Key Questions on Innovation in the B-to-B Context

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Forthcoming, *Handbook of Business to Business Marketing*
Abstract

Innovation is critically important today due to the rapid pace of technological change, the increasing globalization of markets, and the changing taste of customers. Innovation is important for B-to-B firms because they are critical suppliers for B-to-C firms that need to be highly innovative or because they are themselves a major hub in the organizational network of innovative buyers and suppliers. The innovative process consists of three important stages: the development of innovation, the commercialization of innovation, and the fruits of innovation. This essay reviews the important progress in understanding problems in each of these areas and the key questions that researchers face today in the B-to-B arena.

Introduction

Innovation is a critical driver of the improvement in performance of customers, the growth and success of firms, and the wealth of nations. Firms need to constantly innovate or face rivals who do so to offer superior value to their customers. This innovation can be in products or processes, in platform, design or component technologies, or in business models. Innovation is as vital in business-to-business (B-to-B) markets as in consumer markets. Firms that produce and market to other firms often do so in response to specifications set by end customers. However, in the new intensely competitive marketplace, meetings specifications is no longer adequate. Suppliers need to increasingly innovate in order to exceed the specifications demanded by their customers or satisfy these specifications at much lower cost. Further, as markets change rapidly, firms must predict the future needs of their customers in order to meet them in a timely way. Finally, in the highly global marketplace of today, new suppliers arise from numerous developed and emerging economies. Being at the cutting edge of innovation helps ensure that firms can successfully serve their customers and are not made obsolete by competitors with a superior product or better processes.
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Key Questions in Innovation in the B-to-B Context

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In such a competitive and global environment, while much is known because of extensive research on innovation, a number of important questions still remain unanswered. This essay identifies ten major topics in innovation, summarizes the major contributions and issues in those topics, and outlines the key research questions for the future (see Table 1). These research questions are organized within the three major stages of innovation: Developing innovations, commercializing innovations, and the fruits of innovation. Although these stages frequently overlap, and the boundaries between them can be fuzzy, they do provide a useful framework to organize the innovation journey (Yadav, Prabhu, and Chandy 2007).

Developing Innovations

We first discuss some key questions in the development of innovations.

1. Why Do Great Firms Fail?

Given how important innovation is for the survival and success of firms, one would expect that they would invest massive amounts of time, equipment, and personnel into research for innovation. The largest firms in each market would have the most resources for this task. Hence, they would be the most
successful at innovation and would grow to dominate the next technological platform. As such, wealth would lead to greater wealth. However, history reveals that large, wealthy firms frequently fail. Indeed, great market leaders in one generation sometimes do not even survive the next generation. For example, leadership in the personal computer market moved from Altair, to Tandy, to Apple, to IBM, to Compaq, to Dell, to HP (Tellis and Golder 1996; 2001). Why does prior strength not lead to continued strength?

Researchers have put forth a number of theories for why great firms fail. Schumpeter (1942) at least initially attributed failure to the disadvantages of large size. Foster (1986) attributed the failure of firms to the emergence of a new technology and the commitment of old dominant firms to the old technology. Failure occurred when the new technology crossed the old technology in performance. Continuing on the technological explanation, Utterback (1994) attributed failure to the type of technology. Failure occurred not merely if a new technology merged, but if the new technology was competence-destroying rather than competence-enhancing (Tushman and Anderson 1986). Christensen (1997) went a step further and attributed failure to the single minded focus of established firms on meeting needs of the mass market of customers served by the old technology. That focus blinded them to the emergence of a new technology that was inferior to the old technology on the primary dimension of performance but superior on some secondary dimension that satisfied only a niche market. Failure occurred, when the new technology surpassed the performance of the old technology even on the primary dimension. Chandy and Tellis (1998) attributed failure to the internal culture of the firm. A firm with a culture that focuses on the future, instils internal competition, and is willing to cannibalize past successful products, is more likely to embrace innovations and stay ahead of the game (see Tellis, Prabhu, and Chandy 2009).

Which of these theories best explains the failure of firms, especially in a B-to-B context? They have not been tested strictly against each other in a rigorous field experiment or empirical study. The jury is still out.
2. What Role Do Top Managers Play In Innovation?

