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Design thinking: Executing your organization's commitment to customer centricity

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ABSTRACT

This paper discusses the concept of design thinking as an approach for organizations to become more customer-centric and elevate experiences. Design thinking involves understanding user needs, continuously iterating solutions, and embracing ambiguity through rapid experimentation. It places the customer at the heart of problem solving and innovation. The paper outlines five key steps of design thinking: 1) Empathize – Deeply understand user needs and expectations through ethnographic research like interviews and observations; 2) Define – Clearly identify problems or opportunities based on research, using tools like customer personas and journey maps; 3) Ideate – Brainstorm creative alternatives, drawing solutions from diverse sources of input including customers, employees, competitors, etc; 4) Prototype – Rapidly develop inexpensive prototypes for users to experience and provide feedback on to facilitate continuous improvement; 5) Test – Place prototypes into real-world environments and use co-creation by collaborating with users to further refine concepts. Successfully utilizing design thinking requires an organizational culture valuing customer-centricity, embracing continuous change, and failing fast to pivot quickly. The paper discusses applying design thinking to both external customer interfaces and internal operations and processes to elevate experiences across the board. This human-centric approach transforms businesses by keeping user needs central and enables the continual adaptation necessary in today's world to offer memorable engagements that foster lifelong customer relationships.

As the economy has evolved from producing goods to providing services to creating experiences, many observers wonder what is next? More and more the answer appears to be experiences that are in some way memorable and emotional. Consumers are increasingly seeking meaningful interactions that resonate on a personal level, rather than merely acquiring goods or receiving a commoditized service. The experiential approach to creating value involves a deep understanding of customer preferences, values, and aspirations and taking a holistic view of the customer journey from pre-awareness through post-purchase. Designing products and services that blend functionality with emotional resonance is quickly creating competitive distance between firms that are building moats around their brand with experiences and those that do not. Storytelling, personalization, and the integration of technology to enhance the experiential aspect of offerings are just a few ways firms can ensure product and service touchpoints deepen the consumer's relationship with the brand.

One example of how a firm has used customer experience to differentiate its products and services is Apple. Long known for its innovative products, Apple invested heavily in creating highly differentiated purchase experiences through retail operations that lacked all of the typical accoutrements you would expect in a store. Apple Stores are designed to be more than just a place to purchase products. Apple Stores serve as community hubs where customers can attend workshops, receive technical support, and engage with the brand on a deeper level. The stores' minimalist design, interactive displays, and knowledgeable staff contribute to a unique and immersive brand experience. The packaging design and choices by Apple have turned the store unboxing experience into one that approximates buying an expensive piece of jewelry.

Another firm that has turned to experiences to differentiate its offering is Airbnb. Airbnb expanded beyond offering accommodations by introducing "Experiences," which allow locals to host activities or tours, sharing their unique skills and knowledge with travelers. This shift has allowed travelers to immerse themselves in the local culture and lifestyle which can have the effect of turning a simple stay into a comprehensive, experiential journey. From cooking classes with local chefs to guided tours of hidden city gems, Airbnb's "Experiences" have been designed to

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Fig. 1. The design thinking process.

elevate the travel experience by focusing on authentic, memorable interactions that resonate with a consumer's desire for immersive experiences.

Finally, there is Starbucks and its "Reserve Roasteries." Expanding beyond its traditional coffee shops, Starbucks created "Reserve Roasteries" to offer a premium, immersive coffee experience where customers can watch the roasting of beans, learn about coffee brewing processes, and sample rare coffee blends. The layout and interior design of these spaces are meticulously crafted to create a sensory-rich environment and available in just six locations that include Seattle, Shanghai, New York, Chicago, Tokyo, and Milan. The "Reserve Roasteries" elevate the act of drinking coffee by situating customers in elegant environments and providing an educational experience, targeting coffee enthusiasts eager to deepen their appreciation for the craft.

The three examples we have provided of how firms are designing experiences to differentiate their products and services are far from exhaustive. Other firms such as Nike, Disney, Lululemon, Sephora, Lego, IKEA, BMW, Patagonia, Harley-Davidson, Universal Studios, Whole Foods Market, and REI to name just a few, have all designed experiences to differentiate their offerings. The challenge, for firms today and in the future, has become how to create highly differentiated, if not life-changing, experiences and develop a process for doing so that is repeatable.

Organizations that are meeting that challenge have sought to provide these experiences by applying to their customers, both internal and external, a philosophy and process called design thinking. Although various writers have mentioned some of the key ideas underlying the application of design to developing solutions, one of the earliest authors to mention design as a way of thinking was Herbert Simon in his 1969 book *The Sciences of the Artificial*. Today, most credit Tim Brown, Chair of The IDEO Company, with introducing the phrase "design thinking" and describing it as a way to innovate through an emphasis on the four key pillars of empathy, iteration, experimentation, and an embrace of ambiguity and failure.

