CHAPTER SIXTEEN

MANAGING NEW PRODUCTS

I don't design clothes. I design dreams.

—Ralph Lauren, fashion designer and entrepreneur

New products and services are the key to sustainable growth; they enable companies to gain and sustain their market position by taking advantage of the changes in the market to create superior customer value. The main aspects of designing and managing new product offerings are the focus of this chapter.

Forecasting New Product Demand

The decision to launch a new offering stems from a company's belief that there is market demand for the benefits provided by this offering. To define the strategy and design tactics involved in the development of the new offering, the company needs to know the specifics of the target market and, in particular, the size of the market for its offering. This process of estimating the size of the potential market is referred to as demand forecasting.

There are two common types of demand forecasts: market forecasts and sales forecasts. *Market forecasts* estimate the total sales volume that ultimately can be achieved by all companies in a given market. Forecasts of market potential are typically used to make market entry and exit decisions, resource allocation decisions, and to set goals and evaluate performance. Unlike market forecasts, which indicate the sales volume that potentially can be achieved in a particular market, *sales forecasts* impose a specific time frame for achieving the sales volume. Thus, sales forecasts are an estimate of the total sales volume attainable within a given time frame. Similar to estimates of market potential, sales forecasts typically are used to make entry and exit decisions, allocate resources, plan production capacity, and evaluate the impact of various marketing mix variables on sales.

Based on the type of data they utilize, there are two types of demand-forecasting methods: collecting and analyzing primary data (data collected especially for the purpose of demand forecasting) and analyzing secondary data (existing data). These two types of methods are discussed in more detail in the following sections.

Forecasting Demand Using Primary Data

Primary-data forecasting involves collecting and analyzing new data to gain insight into the adoption process and estimate the offering's potential market size and speed of adoption. There are two types of primary-data demand forecasts: expert-judgment forecasts and customer-research forecasts.

- **Expert-judgment forecasts** rely on experts' opinions to estimate market demand. Depending on the nature of the expert's background, there are three main categories of forecasts: the executive forecast, sales force forecast, and industry forecast.
  - *Executive forecast* is a top-down approach in which the forecast is based on the aggregated opinion of a company's top executives and senior managers.
  - *Sales force forecast* is a bottom-up approach in which the forecast is based on the aggregated opinion of a company's sales force and sales managers.
  - *Industry forecast* is based on the aggregated opinion of industry experts, such as industry analysts, executives, managers, and sales forces from competitive companies.

  Because most expert-judgment forecasts are based on aggregating the opinions of multiple experts, an important issue concerns the process of aggregating individual judgments to arrive at the final estimate. A popular method for eliciting expert judgments is the Delphi method, described in more detail at the end of this chapter.

- **Customer-research forecasting** examines customers' reaction to the offering at different stages of the product development process. The two most popular methods of customer-based forecasting are concept testing and market testing.
  - *Concept testing* is the process of evaluating consumer response to a particular offering prior to its introduction to the market. Concept testing can be based on a description of the offering or, alternatively, can involve a fully functional prototype. One approach to concept testing involves using a representative sample of the target segment (a focus group) for the purpose of gleaning insights, ideas, and observations related to the key aspects of the offering. Another methodology involves estimating the probability of the offering's purchase by target customers based on a description of its main benefits and costs. Because it is based on customers' estimates of their future behavior, concept testing provides only rough estimates of sales volume.
  - *Market testing* relies on test markets to estimate market potential and future sales volume. It is often used as the litmus test for a go or no-go decision to launch a new product, as well as for testing specific aspects of the offering's marketing mix. Test markets aim to replicate all relevant aspects of the environment in which the company's offering will be launched (offering-related advertising and incentives, competitive offerings, and point-of-purchase environment) so that the test market outcome can be extrapolated to more general (national) sales forecasts. To

ensure greater validity of the results, multiple test markets, typically located in different geographic areas, are used. Because of its relatively high costs, market testing is normally used only for products that successfully pass the concept testing stage.

