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Whose Innovation Performance Benefits More from External Networks: Entrepreneurial or Conservative Firms?*

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The primary contribution of this research is positing and empirically supporting the proposition that learning through external networks disproportionately benefits conservative, risk-averse firms. The construct, entrepreneurial orientation (EO), is used to discriminate conservative, risk-averse firms from proactive, risk-seeking firms. Organizational learning theory and social capital theory are employed to support our hypotheses. Based on a study of 1978 U.S. firms, the paper suggests that the utilization of external networks (i.e., the process of learning from information, perspectives, and insights embedded in external networks) may act as a primary driver for innovation for those firms that are either not inclined and/or do not have the capabilities to adopt entrepreneurial culture. Specifically, weak EO firms' innovation performance benefits from utilizing external networks more than strong EO firms'. This research also tests for the moderating role of firm size and finds that the negative moderating effect of EO on the external network utilization–innovation performance relationship is more pronounced in small and medium sized enterprises (SMEs) than large firms.

Practitioner Points

- The judicious use of external networks empowers executives in more conservative firms to mitigate the uncertainty associated with product and market innovation.
- A reliance on external networks as a key source of intelligence enables more conservative firms to act as fast followers of firms that take on significantly more risk in their market and product innovation activity.
- The use of external networks to inform new product development and new market entry is particularly beneficial to executives in SMEs.

Introduction

According to A.G. Lafley, the former CEO of Proctor & Gamble, "No company today, no matter how large or how global, can innovate fast enough or big enough by itself. Collaboration—externally with consumers and customers, suppliers and business partners, and internally across business and organizational boundaries—is critical" (Tapscott and Williams, 2006, p. iii). Collaborative networks span beyond formal relationships with customers, competitors, channels, and/or industry insiders. Mark Parker, the CEO of Nike, works with a global network including tattoo and graffiti artists, DJs, fashion designers, musicians, industrial designers, and other cultural bellwethers to help Nike broaden the scope of its innovation activities (Nicholas and Orwall, 2007, p. A1).

The utmost challenge for firms in almost all competitive industries is to consistently innovate, while ensuring sales growth. Still, innovation is risky. The development of new innovative products entails high financial costs and uncertain outcomes (Sorescu and Spanjol, 2008). As per external organizational factors that can enhance firms' innovation performance, researchers have recognized that critical learning resources may "extend beyond the firm's boundaries" (Dyer and Singh, 1998, p. 660). These resources can be captured by external networks of organizations and individuals (Van den Bulte and Wuyts, 2007; Yli-Renko, Autio, and Sapienza, 2001). Still, it is not clear yet if the use of external networks is equally beneficial in terms of innovation performance across different types of firms. Empirical evidence on the firm characteristics that lead them to benefit differently from external networks remains scant (Stam and Elfring, 2008). Hence, managers may benefit from a better understanding of the conditions under which external networks are more/less useful to innovation performance.

The primary contribution of this research is positing and empirically supporting the proposition that learning

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through external networks is more beneficial to conservative, risk-averse firms than bold, entrepreneurial firms. The construct, entrepreneurial orientation (EO), is used to make this discrimination (Lumpkin and Dess, 1996). Organizational learning (Argyris and Schön, 1978) and social capital theory (Coleman, 1988; Nahapiet and Ghoshal, 1998) offer theoretical grounding for our hypotheses. The paper focuses on the role of external network utilization, which is defined as the process of importing information, but particularly perspectives, and insights embedded in external networks into firms' organizational learning process. The construct differs from existing constructs in the literature such as "intelligence generation" (which is part of the market orientation scale; Kohli, Jaworski, and Kumar, 1993) or "market information acquisition" (e.g., Moorman, 1995). It accounts neither for the collection of external market information, nor for market information *per se*, but rather it aims to capture the interpretation and insights generated by the external information. Similarly, external network utilization differs from social capital (Adler and Kwon, 2002; Nahapiet and Ghoshal, 1998); external network utilization is employed to distinguish the act of developing and storing social capital from its utilization. Overall, our logic is grounded in organizational learning research that distinguishes between acquiring information and interpreting it (Sinkula, Baker, and Noordewier, 1997).

Our thesis is based on the expectation that weaker EO firms are likely to benefit more from higher external network utilization than firms with stronger EO because they are more likely to suffer from the type of learning deficits that external network utilization can mitigate (Atuahene-Gima and Murray, 2007; Perry-Smith and Shalley, 2003). To be clear, it is expected that external network utilization benefits all firms, but it is further expected to disproportionately benefit firms whose culture and/or strategic orientation is not geared toward bold, innovative actions. Specifically, our prediction is that EO negatively moderates the effect of external network utilization on innovation performance. In addition, it is suggested that firm size may further moderate the effect. Specifically, small and medium sized enterprises (SMEs) have less human capital than large firms and, hence, less potential for diverse informational inputs into decision-making. Thus, the marginal value of external network utilization, as EO weakens, is likely to be greater in SMEs. Our hypothesized model is depicted in Figure 1.

A significant amount of research has looked at the innovation-related effects of social capital (Adler and Kwon, 2002; Damanpour, 1991; Inkpen and Tsang, 2005) and EO (Atuahene-Gima and Ko, 2001; Matsuno, Mentzer, and Özsomer, 2002; Slater and Narver, 1995). However, their joint effect has yet to be explored (De Carolis and Saparito, 2006; Kalnins and Chung, 2006). Research on social capital has shown that entrepreneurial firms employ their social networks to access information (Birley, 1985) and competitive capabilities (McEvily and Zaheer, 1999). By building upon contingency research (Ahuja, 2000; Batjargal and Liu, 2004; Zhou, Wu, and Luo, 2007), this research shows that firms' utilization of external networks interacts with their EO to influence their innovation performance. We believe this is the first research to specifically hypothesize and test a disproportionately positive effect of the use of external network resources on the innovation performance of more conservative firms. Our results suggest that higher external network utilization may act as a primary driver for

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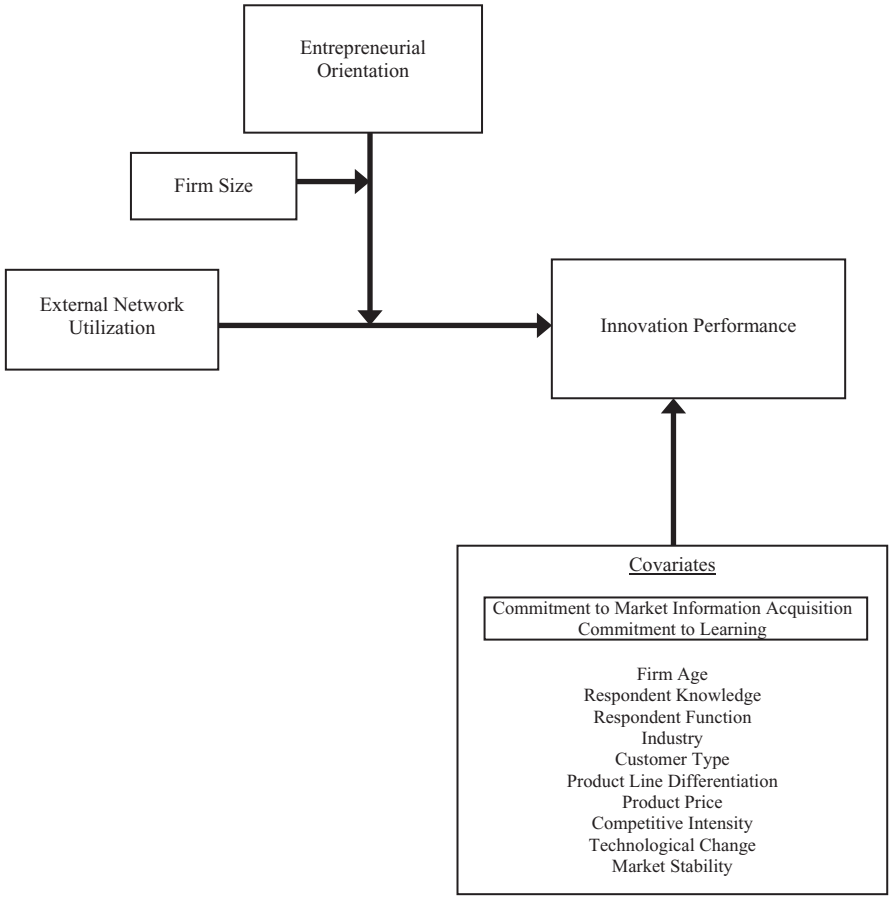

