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Customer Discovery and Validation for Entrepreneurs

The purpose of a business is to create a customer. – Peter Drucker

Sixty years ago, Peter Drucker recognized innovation and customer creation as core entrepreneurial functions.[1] Starting a business requires more than product development and marketing. But customer discovery and validation—the first steps in Steve Blank's customer development process—remain essential activities.[2] Identifying your initial customers and determining whether the opportunity you are addressing is important to them are crucial for entrepreneurial success.

Marketers have developed research tools to assist with these activities. The tools are typically used by established firms introducing new products or line extensions into existing markets. But entrepreneurs face special challenges. Technological uncertainty and new-to-market possibilities mean that key assumptions of familiar market research methods—knowing the variables for which you seek data and having respondents who are able to articulate their preferences in relation to known benchmarks—often do not apply in early-stage situations. Further, resource constraints mean that entrepreneurs face time and money pressures when conducting necessarily iterative research.

Hence, entrepreneurs need more than market research in the traditional sense. They need a process for turning their intuitions and enthusiasm into market-driven facts that can be used to corroborate, pivot, or abandon an initial business model. The process requires (a) coherent and falsifiable hypotheses about potentially relevant variables and (b) timely and affordable means for investigating those hypotheses.

This note provides suggestions for practical customer research techniques suited for early-stage ventures. It stresses the importance of learning, action, and failure in customer discovery and validation. This may feel uncomfortable in an MBA program where the emphasis is legitimately put on (a) comprehensive analysis aimed at establishing optimal solutions versus "good-enough" actions aimed at moving to the next stage and (b) avoiding mistakes versus learning from frequent failures. But the mindset we encourage in this note reflects startup reality.

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What Do You Want to Know about Potential Customers?

A hypothesis is more than an assumption. It is a testable proposition that, if answered, has implications for decisions. Many entrepreneurs—and many managers in large corporations—define a research issue as a broad area of ignorance. In effect, they say, "There are things that I don't know. But when the research results come in, I'll know more and then I can figure out what to do." This boil-the-ocean approach makes it likely that the research will be expensive and time-consuming, and will produce findings that are *not* actionable.[3] Instead, startups—precisely because they face resource constraints—need to be especially disciplined about their hypotheses in two areas:

- **Customer Problem and Product.** Entrepreneurs must formulate initial hypotheses about potential customers' problems and the venture's solution. These hypotheses are core to the *customer value proposition* component of a venture's business model.
- **Demand Creation and Buying Process.** Entrepreneurs also require initial hypotheses about how potential customers will find out about a startup's product, who will buy it, and who else will influence the purchase. These hypotheses are core to the *Go-to-Market* component of a venture's business model.

Only the entrepreneur can develop these hypotheses, and only a very confident or foolish founder would ignore time-tested lessons about how best to do so. We first review some concepts helpful in generating and framing hypotheses, and then discuss techniques for validating the hypotheses.

Customer Problem and Product

The first step in any customer discovery process is to verify that a market *could* exist for the venture's proposed offering. In other words, have we identified a problem that potential customers want solved, and does our solution meet those needs? The goal here is not to determine how to build the product. Rather, the goal is to determine *whether* the product should be built. In developing hypotheses about this issue, it is helpful to keep certain distinctions in mind:

Problems versus Products This crucial difference is often confused in startup situations. As Drucker noted, nobody really pays for a product—they pay for satisfactory solutions to their problems.[4] Harvard professor Theodore Levitt taught generations of students that "People don't buy 2-inch drill bits, they buy 2-inch holes." Levitt coined the term "marketing myopia" to describe the common mistake of defining a business by product features rather than by customer benefits; for example, assuming you are in the railroad rather than the transportation business or, more recently, the newspaper versus the news business. Myopic managers fail to properly perceive market opportunities, potential substitutes, and customer motivations to buy or not buy.[5]

Entrepreneurs often are driven by a product vision and—consistent with the entrepreneurial bias for action—eager to dive into product development. Steve Blank emphasizes the need for a *customer development process*—to be run in parallel with a startup's product development process—to verify customer demand for a proposed solution. Blank notes that in most startups, "Product features emerge by vision and fiat against unknown customer and market requirements… The job of Customer Development is to get the company's customer knowledge to catch up to the pace of Product Development."[6]

During customer discovery, it is important to understand the benefits at the heart of the venture's customer value proposition. This means confirming that potential customers have a strong unmet need for the venture's proposed solution—even if they may not be fully aware of that need.

Customer discovery also entails fleshing out assumptions about how proposed product features do or do not translate into customer-desired benefits, often based on direct observation of specific users' experiences. The entrepreneur's task is to develop verifiable hypotheses about questions such as: What basic problem does the customer face in this aspect of their personal or professional lives? What result(s) would yield more satisfaction than their current means for dealing with the problem? What are the functional, emotional, and/or social dimensions of a satisfactory solution?

Benefits versus Status Quo Psychologist Daniel Kahneman won a Nobel Prize for research conducted with his late colleague Amos Tversky on how people assess market choices.[7] Their work reveals three characteristics of decisions about new products. First, customers evaluate new products relative to a reference point, usually the products they already own or consume. Second, people view improvements relative to the reference point as gains and treat any shortcomings relative to the reference point as losses. Third—and most important for entrepreneurs—perceived losses have a much greater impact on behavior than similarly sized gains, a phenomenon Kahneman and Tversky called "loss aversion." For instance, repeated studies across cultures have shown that most people will not accept a $100 bet where there is only a 50% chance of winning. In fact, the potential gains must be two to three times the potential losses before most people will find a $100 bet attractive. Loss aversion leads to a bias for the status quo, which has been demonstrated in research about choices regarding stock investments, automobiles, jobs, and labor-management negotiations (e.g., "give-backs"), among other areas.

This status-quo bias means that most potential customers will not adopt a new product unless the gains it promises far outweigh the perceived losses from switching away from a familiar solution. How much better must a new product be? This is an empirical and situation-specific issue. But studies have demonstrated that entrepreneurs are prone to overconfidence biases.[8] John Gourville has shown that developers of new products, on average, overvalue the expected benefits of their innovations by a factor of three, compared to the benefits ultimately delivered. Given that potential customers overvalue losses by a similar factor, Gourville discerns a big mismatch between what innovators think they are offering to potential customers and what those prospects will require to change their behavior.[9] He sees this mismatch as contributing to flawed decisions and high average failure rates for innovations.

