Conducting Business Experiments: Validating New Business ModelsWell-designed business experiments can help validate assumptions and reduce risk associated with new business models

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FEATURE ARTICLE

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Validating New Business Models

Well-designed business experiments can help validate assumptions and reduce risk associated with new business models.

Abhijit Ganguly and Jim Euchner

OVERVIEW: Breakthrough innovation inside established companies—innovation that creates new revenue streams—often requires business model innovation in addition to innovation in product or offering. Unfortunately, new business models are rife with uncertainty. They may require new channels or new partnerships, appeal to new customer sets, rely on different revenue models, or require unfamiliar technologies. The risk associated with creating new business models is a major reason high-potential new businesses are not launched inside established companies. Well-designed business experiments are a valuable tool for reducing that risk. Although business experiments are not new, much of the literature concerning such experiments focuses on software and Internet businesses, where experiments are easier to conduct, and on startup companies rather than large corporations. This paper addresses the conduct of experiments in companies that produce physical goods and addresses the issues associated with conducting experiments within an established company. It describes methods used to design experiments, to focus them on critical issues, and to manage them in a corporate context.

KEYWORDS: Business model innovation, Lean Startup, Business experiments

Breakthrough innovation inside established companies—innovation that creates new revenue streams—often requires business model innovation in addition to innovation in product or offering. This is because radically new products and services frequently do not fit within the corporation's dominant business model (Chesbrough 2006). Unfortunately, new business models are rife with uncertainty. They may require new channels or new partnerships, appeal to new customer sets, rely on different revenue models, or require technologies that are unfamiliar to the company. These factors introduce new types of risk over innovation inside the core business.

Success with new business models requires systematically reducing that risk. Well-designed business experiments are a valuable tool for doing so. They enable an innovator to understand more deeply the underlying assumptions of the new business and narrow down the range of uncertainties. Experiments can be used to understand, quantify, and reduce risks across all the elements of the business model. Goodyear Tire & Rubber Company has been using business experiments in the development and launch of new ventures outside the core business for several years. Experiments have been used to quantify value creation, test customers' willingness to pay, understand an unfamiliar technology in use, design ways of shaping user behavior, measure channel effectiveness, quantify costs of providing a service, and test the effectiveness of new partnerships. In each case, the experiments provided the basis for making decisions to proceed with an initiative, to stop it, or to pivot to an alternative approach to the same customer value proposition. Insights from experiments were used to create models that led to the incubation of eight businesses on three continents, three of which have moved into scale deployment.

Goodyear's experience with business experiments offers important insights into how experiments can work in a large corporation that makes physical things. These insights include an understanding of the value of particular tools, like ecosystem analysis and stochastic modeling, both of which help to ensure that business experiments are directed to the elements that are most important to the success of the business model. Goodyear's framework also offers a set of

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methods for designing experiments and managing them within the corporate context. Taken together, these parts constitute a framework for designing and focusing effective experiments within established corporations.

Business Model Innovation

Business model innovation has attracted increased attention over the past decade. This is in part a result of the digital revolution, which has enabled a wide range of new business models, and of the dramatic returns garnered by companies that have introduced powerful new business models. Keeley and Waters (2013) discuss the power of combining multiple types of innovation, including business model innovation, in creating competitive advantage and generating large returns. The business model is the mechanism for capturing value from a new offering in a competitive environment (Euchner and Ganguly 2014).

There have been a number of tools for analyzing and generating business models. Among the most widely adopted is Osterwalder and Pigneur's (2010) Business Model Canvas, which describe the elements of a business model; Osterwalder and Pigneur encourage innovators to use the Canvas to analyze existing models and brainstorm new ways of going to market. However, although the Business Model Canvas encourages readers to open up their thinking, it does not address the interrelationship of business model elements or their capacity to create competitive advantage. Slywotzky's (2002) work supports the development of new business models by illuminating the patterns underlying successful ones. Arguing that there are a limited number of coherent profit models, the business model archetypes, he discusses the logic underlying 23 of them. He extends this work for the digital age in *How Digital is Your Business* (Slywotzky and Morrison 2001). Similarly, Gassman and Frankenberger (2014) explore the working of 55 business models.

These authors provide essential background on business model innovation, but they do not provide an approach for actually doing it. In a previous paper (Euchner and Ganguly 2014), we built on their insights to provide a practical framework for creating successful new business models. The approach has been used at Goodyear to incubate and launch new businesses on three continents. A key component of that approach is business experiments, which surface and test assumptions critical to the success of the business.

