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Understanding innovation

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Innovation strategy

Abstract While innovation has become a pervasive term, many of today's organizations still find innovation elusive. One reason may be that much of what is being said about innovation contributes to misunderstanding. To truly manifest innovation and reap its benefits, one must recognize that innovation is three different things: innovation is an outcome, innovation is a process, and innovation is a mindset. Innovation as an outcome emphasizes what output is sought, including product innovation, process innovation, marketing innovation, business model innovation, supply chain innovation, and organizational innovation. Innovation as a process attends to the way in which innovation should be organized so that outcomes can come to fruition; this includes an overall innovation process and a new product development process. Innovation as a mindset addresses the internalization of innovation by individual members of the organization where innovation is instilled and ingrained along with the creation of a supportive organizational culture that allows innovation to flourish. Such an understanding defines necessary elements, considerations, and vernacular surrounding the term so that better decisions can be made, thereby enabling innovation and having a greater propensity to succeed.

1. The ubiquity of innovation

Innovation is everywhere today. Organizations are including the term innovation in their vision, mission, and objective statements. Politicians regularly mention the term innovation in speeches. The position of chief innovation officer is becoming more commonplace. And centers for innovation are popping up on university campuses. Though such pervasiveness has garnered attention, it has resulted in innovation being called the most important and overused word in America (O'Bryan, 2013). It also has resulted in a misunderstanding of what innovation means, leading to incorrect decision making by individuals and organizations and representing a potential reason for why a number of companies find innovation elusive (Kuratko, Covin, & Hornsby, 2014).

One common misunderstanding is the belief held by some individuals and organizations that an innovation must be something completely new and radical in nature; minor incremental innovation does not count. There is a problem with this belief, as radical innovation is very challenging, may require special resources, and reflects substantial risk—

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certainly more risk than incremental innovation. Incremental innovation, alongside radical innovation, balances the innovation effort by allowing small wins in pursuit of big wins. Successful organizations understand that innovation falls along a continuum, ranging from minor incremental changes to major radical innovations; innovation is not a binary phenomenon.

Another common misunderstanding is the tendency by some individuals and organizations to casually use the terms innovative and innovativeness as synonyms of innovation. They are not. Innovative is an adjective whereas innovation is a noun. Innovativeness is a noun but describes the capability and capacity for innovation. The term innovation is defined in one of two ways: "(1) the introduction of something new, or (2) a new idea, method, or device" (Merriam-Webster, 2017).

Although similar, the two definitions for innovation represent important distinctions. The first definition presents innovation as an outcome. The second definition presents innovation as a process. Herein lies an important consideration for understanding innovation: Innovation should be thought of as both an outcome and process. Organizations defining innovation as only one of these will fall short in its pursuit. Those organizations focusing strictly on outcome will minimize process, leading to inefficiencies such as duplication of effort and resource overconsumption; those organizations preoccupied with process often create organization bureaucracies that make it too difficult to manifest outcomes. A balanced view encompassing outcome and process is crucial, with a third consideration necessary as well: mindset. This article emphasizes that understanding innovation requires thinking around outcome, process, and mindset. Each of these is discussed in the following sections.

2. Innovation as an outcome

Innovation as an outcome emphasizes output. The output typically associated with innovation is the introduction of new products and new services, which exemplifies what is termed product innovation. A keen understanding acknowledges that product innovation is one of several avenues for outcome opportunities. Though not an exhaustive list, innovation as an outcome includes:

- Product innovation;
- Process innovation;
- Marketing innovation;
- Business model innovation;
- Supply chain innovation; and
- Organizational innovation.

2.1. Product innovation

Product innovation pertains to market offerings such as new products, new services, or new programs. While denoted as product innovation, the terms 'service' or 'program' could be readily used instead. Because innovation ranges from incremental to radical offerings, different types of product innovation are possible. Seven types of product innovations are generally recognized:

1. *Cost reductions*: These represent a permanent change in price and do not normally have a dramatic change in the visual characteristics of a product. The aim of the cost reduction is to differentiate the product from competing products on price or ensure the product remains price competitive. For example, in 2010, Nintendo reduced the price of its Wii product, making it more affordable to marketplace consumers. The move attracted media attention and increased Nintendo market share in the video game sector (Pepitone, 2009).

2. *Product improvements*: Enhancements that improve form or function. A product improvement will replace the original product so the original product will no longer be available to customers. Product improvements often represent those offerings labeled as 'new and improved' or 'better.' For example, a new and improved laundry detergent that is now 'even better than before' is characteristic of a product improvement. Product improvements also include packaging changes, assuming the core product the customer is buying does not change.

