Journal of Management
Vol. 39 No. 6, September 2013 1606-1636
DOI: 10.1177/0149206313484516

Success Patterns of Exploratory and Exploitative Innovation: A Meta-Analysis of the Influence of Institutional Factors

Verena Mueller
Justus-Liebig University
Nina Rosenbusch
Wilfrid Laurier University
Andreas Bausch
Justus-Liebig University

Research has frequently argued that firms need to pursue exploratory and exploitative innovation strategies to be viable in an environment of technological change and intensified competition. However, it remains unclear whether exploratory and exploitative innovations are equally successful in different institutional environments. This meta-analysis synthesizes previous empirical findings to reveal under which institutional conditions firms benefit most from exploratory or exploitative innovation. We distinguish between institutional conditions that affect the success derived from exploratory and exploitative innovations through (a) the availability of resources and (b) attitudes toward innovation and the willingness of stakeholders to allocate resources to both innovation types. Our results show that national culture has a strong impact on the success of exploratory innovations, whereas only uncertainty avoidance influences the benefits derived from exploitative innovations. Socioeconomic conditions are equally important for the success of both innovation types. Our findings are of high practical relevance as due to

Acknowledgments: This research was partially supported by a research grant from the Volkswagen Foundation (II/82 408). The work of the second author was partially carried out during a visiting research stay at Richard Ivey School of Business funded by the German Academic Exchange Service (DAAD). We would like to thank Nicole Coviello, Michael Frese, Simon Parker, Shaker Zahra, the editor, and two anonymous reviewers of Journal of Management *for valuable comments on earlier versions of the article.*

Corresponding author: Verena Mueller, Justus-Liebig University, Department of Business Administration and Economics, Licher Strasse 62, 35394 Giessen, Germany.

E-mail: verena-mueller@gmx.de

increasing globalization more and more firms operate internationally and managers have choices regarding the location of their exploratory and exploitative innovation activities.

Keywords: *exploratory innovation; exploitative innovation; firm performance; neo-institutionalism; national culture; social welfare*

An external environment of rapid technological change, increasing globalization, and intensified competition forces firms to continuously explore and exploit opportunities through innovation to grow and stay viable in the long run (Benner & Tushman, 2003; Tushman & O'Reilly, 1996). Extensive literature has shown that both exploratory and exploitative innovation contribute to firm performance (e.g., Bierly & Daly, 2007; Cao, Gedajlovic, & Zhang, 2009; Hortinha, Lages, & Lages, 2011; Lisboa, Skarmeas, & Lages, 2011), yet they differ greatly in many respects, for example, in their antecedents and the conditions needed for their success (Jansen, Van Den Bosch, & Volberda, 2006; March, 1991). Exploitative innovation strategies primarily build on improvements and refinements of current skills and processes (Holmqvist, 2004; Levinthal & March, 1993) and lead to incremental product changes (Amason, Shrader, & Tompson, 2006), which mainly aim at penetrating existing markets. Exploratory innovation primarily involves the challenging of existing approaches. As a process, exploratory innovation includes search, discovery, experimentation, and risk taking (March, 1991; McGrath, 2001). Outcomes of exploratory innovation strategies are superior new products with significant consumer benefits; they can enable the firm to enter or even create new markets (He & Wong, 2004).

Although exploratory and exploitative innovation have frequently been shown to have a positive impact on firm performance, the magnitude of the effects varies considerably. A potential explanation is that the conditions under which their benefits unfold are likely to differ because of the significant differences in their characteristics. Benner and Tushman (2003) have therefore argued that future research should adopt contingency approaches when examining the outcome effects of exploration and exploitation processes. More recent research has followed this suggestion and has identified contingencies under which exploratory and exploitative innovation unfold their benefits. These contingencies refer to industry-level factors such as the industry's average R&D intensity (Uotila, Maula, Keil, & Zahra, 2009), environmental dynamism (Jansen et al., 2006), and the share of power users in the market (Lee, Lee, & Lee, 2003), as well as firm-specific moderators such as collaborative activities (Belderbos, Faems, Leten, & van Looy, 2010), different characteristics of the top management team (Amason et al., 2006), and the firm's absorptive capacity (Rothaermel & Alexandre, 2009). The latter findings suggest that resource endowments at the firm level play an important role for the success of exploratory and exploitative innovation. Such resource endowments are often determined by firm-specific factors, but they may also be influenced by institutional conditions. Having reviewed the literature on exploration and exploitation, Lavie, Stettner, and Tushman (2010) call for more research on cross-national differences. Cross-national differences mainly relate to differences in the institutional environment. Prior research has indicated that institutional differences lead to cross-country

variations in innovation activity in general (Furman, Porter, & Stern, 2002; Shane, 1994) and in exploratory and exploitative innovation in particular (Hall & Soskice, 2001). This research often neglects financial rewards to innovation (Tellis, Prabhu, & Chandy, 2009). Therefore, the moderating influence on the exploratory/exploitative innovation–performance link remains an underresearched topic. We aim to fill this gap in the literature.

Institutional pressures—although not directly related to the task environment of firms—may affect organizations as strongly as task-related market pressures because conforming to norms in line with the requirements of the institutional environment creates legitimacy for firms (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). Exploratory and exploitative innovation require different organizational settings including different resources, skills, and capabilities (Jansen et al., 2006). Hence, resource endowments within the firm and by the firm's stakeholders legitimized by values and norms embedded in the society may not be equally advantageous for exploratory and exploitative innovations. The aim of this research is to identify conditions relating to the institutional environment that facilitate or prevent firms to successfully pursue exploratory and exploitative innovations. More specifically, we aim to identify institutional factors that influence resource endowments at the firm level and thus ultimately determine the success of exploratory and exploitative innovations.

In a first step, we focus on institutional conditions that influence the availability of resources. To a large extent, the level and distribution of welfare in the society determine the availability of resources at different organizational levels (e.g., funds that owners can endow to innovation projects, human capital of employees, as well as funds potential customers can spend on innovative products). Such socioeconomic conditions have been often neglected in previous research in strategic management and entrepreneurship despite their importance for organizational processes (Bruton, Ahlstrom, & Han-Lin, 2010).

In a second step, we turn to attitudes toward innovation and change and the resulting willingness of actors at various organizational levels to endow resources to exploratory and exploitative innovation projects. We argue that attitudes toward innovation and change and the willingness to commit to specific innovation projects are largely determined by national culture. Owners, managers, and employees will endow resources to such projects that are perceived as promising under specific cultural values. Such resources include funds, human resources, time, effort, and so on. At the same time, national culture influences the attitudes and buying behaviors of (potential) customers and affects their resource endowments for specific products and thus ultimately the acceptance of exploratory and exploitative innovations that firms offer.

Research on the conditions that facilitate or hinder the success of exploratory and exploitative innovation not only contributes to the growing body of academic literature on the outcomes of exploration and exploitation, but also offers new insights for practitioners: In today's globalized world, firms have choices regarding the location of their subunits and their networking partners to balance exploratory and exploitative innovation. Thus, the question as to where units that focus on exploratory innovations versus units that emphasize exploitative innovations should be located to maximize benefits is an important one.

We follow a meta-analytical approach to answer our research questions. The method of meta-analysis has one major advantage for our research: Institutional environments tend to

be stable over time, making comparative static analyses in one country difficult and calling for international comparisons (Bruton et al., 2010; Oxley, 1999). Hence, a cross-country perspective is needed. A meta-analysis enables us to synthesize research from various countries, thus providing an ideal database for analyzing contextual factors relating to the institutional environment.

Theoretical Background and Hypotheses

Exploratory Innovations, Exploitative Innovations, and Firm Performance

Following Jansen et al. (2006: 1662) and He and Wong (2004: 483-484), we base our definition of exploratory versus exploitative innovation on two dimensions: (a) their relatedness to existing technologies, skills, knowledge, products, and services and (b) their relatedness to existing markets. Furthermore, we define exploratory and exploitative innovations as processes that use specific inputs that are transformed into innovative outcomes. In line with previous research, we consider exploratory and exploitative innovations as discrete choices (e.g., He & Wong, 2004; Jansen, Bosch, & Volberda, 2005; Jansen et al., 2006) rather than endpoints of a continuum. Although we acknowledge that exploration and exploitation may compete for resources and that there are trade-offs between the two (Lavie et al., 2010), we follow prior research and argue that exploratory and exploitative innovation can be pursued simultaneously at the organizational level (e.g., Bierly & Daly, 2007; Cao et al., 2009; Gupta, Smith, & Shalley, 2006). A competition for resources—the main argument for a continuum of exploration/exploitation degrees—occurs not only between exploration and exploitation but also, for example, between different exploratory innovations. Furthermore, both complement each other with respect to their outcomes (Isobe, Makino, & Montgomery, 2004; Morgan & Berthon, 2008)—a key variable of interest in this study. Examples like Toyota show that firms can successfully accomplish exploitative innovations while continuously exploring new ideas to get ahead of competition (He & Wong, 2004).

Exploratory innovations are associated with search, discovery, and experimentation (March, 1991). Hence, when firms or subunits deal with exploration, they cannot rely on existing familiar knowledge (Rosenkopf & Nerkar, 2001). In fact, prior experience may even hinder the successful introduction of exploratory innovations to the market (Henderson, 1993). Exploratory innovators have to move into unfamiliar territory when aiming at creating and commercializing radically new products, services, or business models that serve new customer needs or create new demands. That involves a disruption of existing competencies and existing market linkages (Abernathy & Clark, 1985) and therefore creates a high level of risk. However, such innovations are linked with a number of advantages such as the generation of sales in new or emerging markets (Benner & Tushman, 2003), a price premium if the innovation addresses customers' needs in a better way than existing products or services do (Schmidt & Calantone, 1998), and even positive spillover effects on nonfinancial goals, such as a firm's image, reputation, and brands (Salomo, Talke, & Strecker, 2008). Because exploratory

innovations are difficult to imitate by rivals, first-mover advantages (Lieberman & Montgomery, 1988) may last for a comparatively long time, increasing the duration of monopolistic advantages and high returns (Atuahene-Gima & Murray, 2007). Last, there is positive effect of exploratory innovation on skills and capabilities necessary for survival and long-term competitiveness (Morgan & Berthon, 2008; Tsai & Huang, 2008).

Once an exploratory innovation has been introduced to the market, firms in the industry move to a new trajectory (Utterback, 1994). Along this trajectory, opportunities for improvement and refinement exist. Exploitative innovation processes aim at creating and commercializing improved or refined products, services, and business models designed to meet the needs of existing customers or markets (Benner & Tushman, 2003). Such innovation outcomes are rather familiar to the innovating firm and its customers; thus, they involve lower risk. Organizational learning occurs along the trajectory; organizational actors can build on experience (Henderson, 1993), existing knowledge, competencies, and market linkages (Abernathy & Clark, 1985). Because they often have high synergies with the existing product portfolio, economies of scale and scope increase profit margins and therefore positively affect profitability and operational efficiency (Auh & Menguc, 2005). As firms apply their prior knowledge and shift from existing product lines to product line extensions, they may also benefit from learning curve effects. In addition, exploitative innovations may help firms extend the life cycle of their offerings (Menguc & Auh, 2010; Morgan & Berthon, 2008). Because exploitative innovations are less resource intensive, profitability gains can occur even in the short run. Furthermore, indirect performance effects can result from organizational learning and the increase of knowledge depth within the firm.