Business Model Development at Goodyear

At Goodyear, we have pursued new business model innovation in a systematic way (Figure 1). It takes place in the context of a few strategic platforms, which define a broad opportunity space within which specific opportunities are explored (see Henderson 2013). Each specific engagement begins with a strategic question, which defines the particular area of opportunity to be explored and identifies the hypothesized customer set for that opportunity. An example might be, How can Goodyear improve tire maintenance for regional fleets? The strategic question launches a customer-centered innovation engagement conducted using design methodologies (see Kelley 2001). The deliverables from that process include a customer brief, which describes the target customer's important unmet needs, and a customer value proposition, which outlines a complete, concrete concept for creating new value for the customer. The value proposition is entirely customer centered; it does not describe the business model or the value capture mechanisms. We have found that combining value creation and value capture at this early stage compromises the focus on the customer.

Only after a powerful value proposition has been developed does the process focus on designing a compelling business model. At Goodyear, a key part of creating the business model is a systematic (but messy) process of reducing the risk of the different aspects of the potential model by generating hypotheses concerning unknowns in the business and then testing them (Figure 2). The overall

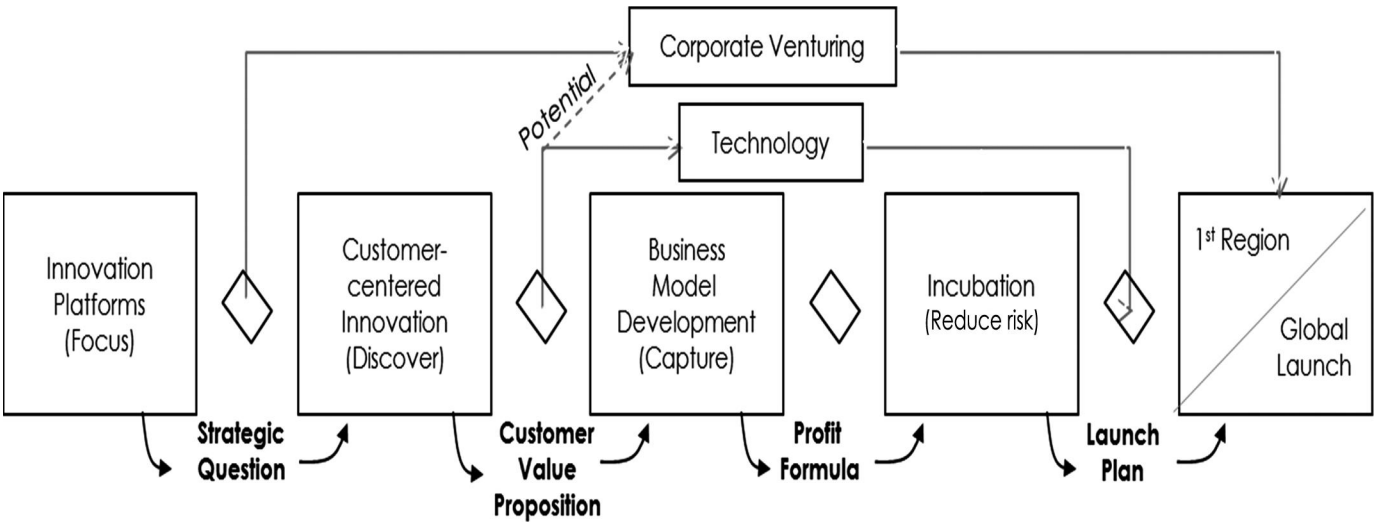

FIGURE 1. Goodyear's innovation process

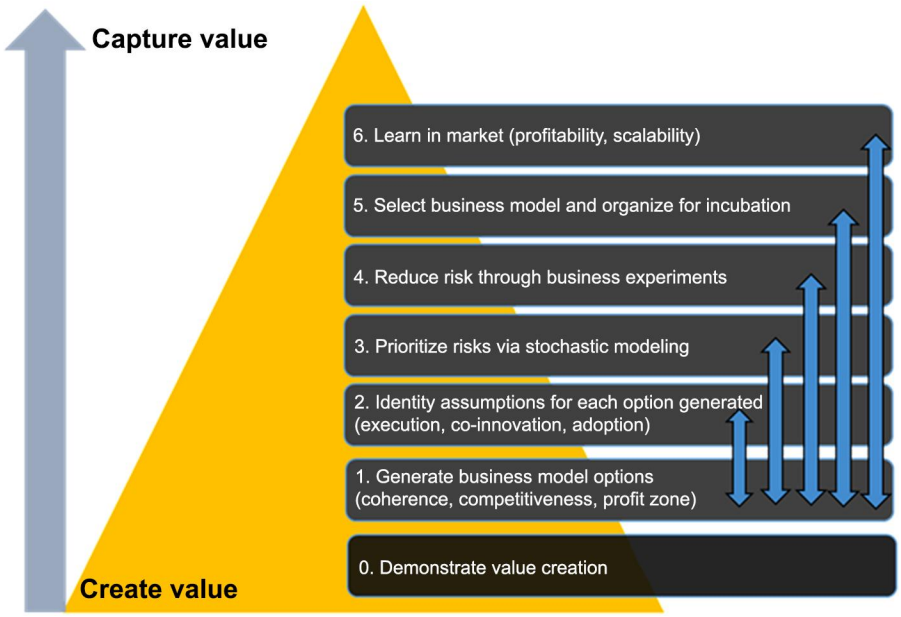

FIGURE 2. Developing a business model (from Euchner and Ganguly 2014)

process is described in some depth in Euchner and Ganguly (2014), but the heart of the approach—and the mechanism by which those hypotheses are tested—is business experiments. The key to effective business model design is effective business experiments. Conducting the right experiments requires clarity about business model options, the risks associated with each option, and the uncertainties that are likely to have the biggest impact on the success of the business.

In exploring business model options, we are seeking business models that are coherent, offer competitive advantage, and provide economic leverage:

- *Coherence* refers to the way the parts of the model work together to create advantage. The customer set, the offering, the channel, and the assets available to create competitive advantage all must work together. The elements of a business model cannot be independently brainstormed; they must fit together.
- *Competitive advantage* describes the differentiation the business model creates to distinguish the offering from other options available to customers; the competitive advantage attracts customers and creates pricing power or margin advantage. It must be built on a strategic asset—a unique product, power in the channel, a speed-to-market advantage, or some form of information advantage.