Due to these biases, gaining in-depth understanding of status-quo behavior is a crucial task of customer discovery. New products often require consumers to change behavior and incur switching costs in the form of transaction costs (e.g., activation fees), learning costs (e.g., how to use a new software program), or obsolescence costs (e.g., the perception of my CD collection as a stranded asset if I switch to downloading). These costs increase the perceived magnitude of "losses" in relation to status-quo behavior and weigh heavily in customer decision making.

Lead Users versus Mainstream Customers Lead users are the early adopters of a new product or service, willing to buy prototypes and accept evolving performance promises. Geoffrey Moore emphasizes that early adopters are often *visionaries* with different purchasing behavior than *pragmatists*—the later adopters who are crucial for scaling a business. In Moore's account, new ventures typically fail to recognize this and, lacking a plan for "crossing the chasm" between early and mainstream customer behavior, frequently see sales stall after a burst of initial growth.[10] But here we are concerned with initial customer discovery and validation where, by definition and necessity, the point is to identify early adopters. If a new venture does not survive the short term, its team need not worry about the longer-term challenges of crossing the chasm. Indeed, research aimed at identifying the needs of mainstream customers can actually be counterproductive if it leads an entrepreneur to neglect the unique requirements of crucial early adopters.

What characterizes lead users? There is no simple answer to this question; research in a variety of contexts has generated multiple and often conflicting criteria.[11] Simply labeling one's first customers as visionaries or evangelists is tautological and does not help much in establishing targeting criteria. But Blank outlines a useful way to think about lead users, suggesting that they should have the first four—and preferably all five—of the following characteristics: (1) the potential customer has a problem, (2) she understands that she has a problem, (3) she is actively searching for a solution, (4) she has cobbled together an interim, often home-grown solution, and (5) she has or can acquire a budget to purchase a better solution. Blank says, "These people are … the ones [to] rely on for feedback and for your first sales; the ones who will tell others about your product and spread the word."[12]

Consistent with Blank's criteria, the process of customer discovery requires hypotheses about those who—compared to the average or mainstream prospect—see your solution as providing far superior benefits than status-quo solutions. To identify these potential customers, an entrepreneur must understand what is (and is not) behaviorally compatible with their established usage systems.[13] Entrepreneurs will encounter less resistance to innovations if their product requires only modest change on the part of potential early adopters. For example, it was easier for Intuit to sell check-writing software to consumers who already owned PCs.

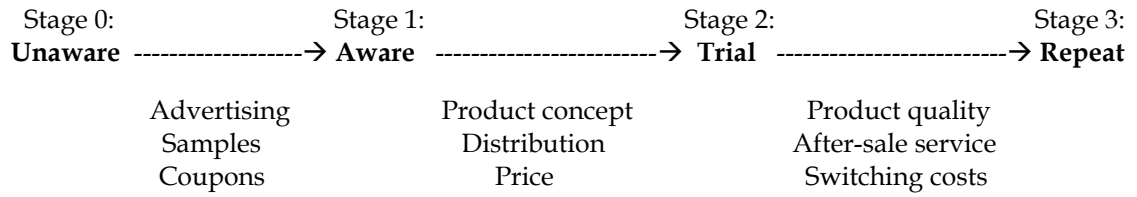
Cultural factors are often relevant in identifying early adopters. In fact, some argue that the U.S. has a productive history of entrepreneurship in part because the country has a larger number of lead users willing to try new products in many categories. American farmers, for example, are among the world's fastest adopters of genetically modified crops. Silicon Valley likewise benefits from the fact that U.S.-based companies tend to adopt new information technologies more quickly than their counterparts in other countries do.[14] Of course, this does not hold in all categories; Scandinavians, for example, are often lead users of "green" solutions. But community norms often have implications for lead-user identification.

Demand Creation and Buying Process

Hypotheses about customer problems help assess whether there could be a market for the venture's idea. But a "market" never buys anything; only customers do. Thus, you need to clarify assumptions about how potential customers will find out about your product or service and how they will buy it.

For many consumer products, purchase activity follows a simple hierarchy-of-effects model. First, consumers become **aware** of the product. Second, given awareness, some are interested enough to make a **trial** purchase. Third, given a trial, some like the product enough to **repeat** purchase it and devote some portion of their future category purchases to the new brand. As shown in **Figure 1**, companies must determine the tools best suited for moving consumers from one stage to the next.[15]

Figure 1 Simple Hierarchy-of-Effects Model and Typical Major Influences



- For ventures in which personal selling is more prominent, the consumer hierarchy-of-effects model is less useful. Especially for products that will be part of a firm's capital budget, multiple parties are typically involved in the buying process. Many models are potentially relevant in these situations, but the common core is the notion of a "buying center" that must be understood and navigated. This refers to the roles that customer participants can assume in a purchase decision. Six roles, some of which may be filled by the same person, are encountered in many B2B situations:[16] **Initiators** recognize that some company problem can be solved or avoided by acquiring the relevant product or service.

- **Gatekeepers** may have the title of buyer or purchasing manager and are paid to keep track of vendors' offerings. They control the flow of information and often access to other decision makers in the relevant buying center.

- **Influencers** are those who have a say in whether a purchase is made and what is, or is not, bought. Influencers may not be able to approve a purchase (affirmative power), but in some cases they can exercise veto power over a potential purchase decision or vendor. Technical support units (e.g., IT departments) often also have influence over purchase decisions, focusing on issues such as vendor reputation and ease of implementation.

- **Deciders** can say yes or no to the contemplated purchase. Often, deciders are not the ones who formally sign off on purchases or negotiate price or other terms and conditions; that may be left to others. In general, there is only one decider per sale, but it may also be a set of people such as a team, board, or committee. Deciders tend to focus on economic concerns such as total cost of ownership, fit with budget, return on investment, and productivity impact.

- **Purchasers** are concerned with actually obtaining the product or service. Corporate or divisional purchasing departments usually fill the purchaser role, but for some products, users may be authorized to make purchases.