Figure 1. The Conceptual Model

innovation for those firms that are either not inclined and/or do not have the capabilities to adopt entrepreneurial culture. Based on a number of robustness checks, it is also shown that our findings are consistent across different contexts and outcomes (i.e., foreign entry, firm performance level, and when other knowledge-related constructs are controlled for—market information acquisition and commitment to learning). Finally, this research tests for the moderating role of firm size. As such, the study offers important theoretical and managerial implications for weak EO firms regarding the means through which innovation-based performance improvements can be achieved.

A review of relevant literature is followed by a set of hypotheses that explicate the moderating role EO on the external network utilization–innovation performance relationship, and then the moderating role of firm size on the above relationship. An empirical study of a diverse group of 1978 managers in U.S. firms is presented next. After a discussion of the results, theoretical and managerial implications are discussed.

Conceptual Development and Hypotheses

Social Capital and External Network Utilization

According to the management literature, the social capital construct embodies a great many concepts including network structure and relationships, trust, norms, beliefs, risk, and value. Adler and Kwon (2002) reported 16 definitions of social capital not including their own: "Social capital is the goodwill available to individuals or groups. Its source lies in the structure and content of the actor's social relations. Its effect flows from the information, influence, and solidarity it makes available to the actor" (p. 23). Another often cited definition is from Nahapiet and Ghoshal (1998) who describe social capital as "the sum of actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (p. 243). Social capital has been associated with the attraction of venture and human capital (Stam and Elfring, 2008), strategic alliance formation and success

(Koka and Prescott, 2002), management team success (Moran, 2005), and with facilitating the spread of knowledge and innovation (Subramaniam and Youndt, 2005). Social capital may be inter-firm, inter-industry, or extra-industry. It may be derived from social, personal, and professional relationships between firm managers with other firm managers or government officials (e.g., Peng and Luo, 2000), between employees and customers (e.g., Lian and Laing, 2007), and among employees from different firms (e.g., Hansen, 1999). It is the output of both formal and informal collaboration.

Due to existing concerns over the breadth of the social capital construct, its boundaries, and applications (Adler and Kwon, 2002; Inkpen and Tsang, 2005), it is important to clarify the role of external network utilization vis-à-vis the social capital construct. Specifically, external network utilization is used to distinguish the act of developing and storing social capital from its utilization. External networks create social capital which may or may not be utilized by the firm to (1) produce new knowledge, (2) increase confidence regarding the knowledge that firms already possess, and/or (3) alter the mental models used to interpret this knowledge (Mouzas, Henneberg, and Naude, 2008). External network utilization is defined as the process of importing information, perspectives, and insights embedded in external networks into firms' organizational learning process. External network utilization enables actualizing the potential of social capital.

Innovation and External Network Utilization

The benefits of external network utilization to firms' innovation processes may best be understood in the context of organizational learning. Organizational learning theory provides the content and context for the generation and transformation of knowledge into innovation (Argyris and Schön, 1978; Sinkula et al., 1997). It is a conduit of new ideas and a means through which organizational mental models and culture can be modified to speed the acceptance and application of these ideas (Dovey, 2009). The changes in market information acquisition and the mental models used to interpret this information expand the range of potential behavior of organizations, including innovation performance (Harmancioglu, Grinstein, and Goldman, 2010).

Competitive advantage and innovation performance derives not solely from distinctive internal resources, but from critical resources beyond the firm's boundaries that are derived from external relationships/ties/knowledge/information (Dyer and Singh, 1998; McElroy, Jorna, and Engelen, 2006; Tsai, 2001).

Innovation can result from new knowledge or new combinations of knowledge (Molina-Morales and Martínez-Fernández, 2009). Through interactions with external networks, firms gain access to new knowledge, which can be combined with existing knowledge to identify and exploit opportunity through innovation (McEvily and Zaheer, 1999; Subramaniam and Youndt, 2005; Yli-Renko et al., 2001). External network utilization enables the coupling of previously unconnected and diverse ideas (Ahuja and Lampert, 2001). Access to different knowledge domains (e.g., physics versus biology or construction versus agriculture) or access to different methods of interpreting the same knowledge domain (Freud versus Jung or Microsoft versus Apple) exposes decision-makers to different technologies, axioms, and logics that can create new ways to approach problem solving. The comparison of disparate marketplace beliefs allows firms to challenge and reconcile differences, and thus, to alter their assumptions and expectation regarding the marketplace (Adler and Kwon, 2002). Knowledge whose source lies in external networks does not pass through the same filtering process as intra-organizational knowledge that is tacitly biased by firms' mental models or explicitly controlled by hierarchical structures. This further increases the likelihood that it will offer different interpretations of the environment, even of very similar events within the environment (Burt, 1992).

External network perspectives can also carry far more value than the raw informational inputs that come with traditional market information acquisition activities. It is the alternative *interpretations* of customers, competitors, technologies, and other elements of the marketing environment into the firm that may offer the most valuable insights and opportunities (Atuahene-Gima and Murray, 2007). Diverse information[1] allows firms to look at situations from multiple points of view. This expands the number of potential solutions and, thus, enhances and accelerates the interpretive process associated with learning (Sinkula et al., 1997). A diverse knowledge base provides a basis for innovation because it increases the likelihood that new information can be effectively integrated with prior knowledge in a manner that enables firms to draw novel associations and linkages that sprout new ideas and innovations.

[1] It is noteworthy that diversity can emerge from either strong or weak ties—a basic distinction in social networks research (Burt, 1992; Granovetter, 1983). While diversity in information is often associated with weak ties as these typically provide novel points of views and ideas, strong ties which are associated with openness, trust, and directness can be valuable in providing constructive criticism and introducing new perspectives (Van den Bulte and Wuyts, 2007).