- *Economic leverage* ensures that the business model can deliver profit at scale. Every coherent business model has an economic story behind it, an intersection of economic forces that enables value creation and value capture. Understanding these dynamics is key to understanding the key leverage points—what must be done in order to be successful.

Business model options are generated by exploring what has worked for others. As preparation, team members study business model archetypes (Slywotzky 2002), which are effective models that have worked for others, often in multiple industries. We compare the archetypes with models we are familiar with and see how they might work for our value proposition. When we identify a potential business model, we seek to benchmark it in some detail against similar models in other industries in order to uncover the dynamics and risks associated with it.

Once a number of business model options have been identified, risk analysis begins. At Goodyear, risk analysis goes beyond the usual focus on execution risks, unknowns in the cost structure, and uncertainty in customers' willingness to pay. We also try to identify assumptions around partners and ecosystems that also represent uncertainty and may determine the success of the venture. As Adner (2012) demonstrates, the failure to broaden exploration of a possible new business model beyond project execution to the risks introduced by co-innovation partners and the adoption chain elements can lead to failure. We find it essential to articulate all assumptions, including what we think partners will do for us and on what terms.

The assumptions are captured in a stochastic model, which visualizes the uncertainties in the various elements of the business model (Figure 3). The stochastic model uses Monte Carlo simulation to aggregate the uncertainty across the model. The model reveals which assumptions are most critical, allowing us to focus experiments on the ones that really matter.

Designing Experiments

Knowing which assumptions are most critical to the success of the business model is a good start toward reducing the risk of that model. The next challenge is to design and conduct experiments that shed light on the critical assumptions, providing evidence to suggest whether they are likely to be correct or not. For that evidence to be clear and convincing, the experiment must be well designed. In our experience, a well-designed business experiment has four attributes:

- It is focused on a few well-chosen factors, ideally one.
- It measures outcomes against a concrete prediction (the hypothesis).
- It is simple and inexpensive to conduct (given its context).
- It is designed to get an answer quickly.