Forecasting Demand Using Secondary Data

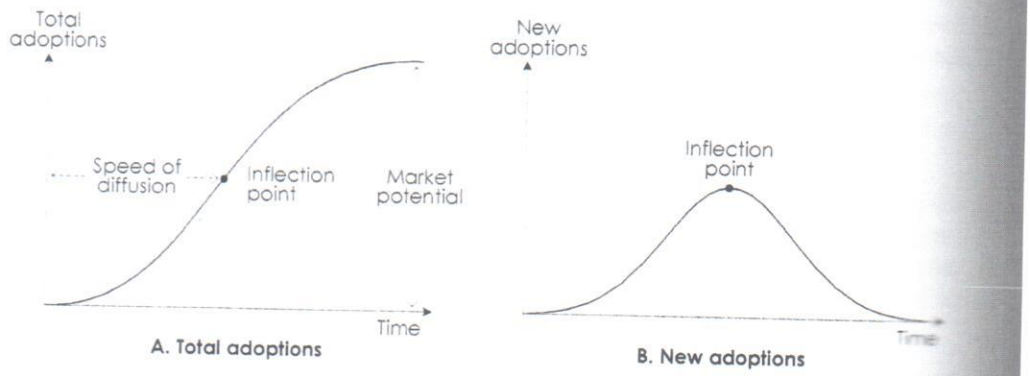
Secondary-data forecasting relies on already existing data. Based on the type of data included, three different secondary-data forecasting methods can be used:

- **Offering-specific forecasting** is based on past data from the sales of the same offering for which the demand is being forecast. A popular approach relies on past sales data to identify trends, then extrapolates these trends to a sales forecast. A variety of time-series statistical approaches might be employed for this type of analysis, such as linear trend analysis, moving-average analysis, and exponential smoothing. Another popular approach involves identifying the relationships between the offering's sales and a variety of internal (the offering's price, incentives, and communication) and external factors (competitors' price, incentives, and communication) to predict the likely sales volume.
- **Forecasting by analogy** involves forecasting an offering's performance by comparing its adoption cycle to a functionally similar product for which sales data are available. This approach is especially useful for new products for which adoption data are not available, or for nontraditional marketing activities involving existing products (drastic price change, novel incentives, nontraditional communication campaign) for which market reaction is unknown. For example, one could forecast the adoption of 3-D TVs by comparing it to the adoption of analogous products, such as color, flat-screen, and high-definition TVs. The key assumption of analogy-based forecasts is that the pattern of adoption of the new product (speed and depth of market penetration) will follow a similar pattern to that of the analogous product.
- **Category-based forecasting** involves utilizing available product-category data to estimate a particular product's performance. One category-based forecasting approach to quantifying sales potential involves estimating the degree to which sales in a given category have captured the total market potential in a particular geographical area based on the population of that area and average consumption per user nationally (also referred to as the Category Development Index, or CDI). An alternative approach to category-based demand forecasting involves estimating the degree to which sales of a specific offering (rather than the entire category) have captured the total market potential in a particular market (also referred to as the Brand Development Index, or BDI). Comparing these two indexes reveals an offering's performance relative to the category (discussed in more detail at the end of this chapter). Thus, a combination of high BDI and low CDI indicates that the brand is doing better than competitive offerings, whereas a combination of low BDI and high CDI indicates that the brand is doing worse than competitive offerings.

Understanding New Product Adoption

Managing new products calls for understanding how customers adopt these products—a process often referred to as diffusion of innovations. The diffusion of new products is often represented by an S-shaped curve, which depicts the total number of adoptions at any given point in time (Figure 1A). The pattern of the diffusion process can be defined by two factors: (1) *market potential*, indicating the total number of users that will ultimately adopt the innovation, and (2) the *speed of diffusion*, which can be defined by the time frame for reaching the inflection point—the point at which the rate of growth slows down and starts declining (and where the shape of the diffusion curve turns from convex to concave).

Figure 1. New Product Adoption



The diffusion process can also be represented by the number of new (rather than total) adoptions at any given point in time. In this context, new product adoption can be represented by a bell-shaped curve, whereby, after a relatively slow start, an increasing number of people adopt the innovation until it reaches a peak, then starts declining as the number of potential adopters decreases. The pattern of new adoptions directly corresponds to that of total adoptions, with the key difference that it represents the dispersion of new adoptions over time instead of the total number of adoptions (Figure 1B). A popular interpretation of the bell-shaped curve of new adoptions involves classifying customers into distinct categories based on their adoption pattern. The two most influential frameworks offering such classifications—Rogers' model and Moore's model—are discussed at the end of this chapter.