Despite the above-mentioned advantages of exploratory and exploitative innovation, prior studies on performance effects of exploration and exploitation have produced somewhat conflicting results (Lavie et al., 2010) regarding both the direction and the magnitude of effects. Whereas most researchers find positive performance effects for exploratory and exploitative innovations (e.g., Bierly & Daly, 2007; Cao et al., 2009; Yalcinkaya, Calantone, & Griffith, 2007), some studies report insignificant or even negative relationships (e.g., Amason et al., 2006; Rothaermel & Alexandre, 2009). This might be a consequence of drawbacks of each innovation type or their need for a specific internal and external environment to be successful. For example, exploratory innovation is a high-risk strategy that might even lead to organizational failure. Their creation and commercialization require a large amount of resources, which may pay off only in the long run. Thus, to be successful with exploratory innovations, organizational actors must be willing and able to allocate resources to high-risk projects whose outcomes are unpredictable. Although the returns from exploitative innovation are comparatively more predictable, it needs to be noted that exploitative innovations are usually associated with normal profits only (Bierly & Daly, 2007). Their competitive advantage can last for a longer time period only if a substantial amount of resources in terms of financial and human capital are devoted during the innovation process so that they are not easily imitable. In particular, exploitative innovations require in-depth knowledge and skills at all organizational levels because they are often created and implemented at lower hierarchical levels. Hence, education levels of employees at lower levels, their knowledge, and their skills could be keys to success for such innovations.

Institutional Environment as a Moderator

As described above, our distinction between exploratory and exploitative innovations is based on two dimensions: (a) the relatedness to existing technologies, skills, knowledge, products, and services and (b) the relatedness to existing customers and markets. Whereas the first dimension focuses on firm-internal aspects, the second dimension adopts an external perspective. Hence, the benefits that can be derived from exploratory and exploitative innovation may depend on characteristics of the internal and external environment of the firm. Internal characteristics determine whether a firm is able to create and implement promising exploratory or exploitative innovation successfully. The external environment influences the adoption by the markets and thus the diffusion of the innovation. In particular, resource endowments of organizational members at different levels (internal environment) and those of customers (external environment) influence the success of exploratory and exploitative innovations.

Neo-institutional theory (Meyer & Rowan, 1977; Scott, 2001) argues that formal and informal institutions influence the behavior of firms and private households and therefore resource endowments within and outside of the firm. Thus, neo-institutionalism provides an ideal framework to examine the influence of institutions on the success of exploratory and exploitative innovation through (a) their effect on the ability of firms to successfully bring exploratory and exploitative innovations to market determined by the availability of resources to organizational members and their willingness to allocate resources to specific innovation projects and (b) their effect on customers' ability and willingness to absorb the innovations.

Firms and private households are embedded in cultural, social, legal, and political environments. Their internal structures, strategies, and behaviors are often reflections of, as well as responses to, rules and conventions existing in the broader environment (Powell, 2007). Institutions define and sometimes even limit the set of choices firms and individuals possess because institutional arrangements either legitimize or constrain the actions of firms and individuals. Thus, neo-institutional arguments suggest that the availability and value of internal and external resources as well as the decisions to allocate these resources toward innovation projects are determined by institutions (Guillén, 2000; Peng, 2003; Peng & Heath, 1996). At the same time, institutions influence the availability and value of resources in private households as well as their decisions to distribute resources across different choices of products, services, and savings.

According to Scott (2001), institutions consist of regulative, normative, and cognitive elements. The regulative elements comprise the formal "rules of the game" and their enforcement, including legal, political, and economic arrangements (North, 1990), whereas the normative elements include values, traditions, and the awareness of what one is supposed to do. Cognitive-cultural elements, in contrast, cover common beliefs and mental models that provide stability and meaning to social behavior (Scott, 2001). Many studies employing institutional theory in innovation and entrepreneurship research solely focus on the impact of culture (Bruton et al., 2010) as one important means by which both normative and cognitive structures are transmitted (DiMaggio & Powell, 1991; Jepperson, 1991), neglecting other important institutional influences. Although institutions can be considered as a

consequence of culture (Hofstede, 2001), we believe that it is necessary to look at further institutional influences in addition to culture. In particular, regulative institutions that relate to economic and educational development and indicate resource availability and distribution across society are determined by many factors other than culture (United Nations Development Programme, 1990).

As a response to this criticism, we aim at integrating cultural and socioeconomic institutions. In a first step, we analyze how these two socioeconomic factors influence the success of exploratory and exploitative innovations by determining the availability of resources for organizational actors and customers as external stakeholders. Second, we examine how national culture determines the benefits derived from exploratory and exploitative innovations by shaping the attitudes toward innovation and change and in turn the willingness of organizational actors and customers to allocate resources to exploratory and exploitative innovations. We focus on three dimensions of national culture that were originally identified by Hofstede (1980) and further developed in the GLOBE study (House, Hanges, Javidan, Dorfman, & Gupta, 2004), institutional collectivism, power distance, and uncertainty avoidance, because these are the three dimensions that are most likely to influence resource allocations to innovation projects. They have also been studied most frequently in previous research with regard to innovation (Pandey & Sharma, 2009; Roth, 1995; Shane, 1994). We do not consider other dimensions of national culture identified by Hofstede (1980). Masculinity, for example, has been criticized for being particularly time- and context-specific (Steenkamp, 2001) and has not been found to influence innovation rates (Shane, 1994) or the diffusion of innovations (Yaveroglu & Donthu, 2002; Yeniyurt & Townsend, 2003). We view culture as an informal institution that influences the behavior of individuals and firms by providing norms and practices that serve as guidelines as to which behaviors are accepted by society (Stephen & Uhlaner, 2010). Such norms may shape customer perception and therefore resource allocations by customers between existing products/services and innovations (Nakata & Sivakumar, 2001). Furthermore, it has been shown that culture influences individual work behavior and decisions and in turn performance outcomes (Schneider & De Meyer, 1991).

Hypotheses

Level of Social Welfare

Whereas the effects of innovation on economic growth and social welfare have been a popular research topic (Lucas, 1988; Romer, 1986), the effects of social welfare on exploratory and exploitative innovations and their success at firm level remain an underinvestigated field of literature. Social welfare refers to the social well-being of the members of a society and consists of three dimensions: education, economic standard of living, and health (United Nations Development Programme, 1990). The level of welfare in a society affects the performance outcomes of innovation for several reasons.

First, a high level of social welfare and in turn human development implies that employees and managers are, on average, better educated than counterparts in countries with low levels of social welfare and human development. Firms operating in such countries can largely benefit from the access to employees with a higher degree of human capital. In the

innovation process, an educated and skilled workforce, especially in the scientific and technical fields, is viewed as an important prerequisite for the development and commercialization of exploratory and exploitative innovations (Tellis et al., 2009). In particular, the second stage of the innovation process—commercialization—is of high importance for the success of exploratory and exploitative innovations. Employees and managers with high human capital can be expected to have a better knowledge of the market. Furthermore, they should be able to apply this knowledge for the commercialization of exploratory and exploitative innovations.

Also, more benefits from a high level of social welfare, in particular education, occur on the customer side: Well-educated customers in such countries are more likely to recognize and demand innovative products. According to social contagion theory (Aral, 2011; Iyengar, Van den Bulte, & Valente, 2011; Van den Bulte & Stremersch, 2004), skilled customers are more likely to be early adopters of product innovations. This should clearly increase the success that can be derived from both exploratory and exploitative innovations. Furthermore, purchasing power is high in countries with high social welfare, increasing the likelihood that there is demand for innovations. The success of exploratory and exploitative innovations largely depends on the question of whether the market absorbs the innovations. Previous research has shown that GDP per capita—an indicator of purchasing power—is one of the key variables explaining the diffusion of technology in an economy (Caselli & Coleman, 2001; Comin & Hobijn, 2004). High-income customers are generally the first to adopt a new product because they can afford new products, especially if they are priced highly as is typical in the introduction phase (Rogers, 2003). If purchasing power is low, potential customers will not be able to afford product improvements and instead stick to the original product with inferior features. The benefits from exploitative innovation are then smaller compared with those in countries with higher purchasing power. In the case of exploratory innovations that make other products obsolete, a low purchasing power may increase the time until the market accepts the innovation, thus diminishing the financial performance derived from the new product.

Because of the above-stated reasons, we posit,

Hypothesis 1a: The level of social welfare has a positive moderating influence on the relationship between exploratory innovation and firm performance.

Hypothesis 1b: The level of social welfare has a positive moderating influence on the relationship between exploitative innovation and firm performance.

Distribution of Social Welfare

When analyzing how welfare affects the performance impact of exploratory and exploitative innovations, not only the absolute level of welfare is of importance but also its distribution among the members of a society. If potential customers are not endowed equally with income, education, and access to health care, they will value innovation and quality differently because of non-homothetic preferences (Foellmi, Hepenstrick, & Zweimueller, 2007), which will, in turn, largely influence the level of success of the commercialization and the sales and profits retrieved from new products and services.

At a given level of welfare, income inequality can affect the innovation–performance relationship through a market size and a price effect (Foellmi & Zweimüller, 2006; Tselios, 2011). Even if a country is wealthy, an unequal distribution of income may imply that many customer segments fall below the income threshold to buy a new product (Stremersch & Tellis, 2004). As a result, in such countries, markets for new products priced at a premium may be smaller in size if the potential customers with low income levels are not able to afford the innovation. Thus, the market size effect implies that an unequal distribution of income is—ceteris paribus—detrimental for the commercialization of innovations and therefore performance outcomes derived from innovative activities. If the concentration in income persists, these small markets will grow only slowly (Rodríguez-Pose & Tselios, 2010; Tselios, 2011).

Furthermore, the distribution of wealth or income among customers could affect the optimal pricing policy of innovative firms. A price effect of income inequality implies that wealthy customers will have higher willingness to pay for new goods because of their preferences related to high status (Rodríguez-Pose & Tselios, 2010). As a consequence, firms may find it more profitable to pursue a high price strategy for the high end of the market than a low price strategy for the "mass market," resulting in beneficial effects of income inequality for innovation performance.

Whether the price effect or the market size effect prevails depends on whether the number of the customers allocating resources to the purchase of a new product is more relevant than their willingness to pay very high prices for the innovative product (Rodríguez-Pose & Tselios, 2010; Tselios, 2011). For exploitative innovations that describe only minor enhancements of existing products, the market effect should outweigh the price effect, as the willingness to pay premiums for products will only slightly increase with incremental product changes. Hence, it will be more relevant that a large market adopts the product improvements. Thus, a more equal distribution of welfare should positively influence the success derived from exploitative innovation.