External network utilization can also be beneficial for innovation activity by helping to prevent the debilitating effects of competency traps on innovation. Competency traps occur when originally favorable outcomes with firm practices are maintained despite changes in customer, technologies, and markets that render them obsolete (Levinthal and March, 1993). These path dependencies cause firms to focus on those capabilities at which they excel at the expense of updating other important capabilities. From a learning perspective, competency traps are linked to imbalances in learning activities (Hughes and Morgan, 2007). While it is true that some firms may employ external networks to confirm rather than augment their view of the world, objective external network utilization can help firms avoid the insular learning practices that over time weaken their alignment with the environment, and thus, lower the probability of competency traps.

Finally, external network utilization may allow firms to reduce the uncertainty surrounding the presence and implications of environmental trends. Just as a good journalist seeks multiple sources to reduce the uncertainty surrounding the facts of unfolding news, firms may use external networks to confirm the presence of trends and the viability of potential responses to these trends. Timely confirmation of developing trends and their implications reduces uncertainty and emboldens action (Moran, 2005).

The Moderating Effect of EO on Innovation Performance

Firms' EO refers to the degree to which their organizational culture is associated with an aggressive strategic posture, opportunity exploitation, and a strong emphasis on market and technology leadership (Covin and Slevin, 1991; Droge, Calantone, and Harmancioglu, 2008). A strong EO reflects a predisposition to pursue high risk–high reward innovation strategies with the goal of competing aggressively to gain a competitive advantage in the market and to lead the customer rather than be customer led (Slater and Narver, 1995). It is grounded in the pursuit of innovation as a principal business strategy (Chandy and Tellis, 1998; Covin and Slevin, 1991). Hitt, Ireland, Camp, and Sexton (2001) expanded on this theme by noting that firms with a strong EO strive to make environmental uncertainty work to their benefit. Explicit in a strong EO is the objective to beat competitors to market with new product or service concepts. An orientation toward identifying and exploiting opportunity prior to competitors presumes an accompanying objective of superior innovation performance (Miller, 1983).

It is unrealistic, however, to believe that most firms can develop the mindset and capabilities to make a strong EO work. Among the strategic orientations commonly discussed in the literature, prospectors, analyzers, low-cost defenders, and differentiated defenders, only the behavior of prospectors corresponds closely to a strong EO culture (Miles and Snow, 1978; Olson, Slater, and Hult, 2005). Certainly, not all firms are built to adopt an aggressive, high-risk culture and the requisite capabilities to support innovation leadership, particularly firms with limited resources (Chandy and Tellis, 2000). For many, if not most firms, the aggressive "home-run" seeking philosophy it reflects is risky relative to the safer, more conservative strategies of firms with weaker EO that prefer to follow the technology-based and market-based innovations of others, once proven viable (Matsuno et al., 2002). In the discussion above, organizational learning theory was employed to explain the innovation-related benefits of external network utilization such as diverse learning, decreased uncertainty, and competency trap avoidance. It is our thesis that firms with weaker EO are more likely to be lacking these characteristics than firms with stronger EO. As a result it is expected they disproportionately benefit from higher external network utilization than firms with stronger EO that already tend to scan the external environment for new insights and perspectives related to opportunity.

The characteristics of a strong EO—risk-taking, proactiveness, and innovativeness—signal a corporate culture that is not adverse to uncertainty and, hence, does not require a convergence or consensus of opinion to establish the confidence to move forward with innovative behavior (Lumpkin and Dess, 1996). Proactiveness refers to a predilection to anticipate rather than react to shifts in the market and the opportunities that they will present. This requires firms to develop the type of knowledge acquisition skills that allow them to identify and exploit opportunity before competitors (Hamel and Prahalad, 1991). Innovativeness supports a bias toward creativity and experimentation with the objective of gaining first-mover advantages in the marketplace. These traits insulate strong EO firms from the type of rigidity and inertia that limits learning and creates competency traps (Hughes and Morgan, 2007). Weaker EO firms, on the other hand, do not possess these traits and, hence, are subject to uncertainty-based inertia, learning deficits, and competency traps. For these reasons, it is expected that weaker EO firms benefit more from external network utilization than stronger firms. For instance, external

network utilization can help weak EO firms to identify earlier the appropriate response to market trends by reducing market uncertainties, allowing them to take a more confident posture toward reacting to environmental events and, hence, reducing the real and perceived risk associated with innovation (Gielens and Steenkamp, 2007; Tyagi, 2006).

So, while it is expected that strong EO firms engender superior innovation performance relative to weak EO firms, we predict that the latter's innovation performance will disproportionately benefit more from higher external network utilization. Formally stated:

H1: EO negatively moderates the relationship between external network utilization and innovation performance: Weak EO firms' innovation performance benefits more from external network utilization than strong EO firms'.

The Moderating Effect of Firm Size

According to the social capital literature, large firms and SMEs have inherent differences in their accessibility to internal social capital (Atuahene-Gima and Murray, 2007). Specifically, in SMEs, strong internal networks of knowledge are typically absent (Peng and Luo, 2000). Larger firms, through their sheer quantity of human capital and by their ability to tap the knowledge of different business units with unique product or service portfolios, knowledge structures, and technological priorities, have a major advantage in utilizing internal networks to gain knowledge and insights. Whereas external network utilization is still expected to augment this base and provide other benefits such as the prevention of the development of core rigidities, it is expected to be even more important in SMEs where internal social capital is relatively deficient. External network utilization can help particular EO conservative SMEs to compensate by increasing access to diverse and novel information in a timely manner (Peng and Luo, 2000; Stam and Elfring, 2008; Stuart, Hoang, and Hybels, 1999).

Another reason for this expected relationship is that compared with large established corporations, smaller firms' limited resources make it more dangerous to take on risky endeavors with high failure rates (Pelham and Wilson, 1996). Thus, the use of external network utilization may be more valuable in streaming effective and less risky innovative activity among firms that are originally more conservative.

We therefore expect the effect of external network utilization on innovation performance to be stronger in SMEs than in large firms, contributing more to innovation performance—especially as EO weakens in the firm. Thus, EO is expected to moderate the relationship between external network utilization and firm innovation performance in SMEs more than in large firms. Specifically, the negative moderating effect of EO on the external network utilization–innovation performance relationship is expected to be more pronounced in SMEs than large firms. Overall, we therefore suggest that:

H2: Firm size moderates the external network utilization–EO interaction: Smaller firms with weak EO benefit more from external network utilization than larger firms with weak EO.

Methods

Sample and Data Collection

Data were collected by a market research firm through a commercially acquired sample of U.S. business managers. Middle and front-line managers are important importers of new knowledge into organizations and can be more aware than top management of the source of this knowledge. So, while senior managers may drive most final innovation decisions, inputs into the process are much broader; therefore, both senior and middle managers' input is valuable and complements each other (Beck and Plowman, 2009). As a result, our sample was selected to represent a cross-section of industries, managers, and manager functions. A total of 12,500 invitations were sent to a national sample of managers participating in an opt-in research panel. A total of 3534 surveys, a response rate of 29.5%, were returned over a 2-day period, by mid-level managers, senior managers (e.g., director, vice president, district manager, group leader), or top management (e.g., owner, CEO, chief financial officer, chief operating officer, senior vice president). Among these responses, 1330 managers were removed from the sample because they worked for micro-firms with fewer than 11 employees[2] and, hence, did not qualify as either a small (11–100 employees) or medium (101–250 employees) sized enterprise. Another 226 managers working for a government or nonprofit entity were also removed from the sample.

