncertainty, market uncertainty (Jaworski and Kohli, 1993), and market maturity into the questionnaire.

IMPLICATION OF IMPROVEMENT 4

The data we will collect will test how the environmental variables influence the relationships between innovation strategies and organizational performances. The research questions the data will address are as follows: 1) Do different environmental variables, such as technological uncertainty and market uncertainty, moderate the relationships between innovation strategies and organizational performance? 2) Similarly, does market maturity moderate the relationship? 3) Do innovation strategies differ among different industries, or do different industries have a different pattern of innovation strategies? Some hypotheses related to moderating effects are: Offering innovation will perform better when market maturity is low; and experience innovation and operational innovation will perform better when market maturity is high (Moore, 2004).

If our data will support our hypotheses, the findings will have important managerial implications on selection of innovation strategies. Basically, firms in different contexts should pursue different types of innovation strategies and focus on different types of innovation activities.

By comparing the current practices in different industries, we will identify innovation patterns of some industries such as computer, telecommunication, department stores, and hotels. By profiling major competitors in an industry on a common set of dimensions, the Innovation Radar also can be used to gain insights into competitors' innovation priorities and to identify innovation vectors that the industry, as a whole, has neglected. The Innovation Radar assessment also provides direction to differentiate the firm and liberate it from industry-wide innovation myopia.

OTHER SUGGESTIONS

We will add more control variables, such as R&D intensity and the size of business unit and firm into the questionnaire. We also will shorten the questionnaire instruction, change the scale framework, remove the description of each type of innovation and some individual demographics, and revise the format of the questionnaire to improve its quality and to reduce its length.

IMPLICATION OF IMPLEMENTING SUGGESTIONS

To add more control variables may rule out some alternative explanations of our research results and justify our argument. Moreover, we may explore if the innovation patterns are influenced by the sizes of business units and firms or other variables.

REFERENCES

- Abell, Derek F. 1980. *Defining the Business: The Starting Point of Strategic Planning*. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Bessen, James and Michael J. Meurer. 2008. Do patents perform like property? *Academy of Management Perspectives* 22: 8-20.
- Booz, Allen Hamilton. 2005. No Relationship between R&D Spending and Sales Growth, Earnings, or Shareholder Returns. Vol. 2005. New York: Booz Allen Hamilton.
- BostonConsultingGroup. 2006. Measuring innovation 2006: Boston Consulting Group.
- Christensen, Clayton M. 1997. *Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Client Distribution Services.
- Cordero, R. 1990. The measurement of innovation performance in the firm: an overview. *Research Policy* 19: 185-92.
- Damanpour, Fariborz. 1991. Organizational Innovation: A Meta-Analysis of Effects of Determinants and Moderators. *Academy of Management Journal* 34: 555-90.
- Damanpour, Fariborz and Shanthi Gopalakrishnan. 2001. The dynamics of the adoption of product and process innovations in organizations. *Journal of Management Studies* 38: 45-65.
- DeSarbo, Wayne S., C. Anthony Di Benedetto, Michael Song, and Indrajit Sinha. 2005. Revisiting the Miles and Snow strategic framework: uncovering interrelationships between strategic types, capabilities, environmental uncertainty, and firm performance. *Strategic Management Journal* 26: 47-74.
- Dewar, R. D. and J. E. Dutton. 1986. The adoption of radical and incremental innovations: An empirical study. *Management Science* 32: 1422-33.
- Djellal, Faridah and Faiz Gallouj. 2001. Patterns of innovation organisation in service firms: postal survey results and theoretical models. *Science and Public Policy* 28: 57-67.
- DOC, Advisory Committee on Measuring Innovation in the 21st Century Economy. 2008. Innovation measurement: Tracking the State of Innovation in the American Economy Vol. 2008. Washington DC: Department of Commerce.
- Downs, George W. and Lawrence B. Mohr. 1976. Conceptual Issues in the Study of Innovation. *Administrative Science Quarterly* 21:700.
- Drejer, Ina. 2004. Identifying innovation in surveys of services: a Schumpeterian perspective. *Research Policy* 33: 551.
- Drucker, Peter F. 1977. *An Introductory View of Management*. New York: Harper's College Press.
- Garcia, Rosanna and Roger Calantone. 2002. A critical look at technological innovation typology and innovativeness terminology: a literature review. *Journal of Product Innovation Management* 19: 110-32.
- Gatignon, Hubert, Michael L Tushman, Wendy Smith, and Philip Anderson. 2002. A structural approach to assessing innovation: Construct development of innovation locus, type, and characteristics. *Management Science* 48: 1103-22.
- Gittleman, Michelle. 2008. A note on the value of patents as indicators of innovation: Implications for management research. *Academy of Management Perspectives* 22: 21-27.
- Gruca, Thomas S. and Lopo L. Rego. 2005. Customer Satisfaction, Cash Flow, and Shareholder Value. *Journal of Marketing* 69: 1-13.
- Gulati, Ranjay and David Kletter. 2005. Shrinking core, expanding periphery: The relational architecture of high-performing organizations. *California Management Review* 47: 77-104.
- Hagel, John iii and Marc Singer. 1999. Unbending the corporation. *Harvard Business Review* 77:133-41.
- Han, Jin K., Namwoon Kim, and Rajendra K. Srivastava. 1998. Market Orientation and Organizational Performance: Is Innovation a Missing Link? *Journal of Marketing* 62: 30-45.
- Hauser, John, Gerard J. Tellis, and Abbie Griffin. 2006. Research on Innovation: A Review and Agenda for Marketing Science. *Marketing Science* 25: 687-717.
- Holbrook, Morris B. and Elizabeth C. Hirschman. 1982. The Experiential Aspects of Consumption: Consumer Fantasies, Feelings, and Fun. *The Journal of Consumer Research* 9: 132-40
- Howells, Jeremy and Bruce Tether. 2007. Holistic innovation: Innovation as an inter-related, complementary and concurrent process. The Academy of Management Philadelphia, PA.
- Jansen, Justin J. P., Frans A. J. Van Den Bosch, and Henk W. Volberda. 2006. Exploratory Innovation, Exploitative Innovation, and Performance: Effects of Organizational Antecedents and Environmental Moderators. *Management Science* 52: 1661-74.