Most writers now have elaborated on these pillars by defining design thinking as a process of creative problem solving and innovation that begins by prioritizing customers' needs, wants, expectations and actual behaviors above everything else. In other words, design thinking has become an accessible and scalable means of executing an organization's commitment to customer centricity. Moreover, we would suggest that it is also the best way to ensure that the commitment to customer centricity includes the organization's internal customers (employees) as well as external customers. To use design thinking is to commit to the simple idea that everything the organization does starts with its customers.

Organizations that seek to become more customer-centric with both their external and internal customers can apply design thinking. The purpose of this article is to present practical guidelines for applying design thinking in a customer-centric organization. These are derived from both the growing literature on design thinking combined with the established literature on managing customer service organizations. Both literatures in combination provide new insights for managers who seek to enhance satisfaction with products and services their organizations offer as well as creating and improving experiences that are differentiating for external and internal customers. These insights are all premised on the simple notion that both external and internal customers want their needs satisfied with as little friction as possible. These organizations know that happy customers (both internal and external) are likely to continue their relationship with an organization while unhappy customers will not. They accept, in the famous words of Peter Drucker, that the purpose of their business is to create and keep a customer.

In order to achieve the purpose of this article it is first necessary to explain what design thinking is and how that thinking can help focus leaders to lead a customer centric organization. A design thinker looks first at how the customer thinks and acts when co-producing the experience provided by its product or service. Having empathy with the customer is the beginning of the design thinking process. An organization's design thinkers use an empathetic approach to find problems by listening to and observing their customers. Once they identify a problem or an opportunity by analyzing the information gained from customers, they then conduct in-depth interviews that enable a deep dive into a root cause or the fundamental cause of the issues and concerns customers are raising. The interviews enable design thinkers to avoid spending time and energy trying to solve the wrong problem while ensuring they focus on the right one. Once they have uncovered a root or fundamental cause of any basic problem, design thinkers brainstorm and research new possible solutions and rank them in the order of likely success. Then, starting with the highest ranked alternative, they create an inexpensive prototype of that alternative and test it with customers to gather feedback on its value. If the highest ranked prototype did not solve the customers' problem, the design thinkers drop it and move to the next best option. The designers are willing to repeat the process of prototyping and testing with customer feedback until an option solves the problem and provides a solution that is both feasible and satisfies customers. Design thinkers are comfortable with failing. By creating quick and cheap prototypes of the product or service, they can fail fast so they can pivot quickly to the next best option to prototype and test.

While this process seems similar to the quality improvement process developed by W. Edwards Deming, it is different. Deming's model made many contributions to product excellence by his focus on the *production process* and continuous improvement that might include making significant changes or redesigning an industrial process or system. The design thinker's contribution is creating memorable experiences by looking at the emotional basis of an experience with special emphasis on the interface of customer and experience provider. In this paper we consider not only the value of design thinking for customers but, also, the value of applying its principles internally to improve employees' experience with their own organization. Its benefits are enjoyed by employees and customers alike. Using both the growing literature on design thinking combined with the established literature on managing customer service organizations, we present practical guidelines for applying design thinking to execute the organization's quest to become customer-centric.

What is design thinking?

Design thinking in its simplest form consists of a five-step sequential problem solving process that starts with watching and listening to customers, framing what customers say and do into a problem statement to satisfy a need, searching for alternative solutions, creating cheap and quickly made prototyped solutions to allow testing the efficacy of the best alternatives, and, finally, taking action that implements the best solution throughout the organization. In an elaboration of this five-step explanation as seen in Fig. 1, some writers have explicated the five steps into: empathize, define, ideate (or brainstorm), prototype, and test.

The first step is to empathize with the customers to understand their needs. Design thinking starts with trying to understand how and why the customer obtains value or could obtain more value from the provider

when experiencing the product or service. Design thinkers supplement statistical data most organizations gather on customer and employee satisfaction by also using ethnographic research methods in order to dig deeply into the emotional aspects of the customer's experience. Ethnographic research enables study of a situation or set of circumstances from the point of view of the individual involved and is an effective means of uncovering the emotions experienced by individuals and groups in both specific and general experiences. Ethnographers use interviews and observations to delve deeply into how customers feel about something or why they do what they do.

This research method allows design thinkers to look at customers' needs, wants, expectations and behaviors as individuals. While this type of research is more costly and labor intensive than commonly used survey techniques, interviews and observations more effectively achieve the ethnographer's goal by building empathy with customers that allows them to gain a real understanding of what needs, wants, and expectations are unmet in their current interactions with the organization.