- **Users** actually consume the product or service, and typically seek the best solution for their problem in terms of criteria such as product performance, ease of use, and reliability.

Understanding these roles is critical, since the various parties to a purchase will typically have different ways of assessing value. During customer discovery, it is important to recognize that current users in a category may be the source of the venture's idea, but users are often not the deciders or purchasers, whose support is necessary to acquire a customer and make a sale.

How Can You Validate Demand?

The rest of this note focuses on ways to validate hypotheses about customer demand. In doing so, we make two assumptions about the situation confronting most startups and the mindset appropriate for validating demand. First, few entrepreneurs get it right on their first try. Most invest in many bad ideas before they succeed. But it is better to fail and iterate *before* big sums are spent on building and launching a new product. Yet this requires entrepreneurs to admit they are wrong, overcoming their natural ego-defensive tendencies.

Second, entrepreneurs usually need both qualitative and quantitative validation techniques, and often cycle between the two types. Qualitative techniques such as focus groups allow probing for additional information based on respondents' statements or behavior, and are therefore especially useful when the entrepreneur has only a rough sense of what he or she is looking for. (See **Appendix A** for a description of focus groups and how entrepreneurs can use them.) Qualitative techniques are

also useful whenever quantitative research generates surprising results—for example, low adoption for a feature expected to have strong appeal. However, qualitative research is subject to multiple interpretations and vulnerable to biases and blind spots. By contrast, quantitative research seems more objective and exact, but it only yields the right answers when one asks the right questions.

To oversimplify, qualitative research surfaces questions that are then answered through quantitative research; quantitative research can surface anomalies that are then explored through qualitative research. Effective entrepreneurs know when they have learned enough to stop cycling between these techniques and either declare a hypothesis validated or pivot to a new one.

Below, we discuss various research techniques and order them in terms of when they are first likely to be used by a startup: (1) customer surveys, (2) letters of intent, (3) usability tests, (4) market trials, (5) split tests, and (6) Net Promoter Score. **Exhibit 1** summarizes the strengths and limitations of these techniques and the settings for which they are best suited.

The tools on this list are not mutually exclusive. Some can be used in combination; for example, split tests may be conducted during a market trial. Nor is the list exhaustive. In particular, an important technique in startup settings—face-to-face interviews with potential customers—is complex enough to warrant a separate note ("Customer Visits for Entrepreneurs," HBS No. 812-098).

We also do not discuss how entrepreneurs can use published data, including information available on the Web, to learn about potential markets and target customers. In general, we find that many first-time entrepreneurs—especially those with MBAs—spend too much time trying to precisely size a market. Investors do want evidence that a startup is pursuing a large and growing market, but most investors also know that estimates of market size are subject to manipulation because market boundaries are rarely clearly defined—a fact that keeps an army of antitrust lawyers busy. Investors also know that new markets are rife with uncertainty, so market-size projections based on published sources are often guesses. Therefore, most investors prefer to see real data on customer reactions, collected through research methods such as those described in this note.

Customer Surveys

Entrepreneurs often survey prospective and current customers to solicit information on topics such as frequency of category purchases, preferences regarding product features, purchase intent for/satisfaction with current category offerings, and the appeal of different methods for learning about and procuring products. In general, customer surveys are better suited for disconfirming early-stage hypotheses about demand than for validating them. If an entrepreneur hypothesizes that a certain customer segment will find the startup's offering attractive but a well-designed survey shows that prospects in that segment have little or no interest in that offering's key features, then the entrepreneur probably should pivot to a new hypothesis. If, on the other hand, a survey shows strong segment interest in the features, there is still more work to do.

Results from customer surveys should be "handled with care" for many reasons. Respondents often have difficulty articulating their preferences about the separate features of products because those features are experienced as a bundle. (Conjoint analysis, described in **Appendix B**, is a survey technique that addresses this shortcoming.) Likewise, surveys do not easily evoke the loss aversion that may deter customers from abandoning familiar products to adopt new ones.

Nonetheless, customer surveys are widely used by startups because they are inexpensive to implement—especially with online tools. To maximize the learning value of surveys, entrepreneurs should follow certain practices. Outlining those practices is beyond the scope of this note; readers

may wish to consult a white paper on the topic by SurveyMonkey.[17] In brief, thoughtful design is important in three areas:

- **Formulating Specific Questions.** Common mistakes include crafting confusing or leading questions. For example, "How do you view the convenience of our customer support system?" is a leading question; less leading would be "Does our customer support system meet your needs?" In general, it is easy to write biased and misleading questions (just look at political surveys) and difficult to write unbiased and useful ones.

- **Survey Length.** Response rates and the thoughtfulness of responses both decline when surveys are too long or repetitive. Pilot testing the survey with individuals who are representative of the target respondents is a crucial step for ensuring that the survey's length and the sequence of questions are appropriate and that the questions are worded clearly.

- **Recruiting Respondents.** Entrepreneurs sometimes fail to recruit survey respondents who are representative of target customers. Instead, they rely on convenient sources such as business school classmates and Facebook friends. Likewise, they often fail to consider the sample size necessary to make statistically significant inferences about survey responses.

Letters of Intent

A letter of intent (LOI) can be useful for validating demand before the startup has developed its product offering. After exposing a potential early adopter to the product—perhaps a crude prototype or even just a sales pitch explaining the planned product features—an entrepreneur asks the prospect to sign a letter of intent. In the LOI, a potential customer agrees to try/buy a proposed product with specific features, once it is ready. An LOI is obviously less of a commitment than an actual sale would be. However, in the words of one entrepreneur, "While legally non-binding, customers who have signed an LOI are less likely to disappear or make themselves hard to get a hold of."[18] Consequently, if few prospects will sign an LOI, then hypotheses about customer demand have been disconfirmed and an entrepreneur must pivot to a new value proposition. Conversely, if most prospects asked to sign an LOI do so, then initial demand has probably been validated. Also known as a "memorandum of understanding," such an agreement typically is legally non-binding.

Entrepreneurs can learn about customer needs by negotiating LOI terms with early adopters (see **Exhibit 2** for a sample LOI in a B2B context). But early adopters often press for custom features that are not on the startup's initial product roadmap. Entrepreneurs must sort out when such features would be valued by other customers and when they are the idiosyncratic needs of a single prospect.