The situation is less clear-cut for exploratory innovation. Exploratory innovations are completely new products for which markets often still need to be developed. Wealthy customers in countries with high income inequality may be willing to pay high premiums for status-enhancing exploratory innovations. However, less welfare equality also comes along with less market participation and demand of new products. If income is, in contrast, more equally distributed, markets will quickly develop into mass markets (Zweimuller, 2000), and the critical mass will be reached faster. Thus, the market effect may outweigh the price effect even in the case of exploratory innovations.

Furthermore, research has shown that personal interaction and communication are facilitated within homogeneous rather than heterogeneous populations (Takada & Jain, 1991). Thus, a society with an equal distribution of income (i.e., with a homogeneous income structure) increases the likelihood that information on the benefits of new products and services will spread among society's members, for instance by word of mouth. This will further stimulate product sales and thus enhance the success of both exploratory and exploitative innovation.

In addition to the effects on the customers' ability and willingness to spend resources, inequality affects the resources that can be allocated during the commercialization process

at firm level. At a given level of social welfare, companies in countries with an unequal distribution of welfare will find it more difficult to get access to highly qualified employees, in particular at lower levels in the hierarchy. Furthermore, the smaller ratio of well-educated employees will increase wages for highly qualified staff and thus personnel costs, reducing the financial benefits derived from innovation. In addition, the scarcity of educated employees will impede the successful completion of the commercialization stage such as communication of new features to customers, negotiations with distributors, and so on. Because firms in countries with low inequality have broader access to better human resources that can be deployed in the commercialization process, they should be able to benefit more from exploratory and exploitative innovations.

Hence, we posit,

Hypothesis 2a: Unequal welfare distribution has a negative moderating influence on the relationship between exploratory innovation and firm performance.

Hypothesis 2b: Unequal welfare distribution has a negative moderating influence on the relationship between exploitative innovation and firm performance.

Collectivism

Whereas the level and distribution of welfare mainly affect the benefits from exploratory and exploitative innovation through their impact on the availability of resources, national culture should affect attitudes toward innovation and change and in turn the willingness of different actors in the innovation process to deploy resources. In a first step, we examine the influence of institutional collectivism in this respect. Institutional collectivism is defined as "the degree to which organizational and societal institutional practices encourage and reward collective distribution of resources and collective action" (House et al., 2004: 30). We focus on this dimension of collectivism (rather than in-group collectivism), as it is more likely to influence organizational practices and outcomes (House et al., 2004).

There are different mechanisms via which collectivism can influence the success of exploratory and exploitative innovation: First, collectivism affects how managers and employees perceive exploratory and exploitative innovation and how they are willing to support these innovative changes with respect to individual commitment and potential allocation of required resources. In individualist societies, managers and employees value individual accomplishments, which leads to a stronger willingness to take risks in hopes of a larger strategic payoff (Morris, Avila, & Allen, 1994). Moreover, managers typically possess high autonomy and independence, which enable them to freely make risky decisions based on their own judgment and without the otherwise necessary achievement of a group consensus when allocating resources to different innovation projects (Kreiser, Marino, Dickson, & Weaver, 2010). Because of their high self-confidence and the belief that they are more skilled and capable of controlling challenges inherent in exploratory innovation than other managers (Sedikides, Gaertner, & Vevea, 2005; Yamaguchi, Gelfand, Ohashi, & Zemba, 2005), they are more likely to withstand the anxiety and pressure that more radical innovative ideas might fail in the market. Hence, they tend to support exploratory innovations until they are finally absorbed by the market and adopted by customers. In addition,

managers in individualist cultures seek out and support more risky and innovative projects to demonstrate their unique self-image and personality. As individualist societies reward individual outstanding achievements rather than group performance, managers in those societies have more reasons to expect compensation and recognition for high-potential innovative ideas and thus will ensure the successful commercialization of exploratory innovation to increase their own income and status (Angle, 1989; Herbig & Dunphy, 1998; Shane, 1992).

In contrast, the commercialization of exploitative innovation benefits from collectivist structures in organizations and the use of networks (Rowley, Behrens, & Krackhardt, 2000). If the relations between different departments in the firm are based on cooperation and mutual trust, continuous improvements regarding existing products and processes not only are more easily achieved but also will more likely be communicated and agreed on at all levels of the organization. Because of such mutual agreements, organizational actors in collectivist countries are more likely to support exploitative innovations and allocate resources toward such innovation processes. The allocation of resources, in turn, increases the success of exploitative innovations.

Second, collectivism influences the way customers perceive and support exploratory and exploitative innovation. Similarly to managers in individualist countries, customers are more autonomous and independent from group norms and thus have more freedom to buy products and services that are completely new to the market (Waarts & Everdingen, 2005). High individualism even encourages such purchasing behavior because the purchase of highly novel products or services increases the level of individuality and uniqueness. In contrast, customers in collectivist cultures do not strive to stand out from the crowd but rather prefer to use products and services that are adopted by the majority of society's members. As a result, they will more likely accept and buy less controversial exploitative innovations that easily find a consensus among customers and foster the integration in the society's norms and habits.

Because of the several advantages of individualism for the success of exploratory innovation and those of collectivism mentioned for the benefits derived from exploitative innovation, we hypothesize,

Hypothesis 3a: Collectivism has a negative moderating influence on the relationship between exploratory innovation and firm performance.

Hypothesis 3b: Collectivism has a positive moderating influence on the relationship between exploitative innovation and firm performance.

Power Distance

Power distance indicates to which extent "a community accepts and endorses authority, power differences, and status privileges" (House et al., 2004: 513). Organizations in cultures with high power distance are characterized by centralized decision structures and the use of formal controls. When power distance is low, managers and subordinates work closely together and consult each other, hierarchies are flat, and decision making is decentralized (Hofstede, 1980). Such structures influence the implementation and commercialization of exploratory and exploitative innovation.

Exploratory innovations involve very high risks while at the same time often requiring large amounts of financial, human, and other organizational resources to be successfully pursued. Because of the high level of risk and complexity, an exploratory innovation process requires the approval of strong authorities within the firm who are willing to allocate resources toward the innovation at different stages of the innovation process. A high-level manager who has decided to allocate resources toward an exploratory innovation will continue to support this endeavor in the commercialization stage. Research has shown that without an influential leader behind a new product who closely monitors its realization and commercialization, it is more likely that especially more risky innovation projects fail (Burgers, Van den Bosch, & Volberda, 2008). Exploratory innovations often cannibalize existing sales, which might cause organizational objections against the pursuit of such innovations (Chandy & Tellis, 1998). In such cases, only an influential leader can ensure that the commercialization of exploratory products and services finds support across all organizational levels.

Members of high-power-distant societies accept that people higher in the hierarchy are more knowledgeable and experienced than people on lower hierarchy levels and that they will have a higher ability to successfully manage especially risky projects. Hence, the leader's idealized influence is strong and potentially affects the outcomes of exploratory innovation through two mechanisms: employees (a) internalize the leader's values and accept them as their own and (b) seek to emulate their leader's behavior (Elenkov & Manev, 2005; Yukl, 2002). As employees in power-distant environments usually try to gain approval from their leaders to satisfy their need for acceptance, the commitment of powerful authorities to exploratory innovation projects will function as a positive signal to subordinates and will motivate employees to work toward the success of the innovations as well. As a consequence, employees at different organizational levels will allocate more resources toward an exploratory innovation project that is emphasized by an influential leader. These resource allocations should have a positive impact on the success of such projects.

Whereas for exploratory innovation an influential leader who is able to make independent resource allocation decisions even against arising objections is essential, such a powerful leader seems to be less beneficial for exploitative innovation. This is because of the fact that tight and time-intensive control by supervisors is less necessary as the accomplishment of exploitative innovation tasks usually bears comparatively low risks and requires considerably less financial and physical resources (March, 1991). Moreover, exploitative innovations present only improvements of existing offerings and thus make use of existing organizational routines and procedures. As a consequence, processes in the commercialization of exploitative innovation are accelerated in low-power-distant environments because employees can immediately start to work on product launch and marketing campaigns for new products and services.

However, the perception of power imbalances in a society not only affects managers' attitudes toward change and their ability to allocate resources to innovation projects but also determines how willing customers are to embrace innovations. Customers purchase and use new products and services not only for functional reasons but also to construct a sense of social belonging and to confirm the existence of social status differences (Bourdieu, 1984; Douglas & Isherwood, 1979), which has direct implications for social contagion (Van den

Bulte & Stremersch, 2004). In high-power-distant countries, powerful and materialistic-oriented customers are entitled with privileges they strive to sustain or even increase (Hofstede, 2001). The purchase of highly novel and sought-after products and services serves as a perfect means to show their authority and position. Hence, powerful members of a highly power-distant culture will favor exploratory innovation and value them with a price premium. At the same time, less powerful people are impressed by the status symbols of the more powerful members of a society and will try to emulate their buying patterns (Dwyer, Mesak, & Hsu, 2005). In addition, customers often also demand the latest innovative products adopted by others of similar status if they fear that such adoptions might threaten the present social hierarchy (Burt, 1987; Van den Bulte & Stremersch, 2004). This will positively influence the acceptance rate of exploratory innovation in the market and as a consequence their financial performance.

By contrast, customers who value an equal distribution of power may disfavor the acquisition of status symbols and privileges as a sign of power imbalance (Hofstede, 1991). As a consequence, they will show resistance and disapproval of the acquisition of completely new products and rather prefer improvements of existing products available to a broad market because of lower product prices.

To sum up, firms should benefit more from exploitative innovation in low-power-distant environments and from exploratory innovation in high-power-distant environments. Hence, we hypothesize,

Hypothesis 4a: Power distance has a positive moderating influence on the relationship between exploratory innovation and firm performance.

Hypothesis 4b: Power distance has a negative moderating influence on the relationship between exploitative innovation and firm performance.

Uncertainty Avoidance

Uncertainty avoidance describes the extent to which members of a culture rely "on social norms, rules, and procedures to alleviate the unpredictability of future events" (House et al., 2004: 30). The reliance on established rules constrains the opportunities to accept new solutions and influences both the willingness of managers to allocate resources to innovation projects as well as the willingness of customers to adopt these innovations.

Exploratory innovations are products or services that are completely new to a market or an industry. As a consequence, the sale of exploratory innovations cannot be planned precisely because of unforeseeable market effects and customer reactions. Only managers who show a comparatively high tolerance for unexpected situations and are able to develop flexible plans that accommodate potential adjustments to environmental changes during the commercialization stage will be capable to meet these challenges (Song, Im, van der Bij, & Song, 2011). Furthermore, employees and managers alike are willing to allocate significant amounts of resources to exploratory innovations and their commercialization only if they have a sufficient tolerance for uncertainty, which is influenced by the cultural dimension of uncertainty avoidance. Exploitative innovation activities, in contrast, generate comparatively predictable and clear outcomes (Levinthal & March, 1993). However, even only

minor product innovations are successfully accomplished only if risk is accepted as a part of business and the deviance of plans is not felt as threatening.