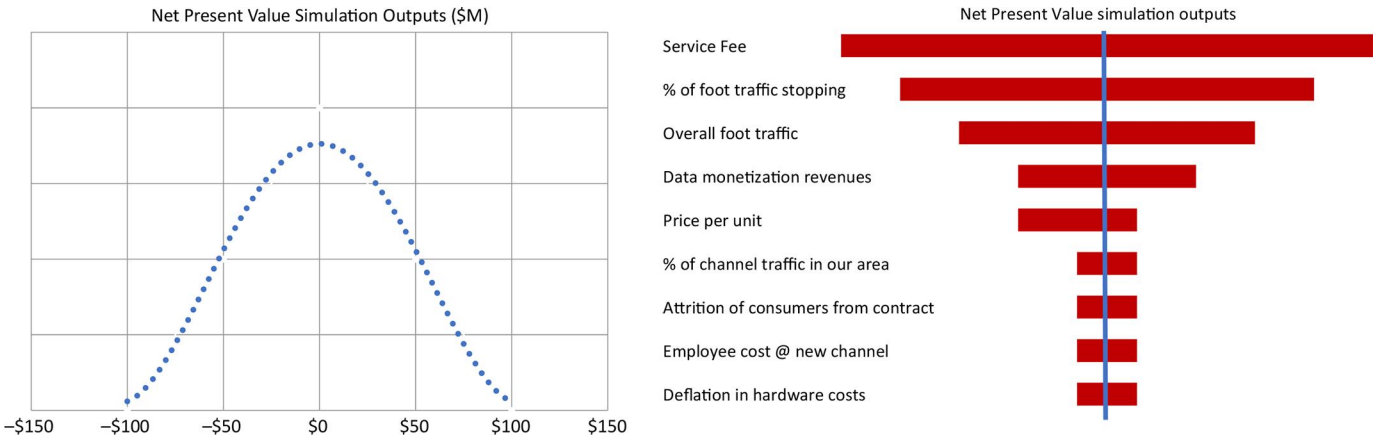

FIGURE 3. Output from the stochastic model

Focus on a few factors. Every experiment should be designed to examine in isolation just a few critical factors that are crucial to the business model. Mixing multiple assumptions in one big experiment can allow interactions that will produce inconclusive results. In addition, testing multiple assumptions in one experiment usually requires longer, more expensive, and less-iterative experimental designs. More complex experiments require too much investment and can fail to answer specific questions clearly. Instead of testing multiple assumptions in one experiment, we seek to address each critical assumption in its own smaller experiment. For instance, for a project where we needed to understand both the likely market size for a new offering and the price target customers might be willing to pay, it might have seemed intuitive to test the two closely related elements together. Instead, we focused on likely adoption, pitching the offering to 15 potential customers at similar pricing levels to gauge the likely adoption level. The pricing question was deferred for another experiment.

Measure outcomes against a prediction. A good experiment tests a measurable assumption. We put on record a prediction for the outcome—a concrete expression of the assumption—before the experiment commences. Without a prediction, experiments can drift. In one project at Goodyear, for instance, a key assumption in the business model was the conversion rate for a new service among urban parents in emerging markets. To test that assumption, we mocked up a nonfunctional solution prototype and set up a kiosk at a shopping mall in Sao Paulo, Brazil, staffed by two salespeople. The project team predicted, based on market research and mall traffic patterns, the number of customers they expected would engage with the kiosk. A key question was whether people would commit to buy or simply offer positive feedback. To address this question, the salespeople asked consumers who liked the solution to sign a "commitment to buy" form; signing the form put them on a list to be among the first to receive the offering when it came to market. Consumers who wanted to commit had to share some personal information, which ensured only truly committed consumers signed up. By counting how many people stopped and how many actually committed to buy, we calculated the conversion rate for that channel. This result was different from the prediction; that prompted the team to go back and understand what caused the difference. Those conversations resulted in true learning that was ultimately reflected in the business model design.

Keep it simple. Experiments should also be inexpensive; learning should be ahead of spending. The level of investment is situational, however. In one experiment, we limited spending to the creative costs to produce product brochures. In another, we purchased equipment costing $100,000 to test a concept in a customer's location. For others, we have hacked together apps with just enough functionality to get the needed feedback. The key is to set a learning agenda and then find ways to execute it as simply and inexpensively as possible. This often requires challenging (and challenging again) the simplicity of the experimental design.

Get answers quickly. All experiments should be quick. The definition of "quick" also depends on context, of course. Statistical significance is not the goal; the goal is to generate just enough information to validate (or invalidate) the prediction and provide fodder for learning. Where possible, we let the data dictate when the experiment should end. For example, we could have continued the new channel test at the shopping mall, and perhaps even expanded it to several different venues until we had a statistically significant number of data points. In practice, however, after about 700 interactions we began to feel that we were hearing the same feedback from new interactions; we were not learning anything new. The conversion rates were also about the same from week to week, and we got good at predicting them based on mall traffic. At that point, we ended the experiment, confident that we had the data we needed.