Usability Tests

Usability tests normally involve asking current or prospective customers to complete specific tasks (called "use cases") with a working prototype or an actual product version. The goal is to identify potential problems with ease of use. Usability tests are conducted during all stages of product development. Late in the product development process, usability tests may involve collecting quantitative data (such as the time required to complete registration; or the number of clicks on a given tab) in order to improve specific design elements (e.g., whether buttons should be more round).

But when an entrepreneur is still validating demand hypotheses, the objectives for usability testing are different. The goal is to rule out the risk that a flawed initial product design will inadvertently lead an entrepreneur to conclude that demand for the venture's proposed solution is low. Put another way, if early demand is weak, it is crucial to know whether prospective customers

(a) have little need for a solution to the problem that the venture has targeted or (b) do want a solution, but simply cannot figure out how to use the venture's initial product, because it is badly built or designed.

Qualitative testing with a few subjects is often adequate to meet this objective. For example, Jakob Nielsen of Sun Microsystems showed that 80 percent of the major problems with early versions of websites can typically be found with samples as small as five.[19] In such tests, subjects' interactions with the product are observed closely and often recorded on video. Subjects are usually asked to "think aloud" about the choices and barriers they encounter as they proceed through an assigned task. Moderators must set the stage properly, emphasizing that the goal is to test the *product*, not the subject's abilities. Likewise, it is crucial to avoid biasing the results by offering your own opinions or by coaching subjects ("Here, let me show you how that works…").

The experience of the Dropbox team shows how useful—and emotionally wrenching—usability tests can be. Founder Drew Houston recounted how not one of five mainstream consumers recruited from Craigslist could install and use an early version of the startup's online file storage service. "Watching them fail," he recalled, "was excruciating… probably the most painful day we had as a team, but afterward, we created a list of 70 things to fix."

Usability testing is readily affordable, even for bootstrapping entrepreneurs. For Web-based products, online services now allow entrepreneurs to outsource the task of recruiting subjects and conducting usability tests; for example, for $39, UserTesting.com will deliver an online video of a typical consumer "thinking aloud" while completing a specified task.

Market Trials

By first testing products with a subset of their intended customer base, entrepreneurs can validate demand and also refine product features and marketing approaches before investing in a full-scale launch. In consumer packaged goods (CPG), a *test market* limits a new product launch to one demographically representative city. The test offers those consumers a finished product at a regular retail price. The firm's sales, marketing, operations, and customer service functions are all involved in the test, which is used to refine marketing plans (e.g., ad messaging, store promotions, pricing) and, in most instances, to validate consumer demand. Firms frequently abandon new product concepts following lower-than-expected initial sales and repurchase rates in a test market.

Market trials are widely used by entrepreneurs. For example, the founders of Rent the Runway, an online service that rents designer dresses, conducted a trial for a limited set of paying customers a few weeks before their public launch and gleaned lessons that affected product features (e.g., minimum viable inventory, or the need for "stylists" to give advice on dress selection and to explain how the service works), marketing (e.g., the need for a waiting list to manage inventory availability), and operations (e.g., the inadequacy of their initial order-processing system).[20]

There are three key issues to consider in designing a useful market trial:

- **Customer Selection.** Customers in a market trial should be representative of early adopters. In B2B ventures, the time and cost of managing a trial often means that only a few dozen testers—and sometimes far fewer—may be recruited. If the venture's product impacts a mission-critical customer activity, ideal test customers can be tricky to recruit: The impact may mean high potential value *but also* more reluctance to participate because of the risk to a key customer activity. Likewise, participating testers often have a vested interest in customizing a product to their needs. A common challenge is dealing with the "feature creep" that can result

from market trials. For this reason, Blank argues that the goal "is not to gather feature requests so you can change the product. Instead, your purpose is… to find [whether there are] customers for the product you are already building."[21]

- **Timing.** A market trial is defined as "a real world test of a system after it has passed all laboratory tests."[22] But that may not be true for a minimum viable product (MVP), where certain features may not be present and performance bugs often still are. Early trials involving MVPs may blur the distinction between regular products and product simulacra—prototypes and other simulated experiences that capture some but not all of a product's planned features, often by relying on makeshift, temporary technology. Such blurring may entail trade-offs that are explored in greater detail in a companion note, "Hypothesis-Driven Entrepreneurship: The Lean Startup" (HBS No. 812-095). In brief, early feedback that comes from putting an MVP in the hands of real customers can be very valuable before investing heavily in product development or marketing. However, an early market trial with an incomplete product can have reputational and competitive consequences that must be managed.

- **Information Flows.** Entrepreneurs must control information flows to and from a trial site. In B2B settings, non-disclosure agreements can raise concerns when testers are being recruited. Also, customers may find information requests to be intrusive. For example, assessing the product's economic value to a prospective customer may mean going beyond immediate users and gaining access to a range of people within the potential buying unit.

How does an entrepreneur know when a market trial is succeeding? If customers are charged a regular price, as in CPG-style test markets, then conversion-funnel metrics can be used to validate demand. Following the hierarchy-of-effects model in **Figure 1**, a conversion funnel shows the rate at which prospects who are contacted with a marketing message or by a salesperson take action (such as registering at a website or agreeing to take the sales call), then the rate at which these "activated" prospects become paying customers, then the rate at which those customers engage in actions showing deeper commitment (such as referring friends), and finally, the rate at which customers repurchase the product. In "Startup Metrics for Pirates," investor Dave McClure tells entrepreneurs building Web-based businesses to track "AARRR": **A**cquisition of a cohort of website visitors; their **A**ctivation into first-time users; **R**epeat visits by users; their **R**eferral of new prospects; and their **R**evenue generation.[23] Conversion funnels can be calculated for businesses that rely on mass advertising methods or direct sales. They are especially easy to monitor for Web-based businesses, for which Google Analytics and other tracking services can provide real-time data.