The remaining sample of 1978 respondents was evaluated on three dimensions for which national data were available: age of the firm (Becker, Haltiwanger, Klimek, and Wilson, 2004), number of employees in the firm

[2] The logic for omitting the micro-firms is based on research that shows these firms to follow different organizational learning and social network mechanisms than "regular" firms and that it is therefore recommended to separate studying firms that significantly differ in size (De Jong and Marsili, 2006; Earl and Gault, 2003). Nevertheless, our findings remain qualitatively unchanged despite the inclusion of the micro-firms.

(U.S. Department of Labor, 2005), and industry category (U.S. Chamber of Commerce Statistics and Research Center, 2006). The Pearson correlation between the sample and U.S. averages was .968 ($p < .0001$), suggesting that the sampled firms are closely correlated on the three dimensions to the typical U.S.-based firm.

The final sample represented a broad cross-section of executive rank, experience, and function. All respondents were part of their firm's management structure; almost half were either members of the top management team (17.8%) or in senior management (27%). Respondents represented a wide array of management functions within the organization: general management (26.5%), operations (12.4%), information technology (12.1%), marketing and sales (11.1%), customer service (6.6%), and manufacturing and research and development (5.5%). Executives from firms whose primary business is manufacturing comprised 21.7% of the sample, 78.2% were in service industries. Firms' primary customers were split evenly between businesses (50%) and consumers (50%).

The possibility of nonresponse bias was tested by comparing early versus late respondents (Armstrong and Overton, 1977). The first 75% of the questionnaires received were identified as early responses and the last 25% as late responses. This analysis was based on the assumption that late respondents shared similar characteristics and response biases with nonrespondent firms, and thus, were considered close approximation of those that did not respond to our survey (Li and Calantone, 1998). Mean comparisons between the two groups indicated that no significant differences existed based on a number of central variables: size of the firm, respondent function and knowledge, customer type, market information acquisition, commitment to learning, competitive intensity, market stability, sales growth, market share, profit margin, and return on investment (ROI). Therefore, no evidence was found for a potential nonresponse bias.[3]

Measures

Appendix A contains the independent, dependent, and covariate measures employed in the study. An established approach to the measurement of EO was employed. The five-item semantic differential scale is based on Miller's (1983) conceptualization, operationalized by Covin and Slevin (1989), and refined by Naman and Slevin (1993), and Matsuno et al. (2002).

[3] Caution should be exercised in interpreting the results from the commonly used procedures to evaluate nonresponse bias (i.e., splitting and comparing the respondents to early and late respondents) as the data were collected over only two days.

The wording of the questions in our measure of external network utilization assesses the explicit priority put on employing external networks to import knowledge and ideas on the presumption that both tacit and explicit knowledge transfer will be captured (Tsai, 2001). Specifically, our measure assessed the degree to which firms rely on external networks to access new ideas, solve problems, seek different points of view, exploit opportunities, and/or make sense of new information about their industry. The three items are based on prior measures of external professional ties (Bao, Sheng, and Zhou, 2012) and the use of external networks as a source of opportunity recognition (Ozgen and Baron, 2007). It was measured on a 7-point scale anchored by "strongly disagree" and "strongly agree."

Per the innovation performance measure used, as the sampling domain widens to a broad cross-section of product and service industries, objective measures of innovation performance become difficult to obtain because both the tasks of identifying the criteria for innovation and finding information pertaining to these criteria becomes unwieldy. In these situations, researchers tend to rely on managers' subjective assessments (e.g., Atuahene-Gima, 2005; Chandy and Tellis, 1998). Our goal with measuring innovation performance was to assess the overall strength of firms' new product programs (Chandy and Tellis, 1998). It involved three items measured on a 7-point scale including the frequency at which the firm introduces new products beyond mere improvements and represent new ways of satisfying customer needs, and the percentage of sales generated by new products or services over the past three years relative to major competitors (Atuahene-Gima, 2005; Chandy and Tellis, 1998; Matsuno and Mentzer, 2000). Size of the firm was measured by the number of employees (Chandy and Tellis, 1998).

A number of covariates including age of the firm, organizational function, respondent knowledge (of marketing programs, business strategy, financial performance), industry (manufacturing versus service), customer type (business-to-business versus business-to-consumer), product line differentiation, product price, competitive intensity, technological change, and market stability were included to absorb spurious effects (e.g., Baker and Sinkula, 1999; Jaworski and Kohli, 1993).

Two additional covariates that are especially relevant were also included: market information acquisition and commitment to learning. The two constructs were included as covariates to help ensure that any effects of external network utilization and EO were not artifacts of firms' market information processing and learning priorities. The specification of these constructs in the model adds

credence to the argument that the effects of EO and external network utilization are incremental to the effects of commonly employed knowledge-related constructs such as market information acquisition and commitment to learning (Sinkula, 1994). We further examine their link with external network utilization and EO as both market information acquisition and commitment to learning can serve as antecedents to external network utilization and EO. The market information acquisition measure was drawn from Matsuno et al. (2002). The commitment to learning measure was derived from Baker and Sinkula's (1999) commitment to learning element of their learning orientation scale. The two covariates were measured on a 7-point scale ranging from "strongly disagree" to "strongly agree."

Measurement Model Validation

Multi-item scales employed to measure the constructs were validated according to standard procedures for reflective construct measurement (Anderson and Gerbing, 1988). The reliability and item-to-total correlations were initially assessed. Cronbach alphas are shown in Table 1. The reliability coefficients ranged from .83 to .91 and thus were acceptable. Only the first eigenvalue of a principal component analysis with varimax rotation was greater than one when each construct was evaluated separately. This supports unidimensionality of the constructs. Confirmatory factor analysis (CFA) using maximum likelihood was then used for a further check of the unidimensionality of the multi-item constructs and to delete unreliable items ($\chi^2 = 786.818$ [df = 171], normed fit index = .963, comparative fit index = .970, root mean square error of approximation = .046). The largest standardized residual was less than 2.00. Thus, the measurement model fits well.

Convergent validity was evaluated by the significance of each standardized coefficient loading of the items on their corresponding factors (Bagozzi, Phillips, and Yi, 1991). All the variables had adequately high loadings, indicating convergent validity (see Table 1). Discriminant validity at the construct level was assessed in two ways: (1) by comparing the average variance extracted to the squared inter-scale correlations (Fornell and Larcker, 1981) and (2) through comparing a CFA model with construct correlations constrained to 1.00 to an unconstrained CFA model (Anderson and Gerbing, 1988). The average variance extracted (AVE) of each construct (the average variance shared between a construct and its measures) was greater than the shared variance between the construct and other constructs in the model (square of correlation between the two constructs). Comparing models with construct correlations estimated freely versus set to one yielded significant χ^2 differences and hence the discriminant validity was supported. Discriminant validity at the item level was assessed by checking whether significant cross-loadings were indicated by a Lagrangian multiplier (LM) test. The lack of significant cross-loadings as indicated by the LM test results indicated no threats to discriminate validity at the item level.

Common Method Bias

Several steps were taken in the design of the questionnaire to prevent common method bias (Rindfleisch, Malter, Ganesan, and Moorman, 2008). First, each of the dependent and independent variables were on different pages of the electronic questionnaire with different instructions. Second, each of these variables employed distinct scales with different endpoints. Third, the order of the specific items in multiple-item measures was rotated to prevent any type of order effect.