The adoption of an innovation does not always follow a normal distribution represented by the bell-shaped curve: Some innovations are adopted very rapidly, whereas others take a substantial amount of time to achieve their peak adoption period. A new offering might be adopted almost instantly by a large segment of the population, then it might be diffused at a much slower rate until it is adopted by all target customers; alternatively, adoption might start at a much slower rate and reach the point at which the majority of target customers have adopted it relatively late in the adoption process. The speed with which customers adopt a new offering is a function of the value provided by the offering. Specifically, several factors can influence the diffusion of new offerings:

concept development is typically complemented with concept testing, which aims to examine whether the new product is technologically feasible and whether it is likely to be accepted by target customers.

- **Business analysis** involves evaluating the viability of the offering's business model. This stage examines the offering's concept that was defined in the previous stage with respect to its ability to create an optimal value proposition for target customers, the company, and collaborators. An important aspect of business analysis involves forecasting market demand (discussed in more detail later in this chapter).
- **Product development** involves designing and manufacturing the offering. Typically, product development is initially implemented on a smaller scale to allow for testing of its technological and business viability. In cases when manufacturing the actual product is complex and/or costly, the company might consider developing a physical prototype or a mock-up before producing a limited quantity of the product for a test market.
- **Market testing** involves assessing the viability of the new product or prototype, typically on a small scale (in a simulated usage environment and/or in a test market area). Market testing enables the company to more realistically assess the likelihood of success of a given offering. In addition to assessing customers' response to the offering, market testing (also referred to as beta testing) is also conducted to improve the design and functionality of the product before commercializing it.
- **Business deployment** involves deploying the new product on a large scale, including full-scale manufacturing, promotion, and distribution.

Note that although the above six stages are presented as a stepwise process, this particular sequence—although the most common one—is not fixed, allowing a certain level of flexibility. Thus, when product development requires substantial resources, prototype-based market testing can precede the development of the actual product. On the other hand, when commercial deployment does not require substantial resources, the new product development process can skip the market-testing stage and use full-scale product deployment as a de facto market test.

Managing Risk in New Product Development

One of the key challenges in new product development is managing the uncertainty of success associated with launching new offerings. Because uncertainty increases the risk of failure, minimizing risk is one of the key aspects of new product development. Managing risk involves minimizing the chance that the new offering will fail (e.g., during unfavorable market conditions), thus wasting the resources expended on its development. The risk involved in new product development can be classified into one of two categories: market risk and technology risk.

- **Market risk** reflects the uncertainty associated with the factors (the Five Cs) defining the market. Thus, the customer need that the new product aims to

- **Inherent value of the offering**. The greater the inherent value of the new offering, the more likely it is to be adopted.
- **Relative advantage**. The greater the relative advantage of an offering over the product it replaces, the more likely it is to be adopted.
- **Transparency**. An offering is more likely to be adopted when its relative benefits are readily observable and can be experienced by customers.
- **Compatibility**. An offering compatible with customers' existing systems and processes is more likely to be adopted than an incompatible one.
- **Perceived risk**. An offering is more likely to be adopted when the perceived risk associated with the new product is low. This might involve customers' uncertainty about their own preferences, about the product's performance, and about the magnitude of the risks associated with the new product.

In addition to being a function of the offering's inherent benefits, the likelihood that customers will adopt a new offering is a function of a company's promotional and distribution activities. Thus, the greater the promotional activity (advertising, public relations, monetary and nonmonetary incentives) associated with a new offering and the greater the availability of the offering across distribution channels, the more likely it is to be adopted by customers.

Managing New Product Development

New product development involves converting ideas into successful market offerings. One of the main challenges with developing new products is streamlining the innovation process in a way that facilitates market success. The key aspects of the new product development process are discussed in the following sections.