- Jaworski, Bernard J and Ajay K. Kohli. 1993. Market orientation: Antecedents and consequences. *Journal of Marketing* 57: 53-70.
- Kaplan, Robert S. and David P. Norton. 2008. MASTERING the Management System. *Harvard Business Review* 86: 62-77.
- Lanjouw, Jean O. and Mark Schankerman. 2004. Patent Quality and Research Productivity: Measuring Innovation with Multiple Indicators. *The Economic Journal* 114: 441 - 65.
- Meyer, Christopher and Andre Schwager. 2007. Understanding Customer Experience *Harvard Business Review* 111: 1-11.
- Miles, Raymond E. and Charles C. Snow. 1978. *Organizational Strategy, Structure, and Process*. Stanford University Press.
- Moore, Geoffrey A. 2004. Darwin and the Demon: Innovating Within Established Enterprises. *Harvard Business Review* 82: 86-92.
- OECD. 2005. Oslo manual: Guidelines for collection and interpreting technological innovation data. Paris.
- Olson, Eric M., Stanley F. Slater, and G. Tomas M. Hult. 2005. The Performance Implications of Fit Among Business Strategy, Marketing Organization Structure, and Strategic Behavior. *Journal of Marketing* 69: 49-65.
- Pink, Daniel H. 2005. *A Whole New Mind: Moving from the Information Age to the Conceptual Age*. New York: Riverhead Books.
- Porter, Michael E. 1985. *Competitive advantage: Creating and sustaining superior performance*. Free Press.
- Porter, Michael E. 1980. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. Free Press.
- Qian, Yi. 2007. Do national patent laws stimulate domestic innovation in a global patenting environment? *Review of Economics and Statistics* 89: 436-53.
- Sawhney, Mohanbir. 2003. Fundamentals of Customer Value. *CIO Magazine* 4: 107-110
- Sawhney, Mohanbir, Robert C. Wolcott, and Inigo Arroniz. 2006. The 12 Different Ways for Companies to Innovate. *MIT Sloan Management Review* 47: 75-81.
- Schumpeter, Joseph A. 1934. *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*. New York: Oxford University Press.
- Sheth, Jagdish N., Bruce I. Newman, and Barbara L. Gross. 1991. Why we buy what we buy: a theory of consumption values. *Journal of Business Research* 22: 159-70.
- Slater, Stanley F. 1997. Developing a customer value-based theory of the firm. *Journal of the Academy of Marketing Science* 25: 162-67.
- Smith, J. Brorck and Mark Colgate. 2007. Customer Value Creation: A Practical Framework. *The Journal of Marketing Theory and Practice* 15: 7-23.
- Sweeney, Jillian C. and Geoffrey N. Soutar. 2001. Consumer perceived value: The development of a multiple item scale. *Journal of Retailing* 77: 203-20.
- Treacy, Michale and Fred Wiersema. 1993. Customer intimacy and other value disciplines. *Harvard Business Review* 71: 84-93.
- Tushman, Michael L. and Philip Anderson. 1986. Technological Discontinuities and Organizational Environments. *Administrative Science Quarterly* 31: 439.
- Tushman, Michael and David Nadler. 1986. Organizing for Innovation. *California Management Review* 28: 74-92.
- Van de Ven, Andrew H. 1986. Central Problems in the Management of Innovation. *Management Science* 32: 590-607.
- Vorhies, Douglas W. and Neil A. Morgan. 2003. A Configuration Theory Assessment of Marketing Organization Fit with Business Strategy and Its Relationship with Marketing Performance. *Journal of Marketing* 67:100-15.
- Vorhies, Douglas W. and Neil A. Morgan. 2005. Benchmarking Marketing Capabilities for Sustainable Competitive Advantage. *Journal of Marketing* 69:80-94.
- Woodruff, Robert B. 1997. Customer value: The next source for competitive advantage *Journal of the Academy of Marketing Science* 25:139-53.
- Zook, Chris and James Allen. 2001. *Profit from the Core: Growth Strategy in an Era of Turbulence*. Boston, MA: Harvard Business School Press.