How high must conversion rates be to validate demand hypotheses? This varies by business. In established markets, competitive benchmarks are often available. In new or existing markets, entrepreneurs should be able to estimate the lifetime value (LTV) of a typical early adopter using data on the marketing costs incurred and the revenue collected at each stage of the conversion funnel. If LTV is positive, net of the average customer acquisition cost (CAC), then demand has likely been validated in a market trial. Even if LTV minus CAC is negative for trial customers, many startups can improve conversion rates through ongoing optimization efforts, so a reasonable extrapolation of conversion rate trends may show that demand is adequate to continue investing.

Split Tests

In split tests—also called A/B testing after the practice of assigning letters to each variation—different versions of a product (or a product simulacrum) are offered to separate samples of customers at the same time. Reactions to a baseline control version are compared to reactions to one

or more test versions that alter the variables under study; for example, product features, marketing messages, or price. Catalog companies have long sent different catalogs to different customers to test optimal product selection and CPG companies routinely test different versions of products. Split tests are easy to conduct online, where changes can be made quickly and metrics can be readily recorded. For Web-based ventures in particular, most elements of a website can be split tested.

Spilt testing is useful for optimizing product design and marketing programs. Such optimization efforts typically entail experiments that are modest in scope. For example: Will conversion rates from website visitor to registered user improve if we make the "Try It Now" button bigger or change its color? For early-stage ventures that are still validating demand, however, split tests often entail bigger changes in product features or pricing, because the goal is to prove whether anyone will use a proposed feature, not to increase usage rates by optimizing a feature's design.

For example, Grockit, an online test-preparation startup employing peer social learning, used split tests to validate demand for core features. The founder's original hypothesis was that more is better when it came to features that provided Grockit's users with social communication tools. But split tests indicated steeply diminishing returns for those extra features and showed that a key to user engagement was a combination of social and solo features. So Grockit added a solo-study mode, with game-like quests and levels of proficiency.[24]

When conducting split tests, entrepreneurs should follow the basic principles of experimental design, and can find guidance online if they lack statistical training.[25] In particular, it is crucial to (a) create a control group, (b) ensure random selection for control and test samples, (c) use big enough samples to get statistically significant results, and (d) use proper statistical methods in drawing inferences about results.

Also, the small scale of a startup's user base may limit the rate of learning because only a few experiments can be conducted at any one time due to sample-size requirements. At the online dating startup Triangulate, for example, founder Sunil Nagaraj discovered that, "With the modest scale of our current user base, you can't run too many experiments in parallel, because you can't split the base too many times. [This] puts a gate on the amount of development work possible during any given period."[26]

Net Promoter Score

Net Promoter Score (NPS) is a measure used to track overall customer satisfaction at the product level. Developed by Bain & Company and Satmetrix Systems, NPS asks a product's customers, "On a scale of 0 to 10, how likely is it that you would recommend XYZ to a friend or colleague?" Respondents are usually also asked an open-ended question about the main reason behind their score. Those who score 9 or 10 are termed "promoters," those who score 7 or 8 are "passives," and those who score 0 through 6 are "detractors." NPS is the percentage of customers who are promoters minus the percentage who are detractors, and it has been shown to correlate with measures of firm growth and profitability. Compared to rivals, companies with a high NPS have higher customer retention rates, lower customer service costs (due to fewer service problems and to the fact that longer-tenured customers have more experience using the product), and lower customer acquisition costs (due to stronger word-of-mouth referrals). Established companies use Net Promoter to identify product or service problems and to spur improvement initiatives.

Startups that have not yet validated demand but have launched a product—either in a market trial or at full scale—can also use NPS. By examining NPS by customer segments, they can test hypotheses about which types of customer will find the venture's product most appealing. Why not simply

observe initial adoption rates by segment? Because for many products, satisfaction depends on ongoing product use. NPS can give an early indication of a product's performance before repurchase rates are known. Likewise, word-of-mouth referrals impact customer acquisition costs. NPS can help predict whether referrals will occur before they actually happen. Finally, because NPS can be implemented quickly and inexpensively to deliver fast feedback, it is well suited to lean startup priorities.

Conversely, by tracking NPS over time, entrepreneurs can avoid premature scaling—i.e., investing aggressively before validating their business model hypotheses. If a startup's NPS improves steadily and passes a threshold level, an entrepreneur can conclude that her product satisfies the target market.

Average NPS varies widely by industry, but across sectors, very high scores tend to range between 60 to 80 (e.g., 60 for JetBlue, 70 for Amazon, 72 for Apple, 78 for USAA homeowners insurance, 82 for Trader Joe's). According to Netpop Research, several leading Internet services have lower NPS scores; e.g., 50 for YouTube, 36 for Facebook, 33 for Groupon, 30 for LinkedIn, 29 for Craigslist, and 11 for Twitter.[27] According to Reichheld and Markey, the average U.S. company has an NPS score between 10 and 20. But due to the "status quo" bias cited earlier, most startups must offer a significant improvement over incumbents' products and must therefore focus on *relative* rather than absolute NPS. This often implies an NPS at least 10 to 20 points higher than the scores of their incumbent rivals.

Conclusion

Customer discovery and validation are intertwined and iterative. Therefore, entrepreneurs must approach these tasks as a continuing process, not a one-time research project; as a motion picture of learning and adjustment, rather than a one-time data snapshot. Also, because entrepreneurs face resource constraints—especially with respect to time—they must be selective in applying the research methods described in this note. The methods have different strengths and weaknesses and entrepreneurs must choose the best combination for their ventures' situations. They also must know when to say, "That's enough." As one venture capitalist notes, "most startups don't starve, they drown" in too many ideas pursued simultaneously. Consequently, entrepreneurs should use research to set priorities and make decisions, not simply to collect more information.

Finally, new ventures are ultimately about today and tomorrow in a market, not yesterday. Therefore, entrepreneurs should supplement *any* research results with direct experience, judgment, and—even as they listen closely and learn from others—a healthy distrust of conventional wisdom. After all, other people—including this note's authors—often "like to give good advice as consolation for the fact that they can no longer set bad examples!"[28]

Exhibit 1 Summary of Entrepreneurial Demand Validation Techniques Discussed in This Note

Surveys

Benefits: Low-cost and relatively easy to implement; an accessible start to learning about potential customers and/or relevant product features.

Limitations: Deceptively difficult to write and ask non-biased objective questions; can you recruit respondents who are representative of early-stage target customers?