Second, based on the insights gained in the observations and interviews the designer can define the root problem to be solved. The value of this type of research is that the problem to be solved may not even be recognized by the customer as a problem. Walt Disney designed his theme park in response to his assessment of a problem customers did not know they had. The gated and fenced-in theme park was a response to his awareness that people would prefer an amusement park unlike the open assemblage of attractions that existed at the time. Instead, his park would be an enclosed clean, safe, and well-regulated assemblage of entertainment and exhibits.

Third, ideate or brainstorm alternative solutions that might solve the problem by delivering a new, valued experience to the customer. A Walt Disney World executive suggested trying a ticketless system in its theme parks to better balance the utilization of its various attractions while reducing dissatisfying waiting times. He had discovered, by observing customers' behavior, that they were using pricing information in the then famous ticket books to guide their selection of which attractions to visit. The term "E ticket ride" made famous by Astronaut Sally Ride on her first trip to space in 1983 made E tickets attractions (the most expensive) a priority for Walt Disney's guests to visit. The problem this created at Walt Disney World was very long lines for the "E" rides and short or no lines for all others. This executive thought if the tickets were eliminated the customers would more evenly distribute themselves across all attractions, reduce long lines at E rides, and increase guest satisfaction. He tested his idea and was proven right as today's continuing use of a single park admission price strategy shows.

Fourth, create a prototype of the most promising alternatives discovered in the brainstorming step as quickly and cheaply as possible to create the opportunity to fail fast. By prototyping the best alternative of the most promising first, an inexpensive quick trial provides a chance to evaluate that solution so that, if it fails, a pivot to the next best alternative can be quickly made. The original iPhone was developed with a plastic screen and the story of how it became glass is cemented in the lore of both Apple and industrial design. Shortly after Steve Jobs introduced the iPhone in January 2007, he noticed that the surface of the plastic screen was becoming scratched. This original prototype that was not yet in full production revealed an issue that needed fixing so he demanded finding a glass face that would not scratch. The result was "gorilla glass" produced by Corning at the behest of this design requirement from Jobs.

Finally, test the best prototyped solution by getting customers to try it. Here, the solution selected as the best can be scaled up to multiple users in multiple applications to see if the solution is really a solution. If not, this test phase can trigger going back to previous design stages such as prototyping or even to brainstorming ideas, or even perhaps starting again with observing and talking to the customer in order to find a better definition or clarification of the problem.

What distinguishes design thinking from the familiar management 101 decision-making model is its strong focus on customers. As is true for the researchers in the related field of service management, all design thinking starts with the customers; their needs, wants, actual behavior, and expectations. There is a popular story attributed to former President Dwight D. Eisenhower when he was president of Columbia University who, when asked where they should locate new sidewalks, said, "do nothing for a year, watch where the students walk, and then pave there." It did not matter to Eisenhower what the design engineers thought would be the best location for sidewalks. It is what the customers actually did that determined the best locations. A more recent example is seen in Orlando, Florida's multi-million-dollar international flight terminal. After opening with great fanfare about how beautiful the building is, customer complaints started coming in about how long the walkways were. The designers, faced with cost overruns, had removed moving sidewalks from the final design. Instead of talking to or observing the customers, they made a decision based upon what made economic sense for them. Because they were not customer focused as design thinkers, they discounted the importance of the distances between points in the terminal to passengers.

In essence, design thinking's customer-centric approach begins with investigating the why, when, and how the customer prefers to interface with the organization to get a desired outcome. Design thinkers believe good design minimizes customers' or users' transaction friction (pain points) which is the time, effort, costs, and other annoyances associated with all customer actions required to co-produce the experience and obtain the product or service expected. Rental car customers do not prefer to stand in line at the rental car desk to fill out and sign rental forms. They want quick access to transportation away from wherever they are to wherever they need or want to be. Rental car companies that have figured out an experience design that allows arriving airport passengers to walk to a nearby car they can get into and drive away without stopping at a desk, filling out paperwork, or standing in line to execute the transaction, have created a competitive advantage over those rental companies who do not offer this level of service. Because this experience is such an improvement over other rental transactions, it is memorable. The bonus for the organization is that the now memorable experience required the customer to first commit to establishing an account in order to secure future frictionless transactions. That initial set up benefits the organization by increasing the strength of the connection of the customer to the rental company by increasing the cost, time and effort required to switch to a competitor. This also increases the likelihood of future repeat patronage of that organization's experience because of the desire for lessened friction in future transactions to obtain the service. This creates customer loyalty, and its value can be measured in repeat patronage and market share.

