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Helge Hartung

Children's Hospital of Philadelphia; Perelman School of Medicine, University of Pennsylvania

Sarah Rottenberg

University of Pennsylvania

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Summary

- 90% of new products fail as a result of a disconnect between what the customer wants and what the company thinks the customer wants.
- Human-centered design aims to narrow the gap between customer and company through a deeper understanding of customers and their needs, motivations, and desires.
- Human-centered design is an iterative process: investigate, ideate, iterate, and implement.
- Design research focuses on the deep story—to understand the many, deeply understand a few.
- Human-centered design is a team sport and is learned in the field, with an emphasis on qualitative data collection.

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Human-Centered Design: Understanding Customers' Needs Through Discovery and Interviewing

Helge Hartung, MD,¹ and Sarah Rottenberg, MA²



Topic Relevance by Timeline

Summary

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Introduction

While there are many approaches to need finding, an important approach that should be recognized by academic entrepreneurs is human-centered design. Human-centered design focuses on the human perspective, where needs are assessed and solutions are evaluated based on understanding the needs of customers and getting feedback from them. Human-centered design should not be thought of as a strict alternative to other approaches but rather as a complementary strategy that can add value to the need-finding process.

¹ Children's Hospital of Philadelphia; Perelman School of Medicine, University of Pennsylvania

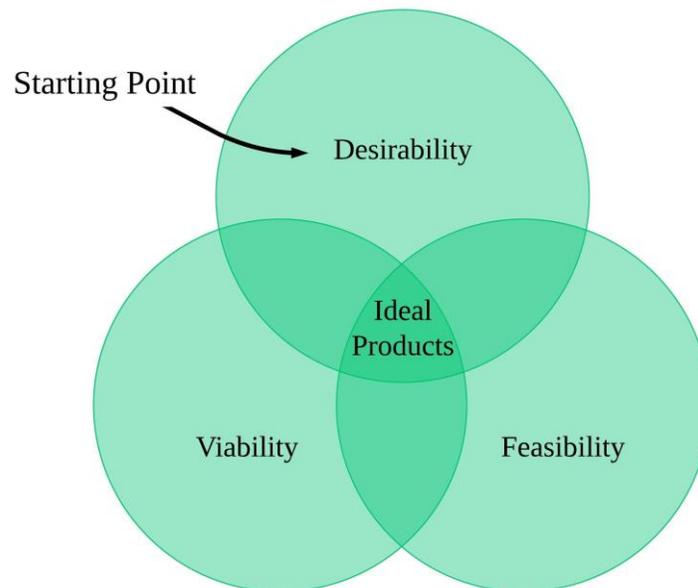
² University of Pennsylvania

The Customer-Company Disconnect

Most academicians are not used to failure. For an academic entrepreneur, success will not happen unless attention is paid to a central dogma in business: understanding the customer. Consider this sobering fact: *90% of new products fail in the marketplace (Gourville et al.)*. Why do they fail? Customers are often skeptical about a new product's performance or do not see the need for it. Usually people are quite satisfied with their existing product choices; in other words, customers often overweight the incumbent product's benefits. Companies, on the other hand, are more likely to see a need for the new product and be dissatisfied with the existing choices on the market. The company may be convinced that the innovation works and be set on viewing the innovative product as the new benchmark. The result is a marked disconnect between customers and companies, which can cause new products to fail. The disconnect can be overcome by human-centered design, which offers a methodology to improve an entrepreneur's understanding of the target customer.

Human-Centered Design: Narrowing the Gap

Figure 1. Narrowing the Gap in Human-Centered Design.

