Organizational culture

Eager Sellers and Stony Buyers: Understanding the Psychology of New-Product Adoption

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Summary.

Companies that introduce new innovations are the most likely to flourish, so they spend billions of dollars making better products. But studies show that new innovations fail at a staggering rate. While many blame these misses on lackluster products, the reality isn't so simple. The goods that consumers dismiss often do offer improvements over existing ones. So why don't people purchase them? And why do companies keep peddling products that buyers are likely to reject?

The answer, says the author, can be found in the brain. New products force consumers to change their behavior, and that has a psychological cost. Many products fail because people irrationally overvalue the benefits of the goods they own over those they don't possess. Executives, meanwhile, overvalue their own innovations. This leads to a serious clash. Studies show, in fact, that there is a mismatch of nine to one, or 9x, between what innovators think consumers want and what consumers truly desire.

Fortunately, companies can overcome this disconnect. To start, they can determine where their products fall in a matrix with four categories: easy sells, sure failures, long hauls, and smash hits. Each has a different ratio of product improvement to change required from the consumer. Once businesses know where their products fit into this grid, they can manage the resistance to change.

For some innovations, major behavior change is a given. In those cases, companies can either wait for consumers to warm to the product, make the improvement so great that buyers get past their apprehension, or try to eliminate the incumbent product. Firms can also try to minimize buyer resistance by making products that are compatible with incumbent goods, seeking out those who are not yet users of the existing product, or finding true believers.

More than a century ago, Ralph Waldo Emerson is reported to have said, "If a man can write a better book, preach a better sermon, or make a better mousetrap than his

neighbor, though he build his house in the woods, the world will make a beaten path to his door." If only marketing innovations were that simple.

In today's hypercompetitive marketplace, companies that successfully introduce new products are more likely to flourish than those that don't. Businesses spend billions of dollars making better "mousetraps" only to find consumers roundly rejecting them. Studies show that new products fail at the stunning rate of between 40% and 90%, depending on the category, and the odds haven't changed much in the past 25 years. In the U.S. packaged goods industry, for instance, companies introduce 30,000 products every year, but 70% to 90% of them don't stay on store shelves for more than 12 months. Most innovative products—those that create new product categories or revolutionize old ones—are also unsuccessful. According to one study, 47% of first movers have failed, meaning that approximately half the companies that pioneered new product categories later pulled out of those businesses.

Consider three high-profile innovations whose performances have fallen far short of expectations:

- Webvan spent more than $1 billion to create an online grocery business, only to declare bankruptcy in July 2001 after failing to attract as many customers as it thought it would.
- In spite of gaining the support of Apple's Steve Jobs, Amazon's Jeff Bezos, and many high-profile investors, Segway sold a mere 6,000 scooters in the 18 months after its launch—a far cry from the 50,000 to 100,000 units projected.
- Although TiVo's digital video recorder (DVR) has garnered rave reviews since the late 1990s from both industry experts and product adopters, the company had amassed $600 million in operating losses by 2005 because demand trailed expectations.

After the fact, experts and novices alike tend to dismiss unsuccessful innovations as bad ideas that were destined to fail. But surely that's too simple an explanation. If these innovations are so misguided, why isn't it obvious before the fact? Webvan was backed by seasoned retailers, executives, and investment bankers, but it was nonetheless a spectacular failure. While the Segway and TiVo stories have yet to play out fully, both company executives and industry analysts were far more optimistic about those innovations than they should have been.

Why do consumers fail to buy innovative products even when they offer distinct improvements over existing ones? Why do companies invariably have more faith in new products than is warranted? Few would question the objective advantages of many innovations over existing alternatives, but that's often not enough for them to succeed. To understand why new products fail to live up to companies' expectations, we must delve into the psychology of behavior change. This article presents a behavioral framework that explains why so many products fail and outlines some actions that companies can take to improve their chances of success.