Five steps to apply design thinking for internal and external customers

Below we use the five steps of design thinking presented above with suggested guidelines for actions that organizations can use to guide their execution for both internal and external customers. Before detailing the steps, however, we suggest that design thinking must be supported by an organizational culture that has three critical core values: a strong commitment to being customer centric, a willingness to embrace continuous change, and acceptance of failing fast as the basis for pivoting. While there are other values that are important in organizations embracing design thinking (e.g., openness to new ideas, servant leadership, strong commitment to interpersonal communication and respect), these three are critical.

Commitment to customer-centricity

Design thinking starts with having empathy with the customer and a sincere interest in satisfying that customer's needs, wants, expectations and recognizing the actual behavior. Although the term customer-centric is increasingly popular, its adoption rate is still not where most

customers would like as evidenced in the low results published by the University of Michigan's American Customer Satisfaction Index. However, there are some organizations that truly believe in putting the customer first.

There is perhaps no organization that has gained a stronger reputation for being empathetic with customers than the Walt Disney Company. Disney invented a term, "guestology," to help managers understand the key differences for customers and how the design of Epcot needed to incorporate these differences to ensure guest satisfaction. Because it is a very different experience to be in a multi-attraction pavilion for many minutes than it is to be on the typical Magic Kingdom attraction for a few minutes, both guests and employees need to think differently about how to design and deliver it. In a published interview, Bruce Laval, a former executive at Disney who invented the term "guestology," defined it as "the scientific study of the behaviors, needs, and expectations of the guests and how to use these data to optimally design and manage a theme park." A "guestologist," consequently, is one who scientifically designs and operates an organization from the guest's point of view.

This term perfectly captures the first step in design thinking. It describes Disney's commitment to include its customers in the co-creation of the experiences its guests co-produce. Not only do its guestologists use guest interviews, surveys, and focus group data in their systematic efforts to create customer solutions to real or revealed problems and concerns, but they also continuously talk with guests and study their actual behaviors to both learn how well their solutions are satisfying guests and to discover exactly what their customers do when co-producing their "magical" experiences. They do these by ethnographic means but also by gathering data that measure what they describe as their guest's key value drivers. By gathering objective and subjective data customer centric companies like Disney gain empathy with their customers with in-depth understanding of the good and bad parts of the customer experiences at the points of contact. Not only do they gain assessments of the key value drivers but, also, the pain points or where there is friction at the customer contact points. If wait times are too long or customer contact people are poorly trained or if the delivery system is too complicated or any of the many other issues that arise at the customer interface, in-depth study of the customer will uncover them. There is an old saying in both customer service and employee relations that if you want to know what it is about the situation that annoys people, ask them.

Just as Disney studies its guests it also studies its "cast members" (its name for its employees). Disney knows that its cast members are on the front lines of delivering the overall experience to guests in the parks and the company regularly invests in activities, training, and events that elevate the cast member experience. Guest-centric organizations, like Disney, know that motivated, energized, and happy employees are contagious and will transmit their enthusiasm to guests during interactions whether it be through those serving food, emptying garbage bins, or operating rides. This is the essence of what is referred to as the "service-profit chain."

Embracing continuous change

Embracing the idea of continuous change requires the presence of a second cultural value in the organization. Not only must there be a commitment to being customer centric but, there must be a readiness to continuously adjust how the organization meets its customers' changing needs, wants, expectations and behaviors. The organization and everyone in it need to embrace change and be ready, willing, and able to pivot from a course of action or customer solution that is not working to something new that might. This is true for both internal and external customers as both change constantly. Pivoting requires a leader to meet two important implementation related challenges. The first is to recognize when change is necessary because further effort to implement a plan or policy will result in wasted effort. Typically, the time to change is

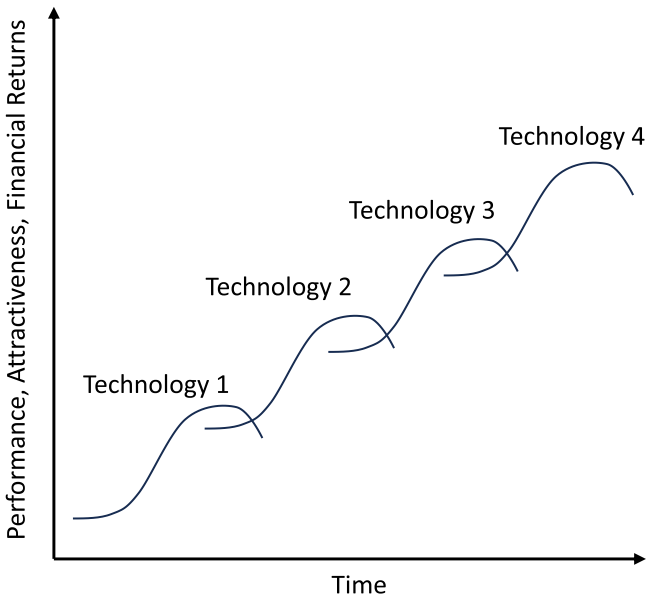

Fig. 2. S-Curve model of technology growth, maturity, and decline.