Use setting: Gathering initial and general information about category purchases and preferences; typically better for disconfirming early-stage demand hypotheses than for validating them.

Letters of Intent

Benefits: A means to increase purchase/use commitment of potential customers and learn about the presence or absence of demand for the proposed product offering.

Limitations: Not legally binding; risk of gathering one-off preferences and "requirements" that are not representative of other customers.

Use setting: Early concept stage of a venture's product and customer development process.

Usability Tests

Benefits: Can help entrepreneur determine whether prospective customers have problems with current product design, versus a lack of demand for the proposed solution in any form.

Limitations: Helps entrepreneur to understand specific product-usage requirements, but *not* the nature or scope of relevant customer needs and propensity to purchase.

Use setting: Early prototype stage of product and customer development.

Market Trials

Benefits: Can help to validate demand and refine product features and/or marketing messages to initial target customers; an opportunity to gather, measure, and analyze conversion funnel metrics.

Limitations: Need to determine relevant customer/market scope for trial to be useful; time and cost of managing information flows with trial customers, especially in B2B ventures.

Use setting: When venture is beyond early-prototype or MVP stage of product development.

Split Tests

Benefits: Helps to identify key product and/or marketing variables; especially easy to conduct and assemble split-test data in online ventures.

Limitations: Requires coherent, consistent experimental design procedures and sample sizes.

Use setting: Beyond concept and prototype stages, when entrepreneur is investigating choices about specific product features and/or marketing variables (such as price) and their impact on demand.

Net Promoter Score

Benefits: Track overall customer satisfaction with venture's product and customers' willingness to refer; help to test hypotheses about which customers find the venture's product most appealing.

Limitations: Customer "status quo" biases require high relative NPS to validate demand, but how high is often unclear.

Use setting: Post introduction and launch, when venture has a product offering that has been purchased and used by target customers.

Source: Casewriters.

Exhibit 2 Sample Letter of Intent

STARTUP agrees to provide, without charge or fee, its XYZ platform on or before DELIVERY DATE to CUSTOMER, which will provide the following features:

- Functionality XYZ and ABC (one-sentence description of each)

STARTUP recognizes the sparseness of detail in the aforementioned features and therefore agrees to update CUSTOMER on development progress on the following dates:

- DELIVERY_DATE minus six weeks
- DELIVERY_DATE minus four weeks
- DELIVERY_DATE minus two weeks

In exchange, CUSTOMER will [make itself available on the] aforementioned dates to provide feedback and guidance as to functionality and requirements. During and after the development process, CUSTOMER agrees to fairly evaluate the product for use as their XYZ platform for a free trial ending DELIVERY_DATE plus four weeks. Additionally, CUSTOMER agrees to use STARTUP, at a 12-month rate of $XYZ/month, as their XYZ platform if STARTUP satisfies their needs.

It is the intent of CUSTOMER to enter into a formal agreement with STARTUP by REASONABLE_DATE. Due to the sensitive nature of the discounted pricing, CUSTOMER hereby agrees not to disclose pricing information and the terms of this Letter of Intent to any other person or entity that is not an employee or associate of the CUSTOMER.

Agreed and understood by:
Designated STARTUP Representative Designated Customer Representative

Author's Comments:

1) We could have titled this a Memorandum of Understanding ("MOU") as opposed to an LOI, but we wanted to strongly signal that they are demonstrating intent to buy by signing something called a Letter of "Intent."
2) Brief description of functionality. This is simply to get both parties on the same page and set expectations.
3) Development process updates. This was to ensure us face-time with our customer. Should our customer get busy, we didn't want to be easily forgotten or ignored.
4) Pricing and price discovery. Our next LOI recipient got a significantly higher price.
5) Intention discovery. Do they actually want to buy our product? Well, let's test it very plainly with "It is the intent of CUSTOMER to enter into a formal agreement with STARTUP, by REASONABLE_DATE." We have de facto started the sales cycle.
6) Terms. Can we sign them up for 10 months? Three months? Month-to-month? Per usage?
7) Disclosure. This is our effort to keep our customers from chatting with another about the terms of the LOI as we go about price and intention discovery.

Source: Patrick Vlaskovits, "Seller Beware: Customers Have Their Own Agenda," December 15, 2009, "Market by Numbers" blog, http://market-by-numbers.com/2009/12/seller-beware-customers-have-their-own-agenda/, accessed November 20, 2011.

Appendix A: Focus Groups

In its classic form, a focus group is 8–10 users or purchasers in the relevant category (such as consumers talking about apparel, corporate controllers talking about budgeting software, or patients talking about healthcare services). Groups typically should not include close friends because they tend to reinforce each other's views, which can skew the discussion. Participants are brought to a common location—ideally, a quiet room with a circular table—and often compensated for their time. A moderator conducts the session, which typically lasts 60–90 minutes and may be recorded. At sessions conducted in market research firms' offices, there may be a one-way mirror so others can observe the discussion. Discussants are informed of such arrangements and promised anonymity. Online video technology has reduced the cost of conducting focus groups and makes it possible to conduct the activity, with appropriate group interaction, across different locations.

Running a focus group requires skill, so entrepreneurs sometimes rely on market research professionals to perform that task. When they do so, the entrepreneurs should attend the sessions: Being immersed in a problem, they often glean insights that hired professionals miss. But entrepreneurs can also run their own focus groups by observing some guidelines:

After a brief introduction in which the moderator explains the objectives and ground rules and asks the participants to introduce themselves, the discussion typically begins with each person commenting on how they use—or when and how they last bought—the product under discussion. Then, the moderator transitions to questions through which the participants' likes and dislikes are listed. To stimulate conversation at the outset, the moderator may ask the participants to spend a few minutes writing down ideas. Throughout the session, the moderator may record key themes on a flip chart or whiteboard for later reference.

It is important to use open-ended and neutral questions to avoid "leading the witnesses." The moderator should never disagree with a participant's statements or take sides in a debate, but instead ask, "Do others agree?" For entrepreneurs passionate about their concepts, avoiding defensive reactions to criticism takes discipline. It is also important that everyone has a chance to speak and react to others' comments, because a goal of most focus groups is to have current consumers verbalize their latent feelings about the category. Often, this only emerges through group interaction.