To check for common method bias, first, a Harman's one-factor test (i.e., factor analysis without rotation) was conducted. Results indicated that no single general factor existed (Podsakoff, MacKenzie, Lee, and Podsakoff, 2003). Second, the same test on pairs of multiple-item scales was performed and we found the test to always produce two distinct factors (Kyriakopoulos and Moorman, 2004). Third, following Podsakoff et al.'s (2003) and Netemeyer, Boles, McKee, and McMurrian's (1997) guidelines, a "same-source" factor (i.e., single-common-method-factor) to the indicators of all constructs was incorporated. The model in which the same-source factor loadings were estimated freely was then compared with a constrained model in which these loadings were set to zero. A CFA yielded a significant χ^2 difference of 373.748 (df = 29). None of the loadings on the same-source factor were significant, and the indicator loadings to the theoretical constructs all remained significant. It is thus concluded that there is no ground for concern regarding a common method bias in our analysis. Further, the presence of significant positive and negative interactions among the model constructs as described below also supports a conclusion that the instrument reliably captured effects of the phenomena without substantial bias (Blalock, 1971).

Analysis and Results

Simultaneous regression analysis based on maximum likelihood estimation using the statistical software

Table 1. Descriptive Statistics and Correlation Matrix

Study Constructs	Mean	STD	α	AVE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Entrepreneurial orientation	4.32	1.19	.83	.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2 External network utilization	4.31	1.46	.91	.78	.446** ($p = .00$)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3 Market information acquisition	4.78	1.43	.89	.7	.450** ($p = .00$)	.502** ($p = .00$)	—	—	—	—	—	—	—	—	—	—	—	—	—
4 Commitment to learning	5.26	1.41	.86	.86	.446** ($p = .00$)	.477** ($p = .00$)	.542** ($p = .00$)	—	—	—	—	—	—	—	—	—	—	—	—
5 Innovation performance	4.78	1.22	.83	.61	.584** ($p = .00$)	.471** ($p = .00$)	.501** ($p = .00$)	.489** ($p = .00$)	—	—	—	—	—	—	—	—	—	—	—
6 Firm size	n/a[a]	n/a[a]	n/a[a]	n/a[a]	.099** ($p = .00$)	.073** ($p = .00$)	.244** ($p = .00$)	.01 ($p = .75$)	.088** ($p = .00$)	—	—	—	—	—	—	—	—	—	—
7 Firm age	3.45	.89	n/a[a]	n/a[a]	−.070** ($p = .00$)	−.03 ($p = .25$)	.03 ($p = .17$)	.00 ($p = .99$)	−.052* ($p = .02$)	.322** ($p = .00$)	—	—	—	—	—	—	—	—	—
8 Respondent function	n/a[a]	n/a[a]	n/a[a]	n/a[a]	−.055* ($p = .01$)	−.082** ($p = .00$)	−.04 ($p = .06$)	−.056* ($p = .01$)	−.078** ($p = .00$)	.161** ($p = .00$)	.110** ($p = .00$)	—	—	—	—	—	—	—	—
9 Respondent knowledge	4.59	2.02	n/a[a]	n/a[a]	.274** ($p = .00$)	.301** ($p = .00$)	.467** ($p = .00$)	.336** ($p = .00$)	.287** ($p = .00$)	−.061** ($p = .01$)	−.073** ($p = .00$)	−.267** ($p = .00$)	—	—	—	—	—	—	—
10 Industry	n/a[b]	n/a[b]	n/a[a]	n/a[a]	−.084** ($p = .00$)	−.01 ($p = .69$)	−.065** ($p = .00$)	.03 ($p = .19$)	−.01 ($p = .65$)	−.051* ($p = .02$)	−.046* ($p = .04$)	−.03 ($p = .14$)	−.04 ($p = .09$)	—	—	—	—	—	—
11 Customer type	n/a[b]	n/a[b]	n/a[a]	n/a[a]	−.01 ($p = .55$)	−.02 ($p = .32$)	−.01 ($p = .57$)	.02 ($p = .37$)	.03 ($p = .16$)	.073** ($p = .00$)	.061** ($p = .01$)	−.01 ($p = .76$)	−.065** ($p = .00$)	.217** ($p = .00$)	—	—	—	—	—
12 Product line differentiation	4.86	1.37	n/a[a]	n/a[a]	.447** ($p = .00$)	.319** ($p = .00$)	.340** ($p = .00$)	.389** ($p = .00$)	.510** ($p = .00$)	.04 ($p = .70$)	−.02 ($p = .41$)	−.03 ($p = .27$)	.231** ($p = .00$)	−.02 ($p = .34$)	−.01 ($p = .80$)	—	—	—	—
13 Product price	4.41	1.25	n/a[a]	n/a[a]	.220** ($p = .00$)	.182** ($p = .00$)	.174** ($p = .00$)	.158** ($p = .00$)	.218** ($p = .00$)	.103** ($p = .00$)	.045* ($p = .04$)	−.02 ($p = .43$)	.122** ($p = .00$)	−.070** ($p = .00$)	−.055* ($p = .02$)	.283** ($p = .00$)	—	—	—
14 Competitive intensity	5.45	1.41	n/a[a]	n/a[a]	.280** ($p = .00$)	.257** ($p = .00$)	.398** ($p = .00$)	.293** ($p = .00$)	.325** ($p = .00$)	.114** ($p = .00$)	.01 ($p = .63$)	−.047* ($p = .04$)	.213** ($p = .00$)	−.03 ($p = .18$)	.00 ($p = .97$)	.253** ($p = .00$)	.168** ($p = .00$)	—	—
15 Technological change	4.89	1.53	n/a[a]	n/a[a]	.405** ($p = .00$)	.378** ($p = .00$)	.405** ($p = .00$)	.343** ($p = .00$)	.519** ($p = .00$)	.095** ($p = .00$)	−.04 ($p = .60$)	−.03 ($p = .26$)	.187** ($p = .00$)	.01 ($p = .76$)	−.03 ($p = .26$)	.329** ($p = .00$)	.170** ($p = .00$)	.391** ($p = .00$)	—
16 Market stability	5.31	1.35	n/a[a]	n/a[a]	.285** ($p = .00$)	.296** ($p = .00$)	.290** ($p = .00$)	.377** ($p = .00$)	.390** ($p = .00$)	−.02 ($p = .34$)	−.02 ($p = .28$)	−.070** ($p = .00$)	.167** ($p = .00$)	.00 ($p = .92$)	.079** ($p = .00$)	.335** ($p = .00$)	.109** ($p = .00$)	.229** ($p = .00$)	.321** ($p = .00$)

Note: The table includes all measured on interval scales.
[a] Single item measures.
[b] Categorical measures.
* and ** indicate significance levels at .05 and .01 respectively. STD, standard deviation; AVE, average variance extracted.