B-to-B markets generally involve a limited set of customers, relative to business to consumer markets. Moreover, transaction values tend to be large, and purchase cycles long in B-to-B markets (Brennan, Canning, and McDowell 2007). For these reasons, and given the critical role of innovation in B-to-B markets, managers in the upper echelons of firms often play an active role in innovation activities in B-to-B firms.

Existing research suggests that top managers can have powerful effects in promoting or discouraging innovation in their firms. In a recent study, when managers were asked “Who is the biggest force driving innovation at your company?” 45% of respondents indicated that it was the CEO of the firm (Boston Consulting Group 2006). CEOs such as Steve Jobs at Apple, Andy Grove and Gordon Moore at Intel, Bill Hewlett at Hewlett Packard are celebrated for their apparent success in driving innovation in their firms.

Top managers play a crucial role in driving innovation within firms for at least four reasons (Boyd, Chandy, and Cunha 2010; Tellis, Prabhu, and Chandy 2009). First, top managers can play an informational role by helping identify new market opportunities, and orienting the attention of others in the firm toward these opportunities. Second, they play a decisional role by helping determine the level and type of innovation-related investments made in the firm. Third, they play a relational role, by managing the firm’s relationships with top stakeholders (such as major customer accounts, investors, alliance partners, and employees) who are relevant to the innovation task. Fourth, and perhaps most importantly, they play a cultural role by shaping the values, attitudes, and practices that are promoted or discouraged within the firm. Each of these effects could impact innovation outcomes.

Given the importance of CEOs and other top managers in innovation a number of scholars have sought to formally examine their role in innovation. Some have highlighted the importance of delving into managers’ backgrounds and experiences to predict their emphasis on innovation. For example, some scholars suggest that top executives with backgrounds in “output” oriented functions such marketing, R&D, and sales will put greater emphasis on product innovation than those with backgrounds in
“throughput” oriented functions such as accounting/finance, production, administration, and legal (Finkelstein and Hambrick 1996; Hambrick and Mason 1984). Others have noted that top managers’ attention patterns have a strong impact on innovation, in that firms with CEOs who tend to focus on the future and on entities external to the firm are more innovative than others (Yadav, Prabhu, and Chandy 2007). Executive compensation schemes may also affect innovation outcomes, in that long-term compensation packages may be associated with a greater focus on innovation activities that pay off over a long time horizon (see Makri, Lane, and Gomez-Mejia 2006).

Despite recent progress in our knowledge of the role of top managers in innovation, much remains unknown. Are top managers in B-to-B firms indeed more engaged in innovation activities than those in B-to-C firms? What roles do different members of top management teams (CEOs, CFOs, CMOs, etc.) play in the innovation journey? How do corporate boards affect innovation? Are top managers in privately held firms more long-term oriented (and thus more encouraging of innovation) than top managers in equivalent publicly held firms, who have to face quarterly earnings pressures? Should top managers get directly involved in picking ideas and opportunities for innovation? These are all topics that could benefit from additional research.

