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Understanding Innovation: A Reorientation

The acuteness of organizations' need for innovation was expressed by Buzan (2007, p. vii) when he concluded that "right now any individual, company or country wishing to *survive* in the twenty-first century *must* . . . *innovate*" (emphasis added). The purpose of this book is to present a broadened perspective on how organizations can become more potent in innovating. This will be achieved by (a) developing a more differentiated understanding of the nature of innovative products (Chapter 2); (b) analyzing the thinking processes through which such products are generated (Chapter 3); (c) identifying the key psychological resources (attitudes, values, motives, and the like) of individual people who carry out these processes (Chapter 4); (d) analyzing the external and internal environments within which the processes occur, the personal resources are applied, and the products are produced; and (e) working out the implications of this material for innovation management.

THE NEED FOR INNOVATION IN ORGANIZATIONS

Awareness of the need for organizations to innovate is by no means new, and the issue has been receiving substantial attention for many years. More than a quarter of a century ago, Van de Ven (e.g., 1986) was already reporting that managing innovation had become a central concern of CEOs. Early this century, Walton (2003) showed that 80 percent of managers he surveyed regarded creativity as vital for corporate success, and the 2010 IBM Report (IBM, 2010) concluded that creativity had become the chief concern of CEOs by then. Anderson, Potocnik, and Zhou (2014) confirmed that scholarly and professional discussions have experienced massive growth in interest in the topic in the last decade, both in the

English-speaking world and internationally. In fact, over the years, the call for innovation has reached life and death proportions, with Freeman and Soete (1997, p. 266) concluding that "not to innovate is to *die*" (emphasis added), and the slogan "innovate or die" has become an established catchphrase in the current literature (e.g., Collis, 2010; Kriekels, 2013).

An example of the failure to innovate leading to corporate death can be seen in the fate of Smith Corona, whose core product – the typewriter – was annihilated by the introduction of the word processor, not because of flaws in Smith Corona's typewriter technology (which had been improved constantly and effectively by the company over the preceding decades by means of incremental change) but because the technology itself had become irrelevant in a digital word-processing world. Hamel (1996, p. 69) came to the amusingly stated but nonetheless dramatic and easily understandable conclusion that "pursuing incremental improvement while rivals reinvent the industry is like fiddling while Rome burns."

Knapper and Cropley (2000) conceptualized the overarching problem societies are facing as the need to *deal with change*. Organizations are confronted by discontinuous change in many domains, including but going beyond the technological. Among other things, changes are affecting production, distribution, and marketing; are reducing the length of product lifecycles; are causing new and intensified demands from customers, increasing competition and the threat of becoming uncompetitive; expanding globalization; imposing unstable economic conditions; changing supply chains; increasing the urgency of calls for sustainable production; accelerating degradation of the environment; leading to diversification of the workforce; and raising pressure for fair and equitable working conditions. According to Barreto (2012, p. 356), organizations are now confronted with massive changes that cause shocks, either exogenous shocks imposed on the organization by powerful external forces such as market changes, technological advances, or regulatory pressures, or endogenous shocks arising from emerging awareness of inadequacies in the status quo in an organization and growing dissatisfaction with it. Organizations must cope by means of innovation.

The Benefits of Change

Nussbaum (2013, p. 38) argued that the bright side of change from the point of view of organizations is that it is causing "unmet needs" in society, and that innovative organizations can meet these needs to their own advantage. Cohen (2010) gave concrete, practical examples of highly beneficial

innovations that have had such effects, including Citibank's introduction of ATMs, and Sony's introduction of the compact disc. Cohen went beyond conceptualizing innovation as a general life-saving force and listed some of the more specific benefits it brings, which in turn lead to the broad benefits of growth and increased profits just mentioned: for example, *obtaining competitive advantage* and *increasing revenue*. Kleinknecht and Mohnen (2001) mentioned improved *export performance*; Yamin, Gunasekaran, and Mavondo (1999) put the emphasis squarely on concrete bottom-line outcomes by concluding that innovation leads to *greater profitability*. Adopting a more process-oriented approach, Miller (1983) argued that an innovative organization is good at "*beating competitors to the punch*"; and Chan and Thomas (2013, p. 1) concluded that innovation adds to "commercial *competitiveness*" and gives organizations "*a competitive edge*"; while Anderson, Potocnik, and Zhou (2014, p. 3) referred to its ability to provide a "*competitive advantage*."[1]