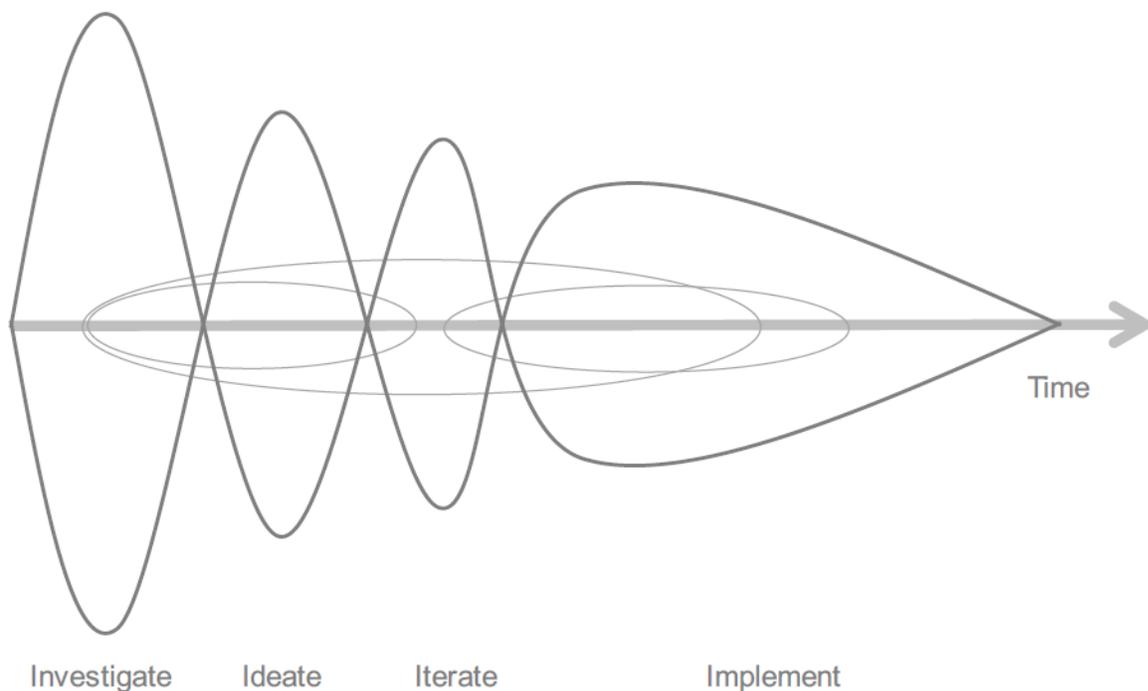


Human-centered design is a framework that aims to create solutions by integrating the human perspective in all steps of the process. A myriad of research approaches are available to facilitate this process (Martin and Hanington). The goal of human-centered design is to identify the overlap of desirability, viability, and feasibility, as shown in the Venn diagram in Figure 1. For an entrepreneur, a thorough understanding of the feasibility of an innovation is necessary. Can the product deliver what is promised? Is the technology ready and robust? One must assess whether or not the product is a viable business strategy. Is the product able to hit a competitive price point? Are the

resources available to sufficiently ramp up production to meet demand? Human-centered design starts with and anchors around the desirability of the product to the customer. Keep the customer in mind when designing a product. Who is the product intended for? Who are the target customers? What do they like and dislike? What do they desire? What is meaningful to them? Aligning feasibility, viability, and desirability will produce a better chance of creating a successful product (see the chapter “Conducting Insightful Market Research”).

The Design Process Is... a Process

Figure 2. The Four I's of the Human Centered Design Process.



Legend: The y-axis indicates deviation from the original concept or problem, and the x-axis indicates time (the origin indicates the inception of the project). For example, in the “Investigate” phase, the team is exploring a broad range of ideas and approaches, but as the project moves downstream toward the “Implement” phase, the changes in design become narrower and more focused.

The very essence of the design process is that it is intensive (Brown). Make time to investigate, ideate, and iterate before implementing a product (Martin). Through investigation, learn to see the world through the eyes of potential customers. Critical attributes of this step are empathy and creativity. Understanding the experiences of consumers increases the likelihood of understanding their problems and needs (see the chapter “Identifying Unmet Needs: Problems that Need Solutions”). Ideate based on these insights in an iterative process to bring new product ideas and

solutions to potential customers for further feedback. This additional feedback may, in turn, impact the next round of ideation. Continue this process until a decision is made on a design, then move toward implementation.