New products often require consumers to change their behavior. As companies know, those behavior changes entail costs. Consumers incur transaction costs, such as the

activation fees they have to pay when they switch from one cellular service provider to another. They also bear learning costs, such as when they shift from manual to automatic automobile transmissions. People sustain obsolescence costs, too. For example, when they switch from VCRs to DVD players, their videotape collections become useless. All of these are economic switching costs that most companies routinely anticipate.

What businesses don't take into account, however, are the psychological costs associated with behavior change. Many products fail because of a universal, but largely ignored, psychological bias: People irrationally overvalue benefits they currently possess relative to those they don't. The bias leads consumers to value the advantages of products they own more than the benefits of new ones. It also leads executives to value the benefits of innovations they've developed over the advantages of incumbent products.

That leads to a clash in perspectives: Executives, who irrationally overvalue their innovations, must predict the buying behavior of consumers, who irrationally overvalue existing alternatives. The results are often disastrous: Consumers reject new products that would make them better off, while executives are at a loss to anticipate failure. This double-edged bias is the curse of innovation.

The Psychology of Gains and Losses

Companies have long assumed that people will adopt new products that deliver more value or utility than existing ones. Thus, businesses need only to develop innovations that are objectively superior to incumbent products, and consumers will have sufficient incentive to purchase them. In the 1960s, communications scholar Everett Rogers called the concept "relative advantage" and identified it as the most critical driver of new-product adoption. This argument assumes that companies make unbiased assessments of innovations and of consumers' likelihood of adopting them. Although compelling, the theory has one major flaw: It fails to capture the psychological biases that affect decision making.

Gains and losses.

In 2002, psychologist Daniel Kahneman won the Nobel Prize in economics for a body of work that explores why and when individuals deviate from rational economic behavior. One of the cornerstones of that research, developed with psychologist Amos Tversky, is how individuals value prospects, or choices, in the marketplace. Kahneman and Tversky showed, and others have confirmed, that human beings' responses to the alternatives before them have four distinct characteristics.

First, people evaluate the attractiveness of an alternative based not on its objective, or actual, value but on its subjective, or perceived, value. Second, consumers evaluate new products or investments relative to a reference point, usually the products they already own or consume. Third, people view any improvements relative to this reference point as gains and treat all shortcomings as losses.

Fourth, and most important, losses have a far greater impact on people than similarly sized gains, a phenomenon that Kahneman and Tversky called "loss aversion." For instance, studies show that most people will not accept a bet in which there is a 50% chance of winning $100 and a 50% chance of losing $100. The gains from the wager must outweigh the losses by a factor of between two and three before most people find such a bet attractive. Similarly, a survey of 1,500 customers of Pacific Gas and Electric revealed that consumers demand three to four times more compensation to endure a power outage—and suffer a loss—than they are willing to pay to avoid the problem, a potential gain. As Kahneman and Tversky wrote, "losses loom larger than gains."

The endowment effect.

Loss aversion leads people to value products that they already possess—those that are part of their endowment—more than those they don't have. According to behavioral economist Richard Thaler, consumers value what they own, but may have to give up, much more than they value what they don't own but could obtain. Thaler called that bias the "endowment effect."

In a 1990 paper, Thaler and his colleagues describe a series of experiments they conducted to measure the magnitude of the endowment effect. In one such experiment, they gave coffee mugs to a group of people, the Sellers, and asked at what price point—from 25 cents to $9.25—the Sellers would be willing to part with those mugs. They asked another group—the Choosers—to whom they didn't give coffee mugs, to indicate whether they would choose the mug or the money at each price point. In objective terms, all the Sellers and Choosers were in the same situation: They were choosing between a mug and a sum of money. In one trial of this experiment, the Sellers priced the mug at $7.12, on average, but the Choosers were willing to pay only $3.12. In another trial, the Sellers and the Choosers valued the mug at $7.00 and $3.50, respectively. Overall, the Sellers always demanded at least twice as much to give up the mugs as the Choosers would pay to obtain them.