Moreover, in an environment with low uncertainty avoidance, other stakeholders such as suppliers, lenders, or governmental funding agencies will also show a better attitude toward risky innovation projects to benefit from the promising innovative ideas themselves. In line with this argumentation, existing research has shown countries scoring low on uncertainty avoidance are more likely to have capital-market-based financial systems (Kwok & Tadesse, 2006), which make it easier for firms to obtain the financial resources to fund risky innovation projects, especially those of exploratory nature.

In addition to the effect of managers' and employees' attitudes toward innovation, uncertainty avoidance levels also influence the willingness of customers to adopt exploratory and exploitative innovations by allocating their resources to such products and services. Customers in countries scoring low in uncertainty avoidance are more likely to accept exploratory innovations associated with change. By contrast, in cultures with high uncertainty avoidance, the perceived risk inherent in an explorative innovation may negatively affect customers' welfare and lead to the fact that they prefer lower levels of novelty (Sorescu & Spanjol, 2008). However, even if firms want to benefit from exploitative innovations in terms of increased sales, customers must accept a small degree of risk such that the innovative product meets demand.

Although we acknowledge that uncertainty avoidance may not affect the success of exploitative innovations to the same extent as that of exploratory innovations because of the lower risk associated with them, we posit that uncertainty avoidance is an unfavorable condition for the success of both innovation types. Thus, our hypotheses are the following:

Hypothesis 5a: Uncertainty avoidance has a negative moderating influence on the relationship between exploratory innovation and firm performance.

Hypothesis 5b: Uncertainty avoidance has a negative moderating influence on the relationship between exploitative innovation and firm performance.

Method

Study Identification and Sample

We tested our hypotheses using a meta-analytical approach, which quantitatively integrates previous research results. To identify empirical studies on the performance consequences of exploration and exploitation activities, we performed computerized keyword searches in relevant databases (e.g., Business Source Premier, Emerald Fulltext Archive Database, ScienceDirect, SSRN), supplemented by manual searches in general management and specialized journals (Short, 2009). More specifically, the general management journals we searched manually included *Academy of Management Journal, Administrative Science Quarterly, Journal of Management, Journal of Management Studies, Organization Science*, and *Strategic Management Journal.* Specialized journals included *Journal of Business Venturing, Journal of Product Innovation Management*, and *Research Policy.* We used

several combinations of keywords for exploratory and exploitative innovation (e.g., exploration/exploitation, radical/incremental innovation, innovation newness/novelty, radicalness, discontinuous/continuous) and firm performance (e.g., performance, success, profitability, growth, return, efficiency, effectiveness). Furthermore, we searched the reference lists of both previously identified studies and a previously published qualitative review (Cesaroni, Minin, & Piccaluga, 2005) as well as topic-related meta-analyses (Montoya-Weiss & Calantone, 1994; Rosenbusch, Brinckmann, & Bausch, 2011). To avoid a potential publication bias, we also searched for working papers and unpublished dissertations.

As a comparison between studies at different levels of analysis is difficult and not straightforward (Li, Chu, & Lin, 2010; Li, Vanhaverbeke, & Schoenmakers, 2008), we focused our research on the firm level as the unit of analysis. Hence, studies that primarily focus on product-, team-, or project-level data were excluded to ensure the same level of analysis. Because of the nature of our meta-analytical method, we included only studies that report Pearson's correlation coefficients between exploitative innovation, exploratory innovation, and a performance measure or statistics (e.g., *t* test, chi-square) that can be converted into correlation-based effect sizes. We identified and coded findings from 46 studies (N = 12,232) regarding the performance effects of exploratory innovations and 42 studies (N = 10,133) regarding the performance effects of exploitative innovations. Other meta-analyses show that this number of studies presents an adequate sample size (Lux, Crook, & Woehr, 2011; Rosenbusch et al., 2011; Song, Podoynitsyna, van der Bij, & Halman, 2008). Whenever one sample was used in more than one study (e.g., Menguc & Auh, 2008; Menguc, Auh, & Shih, 2007), we included the sample only once to avoid potential biases.

Most of the studies investigate performance outcomes of both exploratory and exploitative innovations. A majority of researchers focus on subjective measures of firm performance. Fewer studies link exploratory and exploitative innovation with objective measures of firm performance. The two meta-analytic samples are based on studies that analyze firms in various countries including North American, European, and Asian economies.

Coding

After locating the studies, we coded them with respect to the dependent, independent, and moderator variables. Our dependent variable firm performance is a multidimensional construct. To provide a comprehensive review of the potential effect of exploration and exploitation on organizational performance, we included all dimensions of financial performance: profitability, growth, stock market performance (Combs, Crook, & Shook, 2005), as well as subjective performance evaluations that relate to those three dimensions.

With respect to the independent variable, we coded whether researchers examine the effects of exploratory or exploitative innovations. It needs to be noted at this point that explorative and exploitative innovations are used interchangeably with radical and incremental innovations, respectively (Benner & Tushman, 2003; Jansen et al., 2006). Following (Crossan & Apaydin, 2010), this meta-analysis uses exploration versus exploitation and radical versus incremental as synonyms.

To assess the institutional conditions, we first coded the country of study location. In a second step, we used the values provided by House et al. (2004) to assess the three dimensions of national culture associated with the respective country. Furthermore, we used the Human Development Index (HDI) as an indicator for social welfare. The HDI is an indicator that covers different aspects of welfare such as per capita income, life expectancy, and education. It is an established measure for welfare and takes values between 0 and 1. To assess the distribution of welfare, we coded the Gini coefficient for each country of study location. The Gini coefficient takes a value from 0 (*total equality*) to 1 (*total inequality*) and refers to the distribution of income.

Last, we coded different control variables. First, as we decided to adopt a broad definition for exploratory and exploitative innovation, we have to account for differences in conceptualization and measurement between the underlying studies, as they may influence research results. Our definition refers to the entire exploratory and exploitative innovation processes; hence, it includes exploratory and exploitative learning activities directed at innovation (e.g., Liu, Luo, & Huang, 2011), exploration and exploitation capabilities (e.g., Gibson & Birkinshaw, 2004; Lisboa et al., 2011) and behaviors (e.g., Beckman, 2006; Hughes, Martin, Morgan, & Robson, 2010), exploration and exploitation strategies (e.g., Bierly & Daly, 2007; He & Wong, 2004; Morgan & Berthon, 2008), and exploratory and exploitative innovative outcomes (e.g., Amason et al., 2006; Bierly, 1995). As the relationship between innovative outcomes and firm performance is expected to differ substantially from the performance effect of inputs in the innovation process in a broad sense (Rosenbusch et al., 2011), we coded whether the underlying study was based on an output measure of exploratory or exploitative innovation.

Another important issue refers to whether exploratory and exploitative innovations are considered substitutes or complements. A few authors (e.g., Gupta et al., 2006; Lavie et al., 2010) see exploration and exploitation as conflicting activities, suggesting that each incremental increase in one activity comes at increasing cost to the other (Levinthal & March, 1993; March, 1991). Thus, they tend to view exploration versus exploitation as a continuum (i.e., with reference to the degree of newness inherent in the innovation strategy or the innovative outcome). Other research, especially research on ambidexterity (e.g., Jansen et al., 2005; Tushman & O'Reilly, 1996), challenges this assumption. Scholars representing this research stream view both innovation types as orthogonal dimensions, emphasizing the idea that exploration and exploitation are discrete choices and can occur simultaneously (Gupta et al., 2006). We account for these different approaches by controlling for whether studies relied on a continuous scale or separate measures for the measurement of explorative and exploitative innovation. Furthermore, we included those studies that used continuous measures in both analyses—the one for exploratory and the one for exploitative innovations—to avoid a bias caused by an overrepresentation of such studies in the analyses for exploratory as compared with the one for exploitative innovations.

Similarly to the independent variables, the way the dependent variable is measured may influence results in primary research. Hence, we controlled for the type of performance measurements. We controlled whether firm performance was assessed subjectively or using objective measures. Furthermore, we controlled whether primary research focused on

profitability measures versus growth and stock market measures. The latter serve as the reference category.

In addition, firm size could influence the performance effects of exploratory and exploitative innovation. In line with other meta-analyses (Miller & Cardinal, 1994; Rosenbusch et al., 2011), we applied the Organisation for Economic Co-operation and Development's (2002) threshold of 500 employees to separate large firms from small- and medium-sized firms. Second, as Rosenthal (1984) points out, meta-analyses may suffer from a publication bias if only significant findings are published. To avoid a bias that results from publication status, we included both published and unpublished studies and controlled for publication status.

Analysis

To test the main effects (i.e., the performance impact of exploration and exploitation), we used a bivariate technique and calculated effect sizes according to the method suggested by Hunter and Schmidt (2004), which is the most commonly used meta-analytical method in management research (Song et al., 2008). We corrected the effect size—Pearson's product–moment correlation *r*—for sampling error (Hunter & Schmidt, 2004). Furthermore, we tested whether the effect size differed significantly from zero, calculating the 95% confidence interval. To test for population homogeneity, we checked whether the 95% credibility interval did not include zero and whether more than 75% of the observed variance was because of sampling error.

Because in both cases the two indicators for homogeneity suggested that moderators influence the size or direction of the effects, we then performed a meta-analytical regression analysis (Lipsey & Wilson, 2001) to identify such moderators. In a meta-analytical regression, the dependent variable is the effect size for the main relationship, whereas moderator variables are technically independent variables, which influence the main relationship. We included the three dimensions of national culture as well as measures of the level of welfare and the inequality in its distribution as independent variables. Furthermore, we controlled for the type of performance measure, the type of innovation measure, the firm size category, and publication status. Collinearity statistics did not indicate any problem in this respect.

Results

In a first step, we explored the mean effect sizes for the performance effects of exploratory and exploitative innovations to investigate whether they on average decrease or increase firm success. Both exploratory and exploitative innovations have a positive impact on firm performance, with mean correlations of $r = .15$ for exploratory innovations and $r = .11$ for exploitative innovations, respectively (Table 1). Both effects are significant, as the confidence interval does not include zero. Yet there is no significant difference between the two effect sizes ($z = 1.08$, *n.s.*). As the credibility intervals for both innovation types include zero, the population of samples seems to be heterogeneous in both cases. Furthermore, in both cases, the sampling error variance accounts

Table 1
Results of the Bivariate Analyses for Exploratory and Exploitative Innovation

Performance Effects	*K*	*N*	*r*	% Variance Due to Sampling Error	95% Confidence Interval	95% Credibility Interval	*z* Value
Exploratory innovation	46	12,232	.15	15.2	0.10 to 0.19	–0.13 to 0.43	1.08
Exploitative innovation	42	10,133	.11	10.6	0.05 to 0.17	–0.26 to 0.47	

Note: *K* = number of samples; *N* = sample size; *r* = sample-size-weighted average effect size; *z* value = statistic based on test for significance of difference in effect sizes.