Although they warned that innovation also involves substantial risks, in a meta-analysis, Rosenbusch, Brinckmann, and Bausch (2011, p. 445) identified both tangible benefits, such as new products, services, or production processes, and more process-oriented benefits, such as increased productivity, greater employee satisfaction, greater employee commitment, reduced staff turnover, and greater attractiveness to potential investors. Mumford, Hester, and Robledo (2012, p. 8) also pointed to a range of more indirect organizational benefits (i.e., benefits not referring directly to the bottom line but to factors that mediate success on the bottom line) that have been linked to innovation. These factors include *ability to respond to a crisis* and improved *teamwork, collaboration, and organizational citizenship*. Mumford, Bedell-Avers, and Hunter (2008) listed *improved planning processes*, and Amabile, Schatzel, Moneta, and Kramer (2004) mentioned *a more satisfied and intrinsically oriented workforce*. Thus, the benefits of innovation are not confined to the direct production, implementation, and marketing of new products, as desirable as these are, but also involve factors such as the general atmosphere in an organization, staff motivation, or job satisfaction.[2] These aspects will be referred to as press later in this book (e.g., Chapter 5).

[1] In all of these examples, the emphasis given to the italicized words has been added by the present authors.

[2] Benefits of this kind are not confined to organizations involved in commercial activity. A. J. Cropley (2012) reviewed the effects of "creative" teaching methods on the classroom workforce (pupils) and reported analogous benefits such as improved motivation, better concentration, reduced absenteeism, and decreased incidence of disruptive behavior.

TABLE 1.1. *Examples of Specific Benefits of Innovation for Organizations*

Outcome Benefits	Process Benefits
• Increased productivity • Competitive advantage • Increased demand • Improved export performance • Increased revenue • Greater profitability • Improved ability to attract investors • Greater ability to attract high-quality staff	• Better response to crises • Improved planning • A more satisfied workforce • A more intrinsically motivated workface • Better teamwork and collaboration • Improved organizational citizenship • Reduced staff turnover

The benefits that have been reported as accruing from greater creativity and innovation are summarized in Table 1.1. This table is not intended as an exhaustive list of all possible organizational benefits associated with innovation but as an indication of the kind of thing organizational writers have discussed. The outcome benefits are purely commercial and global in nature. The process benefits involve psychologically oriented concepts such as intrinsic motivation, to be sure, but they are also global in nature. Later in the book, some of these outcomes and processes will be examined in a more psychological way, and the dynamic relationship between the two domains will be spelled out in a more differentiated manner.[3]

CONCEPTUALIZING INNOVATION

Some writers (e.g., Read, 2000) have complained that innovation in organizations is discussed in such diverse terms that its meaning is difficult to grasp. It is true that in the organizational literature *innovation* refers both to (a) a novel *product* such as a new device, service, or procedure and (b) the *process* through which such products are devised, brought into existence, brought to market, or put into practice. The OECD guidelines (OECD, 2005, p. 46) define *organizational innovation* in a two-track way, as involving "a new or significantly improved *product* (good or service), *process*, new marketing method or a new organizational method in business practices, workplace organization or external relations" (emphasis

[3] An example of a more differentiated, noncommercial, psychological outcome benefit would be "an increased number of effective and novel ideas."

added). Bledow, Frese, Anderson, Erez, and Farr (2009a, p. 305) defined it in *process* terms as "the development and intentional introduction of new and useful ideas." Dillon, Lee, and Matheson (2005) and Kim and Mauborgne (2004) made the idea of usefulness clearer by referring to "value innovation," which focuses on customers, conceptualizing innovation as a process through which organizations find novel and effective products that serve their current customers and identify new markets. Thus, organizational innovation is typically regarded as having two elements: the process component and the product component. The products will frequently be referred to here as solutions because they often involve the meeting of previously unmet needs in societies (Nussbaum, 2013, p. 38) or the solving of social and organizational problems such as those outlined above.