Understanding the New Product Development Process

New product development can be viewed as a stepwise process comprising the following six stages:

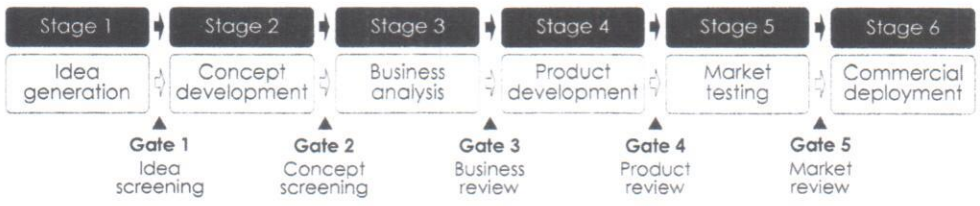
- **Idea generation** involves generating ideas that can become the basis for new products. Ideas can come from different sources: They can stem from the company (e.g., by virtue of marketing research and/or employee suggestions), from customers (e.g., via crowdsourcing), and from collaborators (e.g., dealers, retailers, and wholesalers). Idea generation is typically complemented by idea screening, which involves evaluating the idea from the viewpoint of its technological and market feasibility.
- **Concept development** involves creating a detailed sketch of the initial idea by delineating the key technological and market aspects of the proposed offering. At this stage, the goal is to define the key product attributes, the underlying technology processes, and the offering's tactics (product, service, brand, price, incentives, communication, and distribution). The process of

fulfill might be transient or might exist only for a *customer* segment that is not large enough to justify the development, production, promotion, and distribution costs. The company's *collaborators* (suppliers, distributors, codevelopers) might not allocate the necessary support to ensure the success of the offering. The *company* might end up without sufficient resources to develop and launch the offering due to factors such as cost overruns, inadequate manufacturing infrastructure, and the loss of key personnel. *Competitors* might gain pioneering advantage by being first to market, or they might gain second-mover advantage by emulating the company's technology to design a cheaper product or by building on the company's technology to develop a functionally superior offering. Finally, the success of a new offering can be influenced by changes in the market *context*, such as the development of superior technologies, fluctuating sociocultural trends, new regulatory restrictions on product specifications and the product development process, as well as new import/export tariffs, taxes, and fees.

- **Technological risk** reflects the uncertainty associated with the technological viability of the new offering. For example, the desired product features might not be achievable with currently available technologies, product design might not be compatible with the functional requirements, and product reliability might be compromised by the use of new, unproven technologies. Technological risk might also extend the timeframe for developing the new offering, which in turn can increase the market risk associated with changes in the market environment during a longer period of time.

A common approach to managing risk involves evaluating the outcomes of each of the six stages discussed in the previous section, and before proceeding to the next stage screening out the ideas, concepts, and products that are unlikely to succeed. Thus, the process of new product development can be thought of as a funnel, with numerous new product ideas entering the process and only a few ending up being commercialized. A popular strategy for managing risk in new product development is the *stage-gate approach*, which involves introducing benchmarks (gates) that must be met in order for an idea, concept, or product to proceed to the next stage of development. The stage-gate approach to product development is illustrated in Figure 2.

Figure 2: The Stage-Gate Approach for Minimizing Risk in New Product Development



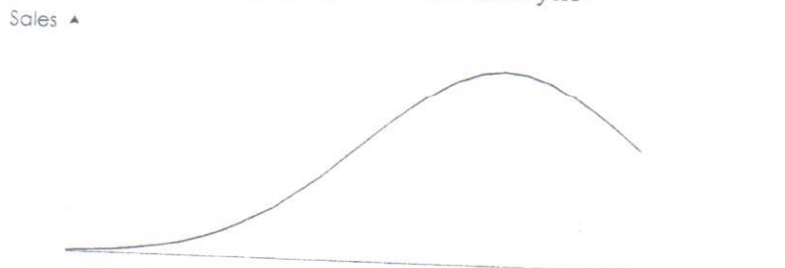
To manage the risk associated with a new product launch, a manager must define the hurdle set by each of the five gates—idea screening, concept screening, business review, product review, and market review—depicted in Figure 2. The

more stringent the hurdle, the greater the likelihood that the offering will succeed. At the same time, setting overly stringent hurdles (gates) can make the company overlook a potentially viable new product, thus giving the competition the opportunity to gain pioneering advantage by being the first to bring the product to market. Therefore, setting the "right" hurdles at each stage of product development is essential for growing the company's new product pipeline while minimizing the risk of new product failure.