3. Should Firms Make or Buy Innovations?
Large corporations often depend on the innovation of their suppliers. In this sense, their suppliers provide not only the materials, parts, and services for the current mix of products but also the innovations to improve them or develop new ones. For example, in developing the Boeing 787 Dreamliner, Boeing decided to outsource the manufacture and even research of about 70% of the plane to firms all over the world (Kotha and Nolan 2005). This included outsourcing the wings the part of the aircraft that Boeing considered its “crown jewels”. In the past Boeing reserved manufacture of the wings to internal divisions only. Moreover, Boeing outsourced such manufacture even though it was well known that some of the firms building these parts had aspirations to grow into manufacturing entire planes themselves. Was Boeing nurturing the competitors of tomorrow? Would these suppliers one day grow to threaten if not displace its dominance of the airplane manufacturing business?
Increasingly, firms actively work with outside entities – not only suppliers, but also customers, academic institutions, and even competitors – to develop new products and services. This process of actively working with outside entities to create and market innovations has come to be called open innovation (Chesbrough 2004). The open innovation efforts of Procter and Gamble (P&G) have received a good deal of attention in recent years. For decades P&G developed its new products entirely within its laboratories. It tended to ignore or reject new ideas that were “not invented here.” A few years ago, P&G decided to abandon its policy of developing most new products internally to developing at least 50% of its products from the outside (Huston & Sakkab 2002). This policy involves the sourcing of new ideas and innovation from the outside the firm or outsourcing even R&D to outside firms. Although most of P&G’s products are targeted to end consumers, the successful implementation of their open innovation strategy relies on collaborating actively with business partners and suppliers. For example, the development of P&G’s Mr. Clean brand of water activated micro-scrubbers - which “magically” erase tough household messes – involved collaboration with BASF, the large German chemicals company. P&G’s open innovation efforts were partly inspired by the B-to-B innovation story of Goldcorp, a Canadian mining company. Goldcorp made the dramatic decision to open the geological data about its mine – data that was zealously guarded from outsiders before - to the world at large (Tapscott and Williams 2008; Taylor and LeBarre 2007). They organized a competition for innovative ideas from outsiders, and offered a monetary prize for the best ideas on where they should dig for gold within their mine. Within two weeks, they received over 1100 ideas from over 50 countries. Of the ideas from the 110 semi-finalists in the competition, more than 50% new were new to the company. And 80% of these ideas yielded gold. Goldcorp went from mining 53,000 ounces of gold per year at a cost of $360 per ounce in 1995, before their open innovation effort, to mining 500,000 ounces of gold at $60/ounce after they incorporated external sources of ideas. Interestingly, the inspiration for the Goldcorp competition came when the CEO of the company learned about the remarkable success of the Linux operating system community in building a computer operating system via voluntary contributions of ideas and effort.
The Linux case (and the open source software context more generally) alludes to another rich source of externally developed innovation: lead users (von Hippel 1986). Lead users are individuals who face needs that will be eventually be general in the marketplace, but who face these needs before others in the marketplace, and are therefore well positioned to solve these needs themselves (von Hippel 1986). By seeking out such users, firms can obtain – often at little or no cost – promising ideas that can serve customer needs more effectively than internally generated ideas. Many firms have used the efforts of lead users to develop successful innovations. However, recent research indicates that lead users are not the only types of customers who can provide valuable contributions to innovation activities (Bendapudi and Leone 2003; Grewal, Lilien, and Mallapragada 2006).

Many leading-edge firms are engaging with customers more generally in their innovation efforts, in a process that has come to be called co-creation (Prahalad and Ramaswamy 2000). Co-creation is defined as a “collaborative new product development activity in which customers actively contribute and select various elements of a new product offering (O’Hern and Rindfleisch 2009, p. 4). Recent research has identified customer segments who might serve as especially productive sources of co-created innovation (Hoffman, Kopalle, and Novak 2010). Despite this progress, much remains unknown about the co-creation process (see Hoyer et al. 2010; O’Hern and Rindfleisch 2009 for reviews). Why are some firms more successful at co-creation than others? What motivates some customers to co-create with companies, and why are some better sources of innovations than others? What incentives should be offered to customers for their co-creation efforts? Do monetary incentives help or hurt the likelihood of engaging in co-creation, and the outcomes of co-creation efforts?

Abstracting further, the question of whether a firm should make or buy its supplies (whether innovation-related or otherwise) has been a perennial strategy issue. One theory enlightening the solution has been that of transaction costs. A firm should make when the transaction costs of buying from the outside exceed the costs of acquiring the expertise to make on the inside (Walker and Weber 1984). However, the examples above illustrate a far more complex set of problems and opportunities that firms
face in the global economy today. Products are now so complex and centers of excellence are so
distributed around the world, that a firm would be unwise to completely ignore good innovations and
expertise that lies outside the firm (Rigby & Zook 2002). What is the core technology, if any, that a firm
should reserve for internal development? When should a firm go outside for ideas and when stay inside?
In which country should a firm locate its R&D and how should it recruit and organize its talent for this
task?

If a firm has chosen to make its innovation, some other important issues arise. How should a firm
organize to be innovative? Should it use a functional or divisional structure? If the latter, should it resort
to cooperating divisions, competing divisions, spinouts, or spinoffs? These are important issues that merit
research.