Table 2. Simultaneous Regression Results

Criterion	Predictors	Estimate	*t*-Value	*p*-Value
Innovation performance	Entrepreneurial orientation	.405	3.344***	.00
	External networks utilization	.030	.327	.74
	Firm size	−.019	−1.825*	.07
	EO × external networks utilization	−.255	−4.110***	.00
	EO squared	.039	2.033**	.04
	ENU squared	.027	1.908*	.06
	Firm size × EO	.013	.358	.72
	Firm size × external networks utilization	−.033	−.729	.47
	Firm size × EO × external networks utilization	.064	2.777***	.01
	Market information acquisition	.085	2.991***	.00
	Commitment to learning	.029	1.063	.29
	Respondent knowledge	−.012	−.741	.46
	Respondent function	−.007	−1.421	.16
	Age of firm	−.006	−.288	.77
	Competitive intensity	.010	.653	.51
	Technological change	.141	7.927***	.00
	Market stability	.060	3.469***	.00
	Industry (manufacturing versus service)	.018	.862	.39
	Customer type (B2B versus B2C)	.064	1.807*	.07
	Product price	.003	.199	.84
	Product line differentiation	.151	8.138***	.00
Entrepreneurial orientation	Market information acquisition	.255	7.961***	.00
	Commitment to learning	.284	9.245***	.00
External networks utilization	Market information acquisition	.410	9.668***	.00
	Commitment to learning	.358	8.802***	.00

Note: Standardized regression coefficients reported for mean centered data. *, **, and *** significance levels at .10, .05, and .01 respectively.

MPLUS version plus 6.1 was employed to test our proposed model. All variables including the interaction terms were specified as latent constructs. Table 2 reports our results.

H1 predicted that EO moderates the relationship between external network utilization and innovation performance in such a way that more conservative firms, firms with weaker EO, are expected to benefit more from stronger external network utilization. The results support the hypothesis. Our model results indicate positive main effect of EO ($\beta = .405$, $t = 3.344$), no significant effect of external network utilization ($\beta = .030$, n.s.). When the interaction terms were added, a strong negative EO–external network utilization interaction ($\beta = -.255$, $t = -4.110$) emerged. The details of the interaction were further examined following Aiken and West's (1991) guidelines. Regression slope coefficients were estimated at high (one standard deviation above) and low (one standard deviation below) levels of EO. In the case in which EO was high, the effect of external network utilization on innovation performance was not statistically significant ($\beta = .150$, $t = 1.142$), but the positive effect at low levels of EO was positive and significant ($\beta = .660$, $t = 4.690$). The interaction is graphically depicted in Figure 2, which indicates that weak EO firms may close the innovation gap with strong EO firms if they can increase their external network utilization.

H2 predicted that the moderating effect of external network utilization on the relationship between EO and innovation performance will be more pronounced among SMEs than among large firms. This hypothesis was supported. As shown in Table 2, for innovation performance, the triple interaction, firm size × EO × external network utilization, was positive and significant ($\beta = .064$; $t = 2.777$). Regression slope coefficients were estimated at high (two standard deviation above) and low (two standard deviation below) levels of EO in small (one standard deviation below the mean number of employees) versus large (one standard deviation above the mean number of employees). The effect of the EO × external network utilization interaction on innovation performance was significantly negative in the SMEs sample ($\beta = -.144$, $t = -3.944$), whereas less negative in the large firm sample ($\beta = -.054$, $t = -2.462$). In the SMEs sample, the effect of external network utilization on innovation performance was nonsignificant ($\beta = .044$, $t = 1.402$) when EO was strong, but significant and positive ($\beta = .317$, $t = 6.701$) when EO was weak. In the large

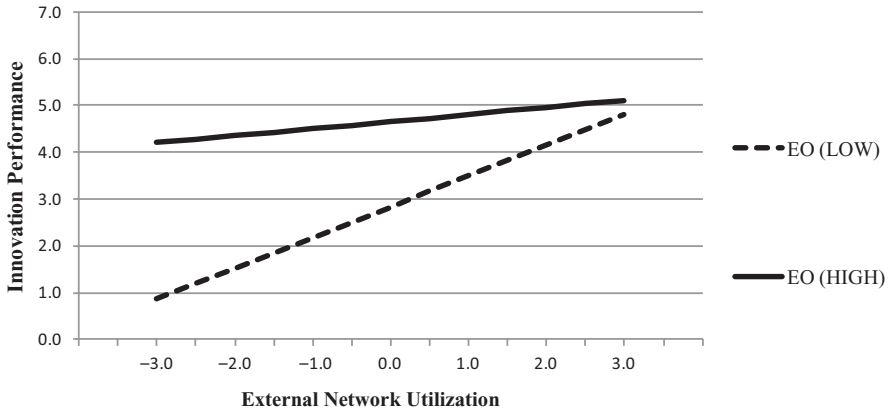

Figure 2. Interaction Effects of Entrepreneurial Orientation (EO) and External Network Utilization

firms sample, although this relationship was significant and positive at low and high levels of EO, the effect was stronger in the low EO sample ($\beta = .361$, $t = 6.561$; $\beta = .253$, $t = 6.342$; respectively). Overall, the above findings qualify the full sample EO × external network utilization interaction by indicating that the negative moderating effect of EO on the external network utilization–innovation performance relationship is more pronounced in small firms than large firms.

Robustness Checks

A number of robustness checks to provide additional credence to our key prediction were conducted. First, our model was tested in a different innovation-related context—foreign entry. Indeed, an entry to foreign markets is viewed as an act of innovation (Lumpkin and Dess, 1996). Second, it was important to ensure the robustness of our findings above and beyond the effects of commonly employed knowledge-related constructs: market information acquisition and commitment to learning (Baker and Sinkula, 1999; Matsuno et al., 2002). Third, we tested as to whether the moderating effect of EO on the external network utilization–innovation performance link also holds at the firm overall performance level. Finally, the potential endogeneity of EO was tested. Overall, the robustness checks are consistent with our main results. They are reported in detail in Appendix B.

Discussion

The effective management of change is an important part of rapidly responding to market dynamics and is key to the success of innovation. Successful innovation requires distinctive firm capabilities as well as effective risk-mitigating mechanisms. The key to attaining both is the deployment of learning resources. The purpose of this research was to examine the role of external network utilization on the innovation process from an organizational learning perspective. It demonstrates the importance of external network utilization as a significant factor in this process, particularly, as predicted, for firms whose approach to markets is more conservative.

Theoretical Implications

External network utilization disproportionately benefits firms with weak EO compared with strong EO firms. As a source of learning independent of inside-out firm learning activities, external network utilization is likely to enable these firms to more confidently assimilate, interpret, and respond to market trends within the context of a more risk-averse culture. Theoretically, one may expect that the learning-based benefits of external networks, enhanced learning diversity, reduced uncertainty, and competency trap avoidance, will benefit those firms with the internal resources and capabilities to benefit from network advantages: strong EO firms. While the latter still benefit from external networks, our findings show that firms with fewer and a narrower range of internal resources apparently benefit *even more* from strong external network utilization. Those firms that need external networks more are those benefiting from them more.

The effects of external network utilization appear to be incremental to firms' commitment to learning and routine market information processing activities (Sinkula et al., 1997). This indicates the importance of external networks to the knowledge creation process in the firm as market information acquisition—that are controlled for—is perhaps the most studied knowledge creation mechanism

in the firm (Matsuno et al., 2002; Sinkula, 1994). External network utilization, as defined and measured here, refers to importing ideas, insights, and perspectives, not simply data or uninterpreted information collected by the firm through routine information processing activities.