Table 2
Results of the Meta-Analytical Regression for the Exploratory Innovation–Performance Link

Exploratory Innovation	*B*	Std Error	*p*
Constant	−1.83	0.80	.02
Published work	0.07	0.03	.03
Subjective performance measure	0.11	0.04	.00
Return-based measure	−0.07	0.05	.14
Output measure of innovation	−0.10	0.04	.00
Orthogonal approach	0.08	0.04	.06
Firm size	0.13	0.03	.00
H1a: Level of welfare	0.00	0.23	.99
H2a: Inequality of welfare distribution	−0.01	0.00	.00
H3a: Collectivism	0.15	0.05	.00
H4a: Power distance	0.40	0.10	.00
H5a: Uncertainty avoidance	−0.12	0.04	.01

Note: *B* = unstandardized regression coefficient; *p* = *p* value.

for less than 75% of the uncorrected variance—a further indicator for heterogeneous populations. Hence, it can be expected that third variables moderate both relationships.

In a second step, we performed regression analyses to test our hypotheses (Tables 2 and 3). Our first set of moderator hypotheses dealt with the level and distribution of welfare. We had hypothesized that a high level and an equal distribution of welfare provide a useful environment for both exploratory and exploitative innovation. However, our data show that it is the distribution of welfare, rather than its level, that is of relevance for the performance impact of exploratory ($B = -0.01$, $p < .01$) and exploitative innovation ($B = -0.01$, $p < .01$). Hence, while we do not find support for Hypotheses 1a and 1b, Hypotheses 2a and 2b are supported by the data.

The second set of hypotheses referred to the moderating influence of several dimensions of national culture. We hypothesized that individualism facilitates the success of exploratory innovations, whereas collectivism increases the benefits of exploitative innovations.

Table 3
Results of the Meta-Analytical Regression for the Exploitative Innovation–Performance Link

Exploitative Innovation	*B*	Std Error	*p*
Constant	0.61	1.00	.54
Published work	–0.02	0.04	.71
Subjective performance measure	0.19	0.04	.00
Return-based measure	0.04	0.05	.42
Output measure of innovation	0.15	0.05	.00
Orthogonal approach	0.26	0.04	.00
Firm size	–0.04	0.04	.31
H1b: Level of welfare	–0.09	0.25	.73
H2b: Inequality of welfare distribution	–0.01	0.00	.00
H3b: Collectivism	–0.07	0.06	.22
H4b: Power distance	0.11	0.12	.35
H5b: Uncertainty avoidance	–0.16	0.05	.00

Note: *B* = unstandardized regression coefficient; *p* = *p* value.

However, our results do not support either of these hypotheses. On the contrary, firms in collectivist countries benefit more from exploratory innovation than firms in individualist countries ($B = 0.15$, $p < .01$). Our results indicate that this is not the case for exploitative innovations ($B = -0.07$, $p = .22$).

As a second cultural dimension, we had argued that power distance is beneficial in the case of exploratory but detrimental for exploitative innovations. Our results indicate support for Hypothesis 4a (i.e., firms in high-power-distant cultures benefit more from exploratory innovation than firms in cultures where power distance is low; $B = 0.40$, $p < .01$). A negative effect of power distance for exploitative innovation cannot be confirmed, as the regression coefficient for power distance is nonsignificant ($B = 0.11$, $p = .35$). The positive effects of power balance for the creation and commercialization of exploitative innovation (Shane, 1993) through participation of employees at different organizational levels seems to be offset by disadvantages.

Third, we had hypothesized that uncertainty avoidance has a detrimental effect for the benefits derived from both types of innovation. The data support Hypothesis 5a for exploratory innovation ($B = -0.12$, $p < .05$) and Hypothesis 5b for exploitative innovation ($B = -0.16$, $p < .01$).

Discussion

The motivation of this meta-analysis was to identify which institutional environment facilitates the benefits from exploratory and exploitative innovation. In their review of the literature on exploration and exploitation, Lavie et al. (2010) pointed out current challenges and future research directions to advance theory on the topic—one of them being the exploration of cross-national differences. Such differences are mainly the

result of different institutions that influence firm-level activities. Although highly relevant not only for academic research but also for practitioners who decide on the location of their firm's R&D activities as well as the market for new product or service introduction, the question as to how the institutional environment provides support for exploratory and exploitative innovation has not been answered so far. Our study contributes to the extant literature in several ways. First, we showed that the relationship between exploratory and exploitative innovations is dependent on the institutional context. More specifically, we demonstrated that institutional conditions that influence resource allocations by organizational actors and stakeholders have a major impact on the performance of exploratory and exploitative innovations. Hence, neo-institutionalism is a useful theoretical lens when studying cross-national differences between exploration and exploitation—a gap in the literature as identified by Lavie et al. (2010). Whereas previous research had mainly identified conditions in the task environment that affect the success of exploratory and exploitative innovations, we identified factors related to the broader, non-task-related institutional environment. Although not directly related to the task of a firm, the institutional environment has major implications for exploratory and exploitative innovations and their success by providing norms to organizational actors and stakeholders. Because of differing degrees of newness and uncertainty, exploratory and exploitative innovations unfold their benefits best under specific institutional conditions. Thereby, exploratory innovations are particularly sensitive to the cultural environment.

Hence, theory building around exploratory and exploitative innovations and more generally exploration and exploitation, their antecedents, and their outcomes can benefit from a combination of previous theoretical arguments and neo-institutional theory. Furthermore, past empirical results should be interpreted with care and with respect to the specific institutional context as they may not be universally applicable because of institutional differences. In the future, researchers should link their results to the institutional context to avoid misleading generalizations.

We distinguished between institutional conditions that affect the success derived from exploratory and exploitative innovations through the availability of resources to organizational actors and customers and such institutional factors that influence their attitudes toward innovation and therefore their willingness to allocate resources to exploratory and exploitative innovation projects. The allocation of resources is crucial for the success of innovation because firms have to make substantial investments in terms of financial, human, and social capital to commercialize their innovations (Cheng & Kesner, 1997; Ding & Eliashberg, 2002). For example, investments in market research, aggressive advertising, and the establishment and development of specific distribution channels are necessary to bring innovations to market. Our findings suggest that institutional conditions that determine resource availability moderate the relationships between firm performance and exploratory and exploitative innovations in the same way. More specifically, the distribution of income that also affects the access to education has a crucial impact for both innovation types. A high level of social welfare does not guarantee that a large share of the society has access to funds and education that would have positive firm-level effects for innovating companies. In addition,

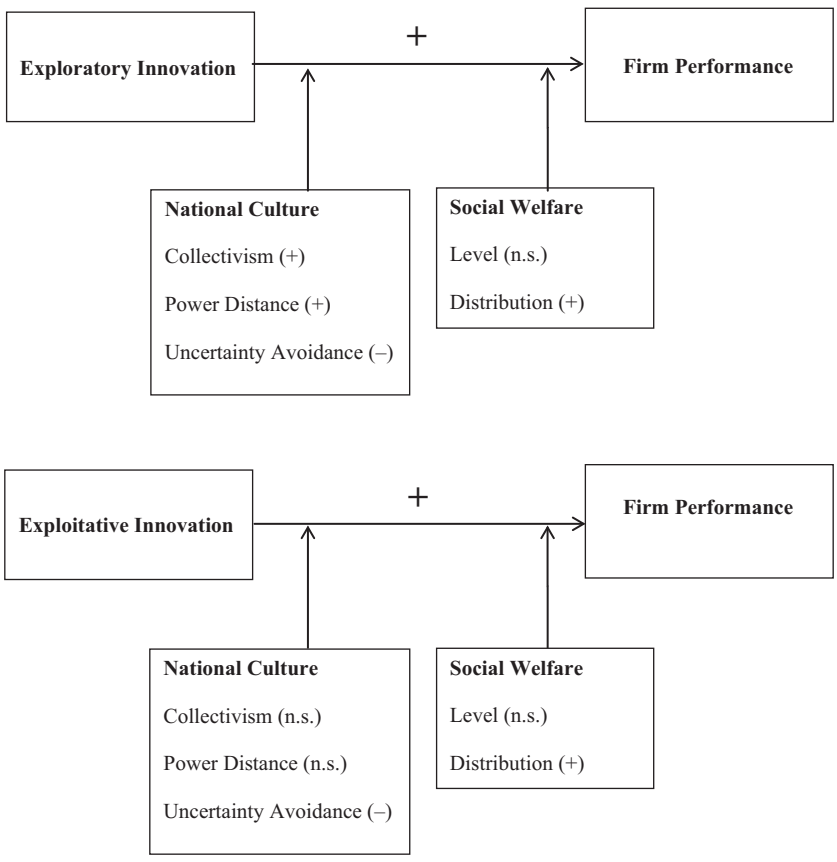
although the social contagion theory (Aral, 2011; Van den Bulte & Stremersch, 2004) suggests that skilled consumers are more likely to be early adopters of product innovations, capable users may also act as independent innovators who capture the market at the cost of a producer firm (Baldwin & von Hippel, 2011; Bogers, Afuah, & Bastian, 2010), explaining our insignificant finding for social welfare. The distribution of welfare indicates how easily firms can access the human and financial capital desired for exploratory and exploitative innovation. At the same time, the distribution of social welfare indicates which share of the society is able to afford innovations and thus how fast innovations can diffuse through the economy.

With respect to culture, we find different sets of conditions that facilitate the performance effect of exploratory versus that of exploitative innovations. Whereas exploratory innovations benefit from high power distance and collectivism as well as low uncertainty avoidance, the success of exploitative innovations does not seem to depend on national culture to the same degree. As high-risk projects, exploratory innovations need the support of a powerful top management that pursues them despite potential resistances of employees and middle managers because of potential cannibalization effects (Chandy & Tellis, 1998). Opinion leaders within either the firm or society as a whole strongly influence the diffusion of exploratory innovations (Dwyer et al., 2005). Their degree of newness and complexity also calls for teamwork and networking skills in the commercialization stages of the exploratory innovation process because it is more challenging to bring an exploratory innovation to market. Collectivist cultures promote teamwork and good relationships between coworkers as well as between members of the organization and stakeholders such as customers. If managers obtain cooperation from those having the expertise and resources necessary for the implementation and commercialization of more demanding radical ideas, they more likely ensure positive performance outcomes of exploratory innovations (Morris, Davis, & Allen, 1994). For example, Song and Swink (2002) found that joint involvement of marketing and manufacturing activities across stages of the innovation process positively influences new product success in radical innovation projects.

By contrast, the success of lower-risk exploitative innovation does not depend on power distance and collectivism. Such incremental innovations seem to be successful in different cultural settings as long as uncertainty avoidance is sufficiently low. This may also explain the high dispersion of exploitative innovation in contrast to exploratory innovation (Garcia & Calantone, 2002; Tushman & Anderson, 1986). The latter may be more rarely pursued by firms, as their success depends on specific cultural characteristics. Furthermore, exploitative activities have also been shown to be task oriented rather than people oriented (Puhan & Vogel, 2009), supporting our finding that neither collectivism nor individualism acts as a significant moderator for the exploitative innovation–performance relationship.