Similar experiments with goods as diverse as lottery tickets, hunting licenses, and fine wines have shown that people demand two to four times more compensation to give up products that they already possess than they are willing to pay to obtain these items in the first place. This shows that people irrationally overvalue goods in their possession over those they don't have by a factor that is very close to three.

Status quo bias.

Kahneman and Tversky's research also explains why people tend to stick with what they have even if a better alternative exists. In a 1989 paper, economist Jack Knetsch provided a compelling demonstration of what economists William Samuelson and Richard Zeckhauser called the "status quo bias." Knetsch asked one group of students to choose between an attractive coffee mug and a large bar of Swiss chocolate. He gave a second group of students the coffee mugs but a short time later allowed each student to exchange his or her mug for a chocolate bar. Finally, Knetsch gave chocolate bars to a third group of students but much later allowed each student to exchange his or her bar for a mug. Of the students given a choice at the outset, 56% chose the mug, and 44%

chose the chocolate bar, indicating a near even split in preferences between the two products. Logically, therefore, about half of the students to whom Knetsch gave the coffee mug should have traded for the chocolate bar and vice versa. That didn't happen. Only 11% of the students who had been given the mugs and 10% of those who had been given the chocolate bars wanted to exchange their products. To approximately 90% of the students, giving up what they already had seemed like a painful loss and shrank their desire to trade.

Other experiments have demonstrated the existence of the status quo bias in people's choices relating to investments, automobiles, and jobs. Those experiments also reveal that the status quo bias intensifies over time. While Thaler and his colleagues estimated the extent of loss aversion to be approximately a factor of two when students had owned the coffee mugs for a short while, other researchers have found that the magnitude of the bias rises, over time, to a factor of approximately four.

Interestingly, most people seem oblivious to the existence of the behaviors implicit in the endowment effect and the status quo bias. In study after study, when researchers presented people with evidence that they had irrationally overvalued the status quo, they were shocked, skeptical, and more than a bit defensive. These behavioral tendencies are universal, but awareness of them is not.

Building a Behavioral Framework

By applying the endowment effect and the status quo bias, I have built a behavioral framework around the three entities that drive the market potential of any innovation: the new product or technology itself, the consumer who must adopt it, and the company that designs it.

Innovations and behavior change.

The successful adoption of an innovation often involves trade-offs. While consumers may obtain highly desirable new features by buying an innovation, they often must give up some of the benefits of the incumbent product. Consumers rarely view these trade-offs as simple behavior changes; they see them as gains and losses. Provide a consumer with a new benefit, and she will see it as a gain. Take away a benefit, and she will see it as a loss. If she buys a Segway, for instance, she can run errands more quickly, but she will sacrifice the health benefits of a brisk walk. Conversely, reduce a current cost, and people will perceive it as a gain; impose a new cost, and it will be treated as a loss. TiVo DVRs, for example, allow people to eliminate the expense of buying videotapes, but they must put up with the clutter of yet another electronic device. As the exhibit "The Trade-offs Innovations Demand" shows, most innovative products suffer from a gain-versus-loss syndrome.

THE TRADE-OFFS INNOVATIONS DEMAND

Innovation	What Consumers Gain by Buying	What Consumers Lose by Buying
Electric cars	Clean environment	Easy refueling
Digital video recorders	Easy recording	Ability to play rented movies
DVD rentals by mail	Broad selection	Spontaneity
E-books	Easy portability	Durability
Online grocery shopping	Home delivery	Ability to select freshest products
Satellite radio	Broad selection	Free music
Screw-top wine caps	Less spoilage	Elegance of the experience
Segway scooter	Mobility	Health benefits of walking
Wind turbines	Nonpolluting energy	Unobstructed views

Consumers and behavior change.