when the firm is at the peak of the s-curve in their innovation cycle (see Fig. 2). This idea is explained well by Clayton Christensen in *The Innovator's Dilemma* whereby earlier technologies grow to a point and then enter a period of maturity (zero growth), and then decline. Firms that anticipate the maturity of their product, or who recognize it through decreasing sales growth, have the advantage of initiating change proactively. The second implementation challenge for the leader is the pivot to the new execution strategy while generating the same enthusiasm and commitment in the organization to the new approach as there was with the old. Meeting these challenges requires leaders who are agile change managers.

However, often, organizations resist change. Resistance is typically a result of not understanding why the change must take place or fear of deviating from the status quo. Communicating why the organization must change is critical. This can be achieved either through a "burning platform memo" to the entire organization or through an inspirational vision of the future describing the improved benefits of the future state. Those organizations that do not recognize the decline in their offerings, or who experience an unexpected shock without necessary safeguards or contingency measures in place, must react to change and the "burning platform memo" approach to change is often necessary. Whereas an inspirational vision, or "dream," such as that espoused by John F. Kennedy when, in 1962, he spoke at Rice University of the imperative to send a man safely to the moon and back before the end of the decade, is proactive and may be applied when the organization anticipates or recognizes the maturity of their offerings prior to decline.

Agile leaders who can lead a pivot anticipate problems, resistance to change, and are able to effectively listen to and address concerns that changes create. They communicate to a fault why what is not working is not working in ways that the affected employees can understand and see where the problems are. This overcommunication of problems enhances the willingness to embrace change that will correct the problems. Further, agile leaders will introduce incentives for embracing change that energize the willingness to do something new. Employees who are rewarded for change will evoke change and incremental progress early on – even through trial and error – can build the momentum the organization will need to move forward.

Moreover, these leaders have built trust by showing their team that they know what they are doing when they pivot from one solution to a new one, willingly share what they know, and ensure that all team members are respected and treated fairly in any change. Building a

culture with people prepared for continuous change and ready to pivot to a new direction is a critical requirement for using design thinking. Design thinkers term this a design mindset. However, we also agree with John Kotter that obstinate resisters, or "dead enders," who will not embrace the change should be moved out of the organization as quickly, and with as much dignity, as possible.

Celebrating failing fast

Finally, the third critical cultural value necessary for design thinking to work is the ability of the organization and its members to celebrate failing fast. Sunk costs in time and money in a prototype or plan can discourage any organization from pivoting quickly. Trying something else before wasting any more resources on a failing idea requires an organization's leadership to define what failure looks like so there is a metric that communicates to all that change is needed.

In any organization, customer feedback systematically measured will communicate a problem. If a restaurant's mystery shopper's report on last night's server shows a service failure, the manager can sit with that server the next day and talk about what happened and give specific feedback on how to fix the problem. Likewise, if a service standard stipulates the desired quality was not met if a phone rings more than three times before being answered, a log of number of rings for the call center employee shows when failures occur so action can be taken. With production goods, metrics can also be established to signal when failures have occurred such as underweight bottle fills, out of round tires, or any other measurable product. For employees, union grievances, employee satisfaction scores, or routine supervisory observation can quickly identify problems with the internal customers.

The critical skill here is to create systems and procedures for quickly finding problems so something can be done to rapidly address the problem. The faster failure is identified the quicker the cause can be addressed. The point is that the organization has to show it cares about failures, create ways to find failures quickly, and ensure everyone takes responsibility for fixing them fast. It does these by including in these actions its cultural values and makes sure to reinforce them by publicly celebrating and recognizing those who find and fix failures quickly. Once these three components of an organization's culture are translated into values, beliefs, and norms and taught by leaderships' actions and words to all, the opportunity to apply the five steps of design thinking to both internal and external customers becomes possible.

Applying design thinking

Once the three critical cultural components are in place, organizations can take specific steps to apply design thinking to improve the value they create for customers. This approach is focused foremost on improving the customer experience as a fundamental competitive differentiator. We believe that these guidelines pertain equally to both external and internal customers.