4. What is Business Model Innovation? What Role Does it Play in the B-to-B Context?
A recent influential survey found that “business model” innovation is the most important form of
innovation for CEOs across the globe (IBM Global CEO Study 2006). The survey also found that firms
that emphasize business model innovation grew far faster than firms that did product or process
innovation alone. What therefore is business model innovation and what role does it play in the B-to-B
context?

Despite considerable recent interest in the phenomenon of business model innovation, there is
still little consensus about what such innovation involves. Velu, Prabhu and Chandy (2010) combine a
review of existing studies (Johnson, Christensen and Kagermann 2008, Brandenburger and Stuart 1996,
Gambardella and McGahan 2009, Zott and Amit, 2007, 2008) with their own interviews with managers,
to propose that business model innovations involve systemic changes to a firm's customer value
proposition combined with changes to its accompanying operating structure. These changes are systemic
as they involve changing multiple elements of the customer value proposition along with the
accompanying cost structure of the business (Susarala, Barua and Whinston 2009). For example,
Amazon.com was an innovation that involved changes to the customer value proposition including
changes to the product (a far greater assortment than any bricks and mortar book retailer, in part made possible by a B-to-B marketplace), distribution (books available everywhere all the time through the Internet), price (lower prices in general) and promotion (access to online customer reviews about products as well as retailers). It also involved a change in the cost structure of the firm's offering through lower overheads and greater economies of scale. Amazon’s B-to-B customers as well as their end customers seem to have benefited from its innovation in business models.

Given its systemic nature, business model innovation potentially poses opportunities as well as challenges for new venture and incumbent firms alike. New ventures such as Amazon can exploit new technologies such as the Internet to create significantly new value propositions for consumers which they can also deliver at radically lower cost levels. In this way, they can come to create and dominate new sectors or even industries. But because business model innovation is more than just product or process innovation, and is often both at the same time, major questions remain about 1) how new ventures go about doing business model innovation, 2) the resources and capabilities they require to succeed at such innovation and 3) the organizational and strategic challenges they face in doing so.

For incumbents firms with existing business models, their superior resources can help them innovate and remain dominant. However, as considerable research shows, radical product innovation is hard enough for most incumbents to do because of the commitment of such firms to existing technologies and customer segments. Given the systemic nature of business model innovation, this form of innovation is likely to be even harder for incumbent firms than product innovation. Thus, bricks and mortar book distributors like Barnes & Noble and Borders faced particular difficulties in trying to develop an internet business model in addition to their existing bricks and mortar based business models. How do incumbents reinvent their business models? What challenges do they face in doing so? How do they leverage their existing resources and capabilities to do so? How are the challenges faced by incumbents different from those faced by new entrants? These are questions around which little empirical research currently exists.

Business model innovation raises issues about how firms manage their relationships with other businesses in both B-to-C and B-to-B contexts. Even in B-to-C contexts, because of the systemic nature
of business model innovation, such innovation involves not only working with end consumers (due to the role of the value proposition), but also the firm’s suppliers and distributors (due to the role of the firm’s operating structure). How do new ventures relative to incumbent firms manage the inter-firm relationships needed for business model innovation? Future research is needed to shed light on this question.

In purely B-to-B contexts, the way in which firms manage their relationships with other firms becomes even more crucial to the successful development and delivery of new business models. Given that the business buying process is different from that of consumers, a key question is: Does business model innovation differ significantly in the B-to-B relative to B-to-C context? Relatedly, are business model innovations more or less frequent in the B-to-B than the B-to-C context? Are they easier or harder to develop in the B-to-B relative to the B-to-C context? Does this development vary depending on whether the innovating firm is a new venture or an incumbent? Given the paucity of research on these topics, finding answers to questions such as these holds the promise of a rich stream of research with significant implications for academics and managers alike.