Incremental Versus Disruptive Innovation

An important consideration in this context is the distinction made by Christensen (1997) between incremental innovation and disruptive innovation.[4] Leifer, McDermott, O'Connor, and Peters (2000) made a similar distinction by referring to radical innovation. As Miron-Spektor, Erez, and Naveh (2011, p. 740) put it: "Innovation can vary from an incremental extension of current organizational capabilities to a radical one." In addition to being referred to as radical or disruptive, the latter kind of innovation is also called breakthrough (e.g., Mascitelli, 2000) or discontinuous (e.g., Veryzer, 1998). Luecke and Katz (2003) defined two forms of innovation: incremental (exploiting "*existing* forms or technologies" [emphasis added]), and radical or disruptive, defined as "*a departure from* existing technology or methods" (emphasis added). These two forms of innovation correspond to a considerable degree to Pink's (2005) distinction between information (building on existing knowledge) and conceptualization (seeing things in a novel way).

The crucial point is that incremental innovation is merely sustaining (e.g., Light, 1998) or evolving (e.g., Veryzer, 1998). It involves further developing, polishing, or expanding *already existing* forms or technologies. Radical or disruptive innovation, by contrast, involves a decisive, probably sudden and nonlinear *departure* from what already exists. Horibe (2009) used the metaphor of getting rid of mice; the classical approach is

[4] We will argue in Chapter 4 that this distinction greatly aids understanding the differences between older members of organizations (e.g., managers) and younger colleagues.

encapsulated in the traditional saying: "Build a better mousetrap and the world will beat a path to your door." This involves incremental innovation because it is based on improving what already exists by making the known solution – a mouse trap – better. Disruptive or radical innovation, by contrast, would involve a completely new approach – a novel line of attack that might well make the old technology irrelevant; thus, improving it would then be of little use, as Smith Corona discovered. As an amusing, impracticable example of a radically new approach, Horibe suggested using supersonic waves to beam the mice back to where they originally came from.

An example can be taken from the automobile industry. Although hailed in some quarters as a major innovation, the hybrid car is still a rectangular box with a wheel at each corner. Thus, it represents only incremental changes in the known way of transporting goods and people. Firing people into the air to hang in space while the earth turned below them so that they landed at a distance from their starting position would involve a new paradigm and would thus represent radical innovation, even if currently impossible to implement. A. J. Cropley (2006) and D. H. Cropley and Cropley (2005) pointed out that highly effective sustaining innovation is possible by means of conventional thinking alone (see also the discussion of product in Chapter 2), so that of necessity the main focus of interest in this book is on disruptive, radical, breakthrough innovation, although the value of incremental or sustaining innovation is not denied.

Business-Oriented Models of Innovation

A. J. Cropley and Cropley (2009) reviewed traditional innovation research and showed that it frequently focuses on economic factors and concepts or on structural factors such as the trajectory that innovations follow, where in the innovation process idea generation and opportunity recognition occur, the degree of formality and linearity of the process, the organizational structures that support the process, and the resources and competencies required (e.g., Leifer et al., 2000); skills, strategy, structure, systems, style, staff, and shared values (e.g., Higgins, 1995); or resources, processes, and values (RPV) (e.g., Christensen, Anthony, & Roth, 2004).