Interestingly, some of the conditions facilitating their performance impact differ between exploratory and exploitative innovations, whereas other conditions are required by both innovation types (Figure 1). The reason behind this finding may be found in the fact that despite all the differences, there are some similarities between explorative and exploitative innovations. Both require the allocation of resources at various organizational levels and across different functions. To be successful, they also require customers to spend their funds

Figure 1
Results of the Studied Relationships



for the innovation. Hence, both innovation types benefit most if organizational actors and customers possess resources such as financial, human, and social capital. Furthermore, by definition, both imply a certain degree of newness. Thus, organizational actors and stakeholders alike must be willing to bear a degree of uncertainty when allocating resources toward innovations. However, the influence of other cultural dimensions differs because of the differences between exploratory and exploitative innovations such as the different degree of newness and uncertainty.

Our findings are highly relevant from a practical point of view. In a world of increasing globalization, managers often have a choice regarding the location of their firms' innovation activities. Hence, knowledge about the advantages and disadvantages of specific locations because of their institutional environments enables them to make more informed decisions on locations. Our results also provide information for those managers who are seeking to

balance innovation activities across subunits or in a network with other firms. For example, firms in individualist, low-power-distant societies that focus on exploitation may look for exploring partners in collectivist, highly power-distant societies to benefit most from the collaboration.

Limitations

As with every meta-analysis, there are several limitations in this study. First, there is a limitation inherent in the primary studies, which is transferred into the meta-analysis. All studies included in our meta-analysis did not take a potential survivor bias into account. However, firms with an emphasis on exploratory innovations may be more likely to fail because of the high risk involved in these innovations and the large amounts of investments necessary to pursue them. Future research should examine the effect of exploratory and exploitative innovations as well as balancing modes on survival. In this respect, it is also important to identify institutional factors that determine the impact of exploratory and exploitative innovations on survival. Such research could help to draw a more detailed picture about the performance impact of exploratory and exploitative innovations.

Furthermore, within the scope of this meta-analysis, we could test only linear main effects, although a few researchers have already found support for nonlinear relationships between exploratory or exploitative innovations and firm performance (Belderbos et al., 2010; Bierly & Daly, 2007). This research refers to conceptualizations as a continuum assuming that medium degrees of exploration outperform low and high degrees. We suggest that this type of research is conducted at the project level and takes the institutional environment into account. The shape of the nonlinear relationship as well as the location of inflection points may depend on the institutional conditions as well as other context-related factors.

Multinationality of the firms included in the primary studies and confounding different countries of operation and origin could bias our results on the moderating effects of the institutional environment, in particular with respect to the dimensions of national culture. To account for a potential bias, we first checked each sample description with respect to the inclusion of multinational corporations (MNCs) or subsidiaries of MNCs that originate in other countries. This problem occurs when researchers use databases such as Compustat, which include subsidiaries of large MNCs from other countries. We coded each study for potentially confounding cultures and excluded these studies from the regression in a post hoc analysis. The results proved to be robust. Thus, we are confident that multinationality and confounding cultures do not cause a bias in our results.

In addition, this meta-analysis focuses on institutional conditions that influence the availability of resources to support exploratory and exploitative innovations and key actors' attitude toward innovation and therefore their willingness to allocate resources toward innovations, whereas other institutional as well as firm- and industry-related variables are beyond the scope of this study. The significant effect our control variable firm size has on the main relationship between exploratory innovation and firm performance highlights the need for further examination of potential moderating effects, especially

in terms of additional firm-related conditions, such as firm age and structure, as crucial factors influencing organizational performance. With respect to the moderating influence of culture, this study only focuses on practices at the societal level, implying equal perceptions of firm managers, employees, consumers, and so on. Although research has shown that national culture is transferred to organizational values to a large extent (Pothokuchi, Damanpour, Choi, Chen, & Park, 2002), further research on the effects of organizational culture as a potential moderator variable would be valuable. In addition, it may be possible that performance effects of exploratory and exploitative innovation differ across industries. Exploration is common and even essential for survival in industries, such as high-tech industries, whereas exploitation may be more successful in other types of industries. In addition, further institutional conditions may influence the success of exploratory and exploitative innovations through other mechanisms than resource allocations. For example, the level of corruption in a society may decrease the success of innovation by increasing transaction costs and lowering profit margins (Anokhin & Schulze, 2009; Luo, 2005). In particular, the success of exploratory innovation may be hindered because exploratory new products often require permits and licenses that may depend on the bribe payments in corrupt societies. Similarly, patent laws may have a strong influence on the outcomes of exploratory innovations. If it is easy for other firms to imitate an exploratory innovation because patent laws are weak and/or not pursued, the competitive advantage of the innovating firm is likely not to sustain (Teece, 1986).

Last, we did not consider interactions with the overall firm strategy. Exploratory and exploitative innovations have to fit within the overall strategy of the firm and the firm's environment. Because different strategies compete for resources in a firm, it is important to know where synergies can be reached. For example, an internationalization or an M&A strategy can be utilized to increase the benefits from exploratory and exploitative innovations if making effective use of different institutional and organizational settings and capitalizing on learning in the foreign market (Zahra, Ireland, & Hitt, 2000). In addition, diversification strategies resulting in multiproduct or multitechnology companies may increase the efforts needed to integrate exploratory and exploitative innovation within the overall firm strategy, as complexity in such firms is very high (Granstrand & Sjölander, 1990).

Implications for Future Research

This study integrates previous empirical research on the relationship between exploratory and exploitative innovation and firm performance and shows that several dimensions of the institutional environment influence that impact exploratory and exploitative innovations have on firm performance. However, it also raises a number of new questions that need to be answered in future research projects. One of those questions refers to specific mechanisms that influence managers' decisions in specific institutional environments and thus affect the performance of exploratory and exploitative innovation. More fine-grained qualitative analyses could examine such mechanisms in more detail. Similarly, multilevel studies

that include the country, firm, team, and individual levels could inform research about relationships within and across levels of analysis. Such studies not only are important to advance the literature on exploratory and exploitative innovations; they also can give detailed recommendations for practitioners as to how to use a specific institutional environment to increase the success of innovation. More specifically, the institutional environment may act as an antecedent of behavior at the individual and team levels while being a moderator to the innovation-success relationship at firm level. For example, national culture determines the willingness of organizational actors to allocate resources toward high-risk exploratory innovations. National culture can thus be considered a determinant of individuals' behavior (e.g., their resource allocations). At the same time, it moderates the relationship between exploratory innovations and firm performance at firm level because the sum of these individuals drive the commercialization success with the resources they put into the innovation process. Hence, more complex multilevel and moderated mediation models could build on our findings and advance academic research on the topic. Naturally, such research could also include different modes of balancing.

In the past decade, research on balancing exploration and exploitation in general and ambidexterity in particular has become popular. The up-to-now published empirical articles mainly show that balancing increases performance outcomes (e.g., Cao et al., 2009; Gibson & Birkinshaw, 2004; He & Wong, 2004; Menguc & Auh, 2008). Hence, the question arises whether exploratory and exploitative innovations influence firm performance independently from each other or only jointly (Lavie et al., 2010). Our moderator analyses demonstrated that different institutional conditions facilitate the success of exploratory and exploitative innovations. Furthermore, our analyses of empirical studies on ambidexterity revealed that 9 out of 11 studies in our database, which look at the performance effects of exploratory innovations, exploitative innovations, and ambidexterity, report significant effects for exploratory or exploitative innovations in addition to joint effects. Hence, exploration and exploitation should be examined separately as well as jointly. More specifically, they seem to be complementary activities when looking at their outcomes (increases in short- and long-term performance) but (partially) contradictory when it comes to the environment that facilitates their success. Thus, it is important to identify (environmental) conditions that facilitate exploratory and exploitative innovations before looking at complementarities between both and potential balancing modes (Ennen & Richter, 2010).

Balancing not only can occur at different points in time or in different subunits; it can also be achieved within a network (Gupta et al., 2006). Depending on the specific context, one mode of balancing may outperform another. If organizations have the choice between adopting different balancing strategies, knowledge of the institutional environment that facilitates or hinders the success of exploratory and exploitative innovations is important for (a) the location choice of such processes and (b) the choice of balancing strategy, depending on the characteristics of the institutional environment. For example, a company currently engaging in exploitative innovation in an institutional environment that hinders the success of exploratory innovation decides on how to balance in the future. Because it is unlikely that the institutional environment changes in the short to medium run, a sequencing strategy aimed at reaching a punctuated equilibrium may be inferior to an ambidexterity strategy with a subunit in a favorable institutional environment or a networking strategy involving a

company located in such an environment. Networking as a mode of balancing not only is an underresearched topic but also is of high practical relevance as it offers firms the opportunity to focus on one innovation type while at the same time enjoying the benefits of balancing within a network of organizations. This might be a particularly useful way of balancing for smaller firms that lack the resources to pursue both innovation types. Furthermore, it offers firms the opportunity to utilize the advantages of different institutional environments provided that the networking partners are located in different institutional settings. However, thus far, we know little about the outcomes of this mode of balancing in general and under different institutional settings. Future research could answer such questions.

Our study also contributes indirectly to the discussion about how to conceptualize exploration and exploitation (Lavie et al., 2010). Interestingly, only 9 out of 46 samples are used to study the relationship between exploratory innovation and firm performance that adopted a continuous perspective, while the majority of researchers adopt an orthogonal perspective. The latter reports an average correlation of .32 for the relationship between exploratory and exploitative innovations, indicating that firms often pursue both innovations simultaneously. Firms like Toyota are an excellent example. On a continuous scale, they would be rated at a medium level just like a firm that is much less successful in innovation but balances exploratory and exploitative innovations. Information about the efforts put into exploratory and exploitative innovations would be missing. Whereas we acknowledge that a continuum measuring a degree of exploration is useful at the project level, we recommend using the orthogonal approach at the organizational level.

Overall, this study contributes to academic research by providing a systematic review and statistical integration of the literature covering the performance effects of exploratory versus exploitative innovation in different institutional contexts. Our analyses revealed that exploratory and exploitative innovations require different institutional settings for them to fully unfold their benefits for firm performance. More specifically, national culture is an important driver of the success derived from exploratory innovations. It is less important for exploitative innovation. We hope this study fosters a more contextual understanding of exploratory and exploitative innovation as potential hallmarks of prosperous companies.

References

Abernathy, W. J., & Clark, K. B. 1985. Innovation: Mapping the winds of creative destruction. *Research Policy*, 14: 3-22.

Amason, A. C., Shrader, R. C., & Tompson, G. H. 2006. Newness and novelty: Relating top management team composition to new venture performance. *Journal of Business Venturing*, 21: 125-148.

Angle, H. L. 1989. Psychology and organizational innovation. In A. H. van de Ven, H. L. Angle, & M. S. Poole (Eds.), *Research on the management of innovation: The Minnesota studies*: 135-170. New York: Ballinger/Harper & Row.