**Commercializing Innovations**

5. **How do Technologies Evolve?**

A commonly observed phenomenon in innovation is that one technology seems to replace another. For example today, digital photography has largely replaced film photography and online air reservation is largely replacing travel agencies, and open source software is threatening commercial software. In printing, ink-jet and laser technologies replaced dot matrix printing, but both are steadily improving in performance. Which one will win or will thermal printing replace both? A change in technology involves huge costs of equipment, training, and management for firms. More importantly, transitions in technologies often cause the demise of or at least the tripping up of giant incumbents. For example, even though IBM’s mainframe business did not seem immediately threatened by the emergence of microcomputers, the lower cost and increasing power of the latter ultimately encroached on IBM’s lucrative B-to-B business in mainframe computers. Thus, predicting the path of technological evolution can be a great advantage for an incumbent or entrant. How do technologies evolve?
Foster (1986) proposed a simple theory to explain technological evolution. He suggested that technological performance on some key dimension, as a function of research effort, evolved along an S-shaped curve. Curves for rival technologies crossed once. So, a good strategy was to switch from an old technology on the mature or upper flat of its S-curve to a new technology on the upward or growth trajectory of its S-curve. Unfortunately, Sood and Tellis (2005a; 2005b; 2011) showed that this simple model is rarely if not never true. Technologies evolve along step functions, with multiple crossings, and huge spikes in performance after periods of long dormancy. How does one predict the path of this evolution given this messy real world? What theory or model can throw light on the phenomenon? Is the pace of technological evolution increasing? If so, where is this heading? These are unanswered questions with billion dollar implications for the firms locked in combat on rival technologies.

Technological innovations are particularly salient because most new consumer products based on new technologies find their initial markets in B-to-B contexts. While mobile phones, room air-conditioners, microwave ovens, or video-recorders are today commonly viewed as consumer products, they got their start as innovations for businesses. Indeed, the B-to-B market may be the launch pad for many if not most major consumer innovations (Tellis and Golder 2001). On the other hand, some products that were introduced to consumer markets may grow so successful as to encroach on B-to-B markets. This phenomenon raises a number of questions: How do technologies diffuse from B-to-B to B-to-C markets or vice versa? Which is a preferred launching pad for new products? How do these two markets cross-subsidize the evolution of technologies?

6. Is Network or Quality more Important for Success?

A not uncommon phenomenon in the age of high technology or internet products – whether B-to-B or B-to-C - is that a single product has an overwhelming market share. For example, Intel, Microsoft Windows, Microsoft Office, eBay, Facebook, Amazon, all seem to dominate their respective markets. Also, in some cases, dominance occurs quite fast and reaches 70 to 85% market share. Why does this phenomenon occur? Analysts attribute it to direct or indirect network effects. Direct or user based
network effects occur when the benefit from a product increases with the number of other users of the same product. Alibaba.com maintains its dominant position as the world’s largest B-to-B portal in part because millions of businesses buy and sell on it. Microsoft Excel’s usefulness to users increases as more users use the same program. Indirect network effects occur when the benefit of a product increases with the number of accessories or add-ons that run with or on it. For example, smartphones that run iPhone and Android operating systems become more useful as the number of mobile applications (“apps”) that run on them grows.

Some economists have argued that in the presence of network effects, a brand that gets an early lead, either because of entering the market early or through some accident, may end up with the highest market share (Church and Gandal 1993; Farrell and Saloner 1985; Katz and Shapiro 1986). This phenomenon is sometimes called path dependence, because the market share path of the brand depends on some early accident (Besen and Farrell 1994). The argument goes that network effects or path dependence could be so strong that an inferior brand could dominate its market and even lock out superior quality or lower priced alternatives.

Some researchers have argued that the case for networks effects and path dependence is overstated (Liebowitz and Margolis 1995; Tellis, Niraj and Yin 2008). However, we are still faced with the persistent dominance of brands that are known to have many flaws (e.g. Windows). What are the real causes of market success and dominance of innovations for high tech and internet products? Are network effects more important than quality for such products? How do such networks develop and what control do managers have over them? Do inferior brands really win out through accidents of history? Answers to these questions have important implications for managers and public policy makers.

7. Should Hardware or Software Come First?
When two products are related by indirect network effects they pose another problem for managers and policy makers: which product should come first? Such linked products often have a hardware component and a software component. For example, the PC (hardware) is more useful as the
number of programs (software) run off it increases. More generally, the hardware may be considered a heavy investment category while the software may be considered a light investment category.