Our analysis also reveals the moderating impact of firm size, suggesting that the moderating effect of EO on the relationship between external network utilization and innovation performance is more pronounced among SMEs than among large firms. This result follows the same logic of our key prediction, suggesting that a firm that is in more need for social capital and knowledge, a resource-poor or conservative firm—such as a weak EO firm or SME—is likely to disproportionally benefit from external network utilization, when compared with resource-richer or a less conservative firm such as a strong EO or large firms.

Our results are also robust across two innovation-related outcomes: innovation performance and foreign entry success. This both provides credence to our prediction but also enables us to generalize our findings. Especially interesting is the notion that external networks are meaningful for weak EO firms both in domestic markets but in also when those firms are involved in international activities. In fact, it can be speculated that external social networks may be especially valuable for firms entering countries with high cultural distance as these networks may be able to reduce the uncertainty involved in such specific foreign entries.

Overall, the fact that our results are consistent for different outcomes and contexts (innovation and firm performance, foreign entry, smaller firms) increases their generalizability and reinforces the general importance of external networks as support to internal capabilities in the innovation process.

Managerial Implications

As detailed in prior research (see Adler and Kwon, 2002), external networks, often through the social capital they produce, influence many organizational functions and activities. These include raising capital and establishing the legitimacy of new ventures (Stam and Elfring, 2008), improving sales force performance (Moran, 2005), enhancing strategic alliance formation and success (Koka and Prescott, 2002), improving supplier relationships (Uzzi, 1997), and enhancing organizational learning and innovation (Atuahene-Gima and Murray, 2007; Nahapiet and Ghoshal, 1998; Subramaniam and Youndt, 2005).

This research extends the applied implications of building strong external networks. Specifically, the finding signals a means for more conservative firms to improve innovation outcomes without having to adopt the type of aggressive culture and strategic orientation characterized by firms with a strong EO. This is very important because it signals that conservative firms can innovate successfully *if* they have external relationships that allow them to more confidently identify, confirm, and respond to market and technology trends and opportunities. Firms must innovate to remain competitive, but most firms do not have the culture nor the capabilities associated with a strong EO. All firms, however, have the opportunity to develop strong external networks and to utilize the wisdom embedded within these networks. While more conservative firms are not likely to become innovation leaders, a reliance on external networks may make it possible to react quickly and effectively to market trends. Rather than be blind-sided by market shifts, these firms are likely to be more able to become "fast followers" rather than laggards in responding to the technological, market, and administrative innovation of others. Our findings imply that firms can enhance their external network utilization by focusing on two central knowledge creation mechanisms: market information processing and commitment to learning.

Our findings indicate that the effects of external network utilization for firms with a low EO are more pronounced in SMEs than large firms. This is important because it indicates that stronger external network utilization provides an avenue for smaller firms to compete against larger ones with more market power and more resources, especially for weak EO firms. Almost by definition, large firms relative to SMEs have superior human capital and at least the opportunity for superior internal social capital. External network utilization gives SMEs the opportunity to somewhat level the playing field. In addition, because smaller firms typically do not typically have the luxury of making expensive mistakes, the use of external network utilization would be valuable in streaming effective and less risky innovative activity among SMEs, especially firms that by nature are more conservative.

Future Research

The hypothesis in this research is based on the organizational learning literature. Theoretically, this work linked external networks to well established organizational learning constructs and processes that improve the ability of firms to innovate. Specifically, it associated external network utilization to diverse learning outcomes, uncertainty reduction, and competency trap avoidance. This

research also explained why firms with a weaker EO are likely to benefit more from the organizational learning benefits of external network utilization than firms with a stronger EO. Future research may dive deeper to the described mechanism and empirically study the relevant learning processes and how are they manifested in firms with different levels of external network utilization and EO.

A possible priority for future research is to examine the characteristics of networks that are most likely to support external network utilization activity. Issues of open versus closed networks, network centrality, weak versus strong ties, and intra versus extra industry bridging activity are all relevant avenues of inquiry. There is already a significant body of empirical research that examines these issues using a variety of theoretical frameworks. For example, Koka and Prescott (2002) assessed the information volume, diversity, and richness embedded within firms' external networks. Atuahene-Gima and Murray (2007) measured the structural, relational, and cognitive dimensions of external social capital. Yli-Renko et al. (2001) assessed social interaction, relationship quality, and customer network ties. Specific research, however, needs to be conducted in this context, i.e., network factors that drive innovation outcomes in firms with weak and strong EOs.

Another issue is to more specifically examine the nature of innovations influenced by external network utilization. Does external network utilization increase the propensity of more conservative firms to engage in radical innovation? Does it increase their propensity to become pioneers? Or, does it primarily help these firms to remain competitive by following the radical innovations of others more quickly, or by improving the frequency and speed to market of incremental innovations? We are predisposed to believe the latter, but research is necessary.

The moderating role of firm size was studied. Future work may want to examine this further. One approach may involve a focus on the study of external network utilization among firms that vary in size and EO with variety of intermediate or ultimate organizational outcomes such as risk taking, efficiency, or profitability.

An additional venue for future research involves the study of nonlinear effects. Potentially the contribution of external network utilization as well as EO may demonstrate marginal returns. A preliminary analysis on the impact of possible nonlinear effects that correspond well with our framework—i.e., EO × external network utilization^2 or external network utilization × EO^2—appear to be nonsignificant, whereas the main relationships of interest remain significant (EO × external network utilization). Further works need to study the conditions under which external network utilization and EO are more likely to exhibit marginal returns.

Limitations

Some limitations should be noted. First, as with the bulk of research in this area, our sample was cross-sectional rather than longitudinal, suggesting that causality cannot be proven. Given this, as with most survey research, our findings indicate probabilities that need confirmation rather than certainties. In addition, our dependent measures were subjective rather than objective. While these issues can be problematic, we believe that the large and very broad sample used substantially increases the validity of our findings as well as their generalizability. Moreover, as the sampling domain widens to a broad cross-section of industries, objective measures of our innovation-related dependent variables become most difficult to obtain. We thus rely on the typical approach adopted by researchers in these situations and use managers' assessments (e.g., Atuahene-Gima, 2005; Chandy and Tellis, 1998). Still, we have studied two types of innovation-related outcomes and conducted multiple robustness checks. Finally, numerous efforts were taken to ensure that common method variance was not a concern. For example, when designing the questionnaire, each of the dependent and independent variables were on different pages of the electronic questionnaire with different instructions, variables employed distinct scales with different endpoints, and the order of the specific items in multiple-item measures was rotated to prevent any type of order effect. Indeed, a series of tests for common method variance and the presence of significant positive and negative interactions among the model constructs support the conclusion that the instrument reliably captured effects of the phenomena without substantial bias.

Conclusion

Breakthrough innovation has long been associated with the EO of firms (Slater and Narver, 1995). It has been tempting to recommend EO adoption as a means for firms to improve innovation success. Not all firms, even most firms, however, have the culture, capabilities, human resources, or financial resources to morph themselves into a strong EO culture. This research demonstrates that the ability to utilize market knowledge, ideas, and interpretations from external networks provides a means for firms that cannot or will not develop a strong entrepreneurial culture to more successfully innovate.