Anokhin, S., & Schulze, W. S. 2009. Entrepreneurship, innovation, and corruption. *Journal of Business Venturing*, 24: 465-476.

Aral, S. 2011. Identifying social influence: A comment on opinion leadership and social contagion in new product diffusion. *Marketing Science*, 30: 217-223.

Atuahene-Gima, K., & Murray, J. Y. 2007. Exploratory and exploitative learning in new product development: A social capital perspective on new technology ventures in China. *Journal of International Marketing*, 15: 1-29.

Auh, S., & Menguc, B. 2005. Balancing exploration and exploitation: The moderating role of competitive intensity.

Journal of Business Research, 58: 1652-1661.
Baldwin, C. Y., & von Hippel, E. 2011. Modeling a paradigm shift: From producer innovation to user and open collaborative innovation. *Organization Science*, 22: 1399-1417.
Beckman, C. M. 2006. The influence of founding team company affiliation on firm behavior. *Academy of Management Journal*, 49: 741-758.
Belderbos, R., Faems, D., Leten, B., & van Looy, B. 2010. Technological activities and their impact on the financial performance of the firm: Exploitation and exploration within and between firms. *Journal of Product Innovation Management*, 27: 869-882.
Benner, M. J., & Tushman, M. L. 2003. Exploitation, exploration, and process management: The productivity dilemma revisited. *Academy of Management Review*, 28: 238-256.
Bierly, P. E., III. 1995. *Technological learning and a dynamic capabilities framework of competitive strategy: A study of the U.S. pharmaceutical industry from 1977 to 1991*. Unpublished doctoral dissertation, Rutgers University, New Brunswick, NJ.
Bierly, P. E., & Daly, P. S. 2007. Alternative knowledge strategies, competitive environment, and organizational performance in small manufacturing firms. *Entrepreneurship: Theory and Practice*, 31: 493-516.
Bogers, M., Afuah, A., & Bastian, B. 2010. Users as innovators: A review, critique, and future research directions. *Journal of Management*, 36: 857-875.
Bourdieu, P. 1984. *Distinction: A social critique of the judgment of taste*. Cambridge, MA: Harvard University Press.
Bruton, G. D., Ahlstrom, D., & Han-Lin, L. 2010. Institutional theory and entrepreneurship: Where are we now and where do we need to move in the future. *Entrepreneurship: Theory and Practice*, 34: 421-440.
Burgers, J.-H., Van den Bosch, F. A. J., & Volberda, H. W. 2008. Why new business development projects fail: Coping with the differences of technological versus market knowledge. *Long Range Planning*, 41: 55-73.
Burt, R. S. 1987. Social contagion and innovation: Cohesion versus structural equivalence. *American Journal of Sociology*, 92: 1287-1335.
Cao, Q., Gedajlovic, E., & Zhang, H. 2009. Unpacking organizational ambidexterity: Dimensions, contingencies, and synergistic effects. *Organization Science*, 20: 781-796.
Caselli, F., & Coleman, W. J., II. 2001. Cross-country technology diffusion: The case of computers. *American Economic Review*, 91: 328-335.
Cesaroni, F., Minin, A. D., & Piccaluga, A. 2005. Exploration and exploitation strategies in industrial R&D. *Creativity and Innovation Management*, 14: 222-232.
Chandy, R. K., & Tellis, G. J. 1998. Organizing for radical product innovation: The overlooked role of willingness to cannibalize. *Journal of Marketing Research*, 35: 474-487.
Cheng, J. L. C., & Kesner, I. F. 1997. Organizational slack and response to environmental shifts: The impact of resource allocation patterns. *Journal of Management*, 23: 1-18.
Combs, J. G., Crook, T. R., & Shook, C. 2005. The dimensionality of organizational performance and its implications for strategic management research. In D. Ketchen & D. Bergh (Eds.), *Research methodology in strategy and management*: 259-286. San Diego, CA: Elsevier.
Comin, D., & Hobijn, B. 2004. Cross-country technology adoption: Making the theories face the facts. *Journal of Monetary Economics*, 51: 39-83.
Crossan, M. M., & Apaydin, M. 2010. A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies*, 47: 1154-1191.
DiMaggio, P. J., & Powell, W. 1983. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48: 147-160.
DiMaggio, P. J., & Powell, W. 1991. Introduction. In W. Powell & P. J. DiMaggio (Eds.), *The new institutionalism in organizational analysis*: 1-38. Chicago: University of Chicago Press.
Ding, M., & Eliashberg, J. 2002. Structuring the new product development pipeline. *Management Science*, 48: 343-363.
Douglas, M., & Isherwood, B. C. 1979. *The world of goods*. New York: Basic Books.
Dwyer, S., Mesak, H., & Hsu, M. 2005. An exploratory examination of the influence of national culture on cross-national product diffusion. *Journal of International Marketing*, 13: 1-27.
Elenkov, D. S., & Manev, I. M. 2005. Top management leadership and influence on innovation: The role of sociocultural context. *Journal of Management*, 31: 381-402.

Ennen, E., & Richter, A. 2010. The whole is more than the sum of its parts—Or is it? A review of the empirical literature on complementarities in organizations. *Journal of Management*, 36: 207-233.

Foellmi, R., Hepenstrick, C., & Zweimueller, J. 2007. *Income effects in the theory of monopolistic competition and trade*. Working paper, University of Zurich, Zurich, Switzerland.

Foellmi, R., & Zweimüller, J. 2006. Income distribution and demand-induced innovations. *Review of Economic Studies*, 73: 941-960.

Furman, J. L., Porter, M. E., & Stern, S. 2002. The determinants of national innovative capacity. *Research Policy*, 31: 899-933.

Garcia, R., & Calantone, R. 2002. A critical look at technological innovation typology and innovativeness terminology: A literature review. *Journal of Product Innovation Management*, 19: 110-132.

Gibson, C. B., & Birkinshaw, J. 2004. The antecedents, consequences, and mediating role of organizational ambidexterity. *Academy of Management Journal*, 47: 209-226.

Granstrand, O., & Sjölander, S. 1990. Managing innovation in multi-technology corporations. *Research Policy*, 19: 35-60.

Guillén, M. F. 2000. Corporate governance and globalization: Is there convergence across countries? *Advances in Comparative International Management*, 13: 175-204.

Gupta, A. K., Smith, K. G., & Shalley, C. E. 2006. The interplay between exploration and exploitation. *Academy of Management Journal*, 49: 693-706.

Hall, P. A., & Soskice, D. 2001. Introduction. In P. A. Hall & D. Soskice (Eds.), *Varieties of capitalism: The institutional foundations of competitive advantage*: 1-68. New York: Oxford University Press.

He, Z.-L., & Wong, P.-K. 2004. Exploration vs. exploitation: An empirical test of the ambidexterity hypothesis. *Organization Science*, 15: 481-494.

Henderson, R. M. 1993. Underinvestment and incompetence as responses to radical innovation: Evidence from the photolithographic alignment industry. *RAND Journal of Economics*, 24: 248-270.

Herbig, P., & Dunphy, S. 1998. Culture and innovation. *Cross Cultural Management*, 5: 13-21.

Hofstede, G. 1980. *Culture's consequences: International differences in work-related values*. Beverly Hills, CA: Sage.

Hofstede, G. 1991. *Cultures and organizations: Software of the mind. Intercultural cooperation and its importance for survival*. London: McGraw-Hill.

Hofstede, G. 2001. *Culture's consequences—Comparing values, behaviors, institutions and organizations across nations* (2nd ed.). Thousand Oaks, CA: Sage.

Holmqvist, M. 2004. Experiential learning processes of exploitation and exploration within and between organizations: An empirical study of product development. *Organization Science*, 15: 70-81.

Hortinha, P., Lages, C., & Lages, L. F. 2011. The trade-off between customer and technology orientations: Impact on innovation capabilities and export performance. *Journal of International Marketing*, 19: 36-58.

House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. 2004. *Culture, leadership, and organizations: The GLOBE study of 62 societies*. Thousand Oaks, CA: Sage.

Hughes, M., Martin, S. L., Morgan, R. E., & Robson, M. J. 2010. Realizing product-market advantage in high-technology international new ventures: The mediating role of ambidextrous innovation. *Journal of International Marketing*, 18: 1-21.

Hunter, J. E., & Schmidt, F. L. 2004. *Methods of meta-analysis: Correcting error and bias in research findings* (2nd ed.). Thousand Oaks, CA: Sage.

Isobe, T., Makino, S., & Montgomery, D. B. 2004. *Exploitation, exploration, and firm performance: The case of small manufacturing firms in Japan*. Research collection, Lee Kong Chian School of Business, Singapore.

Iyengar, R., Van den Bulte, C., & Valente, T. W. 2011. Opinion leadership and social contagion in new product diffusion. *Marketing Science*, 30: 195-212.

Jansen, J. J. P., Bosch, V. D., & Volberda, H. W. 2005. Exploratory innovation, exploitative innovation, and ambidexterity: The impact of environmental and organizational antecedents. *Schmalenbach Business Review*, 57: 351-363.

Jansen, J. J. P., Van Den Bosch, F. A. J., & Volberda, H. W. 2006. Exploratory innovation, exploitative innovation, and performance: Effects of organizational antecedents and environmental moderators. *Management Science*, 52: 1661-1674.

Jepperson, R. 1991. Institutions, institutional effects, and institutionalism. In W. Powell & P. J. DiMaggio (Eds.), *The new institutionalism in organizational analysis*: 143-163. Chicago: University of Chicago Press.

Kreiser, P. M., Marino, L. D., Dickson, P., & Weaver, K. M. 2010. Cultural influences on entrepreneurial orientation. The impact of national culture on risk-taking and proactiveness in SMEs. *Entrepreneurship Theory and Practice*, 34: 959-983.

Kwok, C. C. Y., & Tadesse, S. A. 2006. National culture and financial systems. *Journal of International Business Studies*, 37: 227-247.

Lavie, D., Stettner, U., & Tushman, M. L. 2010. Exploration and exploitation within and across organizations. *Academy of Management Annals*, 4: 109-155.

Lee, J., Lee, L., & Lee, H. 2003. Exploration and exploitation in the presence of network externalities. *Management Science*, 49: 553-570.

Levinthal, D. A., & March, J. G. 1993. The myopia of learning. *Strategic Management Journal*, 14(S2): 95-112.

Li, C.-R., Chu, C.-P., & Lin, C.-J. 2010. The contingent value of exploratory and exploitative learning for new product development performance. *Industrial Marketing Management*, 39: 1186-1197.

Li, Y., Vanhaverbeke, W., & Schoenmakers, W. 2008. Exploration and exploitation in innovation: Reframing the interpretation. *Creativity and Innovation Management*, 17: 107-126.

Lieberman, M. B., & Montgomery, D. B. 1988. First-mover advantages. *Strategic Management Journal*, 9(S1): 41-58.