3. *Line extensions*: New features/options added to an existing offering, which provide unique benefits and functionality that the original product or current set of product offerings does not have. For example, adding offerings alongside an original cavity-fighting toothpaste product such as gel toothpaste, tartar control toothpaste, and whitening toothpaste deepens the toothpaste product line and is indicative of a line extension. The key distinction between a product improvement and a line extension is that when the line extension is introduced, the original product still can be acquired by the customer.

4. *New markets*: Current offerings taken to new markets with minimal changes to the product. For example, in 2005, global pharmaceutical and health product manufacturer Bristol-Myers Squibb announced the launch of its hepatitis B drug in China. The drug already debuted and proved to be effective in the U.S. The drug did not change, though the package language had to be translated into Chinese and provide the necessary information to meet Chinese government regulations (Bristol-Myers Squibb, 2017).

5. *New uses*: Original products positioned in new markets without minimal, if any, changes to the product. A classic example of a new use product is Arm & Hammer baking soda. Originally positioned as a baking product, the yellow box of Arm & Hammer baking soda was given additional positioning as a deodorizer for refrigerators. Arm & Hammer later introduced new lines of products like toothpaste and laundry detergents—products that were in a new form, had new packaging, and provided different functions (Arm & Hammer, n.d.).

6. *New category entries*: Products that are new to the company, but not new to the consumer as a category. Apple's initial entry into the watch business with its Apple Watch is an example of a new category entry (Olenick, 2015).

7. *New-to-the-world products*: Technological innovations that create a completely new market that previously did not exist. These innovations would be characterized as radical. Introduction of a new drug that treats a medical condition previously not addressed is indicative of a new-to-the-world product. For example, in 2015 Novartis received approval and launched Cosentyx to treat adults with moderate-to-severe plaque psoriasis. This drug was the first in a new class of medicines to treat this medical condition (Novartis, 2015). An example of a new-to-the-world service is when Domino's became the first company in the world to provide drone pizza delivery service. This service was launched in New Zealand in November 2016 (Reid, 2016).

One way to manage product innovation is to link new product considerations with the organization's marketing strategy. Delineating both the market to be served and the technology to be offered as current or new presents four types of strategies: market penetration (current market, current technology), product development (current market, new technology), market development (new market, current technology), and diversification (new market, new technology). Each of the seven different types of new products can be mapped to these strategies.

A market penetration strategy is based on an objective to increase market share and/or increase product usage. The current customer base is pursued with no major changes to the current product technology. Cost improvements and product improvements are characteristic of a market penetration strategy because these two types of new products attempt to attract customers through a lower price, more features, and/or improved features.

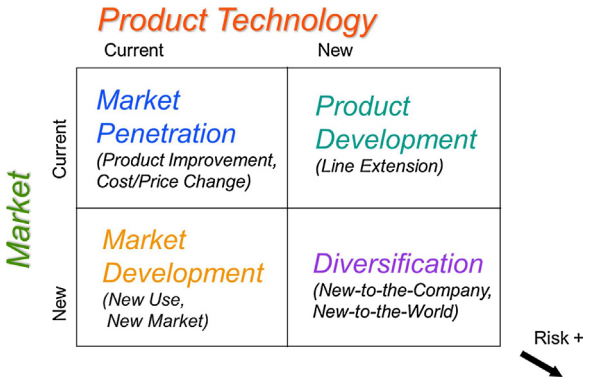
A product development strategy derives from an objective to drive sales volume by capitalizing on current product technology. In this way, the organization with a more diverse product line can offer more product options to connect with the current customer base, presenting additional sales opportunities that would drive revenue. Line extensions are characteristically associated with a product development strategy.

A market development strategy aims to expand the sales volume of current products through new markets. This would include geographic expansions into international markets and targeting new segments. There is no interest in pursuing technology changes; the predominant interest is to take the product as is and find new viable markets. New uses and new markets are characteristic of a market development strategy.

Diversification is pursued when the organization wishes to grow the bottom line by expanding its business into related business opportunities and unrelated business opportunities. Challenges stemming from new customers/markets and new technologies face the organization in this situation. New category entries and new-to-the-world products are pursued in the course of a diversification strategy.

As shown in Figure 1, risk increases as an organization moves from a market penetration strategy, which would involve incremental innovation projects, to a diversification strategy, which would involve disruptive, radical innovation projects. This exemplifies how product innovation can be considered portfolio management due to each type of new product having an associated risk of success. It further exemplifies that most organizations cannot afford to focus on one type of new product innovation. Rather, multiple types of new product projects should be considered simultaneously in order to assemble a new product portfolio that manages risk and maximizes return (Cooper, Edgett, & Kleinschmidt, 2002b).