As an illustration of the critical importance of thoughtful investigation, consider the example of Patricia Moore. A successful industrial designer, Moore decided early in her career to travel throughout the United States and Canada disguised as an elderly woman (Moore and Conn). While she was only 26 years old at the time, these guises allowed Moore to experience how elderly people manage their daily lives and cope with the difficulties they encounter every step of the way. These difficulties span a large variety of categories, from physical barriers, such as poorly maintained steps or nonfunctioning elevators, to psychosocial barriers. Psychosocial barriers can include the reluctance of fellow customers and clerks to speak up for the hearing-impaired or show patience for those who take a little bit longer for routine tasks, such as paying at the counter. As a result of these complex experiences, Moore was able to develop empathy for the elderly and design solutions that effectively meet their needs.

Looking for the Deep Story: An Ethnographic Approach

A central tenet of human-centered design is the need to “search for the deep story,” which involves employing an ethnographic approach to need finding. Ethnography is the systematic and rigorous study of the routine, daily lives of a group of people. Only by immersing oneself fully in a customer’s world can one identify implicit needs (Sanders and Stappers). Implicit needs are often unidentified because the customer may be unable to articulate them. To use the iceberg analogy, implicit needs are far more numerous—and often greater—than those needs easily observed or communicated. These implicit needs are critical for helping to reframe the problem. Too often, entrepreneurs focus on solving explicit needs without making sure they are also addressing implicit needs. This can focus attention on the wrong problem and often results in investing time and money on the wrong things. In Patricia Moore’s example, she was able to see the world through a different lens while she was disguised as an elderly woman, which made her far more likely to discover elderly women’s implicit needs. Her special attention to the investigative part of the design process resulted in ideas that she could leverage for innovative solutions to those needs. Moore’s work embodied human-centered design—by observing people as they go about their daily activities, we can better understand their needs.

Expanding the Deep Story: Identify Stakeholders First

Most problems being addressed have multiple stakeholders. To create the best product, identify who these stakeholders are. Next, discern how their needs align or whether they are in conflict with each other. Great solutions address the needs of multiple stakeholders and even resolve the conflicts between stakeholders

Human-centered design builds off an ethnographic approach, as explained in the previous section, with a goal of understanding a group from their point of view as well as from our own. The aim is to form a holistic perspective by presenting as much information as possible about a target group, including their cultural and social values. In essence, the academic entrepreneur tries to learn what, how, and why people do what they do (Martin).

People Make Sense—It Is the Researcher’s Job to Find Out How

An underlying premise to design research is that people make sense. Whatever solutions people have found for a given problem, and however inadequate these might seem to the academic entrepreneur, the solutions were adopted because they made sense to the stakeholders. While trying to better understand these solutions, be aware that people cannot always say why they do what they do. When asked, they may not tell the full story. Sometimes they are just trying to be agreeable; often, they simply do not know. Likewise, people cannot always express what they need.

To Understand the Many, Deeply Understand a Few

Another central tenet of human-centered design is to not try to generate statistically significant information about a group. Rather, seek depth. The first goal should be to gain a deep understanding of just a few people. Often these ethnographic insights can be tested later on larger customer groups with other, more traditional market research tools. A good rule of thumb is to interview to the point of boredom—if the customer’s answers can be anticipated, enough interviews have been conducted. As tongue-in-cheek as this sounds, it highlights that one of the very real dangers of the investigative stage is to not interview deeply enough and to interview too few customers (Portigal).