Managing the Product Life Cycle

The concept of a product life cycle is based on the idea that products have a limited life in which they pass through distinct stages. Typically, four key product life cycle stages are identified: introduction, growth, maturity, and decline. During the *introduction* stage, product awareness is low and there are few competitors. As the product takes off during the *growth* stage, the number of competitors entering the market increases. At *maturity*, the number of competitors tends to peak, the market becomes saturated, and industry profitability starts to decline because of intensifying competition. Finally, the *decline* stage is characterized by falling demand for the product, relatively low profitability, and a decreasing number of competitors stemming from consolidation and exit from the market. The four stages of the product life cycle and the corresponding market conditions at each stage are illustrated in Figure 3.

Figure 3. Managing the Product Life Cycle[1]



	Introduction	Growth	Maturity	Decline
Market size	Small	Moderate	Large	Moderate/Small
Market growth	Low	High	Low	Negative
Competition	Low	Moderate	High	Moderate/Low

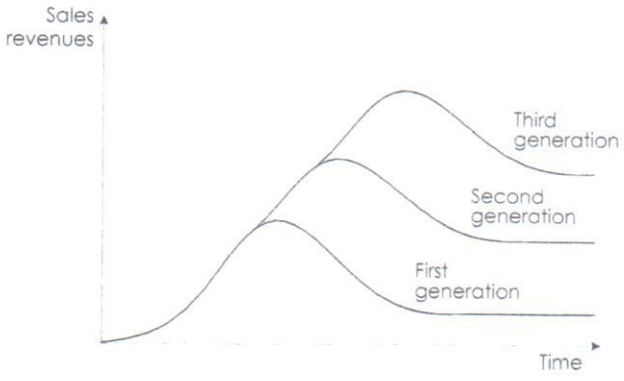
Product strategies vary across an offering's life cycle. At the introduction stage, companies typically offer a single product variant targeted to the most likely adopters. As the product enters the growth stage, the number of customers adopting the product increases, and so does the heterogeneity of these customers. To address the diverse needs of current and potential customers, companies add product extensions designed to better meet the needs of various customer subsegments. The number of product variants typically peaks at maturity and starts de-

creasing as the product enters its decline stage; profit margins shrink, and companies focus on best-selling products, phasing out products with insufficient volume to meet their profitability benchmarks.

In the same vein, the stage of an offering's life cycle can influence its communication. Thus, in the early stages of product introduction, the communication campaign aims primarily at creating awareness among early adopters, as well as among channel partners. As the product enters the growth stage, a company's communication goals shift to creating awareness of the product within the mass market while at the same time differentiating its offerings from those of competitors. As the product enters its maturity stage and the majority of customers are aware of the category benefits, the communication focus shifts from creating awareness of the category benefits to differentiating the company's offering by highlighting its benefits vis-à-vis the competition. This emphasis on product differentiation continues as the product enters its decline stage; however, at this point overall communication expenditures tend to decline.

An important aspect of new product decisions involves managing the evolution of the company's products over time. As products become obsolete, they are often replaced by a new generation of products that take advantage of changes in target markets, such as changes in customer preferences, alterations in the competitive landscape, advances in technology, and changes in the regulatory environment. Innovation enables companies to extend the life cycle of their individual products (Figure 4). To illustrate, consider Gillette's product development strategy leading to the introduction of Fusion, its eighth-generation wet-shaving razor. Gillette's original razor, introduced in 1903 was replaced by the second-generation razor Trac II (1971), followed by Sensor (1990), Sensor Excel (1995), Mach3 (1998), Mach3 Turbo (2002), M3Power (2004), Fusion (2006), Fusion ProGlide (2010), and Fusion FlexBall (2014).

Figure 4. Extending Product Life Cycle through Innovation[2]



When developing a new generation of products, companies often develop strategies to make the earlier generation obsolete, a process often referred to as planned obsolescence. Planned obsolescence involves designing new products in a way that

makes prior generations inferior (and, therefore, obsolete) on key dimensions such as functionality, compatibility, and style. To illustrate, to facilitate user migration to later versions of their software, companies systematically terminate support (e.g., software upgrades) for earlier versions. In addition, the added functionality of the new generation of software often limits its backward compatibility; as a result, once the new software has been adopted by a critical mass of users, the earlier versions become obsolete because of their incompatibility. Another important implication of planned obsolescence for new product design involves managing a new product's costs by optimizing its performance during its expected lifetime, a process often referred to as value engineering. For example, a company expecting its product to be obsolete within a given time frame might optimize costs by designing the durability of a product's components according to the expected product lifetime.