Figure 1. The product-market matrix



2.2. Process innovation

Process innovation pertains to changes in a methodology or process to achieve efficiency such as faster processing, greater throughput, or lower cost. Production systems, service delivery systems, and organizational processes are fertile areas for process innovation.

An example of process innovation is Alcoa's creation of a production process making aluminum 40% more formable than traditional automotive aluminum. The design-friendly aluminum was incorporated into multiple components of the 2016 Ford F-150, with Ford becoming the first automaker to use the advanced automotive aluminum commercially (Alcoa, 2015). An example of process innovation applied to an organization is the 2017 announcement by the Security and Exchange Commission about a new policy and corresponding process that allows companies to file draft registration documents for initial public offerings confidentially. The new process "provides welcome flexibility to access the public markets and is likely to spur more initial public offerings" (Diamond, 2017).

An important relationship exists between process innovation and product innovation. Conditions favoring efficient, high-volume process innovation are different from those stimulating product innovation. Process innovation emphasizes efficiency with cost savings being of particular interest; product innovation is more about effectiveness with an objective to develop new offerings and not efficiency because new products often require additional resources, force new procedures, and cause changeovers in manufacturing processes. Organizations overly focused on process innovation can restrict opportunities for product innovation because process innovation only enables cost reductions. This illustrates a tension between the efficiency orientation of process innovation and the effectiveness orientation of product innovation. This also presents a potential managerial paradox: as the market becomes increasingly vulnerable to performance competition, attempts to continue reducing costs diminish the organization's ability to respond to this kind of competition.

2.3. Marketing innovation

Marketing innovation aims to connect with customers and consumers on new and different levels and may include new types of promotional efforts. In this way, a marketing innovation serves to drive demand by creating awareness, brand recognition, and product uniqueness. A marketing innovation is not usually something that is sold directly to final consumers. For example, in April 2016, Beringer Wine announced taste strips for its wine and installed taste strip dispensers—called Beringer Taste Stations—on store shelves so that consumers could taste the wine firsthand. Market research conducted by Beringer emphasized that customers who were able to sample a wine were more likely to buy it. At the time of its introduction, the Beringer Taste Station was hailed as "category-changing" and an "industry-leading innovation" (Beringer Vineyards, 2015).

2.4. Business model innovation

Business model innovation is an outcome that changes the industry. Three main types of business model innovation, which can be used alone or in combination, are industry model innovation, revenue model innovation, and enterprise model innovation (IBM, 2009). Industry model innovation involves innovating the industry value chain by moving into new industries, redefining existing industries, or creating entirely new ones by identifying/leveraging unique assets of the organization. Revenue model innovation is the generation of revenue through offering reconfiguration of the product/service/value mix and pricing models. Enterprise model innovation is innovating the role played in the value chain by changing extended enterprise and networks with employees, suppliers, customers, and others, including capability/asset configuration (IBM, 2009). Uber is an interesting example of business model innovation as it changed the taxi industry.

2.5. Supply chain innovation

Supply chain innovation is defined (Arlbjørn, de Haas, & Munksgaard, 2011, p. 8) as:

> A change (incremental or radical) within the supply chain network, supply chain technology, or supply chain processes (or combinations of these) that can take place in a company function, within a company, in an industry or in a supply chain in order to enhance new value creation for the stakeholder.

This definition highlights three interacting elements of supply chain innovation: supply chain network structure, supply chain technology, and supply chain business processes.

Since 2005, the Council of Supply Chain Management Professionals (CSCMP) has awarded an annual Supply Chain Innovation Award (SCIA). Dell was the 2016 SCIA award winner for developing an end-to-end sustainability initiative that covers its product portfolio from design to end-of-life. One project stemming from this initiative resulted in cumulative savings of $53.3 million in packaging costs and enabled a closed-loop recycling system that allowed Dell to use 11.7 million pounds of recycled-content plastics in new products (SupplyChainBrain, 2016).

2.6. Organizational innovation

Organizational innovation addresses changes to the organization. Such changes may occur in organization structure, new forms of management, and work environments. In 2014, LEGO introduced a new office concept that encouraged collaboration and chance encounters to spark new ideas and opportunities. The office concept aligned with a new way of operating based on a concept called activity-based working. The space lacked fixed seating so that the traditional, physical concept of a department was dissolved in place of cross-organizational collaboration (LEGO, 2014).