Building the Right Portfolio of Experiments

Every new business model project comes with a host of assumptions, several of which are critical. Each

project, then, will have a portfolio of experiments, each designed to shed light on a particular key assumption. The experiment portfolio should offer a portrait of the business model as a whole, not just the product features or customer acceptance. This is a key difference with existing methods, such as Lean Startup (Ries 2011), which tend to focus on product-market fit experiments. At Goodyear, we've found that the experiments can be classified into eight categories, defined by the types of assumptions they test (Figure 4). Not every project will require every type of experiment, but some are universally relevant (for instance, measuring value creation or testing willingness to pay). We always start by assuring that we understand value creation; beyond that, the order depends on the critical risks for a given business model (as indicated by the stochastic model).

1. *Value creation*—How much value does the offering create for the customer?
2. *Willingness to pay*—How much will customers pay for the value proposition and through which mechanisms?
3. *Supply chain*—How can we source needed components/resources and at what cost?
4. *Operational costs*—What will it cost to execute the business model?
5. *Channel effectiveness/efficiency*—Will the selected channel reach the desired customers cost effectively? Does it result in the necessary conversion rate?
6. *Partners*—Will our selected partners deliver to us what is expected in terms of delivery of new capabilities, performance, responsiveness, supply, and support?
7. *Technology in use*—How does the core technology work under real-world conditions?
8. *Technology and human behavior*—How will users react to the new technology or product? Will they actually use the features they say they will?

At Goodyear, we have not always been successful in adhering to all of the elements of good design in every experiment, but we have executed some that were particularly well done; the examples that follow describe some of these.

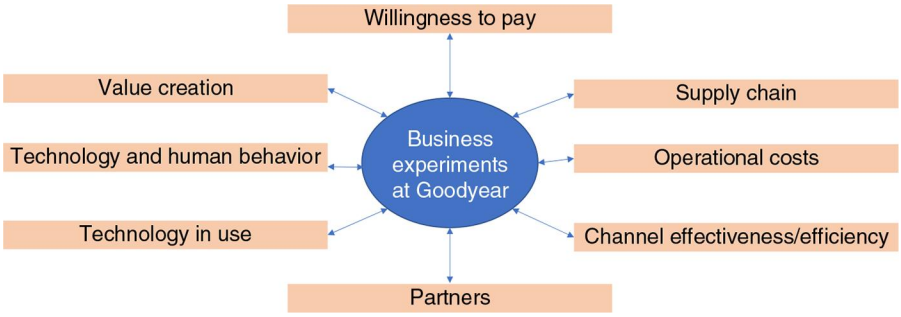

FIGURE 4. Categories of business experiments

Each project will have a portfolio of experiments, each designed to shed light on a particular key assumption.

Value Creation

A value creation experiment is designed to measure, in quantitative terms, the value the customer will gain by adopting the solution. For example, in one project, we proposed a technology solution that would prevent roadside breakdowns in long-haul trucks by monitoring tire pressure and predicting potential breakdowns due to poor tire inflation management. To understand whether such a solution would create value, we needed to validate the assumption that the technology could predict breakdowns, which could reduce roadside incidents, and thus create value for customers. We identified two truck fleet operators in Europe that were willing to participate in a trial; the operators shared data on their annual spending on roadside incidents, and that provided a baseline and gave us a target—we needed to demonstrate that we could improve on that performance with enough margin to justify the cost of the solution. The team's hypothesis was that 70 percent of all roadside incidents involving tires could be prevented by the technology. We then outfitted the fleet with our monitoring technology to test whether the data would let us identify preventable tire-related incidents. The experiment provided data that we used to develop and test predictive algorithms; it also revealed that fleets would need to adopt new maintenance flows to take advantage of the new technology. The findings validated value creation and also defined an additional set of experiments around integration of the solution with fleet operations.

- **Key factor**: The one key factor we needed to calculate was how many roadside incidents could be prevented with the technology.
- **Prediction:** Based on preliminary data, we generated a quantitative prediction—70 percent of tire-related incidents could be prevented.
- **Cost:** The total experiment cost $50,000, including project team time, sensor costs, telemetry bills, and other expenses. In our context, that was the most inexpensive way to confirm whether the business model could create value.
- **Speed:** If we had focused just on the data collection for algorithm development, this experiment would not have taken more than

Supply chain experiments explore whether needed resources can be accessed at a cost that fits with the value proposition of the business model.

four months. We extended the experiment in order to learn how to work with fleets to enable them to integrate the information with their operations and respond to the new information more effectively. The experiment ended up taking nearly eight months to run its course.