Consumers view products they own or use regularly as part of their endowment. As a result, they assess innovations in terms of what they gain and lose relative to those existing products. A lifetime of driving gasoline-powered cars, heating homes with oil, and reading paperback novels has led people to treat those familiar options as the status quo. As a result, the losses consumers will incur in switching to electric cars, obtaining power from wind turbines, and scrolling through e-books will have a far greater psychological impact than will the gains from using them. As pointed out earlier, consumers overvalue losses by a factor of roughly three. Therefore, it's not enough for a new product simply to be better. Unless the gains far outweigh the losses, consumers will not adopt it.

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For example, the benchmark most consumers would have used to assess Webvan's attractiveness would have been the physical shopping trip. By signing up for Webvan, a consumer no longer had to drive to the store, walk through the aisles, physically place his purchases in a cart, stand in the checkout line, lug the groceries to the car, and drive home. To obtain these gains, however, a shopper had to give up some benefits inherent in a shopping trip. No longer could he cherry-pick the best cuts of meat, gain inspiration for dinner by seeing what looked good, or be reminded by a display that he needed ketchup. Most consumers would have viewed giving up those benefits as losses and, since they overweight losses relative to gains, would have found Webvan less attractive than the status quo. Was the overweighting of losses the only reason Webvan failed to gain traction in the marketplace? No. Was it a factor? Almost certainly. George Shaheen, Webvan's former CEO, once stated, "There weren't enough loyal customers for repeat shopping, and the reason is a huge behavioral science problem." He was right in more ways than he knew.

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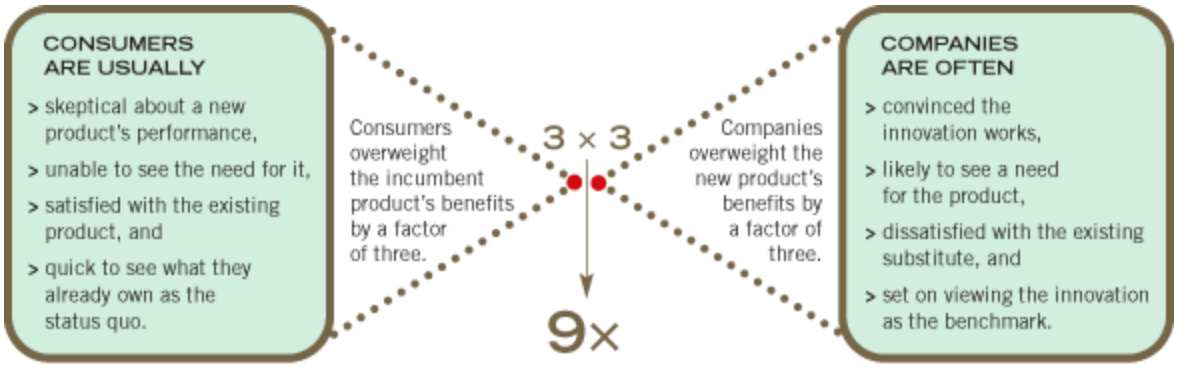
Companies and behavior change.

In a perfect world, companies would know that consumers irrationally overvalue incumbent products and would take that bias into account when launching innovations. But executives are also biased—in favor of new products. Having worked on a new product for months, if not years, developers operate in a world where their innovation is the reference point. They’re convinced that the product works, they recognize the need for it, and they are keenly aware of the shortcomings of existing alternatives. Not having the features that their innovation provides seems to the developers like a shortcoming, and having the features that the incumbent provides doesn’t seem essential. For instance, Webvan’s executives almost certainly came to view online grocery shopping as the standard, and Segway’s engineers envisioned their personal transportation device as the status quo. Companies call those executives visionaries, product champions, or believers, suggesting that they have embraced a world the rest of us haven’t—yet.

Several problems arise when executives’ reference points shift, and they adopt the innovation-as-status-quo perspective. They fall victim to the endowment effect just as consumers do. They overvalue the benefits of their innovations by a factor of three. Like consumers, executives are also unaware of their bias. Studies show that when anticipating others’ judgments or choices, people find it impossible to ignore what they themselves already know or believe to be true. Therefore, we overestimate the probability that others will solve a puzzle if we know the answer, we overestimate the likelihood that others will find a hidden item if we know its location, and we expect others to be better at predicting a company’s earnings if we know that number. Due to the “curse of knowledge,” as behavioral scientists call it, developers expect consumers to see the same value in their innovations that they see. As a result, instead of anticipating difficult sells, managers are shocked when sales don’t materialize.