Chief Operating Officer and Executive Vice President of the LEGO Group, Bali Padda, commented (LEGO, 2014):

> For us, this is a move towards an office culture that embraces the diversity of the entire organization and offers a work environment that allows employees from very different parts of our organization to learn from each other and thereby allows us to think and act more holistically—ultimately making better decisions.

3. Innovation as a process

So far, I have addressed the different types of outcomes associated with innovation. Innovation as a process cannot be overlooked because it specifically attends to the way in which innovation is and should be organized so that these outcomes can come to fruition.

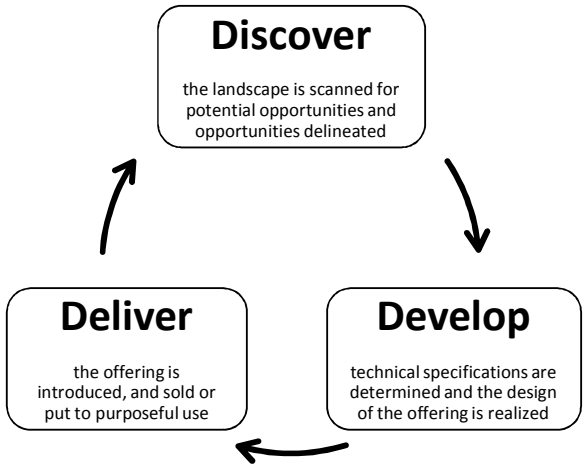
One process model for innovation portrays three phases: discover, develop, and deliver (PDMA, 2015). In the discover phase, the organization scans the landscape for potential opportunities and delineates these opportunities. Promising opportunities enter the develop phase, in which technical specifications are determined and the design of the offering is realized. In the deliver phase, the offering is introduced and put to purposeful use, which could include being sold in the marketplace (see Figure 2).

The deliver phase represents an important clarification of innovation and is what distinguishes innovation from the processes of ideation and invention. Ideation is the creative process that underlies idea generation; invention is taking new knowledge and creating something that had not existed before (Crawford, 1987). Innovation is more than ideas and creating something new; execution in terms of getting the offering into the hands of consumers, having purposeful use, and achieving market acceptance is an essential part of innovation. Without the deliver phase, an organization has not achieved innovation.

Another consideration associated with innovation as a process is the new product development (NPD) process. A commonly accepted NPD process is the Stage-Gate process, which aims to identify crucial process steps and checkpoints, and in doing so provide a blueprint for moving projects through different stages of development. Standard stages are idea generation, pre-technical evaluation, business case preparation, technical development and testing, and launch (Cooper, 2008).

Research studies found that a NPD process like Stage-Gate can reduce development time, allow for

Figure 2. The innovation cycle



the identification of projects that should be killed, increase the ratio of internally developed products that result in commercial projects, and increase the probability of launching new products quickly and successfully (Cooper, 2008). Harmancioglu, McNally, Calantone, and Durmusoglu (2007) added that the NPD process can help manage risk and increase efficiency through adherence to a structured NPD process, plus facilitate action across functions and projects by providing a common language and framework to enhance communication. Studies emphasized that organizations need to use a parallel NPD process versus a sequential process; the latter can lengthen cycle time due to the need to revisit key requirements overlooked in prior stages (Schilling & Hill, 1998). It is particularly emphasized that the NPD process integrate NPD efforts of the organization, facilitate organizational learning, and be adaptable and scalable to different types of projects and situations (Cooper, Edgett, & Kleinschmidt, 2002a).

4. Innovation as a mindset

Innovation as a mindset addresses the internalization of innovation by individual members of the organization and advancement of a supportive culture throughout the organization. Innovation has the propensity to flourish when employees and the organization as a whole instill and ingrain innovation, which in turn predicates the emergence of favorable innovation characteristics.

Dyer, Gregerson, and Christensen (2011) found five skills that push new ways of thinking, spur and support innovation, and represent distinguishing features of organizations known for innovation:

1. *Associating* is drawing connections between questions, problems, or ideas from unrelated fields;

2. *Questioning* is posing queries that challenge common wisdom;

3. *Observing* is scrutinizing the behavior of customers, suppliers, and competitors to identify new ways of doing things;

4. *Experimenting* is constructing interactive experiences and provoking unorthodox responses to see what insights emerge; and

5. *Networking* is meeting people with different ideas and perspectives.

Applied at both individual and organization levels, these skills prepare and enable the individual and organization to think differently, laterally, and expansively. The latter two are crucial innovation characteristics.