SUMMARY

The decision to launch a new offering stems from a company's belief that there is market demand for the benefits provided by this offering. To define the strategy and design tactics involved in the development of the new offering, the company needs to know the specifics of the target market and, in particular, the size of the market for its offering.

Understanding market demand is essential for managing new products. There are two basic types of demand forecasting methods: methods that involve collecting primary data (data collected especially for the purposes of demand forecasting) and methods that involve analyzing secondary data (existing data). Primary-data forecasting comprises two types of methods: expert-judgment forecasts and customer-research forecasts. Forecast methods involving already existing (secondary) data include offering-specific forecasting, forecasting by analogy, and category-based forecasting. Because most forecasting methods are based on a variety of assumptions, a more accurate forecast can be achieved by using multiple methods.

The process of new product adoption can be represented by an S-shaped curve that depicts the total number of adoptions at any given point in time, as well as by a bell-shaped curve depicting the number of new (rather than total) adoptions of the innovation at any given point in time. New product adoption is influenced by several factors: the inherent value of the product, its relative advantage over similar offerings, the transparency of product benefits, its compatibility with related products, and the perceived risk that consumers associate with product adoption.

The process of converting ideas to market offerings can be viewed as a process comprising the following six stages: idea generation, concept development, business analysis, product development, market testing, and business deployment. To minimize the market and technical risk associated with the offering, the stage-gate approach to new product development calls for introducing benchmarks (gates) that must be met in order for an idea, concept, or product to proceed to the next stage of development.

Managing product life cycle involves optimizing the market value of products and services as they progress through different stages in the marketplace: introduction, growth, maturity, and decline. At introduction, product awareness is low and there are few competitors. As the product gains traction with customers, the number of competi-

tors entering the market increases. At maturity, the number of competitors tends to peak, the market becomes saturated, and industry profitability starts to decline because of intensifying competition. Finally, the decline stage is associated with falling demand for the product, relatively low profitability, and a decreasing number of competitors stemming from consolidation and exit from the market. Because the stages in the product life cycle are characterized by different market conditions, different stages require different marketing strategies.

RELEVANT CONCEPTS

Brand Development Index (BDI): A measure of the degree to which sales of a given offering (or a product line associated with a particular brand) have captured the total market potential in a particular geographical area. BDI quantifies the sales potential of a given brand in a particular market.

$$\text{BDI} = \frac{\text{Percent of an offering's total US sales in market X}}{\text{Percent of the total US population in market X}}$$

Category Development Index (CDI): A measure of the degree to which sales in a given category have captured the total market potential in a particular geographical area. CDI quantifies the sales potential of a given category in a particular market.

$$\text{CDI} = \frac{\text{Percent of a category's total US sales in market X}}{\text{Percent of the total US population in market X}}$$

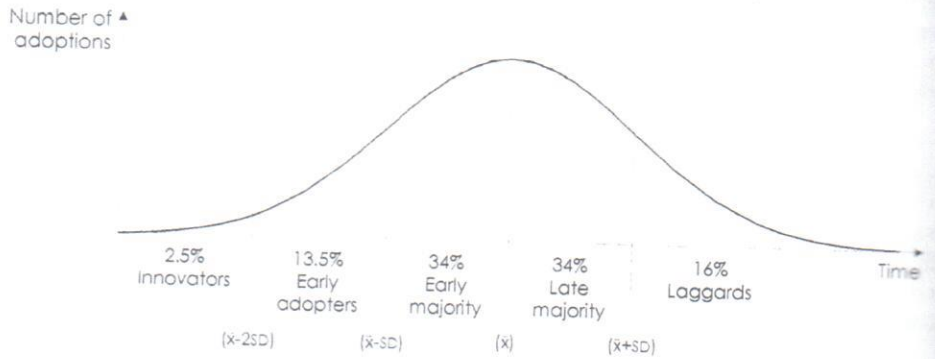
Delphi Method: A popular method for eliciting group expert judgments, named after the site of the most revered oracle in ancient Greece, the Temple of Apollo at Delphi. The Delphi method involves multiple rounds of collecting anonymous expert opinions. The primary goal of the Delphi method is to ensure an accurate forecast from a group of experts by controlling for many of the potential decision biases, such as social conformity (agreeing with the majority), status (seniority within the organization), confirmation bias (ignoring new information that is inconsistent with the original forecast), and other related effects (experts' ability to eloquently articulate their forecast). To achieve this degree of control, individual forecasts are collected by a moderator who ensures anonymity of the experts' opinions. Each forecast typically consists of two parts: the forecast and its rationale. In the Delphi method, after each round of forecast elicitation, the moderator provides the experts with the anonymous forecasts and their rationale, and gives them the option to revise their opinion. This process is repeated until a consensus is reached. In cases where consensus is unlikely after several rounds, the individual forecasts are typically aggregated into an overall estimate (e.g., by averaging the individual numeric forecasts).