To sum up, consumers overvalue the existing benefits of an entrenched product by a factor of three, while developers overvalue the new benefits of their innovation by a factor of three. The result is a mismatch of nine to one, or 9x, between what innovators think consumers desire and what consumers really want. (See the exhibit “The 9x Effect.”) Left unchecked, this mismatch is a recipe for disaster.

The 9x Effect



There's a fundamental problem for companies that want consumers to embrace innovations: While developers are already sold on their products and see them as essential, consumers are reluctant to part with what they have. This conflict results in a mismatch of nine to one between what innovators believe consumers want and what consumers truly desire.

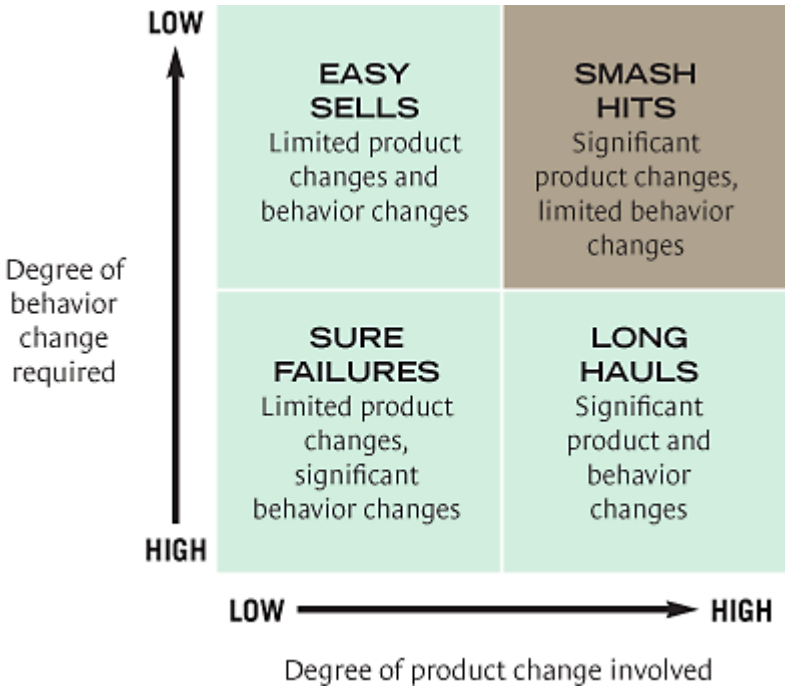
Balancing Product and Behavior Changes

Against this rather bleak backdrop, what can companies do to ensure that consumers will adopt new products? The first step is for them to ask what kind of change they are demanding of consumers.

Innovations create value for consumers through product changes. While the internal combustion engine converts gasoline to energy, a fuel cell converts hydrogen to energy, virtually eliminating pollutants in the process. While film cameras capture analog images, digital cameras capture ones and zeroes, making it easier for consumers to edit photos. While FM radio uses transmission towers, satellite radio uses orbiting satellites, resulting in coast-to-coast reception. The greater the product change, the greater the potential for a breakthrough. However, as we're aware, most innovations also demand behavior change from consumers. People must change how they refuel cars, how they develop pictures, and how they listen to the radio. The bigger the behavior change, the bigger the resistance from consumers is likely to be.

Comparing product and behavior change yields a certain tension: Companies create value through product change, but they capture that value best by minimizing behavior change. That results in a simple but powerful matrix. (See the exhibit "Capturing Value from Innovations.") Companies must identify where their innovations fall in the matrix because each cell has different implications for the likelihood that consumers will adopt those products as well as the time acceptance might take.