An additional mindset consideration is cross-functional thinking, because innovation must connect across departmental lines and represent an organization-wide effort. Cross-functional thinking is related to the notion of being T-shaped, a concept advocated by Tim Brown, CEO and president of IDEO. The T-shaped model portrays individuals who are deep in one area (e.g., business, design, or engineering) and augmented with broad knowledge of all aspects of product innovation activity. Another similarly advocated concept is the pi-shaped individual (Griffin, Price, & Vojak, 2012), who has deep expertise in two areas and a broad base of knowledge in other areas. T-shaped and pi-shaped individuals are described as having capabilities to embrace analytical and data-driven elements alongside storytelling and experiential elements (Mortimer, 2012).

A third mindset consideration is the incorporation of design thinking, a human-centered approach to innovation (Brown & Martin, 2015). While design thinking encompasses a design process, there is emphasis on embracing an empathetic mindset, which stresses the needs of the end user. Product attributes and technology are predicated on these needs. Design thinking also emphasizes iterative design, in which the interest is to generate many possible solutions quickly, develop simple prototypes, and then iterate on these initial solutions—informed by external feedback—toward an eventual solution. Characteristics that describe design thinking correspond to important mindset considerations for innovation, including people-centric, cross-disciplinary, collaborative, holistic, integrative, flexible, comfortable with ambiguity, communicative, open to learning, willing to test new ideas, and unhindered by failure (Luchs, 2016).

5. Understanding innovation makes it attainable

Whereas its pervasiveness has resulted in overuse and misunderstanding, innovation is important to all organizations as it is a requisite for longevity. To truly reap the benefits offered by innovation, organizations must understand that innovation is an outcome, a process, and a mindset. As suggested in Table 1, each element addresses keen aspects.

Table 1. Understanding innovation

Element	Strategic focus	Strategic question	Consideration
Innovation is an outcome	Ends	What do you want to happen?	– Product innovation – Process innovation – Marketing innovation – Business model innovation – Supply chain innovation – Organizational innovation
Innovation is a process	Ways and Means	How will you make it happen?	– Innovation process – Product development process
Innovation is a mindset	State	What should be instilled and ingrained to prepare for the what and the how?	– Individual mindset – Organization culture

Innovation as an outcome addresses the end the organization seeks to achieve. There is a main question surrounding outcome: What does the individual/organization want to happen? An important understanding around outcome is that there are multiple outcomes possible, depending on the context. Product innovation is commonly regarded as an outcome, but it is not the only outcome possible. Other outcomes can include process innovation, marketing innovation, business model innovation, supply chain innovation, and organizational innovation. Each type of outcome has the potential to range from incremental to radical in nature.

Process comprises the ways and means through which innovation can occur. The question addressed is this: How will the individual/organization make innovation happen? Process helps to support innovation and ensures its repeatability. Two particular processes to establish innovation are the innovation process itself and the product development process, both of which must include a deliver/execution phase in order to be innovation. Deliver is not a concluding end point, however, as innovation is a cycle that learns from previous deliver phases to enhance discover, develop, and deliver phases of future initiatives.

Mindset aligns employees and manifests the culture needed for innovation to happen. Encompassing a mindset that predisposes individuals and organization to be risk taking, cross-disciplinary, and open to varied ways of thinking helps to establish the state necessary for innovation; state implies something habitual and lasting. It is about instilling and ingraining a mindset that prepares the individual and organization for innovation so that there is proper engagement in the innovation process to achieve the desired innovation outcome.

Strongly associated with innovation are the criteria of success and failure, with the presumption that success is essential for innovation. Literature clearly points out that outcomes characterized as success and failure are part of a flourishing process, and a mindset accepting of this enables both outcomes and process. While success is desirable, innovation does not guarantee success and so failure is an option. Innovation presents opportunities upon which the organization chooses to act, with execution critical. Sometimes the innovation outcome may be quite compelling but, due to poor execution, results in a failure (Cooper, 2001). Sometimes it will be a success when introduced and a failure over a longer period.

In summary, the more an individual or organization demonstrates a fuller understanding of innovation, the greater propensity to attain innovation. This means that there is an understanding that innovation is an outcome, a process, and a mindset, where outcomes arise from an innovation process accentuated by mindset. Innovation is not a binary phenomenon, but comes in degrees; innovation is not the same thing as innovative or innovativeness; and innovation includes success and failure. Such keen understanding better defines the necessary elements, considerations, and vernacular surrounding the term, making innovation attainable and far less elusive.

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