Empathize with customers

Design thinking starts by trying to understand how and why the customer obtains value from the product or service. As noted earlier this is a two-step process. The first step is to define metrics or service standards that represent the organization's best understanding of when customers are satisfied. For a product, this metric is likely to be a testable performance level that falls within a defined range of acceptable variation. A ¾ inch screw should fit a test template. For largely intangible services, standards are created that reflect customer satisfaction. From its studies of guests, Disney knows that if a guest is not able to get into a set number of attractions during a visit, the guest is dissatisfied. Restaurants know that if a diner does not get her food served within a set time, she will be dissatisfied. The importance of metrics set by standards is that they signal problem areas. No organization has the resources to

Fig. 3. Example of a customer persona.

interview or observe every customer's interaction at every point of contact, so it must create measures to identify when and where problems that require further ethnographic investigation exist.

Although gathering customer satisfaction or dissatisfaction data is an efficient way to signal the existence of customers' pains, the design thinking approach is to use these data to initiate a deeper dive with individual customers. By observing and talking to individuals about the identified pain points, design thinkers can find out what reasons these are pain points in the customer's experience. On the other hand, when the ethnographic research reveals a need to create completely new products or services, there may not be any historical metrics to build on. In these situations, the importance of observation and interviews becomes even greater. The point is that design thinkers believe the best way to identify both root problems and good opportunities is to talk to and observe customers. Whether the problem is employee dissatisfaction or customer anger, asking and observing are the best ways to uncover the real, foundational issues involved. Some simple yet fundamental guidelines for customer empathy illustrated by this example are:

- Gather and analyze customer satisfaction/dissatisfaction data from all sources from all customers to identify potential problems or new opportunities in the delivery of the organization's experience. Look for anomalies in data.
- Ask and observe internal and external customers who are directly impacted by what they believe are the problems in their experience with the organization.
- Seek out and listen to customer complaints as freely given indicators of a problem that needs to be further researched and addressed.
- Develop measures for key determinants of value and satisfaction for customers, and track them over time to identify changes or trends.
- Remember that design thinking begins with the customer – whether they are internal or external.

Identify problems and opportunities for customers

While the empathy step often clearly identifies the problem, it may also only reveal a symptom requiring further thought and investigation to find the root cause of the problem. Thus, design thinkers carefully review the problem identified to be sure that it is the real problem. As an example, one hotel in Orlando was getting many customer complaints about how difficult it was to open the room doors. The problem-solving team focused initially on the locking system but, could not seem to find a problem with it. Then one of the team members decided to look more closely into which specific customers were lodging the most complaints and noticed a pattern. The majority of the complaints were made by

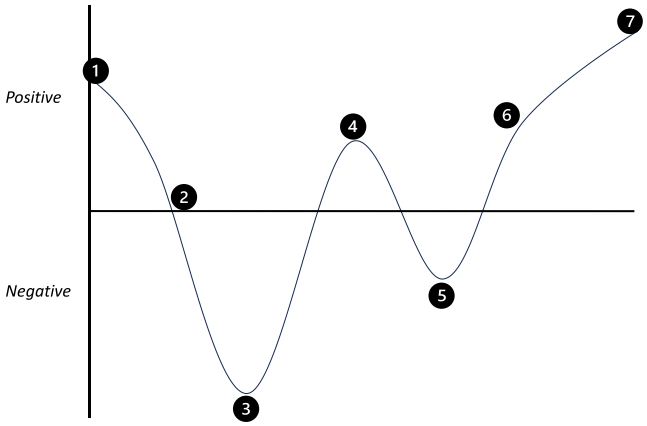

Fig. 4. Example of a customer journey map with specific steps identified.

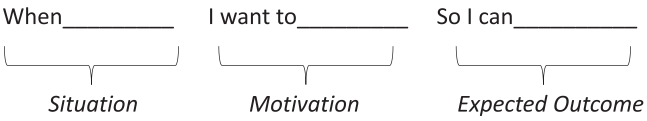

Fig. 5. Example of how to frame a job to be done.

people staying in rooms designed for those with a physical disability. Once an insight has been developed regarding a problem such as discovering that not all guests were having difficulty accessing their rooms but, only those with in a certain subset – in this case, those with disabilities – the problem or opportunity was reframed and more precisely defined. Thus, this team member put together a composite profile, or persona, of the customers having difficulty entering the rooms which allowed her to dig deeper. Customer personas may be developed around a specific individual or a subset of customers who have similar needs goals, wishes, and/or frustrations (see Fig. 3). Next, the team member mapped the customer journey by reflecting on how the hotel might help people with disabilities more easily enter their rooms. The team member hired people with different disabilities to "mystery shop" the hotel's rooms designed for those with physical disabilities and map each step of the guest experience of checking-in.

The reports revealed the problem. Those who were blind could not see the room numbers and those using wheelchairs could not comfortably reach the locks. In this case, both problems could be solved by minor changes to the doors. By following customers and observing each step of the service delivery path, those parts of the experience that were "positive" and pleasant as well as those that were "negative" and created difficulty and unhappiness were identified. Fig. 4 provides an example of how a simple customer journey map might be created to identify the specific steps in the process as well as where the service or product use was "positive" or "negative."