Willingness to Pay

Willingness to pay experiments explore the likelihood that customers will pay for the value created by the product or service—and how much they are likely to pay. In the predictive maintenance project, data from the experiment with the truck fleets allowed the team to estimate the value created per year per truck, based on baseline data and the predictions from the experiment regarding how many breakdowns could be prevented. The business model design called for a monthly or annual subscription model. The team formed a hypothesis about price point, based on an analysis of Goodyear's costs and the value creation the service provided. To validate this prediction, the team talked to 85 fleet operators all over Europe and the Middle East, all by phone. Language was a key challenge, but the team included members who were fluent in French, German, Luxembourgish, and English. This kind of work might have cost tens of thousands of dollars if it were outsourced to a market research firm; instead, the team leveraged enthusiasts from the sales team, who were proud to show off Goodyear's leading-edge technology to their customers. Most customers expressed willingness to accept the proposed pricing model; most also wanted to dive deeper into their spending on breakdowns, which could not be accomplished over the phone. We decided, based on these interviews, that the hypothesized price range was not unreasonable, though we could not be sure until we were actually in the market. Sometimes you have to accept partial validation of an assumption.

- **Key factors:** The factor we sought to estimate was how much fleet operators were willing to pay per vehicle, assuming a four-year subscription paid via a monthly fee.
- **Prediction:** We knew (from analyzing our costs) that we needed to charge a specific monthly fee per year for the subscription model to work. We also knew the percentage of value creation that this represented. We therefore had specific metrics to measure against.
- **Cost:** Since the interviews were done by the project teams and or the relevant sales associates, we did not incur any additional costs in this experiment.
- **Speed:** The survey took a few weeks to complete; there was no quicker way to learn what we needed to learn.

Supply Chain

Supply chain experiments explore whether needed resources can be accessed at a cost that fits with the value proposition of the business model. In one project, we considered a concept for a "green" consumer tire that was dependent on reusing tire casings (the inner core of the tire, on which the tread is placed). For this concept to work, we needed to be able to source used tire casings at a reasonable cost. We had an idea of used tire prices from a web search, but we needed a lower cost point for the business to be viable and we had to have a sufficient supply to make the model work. We worked with colleagues in the procurement function to issue a request for proposal from tire collection companies. Based on the responses, we visited some facilities to observe the quality of the tires offered. We learned that the cost of procuring "good enough" used tires would be very high, as there was a secondary market competing for many of the same used tires. As a result of this and other learning, the project was stopped.

- **Key factors:** The cost and availability of used tire casings was the key metric in this experiment.
- **Prediction:** We predicted a certain cost per tire to get the casings that would meet Goodyear standards for reuse.
- **Cost:** This experiment cost us a few weeks of time and travel costs.
- **Speed:** This experiment took less than two months.

Operational Costs

A key to the viability of a business model is the costs to deliver the promised offering to the customer. In one project, the value proposition included the use of a call center to help users make decisions about car maintenance needs. The call center would provide estimates for necessary work from participating service providers; users could then choose the quotes that best matched their needs and connect with the service provider to get the work done. A critical unknown—and the key assumption at the core of this experiment—was the cost of operating such a call center. After researching how calls were handled in the company's retail store operations, the team made a prediction about the amount of time it would take to handle a call, including time for a user to describe a vehicle issue and for the call center staff to provide a diagnosis and service quotes based on that description. To validate our prediction, we set up a toll-free number, advertised the service in one US city, and hired one person—a retired Goodyear associate with deep expertise in retail and customer service—to staff

the center for three months. The data on time required and cost was used in the business model.

- **Key factor:** The critical unknown to be determined by this experiment was the cost per call to operate a call center.
- **Prediction:** We predicted a certain number of calls per associate hired into the call center.
- **Cost:** This experiment, which ran for a couple of months, cost just the contractor costs at prevailing rates.
- **Speed:** The experiment took three months to complete.

Channel Effectiveness/Efficiency

New business models often require going to market with a new channel. The effectiveness and costs of this channel can determine the viability of the model. For the project in Brazil, the central idea was a solution that helped consumers monitor their vehicles when they were not in them. Early research established that Goodyear's existing dealer network was not an effective channel for this product and that shopping malls might be a better channel. To test whether this approach was viable for this concept, we did a channel experiment. We set up a kiosk in a Sao Paolo mall and measured both traffic to the kiosk and the conversion rate (that is, the proportion of visitors to the kiosk that committed to buy). If a customer signed a commitment to purchase the product when it became available, we considered it a sale. The data collected supported a move to incubation.

- **Key factor:** The critical assumption in this experiment was the conversion rate; we also measured related statistics, including how long it took to close the sale and the number of personnel needed to staff the kiosk.
- **Prediction:** It was difficult to establish a prediction up front, due to our lack of familiarity with the channel; we calculated the number of customers required to support the business model and used that as our target.
- **Cost:** Costs included space rental in the mall for two months plus two sales people, hired on contract, and the cost to create a makeshift kiosk.
- **Speed:** The whole experiment took around three months to plan and execute.