The presence of indirect network effects raises a chicken and egg problem (Caillaud and Jullien 2003; Gandal 2002; Gupta, Jain and Sawhney 1999). Should firms invest in the hardware or the software first? Hardware manufactures argue that without programs, consumers will not buy the hardware. Software manufacturers argue that without hardware to play on, the software is meaningless. This dilemma is what delayed and still delays the easy spread of ethanol or electric cars in the US. In the latter cases, the link is between cars and the network of refueling stations. Some analysts argue that the issue has no solution like the proverbial chicken-and-egg problem. However, a solution could come from many sources including commitment, level of investment, or regulation (Stremersch et al 2007). How prevalent is the problem of first investment for such linked products? Should hardware or software come first? Under which conditions? When if ever and how should government intervene to break the impasse between hardware and software suppliers, for the benefit of consumers? Research to answer these questions can serve multiple publics.

We next address key questions around the fruits of innovation, at the level of the firm as well as the countries in which these firms operate.

Fruits of Innovation

8. What is the Payoff to Innovation?

The normal way that managers invest for innovation is by comparing the investment costs against the future market revenues from an innovation. However, the payoff from innovations is often in the distant and uncertain future. Not only must managers discount the profits from future time periods but they must also factor in the uncertainties from ever earning those revenues. Some analysts suggest turning to the stock market to assess how the market values investments in innovations. The logic from doing so is that the market is efficient so that the stock price reflects current and discounted future cash flows that would accrue to the firm given the all information available at the time. Any abnormal return in the stock
price (beyond the normal for the whole market) on some announcement of innovation would reflect the value of that innovation at the time of the announcement.

A few studies have shown that the market does indeed show “abnormal returns” to certain events in the life cycle of developing and commercializing an innovation (Chaney, Devinney and Winer 1991; Sorescu, Chandy and Prabhu 2003; Rao, Chandy and Prabhu 2007). Nevertheless, these findings raise a host of important issues (Sood and Tellis 2008). What is the right metric and approach for evaluating the returns to an innovation? If one should focus on abnormal returns, what are the abnormal returns to various stages of an innovation, such as initiation, development, and commercialization? What are the total returns to all stages and events in the life of an innovation? Do investments in innovation ultimately payoff in terms of total returns? Answers to these questions are of critical importance in determining the value of investments in innovation and advising managers and investors about strategies they should

9. What Role Does Innovation Play in Emerging Markets?

For much of the 20th century, innovation was the preserve of the developed economies of North America, Western Europe and Japan. The world’s largest spenders on innovation were mostly Western or Japanese multinationals who, even while they outsourced manufacturing to China in the 1980s and back office processes to India in the 1990s, located their R&D activities at home, close to headquarters. If they chose to locate R&D away from their home country, they typically did so in other developed or triad economies. In the late 1990s and in the 2000s, however, this trend was reversed, so much so that, China and India in particular, but also Brazil and to a certain extent Russia, are now major destinations for large multinational to locate their R&D (see Tellis, Eisingerich, Chandy and Prabhu 2010). For instance, GE and IBM currently have their largest R&D centers outside the US in India.

The phenomenon of the offshoring of R&D is accompanied by a related phenomenon of the outsourcing of innovation to other companies, both multinational and domestic, in emerging economies. Specifically, the R&D centers of many large multinationals in emerging markets form relationships with
other local companies as a means to tap into ideas and expertise that others have. These ideas may be technical or market related and may be local or global in nature.

The twin phenomena of offshoring and outsourcing of innovation to emerging markets raises a number of questions for researchers and managers alike. What is driving these phenomena? Given that R&D and innovation are strategic assets that offshoring and outsourcing imperil, how do firms manage the potential loss of IP to competitors, especially those that they also partner with in the R&D/innovation process? What kinds of activities—technological versus market development, local versus global application—do multinationals in emerging markets pursue? How do they combine their activities in emerging markets with their R&D activities in their R&D centers in other parts of the world, especially in developed economies?