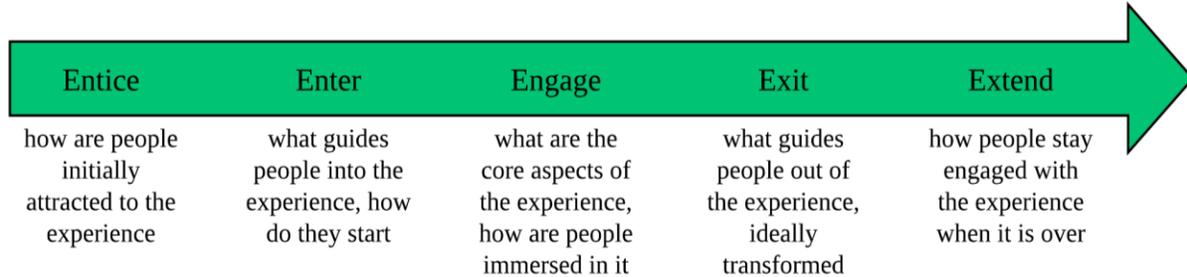
Another frequently asked question is when to perform a survey. Design research teaches us that a survey given after generating a deep understanding of a few customers is far more likely to be worthwhile. This allows better questions to be asked in order to set up a survey that can validate the hypothesis more easily. Try to identify patterns in the deep stories recorded. Be open to surprising patterns—patterns that communicate the what, why, and “so what” of customer actions. Be mindful of the preexisting biases of the researchers interviewing stakeholders or designing the survey.

How to Investigate in the Design Process

To start investigating, first, go to the right location. Sufficient learning cannot occur by staying behind a computer or only performing phone interviews. As the example of Patricia Moore illustrates, one does not know what one does not know—it is not possible to ask all the relevant questions if all the relevant issues are not known. Whenever possible, work with a team. Different

observers’ perspectives can enrich the deep story. Keep a wide perspective—try to understand the entire customer experience from start to finish (Figure 3).

Figure 3. The Five E’s of Experience.



This experience framework, adopted from Doblin, Inc., highlights the fact that the customer experience starts well before the actual engagement with the product and lasts much further beyond that (Sontag). Depending on the product, understanding each step of the experience is imperative to identifying relevant pain points along the way. While examining the entire customer experience on location, be mindful that it is a common mistake to take notes of our interpretations of the facts instead of focusing on the facts themselves, thus losing valuable first-order data.

A simple chart such as the one in Figure 4 can help separate these two realities. Audio recordings of an interview are superior to written notes alone, but video recordings are superior to both. The largest amount of first-order data can be generated from video documentation. On the other hand, reanalyzing video recordings is far more labor-intensive than reanalyzing audio or written recordings. In the interviews, seek stories that best illustrate the needs of the customers and that can serve as tools for future pitches to investors and collaborators.

Figure 4. Customer Experience Observation Chart.

Location of observation:	
Observer:	Date:
What I see	What I think

Getting Feedback on Ideas

Once the initial research is completed and a good sense of stakeholder needs is developed, generate ideas for how those needs can be addressed. Employ human-centered design methods to get feedback on whether the developed idea successfully addresses the intended needs, whether the key features have been designed and function adequately, and whether the benefits the product provides are meaningful and motivating to potential customers. To do so, prototype a draft outline of the experience of using the solution. A prototype is a mockup of the intended product that can be built in a short time with minimal effort—allowing for quick iteration, should customer responses to the first mockup product disappoint (see the chapter “Rapid Prototyping Strategies”). Ongoing prototyping and user feedback will help the product have the best chance at success in the marketplace.

Human-centered design: Best practices

- Human-centered design is best done as a team sport—everyone on the team participates in research and analysis.
- Design research can be data heavy and contextual. Be sure to take lots of pictures and notes and keep them organized.
- Interviews are often not easy to schedule. Give adequate time for these and schedule them when it is convenient for customers.
- Clearly communicate intent when setting up the visit.
- Make sure all recording devices are accounted for: notebook, pens, camera, and audio recorder.
- Establish team roles: who will lead the interviews, who will record, and who will observe.
- Understanding customer needs through human-centered design is an iterative process—continue to research throughout the entire design process.

Conclusion

With its emphasis on a deep understanding of customers and stakeholders, human-centered design offers a powerful framework for understanding customer needs. If done well, this approach promises to lead to better products that can succeed in the marketplace.

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