RELEVANT FRAMEWORKS: ROGERS' MODEL OF ADOPTION OF INNOVATIONS

The key premise underlying the Rogers model is that some consumers are inevitably more open to innovations than others.[3] Based on the relative time of adoption of innovations, the Rogers model distinguishes five categories of customers (Figure 5): innovators (the first 2.5% of the adopters), early adopters (the 13.5% of the adopters following the

innovators), early majority (the next 34% of adopters), late majority (the next 34%), and laggards (the remaining 16%).

Figure 5. Rogers' Categorization of Customers Based on the Time of Adoption of Innovation



The respective percentage values associated with each category are based on the assumption that the process of adoption of innovations can be represented by a normal distribution, which is defined by two key parameters: its mean ($\bar{x}$) and its standard deviation (SD), a measure of the variation from the mean. In this context, the early and late majorities are defined as being one standard deviation from the mean (34%), whereas early adopters are defined as being two standard deviations from the mean. This classification is not symmetric: There are three categories on the left of the mean and only two on the right. The reason is that the segment on the far left end is further divided into two categories: innovators and early adopters, which cumulatively add up to the size of the laggards segment on the right. The rationale for this division is that these two categories display distinct patterns of adoption behavior and, therefore, from a theoretical standpoint, need to be considered separately.

Despite its popularity, the Rogers model has a number of limitations. One of its key limitations is that it is essentially a classification model; although it identifies the five different categories of adopters of innovation, it does not explain the factors that determine this classification. For example, this model does not offer a decision rule to help determine whether a particular individual will become an early adopter or a laggard. Another limitation is that classification into one of the five categories is linked to relatively stable personality traits, even though in reality individuals who are innovators in one domain often might be laggards in another. Additional limitations can be traced back to some of its assumptions, such as the normally shaped distribution of adoption of innovation across the population and the preset percentage allocation of individuals into each of the five categories. As a result, the application of the Rogers model is limited to a general description of the adoption of innovations process and to classifying adopters into one of the five categories for descriptive purposes.

RELEVANT FRAMEWORKS: MOORE'S MODEL OF ADOPTION OF NEW TECHNOLOGIES

A popular application of Rogers' diffusion theory to technology products is Moore's "chasm" model.[4] Moore argued that the adoption of technology-based innovations is discontinuous because different groups of adopters have different adoption patterns

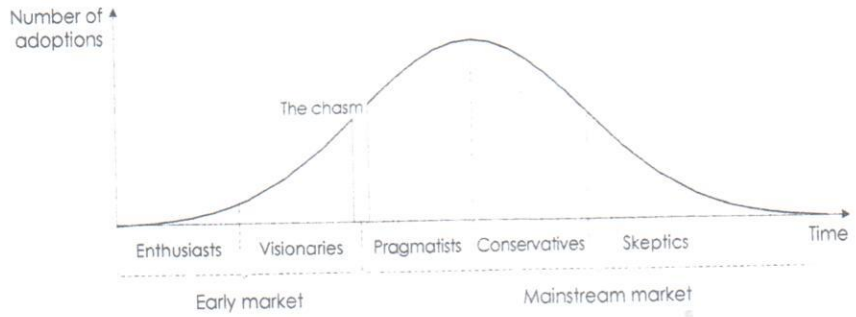
and, therefore, require different marketing strategies. Moore's model identifies five distinct categories of customers based on their attitudes toward technology, which correspond to Rogers' five categories: technology enthusiasts (innovators), visionaries (early adopters), pragmatists (early majority), conservatives (late majority), and skeptics (laggards). These five categories of adopters can be described as follows:

- **Technology enthusiasts** (innovators) are fundamentally committed to new technology and derive utility from being the first to experience new technologies.
- **Visionaries** (early adopters) are among the first to apply new technologies to solve problems and exploit opportunities in the marketplace.
- **Pragmatists** (early majority) view technology innovation as a productivity tool. Unlike enthusiasts, they do not appreciate technology for its own sake. Unlike visionaries, they do not use technology innovations to change existing business models but rather to optimize the efficiency and effectiveness of existing business models.
- **Conservatives** (late majority) are generally pessimistic about their ability to significantly benefit from new technological innovations and are reluctant to adopt them.
- **Skeptics** (laggards) are critics of any innovative technology and are not likely to adopt such technologies even when they offer distinct benefits.

Unlike Rogers' model, which implies smooth and continuous progression across segments during the life of an offering, Moore's model assumes that the adoption of technology-based innovations follows a discontinuous pattern. This discontinuity in the adoption process is attributed to the fact that different groups of adopters have different adoption patterns and, therefore, require different marketing strategies. Thus, once a technology has reached its market potential within a given segment, it might not naturally roll over to the next segment.

To illustrate, even though an innovation has been adopted by technology enthusiasts, it might never be widely accepted by the visionaries. In this context, a company's biggest hurdle in promoting technology innovations is to bridge the gaps among different segments. According to Moore, the key gap among segments—referred to as a "chasm"—is the one between the early market (enthusiasts and visionaries) and the mainstream market (pragmatists, conservatives, and skeptics). In this context, the chasm describes the impediments to mainstream commercialization of technology innovations that prevent pioneers from gaining mainstream acceptance of their offerings (Figure 6). Thus, to be successful, an offering needs to "cross the chasm" between the early and the mainstream market.

Figure 6. Moore's Application of Rogers' Model to Technology Markets



To avoid the perils of discontinuity of adoption of innovations, Moore's model suggests promoting innovations first to technology enthusiasts so that they help educate visionaries. Visionaries, in turn, are likely to serve as a reference for pragmatists, one of the two largest market segments. Leveraging its success with pragmatists, the company should be able to gain the know-how and achieve the economies of scale necessary to make the product reliable and inexpensive, allowing it to meet the needs of conservatives. With respect to skeptics, referred to as the "gadflies of high tech," the prescription is to let them be and not promote the innovation to them.

Despite the intuitive appeal of the idea that customers vary in terms of the speed and likelihood of adopting new technologies, Moore's model of technology adoption is subject to several important assumptions that limit the validity of its predictions. Dividing adopters into five distinct categories, as well as predefining the size of each category (e.g., enthusiasts/innovators are the first 2.5% of adopters), often involves an unrealistic assumption that does not apply to all high-tech innovations. This assumption is not an issue for Rogers' model, which assumes continuous adoption across different segments. In contrast, because the presence of gaps among segments is the cornerstone assumption of Moore's model, the identification and size of each segment are crucial. To illustrate, the assumption that a pronounced discontinuity (chasm) in the adoption process is likely to occur after 16% of customers (the "early market") have adopted the product is not likely to hold universally across different innovation types and industries. In the same vein, relative segment sizes are likely to be a function of the degree to which the technology appeals to the broader market. Indeed, certain types of innovations are likely to have much broader appeal than others and, as a result, the dynamics of their adoption patterns are likely to vary.

ADDITIONAL READINGS

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NOTES

[1] Adapted from Levitt, Theodore (1965), "Exploit the Product Life Cycle," *Harvard Business Review*, 43 (November–December), 81–94.

[2] Adapted from Christensen, Clayton (1997), *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Boston, MA: Harvard Business School Press.

[3] Rogers, Everett M. (1962), *Diffusion of Innovations*. New York, NY: Free Press.

[4] Moore, Geoffrey A. (1991), *Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers*. New York, NY: HarperBusiness.