Partners

Increasingly, ecosystem partners are critical to the success of a business model; experiments can validate whether partners can contribute in the ways demanded by the model. In one project, we were working with a startup that had demonstrated a good proof of concept for a solution for beverage haulers in the United States. We needed to find out whether the startup was ready to adapt its technology to related applications and to scale up its operations. To explore these questions, we asked the partner to adapt its solution to reduce driving distances for trash haulers in Latin America. We knew how many miles the test fleet was already driving from existing telematics data; based on that information, we predicted how much the technology should reduce mileage. We then asked a specific trash hauler to use the technology on one of their routes. We learned from the trial that we had assumed too much about the startup's ability to customize its solution to a new country and a new fleet application; we just could not make the concept work in that context. Because the technology remained promising, we pivoted to a US-based trial.

- **Key factor:** The key hypothesis we were testing was the applicability of the startup's solution to a new market segment.
- **Prediction:** Our prediction was that we could reduce miles driven to complete the same level of collection by 10 percent.
- **Cost:** We paid a small fee to the startup, which had to invest to adapt the technology to the test fleet. We used staff already working with the customers participating in the experiment to do the actual experiment, so other costs were minimal.
- **Speed:** Once the nondisclosure agreement was complete, a process that took a few weeks, planning and preparing the customer for the trial proceeded quickly. The trial itself took two weeks.

Technology in Use

At times, a technology that works in the lab or in a controlled field environment does not work well in the real world. Some business experiments seek to understand how performance might degrade in practice. For example, we believed that a technology that could measure tire pressure and tread depth on trucks and buses as vehicles rolled over the sensor had broad applicability. We were intrigued by the idea, but earlier tests with similar technology had not initially worked in the field. We needed to understand whether the newer technology would be effective under real-world conditions. After reaching agreement on terms with the supplier, we installed the technology at a test site to see how it would work in real-world conditions, comparing the sensor's readings for tread depth and tire pressure to manual readings. During the testing, we found that the sensor design allowed the back of some buses to brush against the sensor, damaging it. We worked with the supplier to develop alternative designs. We also found

Some business experiments seek to understand how performance might degrade in practice.

that, in some weather conditions, we could not read the license plates of the vehicles as they rolled over the sensor and therefore could not assign the sensor readings to the correct vehicle. This item was added to the list for future development.

- **Key factor:** We set out to test the effectiveness of the technology by assessing how accurately it measured the pressure and tire tread depth of the vehicles passing over it.
- **Prediction:** We predicted a level of accuracy for the sensor readings.
- **Cost:** The sensor was expensive, but we invested in one to conduct the tests. Other costs involved project team time to monitor the trials.
- **Speed:** This experiment ran for about a year. The initial learnings led into a lot of pivots on the solution, and we ended up working with the supplier to develop the technology further.

Technology and Human Behavior

A solution can work as designed, but it will not deliver the promised benefits unless it is accepted and used properly in the field. Problems can arise with usability, motivation, or some unexpected factor that makes use of the new solution problematic. In a project geared toward vehicle security in a Latin American market, we were uncertain whether users would use the features they said they wanted. For instance, consumers indicated in interviews that a feature that allowed them to call in to their vehicles and listen to the noises inside their cars was important. To explore actual use patterns, we developed a dummy prototype—a mock-up that captured key features. The goal was to create the least functional system required to allow the team to learn what it needed to learn. The team assembled a collection of sensors and off-the-shelf apps to create a functional-enough technology to run the experiment. One team member monitored how the prototype was being used. We found that almost no one actually called in to listen to ambient noises in their vehicles. They did use other features, however. As a result, we did not design that capability into the final feature set.

- **Key factor:** We wanted to discover whether users actually engaged with a given feature in real-world conditions.
- **Prediction:** We assumed that a large percentage of users in the research would use the call-in feature.
- **Cost:** We purchased some tablets and programmed them with off-the-shelf apps that could mimic the features and functionalities of the users' mobile devices. We did not do any actual development, so the costs were only those associated with making the mock prototype work.
- **Speed:** It took us less than three months to run this experiment.

Executing Experiments in a Corporate Environment

Govindarajan and Trimble (2010) discuss the inherent conflicts between any innovation initiative and what they call the company's "performance engine." These conflicts arise frequently in the context of business experiments, as experiments can challenge the working practices of existing functions and at times require exceptions to those practices. The specifics of the conflicts will vary by industry and cultural factors, but there are patterns. The most common conflicts concern intellectual property, marketing, risk management, procurement, and sales.