The purpose of focus groups is exploratory learning about "consumers' opinions, semantic structure, usage patterns, attitudes, and buying processes."[29] The term "semantic structure" refers to how people talk about, frame, and relate to the category. To learn this, entrepreneurs must hear them speak and watch their reactions, especially in high-involvement categories with emotional, status, or lifestyle associations. In a venture for a hand lotion product, for example, a male entrepreneur saw 10 female participants casually wait with their hands on the table for the discussion to begin. Seconds after the topic was announced, all hands were either under the table or out of sight. The discussion revealed much anger about the fact that, in the country where the focus group was held, women were expected to do all the housework and still have soft hands. Insights from the focus group resulted in a changed product.

Such insights can be powerful but, as one entrepreneur notes, in a focus group setting, "The answer to any question that starts with 'do you want' or 'are you concerned about' will always be 'yes'!"[30] Thus, even if all participants say they will buy a startup's product, do not conclude that demand has been validated. On the other hand, a unanimous *negative* reaction can probably be viewed as evidence of *lack* of demand. In short, focus groups are better for disconfirming hypotheses than for validating them. Like other qualitative research methods, focus groups are also good for generating new hypotheses that must subsequently be validated through other techniques.

Focus groups are typically best suited for exploring current usage by mainstream customers, not lead users. Hence, the technique is most often used for line extensions in consumer goods and new-feature additions in industrial products. If your venture creates a new product in a new market, then take focus group responses with a warehouse of salt, because current users are not good at verbalizing responses about products they have not experienced.[31]

Appendix B: Conjoint Analysis

Conjoint analysis is used in new-product development for consumer and B2B goods.[32] It breaks a product concept into relevant attributes and estimates the value that potential customers attach to each attribute. For example, choosing a health-care facility might depend on attributes such as travel time, time lag in getting an appointment, waiting time once you are there, hours of operation, and facility type (e.g., doctor's office or health-care center). When evaluating a bundle of product attributes, customers are not good at valuing specific attributes, because they buy and experience the bundle. In particular, statements about specific attributes may be unreliable when attributes interact (e.g., travel time to a facility may be less burdensome if the facility is open late; reactions to a $200 price may vary by brand). For these reasons, tools that ask respondents to rate the importance of a series of product attributes, considered independently, often yield flawed results. In conjoint analysis, attributes are ***CON***sidered ***JOINT***ly.

Conjoint analyses use two basic methodologies. The discrete-choice method asks customers to choose their favorite bundle of attributes from among a small set (often just a pair) of different bundles, and to make such choices repeatedly, with the bundle attributes being varied each time. The single-concept method asks respondents to rate the overall attractiveness of many different bundles on a high-to-low scale, assessing one bundle at a time. In most situations, the two methods yield similar conclusions, but each has different advantages and shortcomings.[33] In brief, even if a respondent has low interest in the category overall, discrete-choice analysis will nevertheless include all respondents' input in estimating attribute values—introducing "noisy" data from likely non-buyers. Conversely, with single-choice analysis, category enthusiasts may give very high ratings to all bundles, making it difficult to discern the strength of their preferences for different attributes.

With either method, after preference data is collected, mathematical algorithms are used to infer the value that respondents attach to each product attribute by examining their pattern of preferences for different bundles. By summing the values (also called "utilities") across all attributes and confirming that the total exceeds the proposed purchase price, one can predict the probability that the respondent will buy a product with a given set of attributes. In most situations, the resulting prediction is far more reliable than purchase intent data collected in conventional customer surveys that ask, "On a scale of 1 to 7, how likely are you to buy XYZ?"

Properly used, conjoint analysis can provide validated learning about two core issues confronting startups. First, it elicits quantitative data for testing hypotheses about a product's value proposition; specifically, what product attributes do customers value and which design trade-offs do they find preferable or acceptable. Second, it helps entrepreneurs understand which attribute combinations are most and least valued by different customer segments and thus can help identify lead users.

To use conjoint analysis effectively, certain conditions must hold. First, in contrast to focus groups, the startup team, not the respondent, must specify the attributes to examine. The technique cannot indicate the *absence* of an important attribute, so the team must be confident that it has included all relevant attributes. This is possible with a "better/faster/cheaper" improvement in an existing product category. However, with a fundamentally new product category, an entrepreneur is likely to face considerable uncertainty about the nature of both customer problems and potential solutions.

Second, conjoint analysis requires respondents who are familiar with the attributes and the product category overall. Again, this can be challenging with a fundamentally new product. Remember the maxim attributed to Henry Ford: "If I had asked people what they wanted, they would have said faster horses."[34]

Conjoint analyses can be powerful but complex to design. Consequently, proper training or assistance from a market research professional can help to ensure good results.[35] Further, conjoint analysis can be expensive: It may be necessary to retain a market research service to structure and interpret the analysis, large sample sizes are often required (roughly 200 respondents for each customer segment evaluated), and each respondent might spend 15–30 minutes answering questions. Researchers have lowered costs by using online tools to recruit respondents and conduct conjoint studies, but the technique is often still too expensive for bootstrapping entrepreneurs.

Endnotes

[1] Peter F. Drucker, *The Practice of Management* (New York: Harper & Brothers, 1954), pp. 37-38.

[2] Steven Gary Blank, *The Four Steps to the Epiphany*, 3rd ed. (Quad Graphics, 2007).

[3] For the limits of this approach to research, see Alan R. Andreasen, "Backward Market Research," *Harvard Business Review* (May-June 1985).

[4] Peter F. Drucker, *Managing For Results* (Pan Books, 1964), chapter 6 ("The Customer Is the Business").

[5] Theodore Levitt, "Management Myopia," in *Innovation in Marketing: New Perspectives for Profit and Growth* (New York: McGraw-Hill, 1962).

[6] Blank, *Four Steps*, p. 27.

[7] For a witty and accessible review of this research and its application to health and environmental issues, see R. Thaler and C. Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness* (New Haven, CT: Yale University Press, 2008). For the core academic research and concepts, see D. Kahneman and A. Tversky, eds., *Choices, Values, and Frames* (Cambridge, UK: Cambridge University Press, 2000).