Increasingly, it is not only foreign, developed country multinationals who innovate in emerging markets. More and more Chinese, Indian and Brazilian firms are investing in R&D and exploiting their home cost and market advantage to innovate for global markets. These firms are also acquiring foreign, developed country firms in order to acquire advanced technology they can leverage to compete globally. For instance, India’s Tata Motors has not only developed domestically the Nano, the world’s cheapest car, it has also acquired the UK’s Jaguar and Land Rover to give it access to technology and brands at the high end of the price spectrum. The rise of firms from emerging markets and their increasing focus on innovation raises a number of questions of interest. Is the type of innovation that emerging market firms do different from that of developed country firms? Specifically, do emerging market firms excel at low cost product and process innovation as opposed to high end, technological innovation? Do they do more business model rather than product innovation? Can they successfully take their domestic innovations to global markets? How will they compete with western multinationals through innovation in the long run? Questions such as these hold the promise of a rich stream of research with significant implications for academics and managers alike.
10. What Drives the Wealth of Nations?

A question that has long intrigued researchers is what drives the wealth of nations and what role has innovation to play in it? Indeed, many disciplines have addressed this question and have come up with quite varied answers. One obvious candidate seems to be raw materials, which many people assume to be the most important cause of wealth. Along these lines, at least one recent author has argued that geography plays a critical role in enabling the harnessing of crops and animals for the development of prosperity (Diamond 1999; Morris 2010). However, could lack of raw mineral, agricultural, or animal resources lead people to be innovative, while abundance of these resources leads people to be lazy? Some authors have argued that a key driver of wealth is a particular religion, which makes those believers more materialistic, industrious, and innovative than believers in other religions (Weber 1930). Other authors have argued that climate plays a critical role in fostering a work ethic of innovation and industriousness (Parker 2000). Still other authors have argued for the importance of social and political systems (such as patent law) that have given individuals the incentives to be innovative (Landes 1999). Economists have argued for the role of regulation, investment in R&D, and education of the work force (Fuhrman, Porter and Stern 2002). In contrast to these perspectives, a recent study argues that firm culture is the most important determinant of a country’s innovativeness (Tellis, Prabhu and Chandy 2009).

Innovations have enabled even countries with minimal raw materials (e.g., Japan), to develop and become wealthy. Further, the innovations of these countries arise from entrepreneurs and firms within the country rather than from governments. In this context, B-to-B markets may play two roles. First, as explained above, these markets could serve as the launch pad for innovations, including those that ultimately grow to become consumer products. Second, highly innovative firms may serve as the hub of a highly innovative cluster of B-to-B suppliers. For example, Apple, Boeing, Microsoft, and Intel serve as the nexus of an innovative cluster of B-to-B firms. The innovations of the hub stimulate and are enhanced by innovations of their B-to-B suppliers.
An overview of history shows that no country or civilization has been permanently dominant or wealthy. Wealth has not led to greater wealth and success, as at least some of the above explanations would lead one to conclude. Rather history has been witness to the perennial rise and fall of civilizations. Thus any explanation of this complex but important problem needs to take into account the failure of any one nation to remain innovative and wealthy permanently. Moreover, even within a nation, clusters of innovativeness (e.g. Silicon Valley) rise and fall with time. The answer to this problem is not merely of historical importance. It informs public and government policy and firm strategy today.

Key research question are the following. What causes nations to be innovative? Is it climate, geography, culture, religion, economics, or politics? Does the innovativeness of a country affect the innovativeness of firms within it? Or does the innovativeness of a country rest on the innovation of its firms? Are there innovative clusters within countries? If so, what drives that phenomenon and how can it be replicated? Is the location of a firm’s research department merely one of operational efficiency or does it affect the innovativeness of the department and the firm? What role do B-to-B firms play in the innovativeness of major organizations? To what extent are consumer innovations driven by innovations of the manufacturers versus innovations of their suppliers?

**Conclusion**

Innovation is an important force in markets today, and it is just as vital in B-to-B as it is in B-to-C markets. Despite extensive research over the years and across many disciplines, while much is known, still more remains to be known about innovation, especially in a B-to-B context. As we argue in this chapter, the B-to-B context is in some ways similar to the B-to-C context, and in some ways different. Moreover, one might argue that the B-to-B context is a more widespread one. Even firms that eventually serve end-consumers need to work with other firms in order to innovate and serve end-consumers better. While much of our existing knowledge about innovation in a B-to-C context can be extended to the B-to-B context, research remains to be done to better understand when and how innovation in the two contexts
differs. The goal of this essay has been to outline what we already know and what remains to be done, and to trigger interest in findings answers to the questions that remain.

References


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