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Appendix A. Measures and CFA Factor Loadings

Measures	Loading
Innovation performance (7-point Likert scale)	
1 Percentage of sales generated by new products or services relative to major competitors (1 = low, 7 = high)	.70
Think about your firm/business unit over the past three years. How frequently did new product or service offerings fall into the category of innovations that . . .	
2 Went beyond merely improving products/services (1 = Never, 7 = Always)	.87
3 Represented new ways of satisfying customer needs (1 = Never, 7 = Always)	.85
Entrepreneurial orientation (7-point semantic differential scale)	
1 Market tried and true products and services . . . Market new to the market products and services	.67
2 Innovate products and services only after others have shown these innovations to be successful . . . Innovate products or services before others even if that means some will fail	.74
3 Respond to actions that competitors initiate . . . Initiate actions to which competitors respond	.74
4 Serve our existing customers and markets . . . Pursue new opportunities even if that requires developing new customers and markets	.68
5 Engage in gradual and cautious behavior to pursue new opportunities . . . Engage in bold, wide ranging acts to pursue new opportunities	.74
External network utilization (7-point Likert scale; 1 = strongly disagree, 7 = strongly agree)	
1 We routinely network with outside experts to explore new ways to solve problems and exploit opportunities	.85
2 We frequently share ideas with external networks whose point of view may be different than ours	.79
3 We routinely interact with knowledgeable people outside our company to “make sense” of available information about our industry	.88
Firm size	
1 Number of employees	n.a.

Measures	Loading
Market information acquisition (7-point Likert scale; 1 = strongly disagree, 7 = strongly agree)	
1 We regularly conduct research with our customers to assess the performance of our products and services	.74
2 Intelligence on our competitors is frequently collected	.76
3 Intelligence on our distribution network is frequently collected	.83
4 We frequently review the likely effect of changes in our business environment (e.g., regulation, technology) on customers	.83
5 We frequently collect and evaluate general macroeconomic information (e.g., interest rates, exchange rates, gross domestic product, industry growth rate, inflation rate) that might affect our business	.78
Commitment to learning (7-point Likert scale; 1 = strongly disagree, 7 = strongly agree)	
1 Our basic values include learning as a key to improvement	.90
2 The collective wisdom in this enterprise is that once we quit learning we endanger our future	.83
Other covariates (7-point Likert scale; 1 = very low, 7 = very high)	
1 Firm age: Years of operation	n.a.
2 Respondent function: The primary area of responsibility (general management, marketing and/or sales, finance, accounting, human resources, information technology, manufacturing, operations, research and development, customer service, and other)	n.a.
3 Respondent knowledge: Marketing programs, business strategy, financial performance	n.a.
4 Industry: Manufacturing or service	n.a.
5 Customer type: business-to-business or business-to-consumer	n.a.
6 Product line differentiation: Relative to your competition, how would you describe your primary product/service line? Undifferentiated versus Differentiated	n.a.
7 Product price: Relative to your competition, how would you describe your primary product/service line? (Low priced versus high priced)	n.a.
8 Competitive intensity: Competitive intensity in your market	n.a.
9 Technological change: The rate of change of production/service technology in your market	n.a.
10 Market stability: The stability of customer preferences and loyalty in your market	n.a.

Appendix B. Robustness Checks

Foreign Entry Context. A subset of our sample includes firms that are involved in foreign activities ($n = 635$). We followed the similar screening processes reported above to yield an effective sample of $n = 271$. We ran the same model reported above with the only change being the dependent variable: foreign entry success. It asked executives to "indicate the degree to which the entry exceeded, met or fell below expectations" on four dimensions of performance: sales revenue, profitability, market share, and management satisfaction. It involved a 7-point scale ranging from "far below expectations" to "far above expectations." The results support our key prediction, finding that entrepreneurial orientation (EO) negatively moderates the relationship between external network utilization and foreign market success ($\beta = -.104$, $t = 1.905$).

The Effect beyond Market Information Acquisition and Commitment to Learning. In a new analysis, market information acquisition and commitment to learning were included as covariates to help ensure that any effects of external network utilization and EO were not artifacts of firms' market information processing and learning priorities. The specification of these constructs in the model adds credence to the argument that the effects of EO and external network utilization are incremental to the effects of commonly employed knowledge-related constructs such as market information acquisition and commitment to learning (Sinkula, 1994). The market information acquisition measure was drawn from Matsuno et al. (2002) and it was measured on a 7-point scale ranging from "strongly disagree" to "strongly agree." The commitment to learning measure was derived from Baker and Sinkula's (1999) commitment to learning element of their learning orientation scale. The two covariates were measured on a 7-point scale. The new analysis suggests that the hypothesis support reported above was found in the presence of market information acquisition and commitment to learning. Specifically, EO remains to negatively moderate the relationship between external network utilization and innovation performance, when market information acquisition and commitment to learning were added to the model ($\beta = -.080$, $t = -4.941$). Moreover, as consistent with prior research, market information acquisition and commitment to learning were both strongly related to innovation performance ($\beta = .113$, $t = 4.876$ and $\beta = .067$, $t = 3.183$) (Harmancioglu et al., 2010).

The Effect on Firm Performance. While the focus of this paper is on the ability of external network utilization to influence the strength of firms' new product/service programs, the rate of innovation does not matter unless those innovations are successful. The innovation ability of a firm relative to its competitors can also be measured through the overall performance of the firm. For this to occur, firms must not only produce value-generating innovations, but also these innovations must lead to strong market performance (Stata, 1992). Specifically, improvements in innovativeness are related to improvements in overall firm performance (e.g., Harmancioglu et al., 2010). Thus, we expect weaker EO firms' performance to disproportionately benefit from higher external network utilization relatively to strong EO firms. Our results are in line with our expectations: Both EO and external network utilization exerted positive main effects on firm performance ($\beta = .185$; $t = 8.144$; $\beta = .072$; $t = 3.319$; respectively), while their synergistic effect on performance was significantly negative ($\beta = -.067$, $t = -3.650$).

Endogeneity Tests. It is possible that EO leads firms to utilize their external networks more, creating an endogeneity bias between the independent and moderator variables. Hence, we test for potential endogeneity of external network utilization in our model, drawing upon Wooldridge (2009) and Ozturan, Ozsomer, and Pieters (2014). In a first-stage model, we regressed the potentially endogenous variable (i.e., EO) on the other variables in our model (i.e., external network utilization, size and age of the firm, respondent knowledge and function, product line differentiation, product price, degree of competitive intensity, the rate of technological change, the stability of customer preferences and loyalty, market information acquisition, and commitment to learning). As instrumental variables, we used the ability of the firm to raise its prices (price leadership) and negotiate lower prices from suppliers (supplier price negotiation), the industry sales growth, the extent of government regulation in the industry, and the likelihood of the market success of new entrants. To implement a version of the Hausman exogeneity test, we entered the first-stage model residuals into our second-stage model of innovation performance (influenced by external network utilization, market information acquisition, and commitment to learning). This model served as the unrestricted model, while our original regression model of innovation performance represented the restricted model. Notably, the residual of the first-stage external network utilization model significantly influenced innovation performance ($\beta = .142$, $p < .01$). A joint test of statistical significance based on the change in R^2 (.019) was nonsignificant $F(1, 1668) = .00$, indicating that endogeneity of EO is not an issue in our context.