Capturing Value from Innovations



The more companies change how products work, the more behavior change they demand from consumers. While companies can create value through product changes, they can capture it most easily by minimizing the need for consumers to change. As the chart shows, that dynamic leads to four types of innovations.

Easy sells.

The most common new products are those that entail limited changes and require limited adjustments in behavior, as in the case of toothbrushes with angled heads, detergents with improved whiteners, and cookies with organic ingredients. Consumer acceptance of such products may be quite high, but the benefits to both consumers and companies are limited.

Sure failures.

Companies should avoid developing products that involve limited change and offer few benefits but require significant behavior change. The Dvorak keyboard, which marginally increases typing speeds over the QWERTY keyboard but entails tremendous behavior change, falls in this cell.

Long hauls.

Many new products offer technological leaps, creating great value. However, they also require significant behavior change. As the developers of satellite radio have found, the road to adoption is slow and difficult with such products because consumer resistance is high. The silver lining is that many products we now take for granted, such as the cellular telephone and the Linux operating system, fell into this category when they were introduced.

Smash hits.

Some innovations offer great benefits but require minimal behavior change. These products stand the best chance of both short-term and long-term success. In 2000, who would have thought that the world needed yet another search engine? By using a new search algorithm without changing a familiar user interface, however, Google succeeded in rapidly attracting users.

Once companies understand the nature and extent of the changes their innovations embody, they can accept and manage, or proactively minimize, the underlying resistance to change.

Accepting Resistance

For many innovations, significant behavior change is a given. The telephone changed how we interact with others, the automobile transformed the way we deal with distances, and the PC revolutionized the way we work. In such cases, companies can do several things to manage consumer resistance.

Be patient.

The simplest strategy for dealing with consumer resistance is to brace for slow adoption. Management consultant Geoffrey Moore's recommendations about how to "cross the chasm" and sell products to the pragmatic consumer applies in this context. To be successful, companies must anticipate a long, drawn-out adoption process and manage it accordingly.

When companies wrongly assume that the adoption of new products will be rapid, they run the risk of depleting their resources too quickly. Compare the fate of the TiVo DVR with that of the DVD player, both of which entered the market in the late 1990s. By the end of 2005, U.S. consumers had purchased more than 80 million DVD players and bought only 4 million TiVo units. That's surprising, because while both devices are innovative, the incremental value of a DVD player is far less than that of a TiVo DVR. A DVD player performs many of the same functions that a VCR does—primarily, playing rented movies. However, a TiVo unit does things well that a VCR does poorly, such as record TV shows, or things a VCR can't do at all, such as pause live TV. Yet, given consumers' comfort with devices that play movies and use CD-like discs, the DVD player fits seamlessly into everyday behavior. TiVo, which pauses live TV and records shows that it thinks consumers will like, doesn't. A small amount of behavior change is required to adopt DVD players, while significant change is required to adopt TiVo. Thus, TiVo may be burning through its capital by trying to quickly build and sell a product that is actually a long-haul innovation.

Strive for 10x improvement.

Another approach to managing customer resistance is for companies to make the relative benefits of their innovations so great that they overcome the consumer's overweighting of potential losses. Intel's Andy Grove claims that to transform an industry rapidly, an innovation must offer benefits that are 10x, or ten times better, than

what existing alternatives can provide. The best examples come from the world of medicine, where MRIs offer a 10x improvement over X-rays, angioplasties offer a 10x improvement over bypass surgeries, and psychiatric drugs offer a 10x improvement over frontal lobotomies.

Eliminate the old.