Herzog (2008) reviewed a number of more recent models of innovation in business and organizations, and he and Bledow et al. (2009a) drew attention to aspects of the organizational environment such as a shared vision, innovative organizational culture, emphasis on exploration rather than exploitation, investment in R&D, team diversity, task-related conflict,

and rewards. However, even these models have continued to see innovation as explained by *structural and process-related aspects of the organizational environment*. A. J. Cropley and Cropley (2009) summarized these models as: (a) attributing innovation to rational, economic push and pull factors; (b) regarding it as arising from continuous but unpredictable change and adaptation; (c) attributing it to the work of forward-looking management; or (d) seeing it as depending mainly on knowledge and skills.

Even where conventional, traditional models of organizational innovation refer to noncognitive psychological factors (for instance, motivation or tolerance for uncertainty), these are looked at more from the point of view of the organization (e.g., the flexibility of institutional goals, the openness of organizational climate, the pattern of rewards provided by the organization). A good example can be seen in the contribution of Bledow et al. (2009a; see, for instance, their Table 1). They examine psychological factors in terms of the individual, the team, and the organization and in relation to their function as antecedents, processes, and outcomes associated with innovation. Although it is true that these authors refer to the individual and to personal properties that are frequently discussed in psychological research (e.g., divergent vs. convergent thinking or openness to experience), Bledow et al. (2009a) discuss such variables mainly in terms of the organization's structure and function, and little emphasis is placed on psychological processes within the individual actor or on personal properties of the actor.

According to D. H. Cropley and Cropley (2014, p. 25), from a psychological point of view, business-oriented descriptive frameworks for studying organizational innovation are of limited value because they do not adequately address:

- The psychological resources of the individual person that contribute to the process of innovation.
- The organizational factors that have an impact on these psychological resources.
- The role of the individual in the detailed steps involved in the innovation process.
- The manner in which the importance of certain psychological factors changes during the innovation process.

The purpose of this book is to expand existing perspectives by applying psychological concepts to examining the:

- products that innovation yields
- thinking processes within individual people that generate the ideas that give rise to such products
- values, attitudes, motives, and the like, of human actors that affect the way they carry out the processes and develop the products

As Read (2000, p. 106) stated clearly: "The encouragement of innovation is a *management function*" (emphasis added), so that the final element in the expansion of perspectives involves the forms of management that encourage people to be innovative (or inhibit them from doing so). This area is intimately linked to what is often referred to as innovation management, and indeed the ultimate purpose of this analysis is to provide managers with a tool for understanding and promoting the introduction of beneficial change into their organizations.

A SHIFT IN EMPHASIS

Innovation does not occur in a vacuum but is embedded in a system. This system is frequently conceptualized as involving levels, but in this book we treat it as encompassing three interacting environments. It is true that the elements of the system differ quantitatively, as the term *levels* implies. For example, one element involves the entire external world; another, an individual person. In addition, the relationship among the elements of the system is hierarchical, with the individual person, for instance, being both an independent element of the system but also simultaneously a unit contained within the society at large. For the purposes of this book, however, the most important differences among the various elements of the system are *qualitative* not quantitative; what is important is the *kind* of thing that happens in a particular element of the system, not how large it is. For this reason, these elements are referred to here as environments. The external world outside the organization that, for commercial organizations often means customers, constitutes the social environment; the organization itself defines the organizational environment; and the individual person functioning within an organization constitutes the personal environment. The person is an environment in the sense that psychological processes such as thinking take place within the person. The interrelationship of these environments is shown in Figure 1.1.