[8] For example, see A. Cooper, C. Woo, and W. Dunkelberg, "Entrepreneurs' perceived chances for success," *Journal of Business Venturing* 3, issue 2 (1988): 97–108.

[9] John T. Gourville, "Eager Sellers and Stony Buyers: Understanding the Psychology of New-Product Adoption," *Harvard Business Review* (June 2006).

[10] See Geoffrey A. Moore, Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers (New York: HarperCollins, 1991; revised 2002) and Inside the Tornado: Strategies for Developing, Leveraging, and Surviving Hypergrowth (New York: HarperCollins, 1995; revised 2004).

[11] The best place to begin understanding this research is the work of Erich von Hippel: *The Sources of Innovation* (Oxford University Press, 1988), *Breakthrough Products with Lead User Research: Methods for Uncovering the Ideas and Prototypes of Leading Edge Users* (Cambridge, MA: MIT Press, 1998), and *Democratizing Innovation* (Cambridge, MA: MIT Press, 2005).

[12] Blank, *Four Steps*, p. 35.

[13] Gourville, "Eager Sellers."

[14] See Amar Bhide, The Venturesome Economy: How Innovation Sustains Prosperity in a More Connected World (Princeton University Press, 2008) and von Hippel, Democratizing Innovation.

[15] Figure 1 is adapted from Robert J. Dolan, "Researching and Monitoring Consumer Markets," HBS No. 592-088. This sequence of awareness → trial → repeat phases is the common core of most models of buying processes for nondurable goods. For similar models of the more complex purchase processes associated with consumer durables (such as automobiles), see J. Hauser, G. Urban, and J. Roberts, "Prelaunch Forecasting of Automobiles," *Management Science* (April 1990): 401-420.

[16] The information on Initiators, Gatekeepers, Influences, Deciders, Purchasers, and Users was adapted from Thomas V. Bonoma, "Major Sales: Who *Really* Does the Buying?" *Harvard Business Review* (May-June 1982). For variations on this model and discussions of the academic research underlying such models, see Frederick E. Webster, Jr., *Industrial Marketing Strategy*, 3rd ed. (John Wiley & Sons, 1995), chapter 2 ("Models of Organizational Buying Behavior"), pp. 36-52.

[17] This white paper is available at http://s3.amazonaws.com/SurveyMonkeyFiles/SmartSurvey.pdf.

[18] Eric Ries, "Case Study: Using an LOI to Get Customer Feedback," December 23, 2009, "Startup Lessons Learned" blog, http://www.startuplessonslearned.com/2009/10/case-study-using-loi-to-get-customer.html, accessed November 20, 2011.

[19] Walter Apai, "Interview with Web Usability Guru, Jakob Nielsen," September 28, 2009, "Webdesigner Depot" blog, http://www.webdesignerdepot.com/2009/09/interview-with-web-usability-guru-jakob-nielsen/, accessed November 20, 2011.

[20] Thomas R. Eisenmann and Laura Winig, "Rent the Runway," HBS No. 812-077 (Boston: Harvard Business Publishing, 2011), p. 8.

[21] Blank, *Four Steps*, p. 36.

[22] J. G. Sweetland, "Beta-Tests and End-User Surveys: Are They Valid?" *Database* (February 1988): 27-32.

[23] McClure's presentation is available at http://www.slideshare.net/dmc500hats/startup-metrics-for-pirates-long-version.

[24] E. Ries, *The Lean Startup* (Crown Business, 2011), pp. 133-141.

[25] See A. Kaushik's blog "Occam's Razor"; for example, "Excellent Analytics Tip #1: Statistical Significance," http://www.kaushik.net/avinash/excellent-analytics-tip1-statistical-significance/, accessed November 20, 2011.

[26] Thomas R. Eisenmann and Lauren Barley, "Triangulate," HBS No. 811-055 (Boston: Harvard Business Publishing, 2011).

[27] Marketingprofs blog, "YouTube tops Facebook, Twitter in User Satisfaction," March 3, 2011, http://www.marketingprofs.com/charts/2011/4549/youtube-tops-facebook-twitter-in-user-satisfaction, accessed November 20, 2011.

[28] La Rochefoucauld, *Maxims,* ed. Leonard Tancock (Penguin Classics, 1959).

[29] Glen L. Urban and John R. Hauser, *Design and Marketing of New Products* (Prentice-Hall), p. 129.

[30] Cindy Alvarez, "10 Things I've Learned," September 8, 2011, "The Experience is the Product" blog, www.cindyalvarez.com/roundups/10-things-ive-learned, accessed September 12, 2011.

[31] There is also a general guideline here for all validation techniques: Market type will affect what you need to know. Blank (*Four Steps*, pp. 23-26) distinguishes four new-venture types: new higher-performance product in existing market, new product in new market, new product attempting to resegment an existing market at lower cost, new product attempting to resegment an existing market with a custom niche solution. Blank emphasizes that "What kind of a startup are we?" should inform customer discovery and validation techniques.

[32] This example, and much of this section about conjoint analysis, is indebted to Robert J. Dolan, "Conjoint Analysis: A Manager's Guide," HBS No. 590-059 (Boston: Harvard Business Publishing).

[33] Brian Orme and W. Christopher King, "Conducting Full-Profile Conjoint Analysis Over the Internet," 1998, Sawtooth Software, Inc. white paper, November 20, 2011, http://www.sawtoothsoftware.com/download/techpap/internet.pdf, accessed November 20, 2011.

[34] For more on the history of this quote, see Patrick Vlaskovits, "Henry Ford, Innovation, and that 'Faster Horse' Quote," *Harvard Business Review* blog post, August 29, 2011, http://blogs.hbr.org/cs/2011/08/henry_ford_never_said_the_fast.html, accessed November 20, 2011.

[35] For more about the methodologies and assumptions embedded in conjoint analysis programs, see Urban and Hauser, *Design and Marketing of New Products*, pp. 269-273; or David Bakken and Curtis L. Frazier, "Conjoint Analysis: Understanding Consumer Decision Making," in Rajiv Grover and Marco Vriens, eds., *The Handbook of Marketing Research: Uses, Misuses, and Future Advances* (Thousand Oaks, CA: Sage Publications, Inc., 2006), chapter 15.