Another way to frame this problem would be to use a customer persona to identify what the customers were trying to accomplish (a "job") in a given situation or context and then focus on developing the best solution to doing that "job." The job to be done should be identified in its context or situation, and include the motivation, and finally the outcome. So, a customer may state that "when I am going into my hotel room I want to enter easily without confusion or great physical effort so that I can drop my luggage and rest" (see Fig. 5). In this case, the "job" is to easily enter the room.

Remember that a customer's job to be done can have not only a functional dimension but also a social and emotional dimension. In our example, the functional dimension is to "easily enter the room" but the social aspect might be to enter the room without appearing to struggle or be confused and the emotional aspect may be to enter the room with dignity and without embarrassment. Some simple yet fundamental guidelines for defining the problem or opportunity for customers include:

- Define your customer – whether internal or external – in as precise a way as possible and create a customer persona that identifies your customer's goals, needs, expectations, and behaviors.
- Map the customer's journey by following each step of the customer's experience in your own organization's value delivery.
- Identify your customer's "jobs to be done." Remember that a customer's job to be done can have not only a functional dimension but also a social and emotional dimension.

Ideate alternatives

Design teams rely primarily on brainstorming to uncover alternative solutions that might resolve the problem. Brainstorming is not the only source of ideas, however. Many things that are problems for customers in one organization have likely been a problem in another organization. Design thinkers should use multiple approaches to finding solutions beyond brainstorming. For example, once Disney discovered the FASTPASS virtual queue solution for the classic waiting line problem, others in other industries saw the possibilities virtual queues offered. Often solutions to a problem in one industry or for one type of problem can be migrated from another industry or different type of problem. While some consider this a form of brainstorming, it can also be thought of as knowledge transfer which presupposes knowledge of solutions others have discovered. Thus, a person listening to a professional association presentation may experience the classic "aha" moment when an example presented by a colleague seems like the perfect solution for the listener's problem. Academics get similar experiences when reading related research studies or listening to an academic discussion. Finally, guests can co-create solutions if the design thinker asks simply, "what would you do to fix this problem?"

Obviously, there are many ways to generate novel solutions to existing problems. As those who remember the Apollo 13 difficulties, it is generally harder to generate new solutions to new problems than it is to generate solutions to known problems. Small problems are easier to generate solutions for than large problems. Simple problems with few connections to other problems are easier to find solutions than complex problems with many connections. More people with diverse backgrounds and training tend to generate more ideas than fewer people who share the same training, backgrounds, and interests.

Generating ideas can be done through several widely used brainstorming techniques, the most common are those that pose a problem to a group and ask for ideas. Since there is significant literature on how to create brainstorming groups, how big to make them and how to encourage them to think outside of the box, we will not review them here but include several in the further readings. However, we will point out that one of our favorite methods is reverse brainstorming. In reverse brainstorming you brainstorm ideas that are the opposite of what you are seeking. For example, if we were brainstorming ways to improve food delivery, we would begin by identifying how to make food delivery very bad such as "deliver late," "deliver the wrong order," or "deliver cold food." We would then take this list and reverse it by turning "deliver late" to "deliver quickly" or "deliver the correct order." Another approach is brain writing whereby the problem is first written down for everyone to see and then the group takes a set amount of time to solo brainstorm and write down their ideas individually on notecards or sticky notes. Once everyone is given the opportunity to solo brainstorm, they then post their ideas to a common workspace, whiteboard, or virtual whiteboard space. This approach allows everyone to simultaneously generate ideas and then build on one another's ideas once they are revealed in a shared workspace. An affinity diagram approach could then be taken to aggregate common ideas into general themes. Some general guidelines for internal and external customers for developing initial solution ideas to prototype are:

- Seek extensive input from all knowledgeable sources on possible solutions to include customers, engineers, scientists, customer facing employees, competitors, customers, trade and professional associations, published research, and those who have solved similar problems.
- Break major pain points down to find smaller sources of friction.
- Keep brainstorming sessions free from evaluative judgment and criticism before the evaluation phase and provoke associations from one idea to another.
- Make sure everyone contributes to the brainstorming process.