Lipsey, M. W., & Wilson, D. B. 2001. *Practical meta-analysis*. Thousand Oaks, CA: Sage.

Lisboa, A., Skarmeas, D., & Lages, C. 2011. Innovative capabilities: Their drivers and effects on current and future performance. *Journal of Business Research*, 64: 1157-1161.

Liu, H., Luo, J.-H., & Huang, J. H. F. 2011. Organizational learning, NPD and environmental uncertainty: An ambidexterity perspective. *Asian Business & Management*, 10: 529-553.

Lucas, R. E. 1988. On the mechanics of economic development. *Journal of Monetary Economics*, 22: 3-42.

Luo, Y. 2005. An organizational perspective of corruption. *Management and Organization Review*, 1: 119-154.

Lux, S., Crook, T. R., & Woehr, D. J. 2011. Mixing business with politics: A meta-analysis of the antecedents and outcomes of corporate political activity. *Journal of Management*, 37: 223-247.

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

McGrath, R. G. 2001. Exploratory learning, innovative capacity, and managerial oversight. *Academy of Management Journal*, 44: 118-131.

Menguc, B., & Auh, S. 2008. The asymmetric moderating role of market orientation on the ambidexterity-firm performance relationship for prospectors and defenders. *Industrial Marketing Management*, 37: 455-470.

Menguc, B., & Auh, S. 2010. Development and return on execution of product innovation capabilities: The role of organizational structure. *Industrial Marketing Management*, 39: 820-831.

Menguc, B., Auh, S., & Shih, E. 2007. Transformational leadership and market orientation: Implications for the implementation of competitive strategies and business unit performance. *Journal of Business Research*, 60: 314-321.

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

Miller, C. C., & Cardinal, L. B. 1994. Strategic planning and firm performance: A synthesis of more than two decades of research. *Academy of Management Journal*, 37: 1649-1665.

Montoya-Weiss, M., & Calantone, R. 1994. Determinants of new product performance: A review and meta-analysis. *Journal of Product Innovation Management*, 11: 397-417.

Morgan, R. E., & Berthon, P. 2008. Market orientation, generative learning, innovation strategy and business performance inter-relationships in bioscience firms. *Journal of Management Studies*, 45: 1329-1353.

Morris, M. H., Davis, D. L., & Allen, J. W. 1994. Fostering corporate entrepreneurship: Cross-cultural comparisons of the importance of individualism versus collectivism. *Journal of International Business Studies*, 25: 65-89.

Nakata, C., & Sivakumar, K. 2001. Instituting the marketing concept in a multinational setting: The role of national culture. *Journal of the Academy of Marketing Science*, 29: 255-275.

North, D. 1990. *Institutions, institutional change and economic performance*. Cambridge, UK: Cambridge University Press.

Organisation for Economic Co-operation and Development. 2002. *OECD Small and medium enterprise outlook*. Paris: OECD Publishing.

Oxley, J. E. 1999. Institutional environment and the mechanisms of governance: The impact of intellectual property protection on the structure of inter-firm alliances. *Journal of Economic Behavior and Organization*, 38: 283-309.

Pandey, S., & Sharma, R. P. K. 2009. Organizational factors for exploration and exploitation. *Journal of Technology Management & Innovation*, 4: 48-58.
Peng, M. W. 2003. Institutional transitions and strategic choices. *Academy of Management Review*, 28: 275-296.
Peng, M. W., & Heath, P. S. 1996. The growth of the firm in planned economies in transition: Institutions, organizations, and strategic choice. *Academy of Management Review*, 21: 492-528.
Pothokuchi, V., Damanpour, F., Choi, J., Chen, C., & Park, S. 2002. National and organizational culture differences and international joint venture performance. *Journal of International Business Studies*, 33: 243-265.
Powell, W. W., & Colyvas, J. A. 2008. The new institutionalism. In S. R. Clegg & J. R. Bailey (Eds.), *The International Encyclopedia of Organization Studies:* 975-979. Los Angeles: Sage.
Puhan, T.-X., & Vogel, R. 2009. Solving the innovation dilemma by creating organizational think tanks. *International Journal of Entrepreneurship and Innovation*, 10: 291-300.
Rodríguez-Pose, A., & Tselios, V. 2010. Inequalities in income and education and regional economic growth in Western Europe. *Annals of Regional Science*, 44: 349-375.
Rogers, E. M. 2003. *Diffusion of innovations* (5th ed.). New York: Free Press.
Romer, P. M. 1986. Increasing returns and long run growth. *Journal of Political Economy*, 94: 1002-1037.
Rosenbusch, N., Brinckmann, J., & Bausch, A. 2011. Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing*, 26: 441-457.
Rosenkopf, L., & Nerkar, A. 2001. Beyond local search: Boundary-spanning, exploration, and impact in the optical disk industry. *Strategic Management Journal*, 22: 287-306.
Rosenthal, R. 1984. *Applied social research methods series, Vol. 6. Meta-analytic procedures for social research*. Beverly Hills, CA: Sage.
Roth, M. S. 1995. The effects of culture and socioeconomics on the performance of global brand image strategies. *Journal of Marketing Research*, 32: 163-175.
Rothaermel, F. T., & Alexandre, M. T. 2009. Ambidexterity in technology sourcing: The moderating role of absorptive capacity. *Organization Science*, 20: 759-780.
Rowley, T., Behrens, D., & Krackhardt, D. 2000. Redundant governance structures: An analysis of structural and relational embeddedness in the steel and semiconductor industries. *Strategic Management Journal*, 21: 369-386.
Salomo, S., Talke, K., & Strecker, N. 2008. Innovation field orientation and its effect on innovativeness and firm performance. *Journal of Product Innovation Management*, 25: 560-576.
Schmidt, J. B., & Calantone, R. J. 1998. Are really new product development projects harder to shut down? *Journal of Product Innovation Management*, 15: 111-123.
Schneider, S. C., & De Meyer, A. 1991. Interpreting and responding to strategic issues: The impact of national culture. *Strategic Management Journal*, 12: 307-320.
Scott, W. R. 2001. *Institutions and organizations*. Thousand Oaks, CA: Sage.
Sedikides, C., Gaertner, L., & Vevea, J. L. 2005. Pancultural self-enhancement reloaded: A meta-analytic reply to Heine (2005). *Journal of Personality and Social Psychology*, 89: 539-551.
Shane, S. A. 1992. Why do some societies invent more than others? *Journal of Business Venturing*, 7: 29-46.
Shane, S. 1993. Cultural influences on national rates of innovation. *Journal of Business Venturing*, 8: 59-73.
Shane, S. 1994. Cultural values and the championing process. *Entrepreneurship Theory and Practice*, 18: 25-41.
Short, J. 2009. The art of writing a review article. *Journal of Management*, 35: 1312-1317.
Song, M., Im, S., van der Bij, H., & Song, L. 2011. Does strategic planning enhance or impede innovation and firm performance? *Journal of Product Innovation Management*, 28: 503-520.
Song, M., Podoynitsyna, K., van der Bij, H., & Halman, J. I. M. 2008. Success factors in new ventures: A meta-analysis. *Journal of Product Innovation Management*, 25: 7-27.
Song, M., & Swink, M. 2002. *Marketing-manufacturing joint involvement across stages of new product development: Effects on the success of radical vs. incremental innovations*. Paper presented at the Academy of Management conference, Denver.
Sorescu, A. B., & Spanjol, J. 2008. Innovation's effect on firm value and risk: Insights from consumer packaged goods. *Journal of Marketing*, 72: 114-132.
Steenkamp, J.-B. E. M. 2001. The role of national culture in international marketing research. *International Marketing Review*, 18: 30-44.
Stephen, U., & Uhlaner, L. M. 2010. Performance-based vs. socially-supportive culture: A cross-national study of descriptive norms and entrepreneurship. *Journal of International Business Studies*, 41: 1347-1364.

Stremersch, S., & Tellis, G. J. 2004. Managing international growth of new products. *International Journal of Research in Marketing*, 21: 421-438.

Takada, H., & Jain, D. 1991. Cross-national analysis of diffusion of consumer durable goods in Pacific Rim countries. *Journal of Marketing Research*, 55: 48-54.

Teece, D. J. 1986. Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy. *Research Policy*, 15: 285-305.

Tellis, G. J., Prabhu, J. C., & Chandy, R. K. 2009. Radical innovation across nations: The preeminence of corporate culture. *Journal of Marketing*, 73: 3-23.

Tsai, M.-T., & Huang, Y.-C. 2008. Exploratory learning and new product performance: The moderating role of cognitive skills and environmental uncertainty. *Journal of High Technology Management Research*, 19: 83-93.

Tselios, V. 2011. Is inequality good for innovation? *International Regional Science Review*, 34: 75-101.

Tushman, M. L., & Anderson, P. 1986. Technological discontinuities and organizational environments. *Administrative Science Quarterly*, 31: 439-465.

Tushman, M., & O'Reilly, C. 1996. Ambidextrous organizations: Managing evolutionary and revolutionary change. *California Management Review*, 38: 8-30.

United Nations Development Programme. 1990. *Human development report*. New York: United Nations Development Programme.

Uotila, J., Maula, M., Keil, T., & Zahra, S. A. 2009. Exploration, exploitation, and financial performance: Analysis of S&P 500 corporations. *Strategic Management Journal*, 30: 221-231.

Utterback, J. 1994. *Mastering the dynamics of innovation*. Cambridge, MA: Harvard Business School Press.

Van den Bulte, C., & Stremersch, S. 2004. Social contagion and income heterogeneity in new product diffusion: A meta-analytic test. *Marketing Science*, 23: 530-544.

Waarts, E., & Everdingen, Y. M. v. 2005. The influence of national culture on the adoption status of innovations. *European Management Journal*, 23: 601-610.

Yalcinkaya, G., Calantone, R. J., & Griffith, D. A. 2007. An examination of exploration and exploitation capabilities: Implications for product innovation and market performance. *Journal of International Marketing*, 15(4): 63-93.

Yamaguchi, S., Gelfand, M., Ohashi, M. M., & Zemba, Y. 2005. The cultural psychology of control: Illusions of personal versus collective control in the United States and Japan. *Journal of Cross-Cultural Psychology*, 36: 750-761.

Yaveroglu, I. S., & Donthu, N. 2002. Cultural influences on the diffusion of new products. *Journal of International Consumer Marketing*, 14(4): 49-63.

Yeniyurt, S., & Townsend, J. D. 2003. Does culture explain acceptance of new products in a country? An empirical investigation. *International Marketing Review*, 20: 377-396.

Yukl, G. 2002. *Leadership in organizations* (5th ed.). Upper Saddle River, NJ: Prentice Hall.

Zahra, S. A., Ireland, R. D., & Hitt, M. A. 2000. International expansion by new venture firms: International diversity, mode of market entry, technological learning and performance. *Academy of Management Journal*, 43: 925-950.

Zweimuller, J. 2000. Schumpeterian entrepreneurs meet Engel's law: The impact of inequality on innovation-driven growth. *Journal of Economic Growth*, 5: 185-206.