Intellectual Property. A strong intellectual property regime can be a key element of competitive advantage, and business experiments often come with the risk of exposing elements of intellectual property related to the concepts being tested. In many companies, concern about even limited exposure of an idea before patent applications are filed drives strict policies regarding disclosure. Goodyear protects intellectual property in business experiments, but takes a different approach than that of the core business. Customers participating in experiments are informed that the information they will see is confidential and are asked to agree to keep it confidential. In some cases, that agreement is a simple, one-page form; in others, it is a verbal communication. In a few cases, when the concept seemed likely to result in a patentable invention, we have filed provisional patents before sharing it. We have not had any intellectual property issues arising from business experiments.

Marketing. Companies spend significant resources and time developing their brands. On occasion, concerns may arise that an experiment could damage the brand image with a particular customer set or some other stakeholder. Often, this concern can be avoided by not using the brand or logo in the experiment. When the brand is central to the experiment—when we believe that the success of the endeavor depends on its being offered by Goodyear—we work closely with the marketing function in designing the experiment. If the experiment is conducted in a local test market for a limited period of time, and if the marketing function has the chance to review the materials ahead of the experiment, it is often (but not always) possible to move forward with the experiment.

Risk Management. There is the potential in any experiment for something to go wrong, whether through a failure of the technology or a failure of the concept. It is possible that the failure might result in consequential damages. The need to manage liability can therefore be an impediment to conducting certain experiments. However, at times there is no way to learn about a new concept without conducting a real-world experiment, with all of its attendant risks. When we do such an experiment, we seek to identify the risks before the experiment begins, mitigate them as much as possible, note any concerns that can't be fully mitigated, and document how they will be handled if they arise. We engage in practices analogous to those we use when conducting trials of new products in the core

business. Careful experimental design, together with open discussion of possible risks with participating customers, is critical.

Procurement. We often conduct experiments with technology developed by partners. These experiments are generally designed to provide an opportunity to learn about the technology's potential to support a new business. These experiments come with a risk that the collaboration could compromise future negotiations with that partner in some way. At Goodyear, we have mitigated the risk of ill feeling or compromised negotiating position by creating different types of agreements for different stages of business building. At the early stages, we may experiment with an off-the-shelf offering. If the partner is a startup or a small enterprise, we may enter into a joint development arrangement to pilot the technology, with intellectual property terms defined but business terms to be determined. In other instances, business negotiations may be deferred until we are clear about the business potential and can negotiate with clear intent. This flexibility works to the benefit of both parties; without it, the experiments can be significantly delayed.

Sales. Because business model innovation is aimed at creating growth in areas adjacent to the core business, we often work with customers of the company's performance engine. This can create issues with the sales organization for two reasons. First, anything that is not a sale of a core product can be a distraction to the sales force, which already must meet challenging targets. Second, the sales organization may not agree with the concept being tested and may not want to expose it to customers. Sales organizations also have a natural concern that the innovation function may appear to promise something that may never be brought to market, and by doing so, may disappoint the customer. When approaching customers, we work with the sales organizations; we spend time discussing the concept and the experiment design with sales management. Often, we get useful feedback on the concepts. We also get good insight into which customers might be the right first targets. Done well, these discussions result in better experiments. Early in the business model innovation process, sales personnel will often accompany the innovation team in meetings with customers; over time, as trust builds, access to customers typically becomes more open.

Business experiments present clear risks in each of these areas, but there are also risks in *not* conducting experiments. Principal among these is that you will build the wrong product or service, partner with the wrong partner, or go to market with the wrong business model. Furthermore, the learning from these experiments, and from customers in particular, is very powerful in building internal support for the business you are building. Conducting experiments—even "quick" experiments—can take time, but they can help the organization to understand the opportunity and ultimately lead to a stronger offering.

Conclusion

New business models are rife with uncertainty—they require the mapping of new territories—whether new channels, new revenue models, or relationships with new partners and new customers. Well-designed business experiments can systematically reduce these risks. They can be used to understand, quantify, and reduce uncertainty across the elements of the business model. An effective experiment can lead to a shift in direction of the product, the targeted customer set, or the channel. It may also spur modifications to the product or shifts in key elements of the business model. When the business experiment phase is complete, the innovation team will be able to present a business case with real data for the most important variables in the model. The team may also have strong customer feedback about the offering and may even have a first customer. These factors greatly increase the chances that a management team will invest in incubating a new venture outside the boundaries of the company's traditional core business.

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