Barreto (2012, p. 356) argued that organizations typically try to deal with modern pressures by focusing on the social and organizational environments and *improving what they already do*. This often means, for instance,

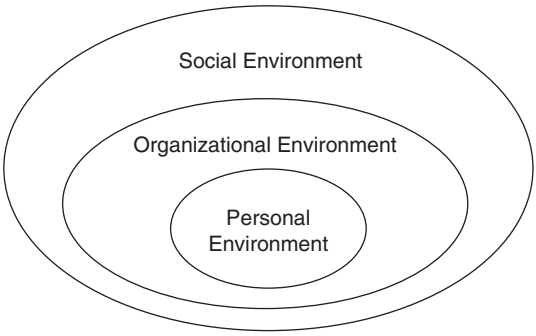

FIGURE 1.1. The Interrelationship of Environments

"squeezing another penny out of costs, getting a product to market a few weeks earlier, responding to customers' inquiries a little bit faster, ratcheting quality up one more notch" (Hamel, 1996, p. 69). More recently, Nussbaum (2013, p. 234) made a similar point when he complained that organizations are still trying to drive profit mainly "through efficiency, outsourcing and cost-cutting"; the result is that "*creativity and innovation are shunted to the periphery*" (emphasis added).

In a comprehensive review of the organizational literature, Barreto (2012) focused on individual actors (the personal environment), to be sure, but saw their role as mainly a matter of interpretation of information provided by the social and organizational environments in the form of the exogenous or endogenous shocks already mentioned. According to this model, the innovative impulse set in motion by a shock leads either to *identification* of opportunities – which are more or less lying around waiting to be recognized (discovery) - or to *generation* of opportunities through search and action (creation). Barreto thus saw the individual actor as mainly *reacting* when forced to do so by a shock. Looked at in this way, innovation involves little more than identifying and attempting to apply existing but previously neglected possibilities in order to relieve the pressure of the shock.

Nussbaum (2013, p. 38) referred to the reactive approach to innovation just outlined as the old model. By contrast, his new model *starts from* ideas originating in people's "creative intelligence" rather than being imposed from outside. Thus, he adopts a *proactive* approach, which requires that innovation management actively foster the generation of ideas and promote their transformation into valuable products rather than waiting for the external world to impose demands that cannot be ignored and then responding by making changes in the way the organization is run (such as

decision-making processes, reward systems, or structure of the workforce) or waiting for internal defects to demand such changes and then reacting to these demands in a last-ditch fight for survival.

Innovative Thinking

Chang and Burkitt (2005) called for examination of the generation and implementation of *ideas* in innovation rather than, for example, acquisition of improved technology for doing familiar things or streamlining already existing processes and systems, thus in effect calling for increased emphasis on the personal environment. In their assessment of the "state of the science," Anderson, Potocnik, and Zhou (2014) also emphasized the importance in organizational innovation of ideas generated by employees. According to Liedtka (1998, p. 120), "traditional processes have *choked* initiative and favored incremental over substantive change. They have emphasized analytics and extrapolation rather than creativity and invention." He called for more attention to be paid to innovative thinking, which he contrasted with strategic thinking. Chapter 3 will examine such thinking more closely.

Smith (2009) gave an example of thinking that was fixated on a particular strategy – that of Polaroid. Their tried and trusted, highly successful strategy was to get cameras into people's hands and make money through rapid provision of hard-copy pictures taken with the cameras. Their tactic for realizing this strategy was to offer a technology for rapid printing (Polaroid film). The firm reacted to the emergence of digital imaging by maintaining its rapid printing strategy and merely seeking to improve the printing technology through which this strategy was implemented: They spent years and substantial amounts of money developing a miniaturized printer that could produce instant hard-copy prints of digital images, much as the Polaroid process had done for photochemical images. Thus, Polaroid innovated by improving what already existed. Unfortunately, digital photographers print very few of the countless pictures they take. Thus, there was no market for the printer, even though it was an effective cog in the – unfortunately outdated – existing strategy of instant hard-copy pictures. Polaroid eventually went into bankruptcy protection.

Personal Resources for Innovation

The idea of innovation as being essentially proactive is not new in the organizational literature. Parker, Williams, and Turner (2006) defined it as "proactive behavior" (p. 636) and then went on to examine the key issue for