When facing unavoidable consumer resistance, a company can eliminate incumbent products. In few cases would the logic be more compelling than in the United States Mint's handling of the dollar coin. In its latest attempt to replace the dollar bill, the U.S. Mint recently announced that starting in 2007, it would issue dollar coins bearing the portraits of past U.S. presidents. It wants to replace bills with coins because a bill lasts for only 18 months, while a coin has a 30-year life span. The Mint's decision may excite coin collectors, but it's unlikely that the new dollar coins will be much more successful than the Susan B. Anthony coin of the late 1970s or the Sacagawea dollar coin of the past six years. That's because, as in the past, the Mint doesn't plan to withdraw the dollar bill from circulation. To appreciate how things could be different, look north. In 1987, the Royal Canadian Mint introduced a gold-colored dollar coin, the loonie, and nine years later, it launched a two-dollar coin, the toonie. Both coins are widely used units of currency in Canada today. The reason is simple: The Canadian government removed one-dollar and two-dollar bills from circulation after it introduced the new coins.

Most companies don't have the option of eliminating rivals. However, in some cases, regulatory agencies can play a facilitating role. In the automobile industry, for instance, groups such as the California Air Resources Board and the United States Environmental Protection Agency can foster the adoption of innovative vehicles by restricting or taxing the sale of gasoline-powered cars. Similarly, HMOs and Medicare can encourage the adoption of certain drugs and medical procedures through their reimbursement powers. Those agencies may not be able to eliminate the old directly, but their actions can often have that effect.

Minimizing Resistance

For many companies, the long-haul option is unattractive, innovations that offer 10x improvements are rare, and eliminating the old is impossible. These companies must minimize consumer resistance.

Make behaviorally compatible products.

Companies can reduce or eliminate the behavior change that innovations require and thereby create smash hits. Toyota embraced this tactic with its hybrid electric vehicles, like the Prius. The Prius provides drivers with both the traditional internal-combustion engine and an innovative, self-charging electric engine. The result is a driving experience that is virtually identical to that of a gasoline-only car. Consumers obtain a significant increase in gas mileage, yet they retain all the benefits of the entrenched alternative. As a result, Toyota's Prius is the first alternative-fuel vehicle to gain popular acceptance in the United States, with consumers buying more than 100,000 of them in 2005.

The idea of minimizing behavior change has not been lost on Toyota's rivals. In January 2005, for instance, BMW announced that it was developing a hydrogen-based fuel cell vehicle that would also have a small gasoline engine. If the vehicle runs out of hydrogen, the driver can switch to the conventional engine. The automobile will have all the benefits of a cleaner-burning fuel without the need to alter driving behaviors due to a lack of nearby hydrogen-refueling stations. BMW, it appears, also understands the importance of minimizing behavior change.

Seek out the unendowed.

A company can also seek out consumers who are not yet users of incumbent products. Over the past two decades, Burton Snowboards, based in Burlington, Vermont, has done just that. The company, which makes snowboards, boots, clothing, and other winter weather–related equipment, targets young winter sports enthusiasts who haven't yet established themselves as skiers. Through a countercultural marketing effort, the company has captured the imagination of this demographic. Burton's efforts have helped grow the snowboarding industry from virtually nothing in the 1970s to a point where the number of snowboarders in the United States now surpasses the number of skiers. Not surprisingly, the privately held company is the world's leading snowboard maker, with a 40% share of the global market.

Find believers.

Another option is for a company to seek out consumers who prize the benefits they could gain from a new product or only lightly value those they would have to give up. In the case of hydrogen-powered fuel cell vehicles, for instance, businesses must target environmentally conscious consumers. Less obviously, they can also target consumers for whom access to central refueling stations isn't a problem. Consider an island like Bermuda or Nantucket, where a car owner might not ever drive more than 20 miles from town. In such places, consumers might value a network of gas stations less and value emissions-free transportation more than consumers on the mainland would. For that reason, the small island nation of Iceland is at the forefront of developing a fuel cell society. In 2003, Reykjavik, the capital, became home to the world's first commercial hydrogen filling station, and hydrogen-powered buses now travel its streets. • • •

All too often, consumers fail to buy products that companies expect them to adopt. The reason may lie less in the economic value of physical products and more in the minds of people. Until businesses understand, anticipate, and respond to the psychological biases that both consumers and executives bring to decision making, new products will continue to fail.