Prototype solutions that elevate the customer experience

Once alternatives have been generated, the next step is to identify the most promising and build a prototype as quickly and cheaply as possible. Fast and inexpensive prototypes create an opportunity to fail fast in order to move on to the next best alternative. Prototypes can be paper airplanes, computer simulations or even an actual full-scale model of the potential solution. Some prototypes are sequentially developed in size and cost to see if they work at small scale before building a larger scale model. If, for example, the goal is to make a great paper airplane, each trial of a prototype yields insights into what happened and why. Getting the prototype of the paper airplane into the hands of the customer who will use it is the most important step. Once the prototype is in use, we can observe and ask the customer what they like or dislike and what they would wish for in the current design that may be absent. That learning translates into modifications in subsequent prototypes that may yield improvements (or not) in performance. As noted earlier, a quick and simple prototype allows the experimenter to fail or recognize success fast. Either outcome can lead to further improvements in design. Some general guidelines for internal and external customers when developing initial solution ideas to prototype are given in the table below. When a joint venture of Westinghouse Nuclear Division and Tenneco's Newport News Boat Building division wanted to test the sea worthiness of their innovative floating nuclear reactor platform, they first built a model of it and took it to a swimming pool to see how it would react in turbulent water. Only after the engineers were satisfied with the design that worked in the swimming pool did they start designing the full-scale floating plant.

Prototypes need not be small scale versions of the eventual final design, however. There are other approaches that are quick to develop and inexpensive to produce. One approach is storyboarding which consists of creating mockups visually depicting a potential new customer experience using simple sketches and captions that facilitate quick iteration. Another approach is role play whereby participants act out new service concepts and interactions with team members, or, in the instance of co-creation, potential users or customers. The role play approach allows for the testing the effectiveness of those supporting processes in service delivery by having staff act through scenarios. Paper and digital prototyping allows for the building of an interactive visual model of a digital solution like an application (or app) interface using rapid wireframing tools. A more fanciful approach is that of "Wizard of Oz" minimum viable product (or MVP) prototyping. In this approach a prototype that appears functional but is actually operated by a human behind the scenes. This MVP approach gives the impression of full automation while saving on the cost of development. The use of 3D printing supports quick iteration of design ideas by printing multiple product prototypes from digital files to allow testing and refining with user feedback While relatively inexpensive, 3D printing is considerably more involved and costly than other prototyping methods.

Finally, rapid physical prototyping is the most commonly used approach recommended in the design thinking literature. The rapid physical prototyping approach involves the use of inexpensive materials like cardboard or craft supplies to create a simplified mockup of product concepts or spatial environments like store layouts, aircraft designs, or home living rooms such as that available in IKEA's Home Planner. This fast, inexpensive approach gets prototypes into the hands of potential users quickly thereby facilitating rapid feedback and development of improved prototypes through iteration at a rate only matched by role playing. The goal with these types of rough prototyping techniques is to investigate concepts with end users, prior to investing in more costly and time intensive finished solutions. Some general guidelines for internal and external customers when developing prototypes are:

- Develop rapid, inexpensive prototypes that customers can see, feel, and interact with to enable them to provide feedback on form and function.
- Simulate service delivery prototypes with role plays to not only identify what works or does not work particularly well but, also, to identify the support services necessary to ensure consistent, high-quality delivery.
- Seek to build test prototypes as a low-cost alternative to finding solutions. Use virtual worlds if too expensive to build to scale.
- For prototypes that require more complex delivery systems, utilize "Wizard of Oz" minimum viable products that rely on behind-the-scenes manual approaches that are less costly and lend themselves to flexible adjustments before making any final investments in scaling up automation.

Test the prototypes with customers

Prototypes, especially simple and inexpensive ones that can be generated quickly, allow potential customers to try them out in order to learn if the solution solves the identified problem This testing provides quick, low-cost feedback before investing more time and resources into a more elaborate prototype to ramp up production of a final product. A more graduated approach would be to release a beta version of the solution to a selected small group of customers and observe and interview them to gain more in-depth feedback about the value seen in this solution to the identified problem. For some beta tests, a mix of participants including users and designers can co-create the tests so the feedback and refinements to the solution can be made in real time. For example, if prototyping a complex space such as an emergency room workflow, there may be a mix of designers, nurses, doctors, technicians, support staff, and patients collaborating together to test various workflows and procedures to identify the most effective approach. Finally, if a complete functioning prototype is produced, it could be used in an actual end use situation to validate its value as a solution in the real world. For example, an *in-situ* test could be run to determine if a room scheduling iPad app works in the emergency room with the hospital staff. Real world tests of in-situ solutions are especially valuable for testing complex and expensive solutions to avoid large capital investments or human resource commitments to a bad solution. Burger King built an entire restaurant as a test location for new solutions to problems it hoped to solve for both internal and external customers, The goal of testing in design thinking is not to prove absolute, final success but, to quickly gather insights from end users to spur further improvement in new prototypes to test and avoid costly mistakes. Some general guidelines for internal and external customers when testing are:

- Create rapidly developed, inexpensive prototypes to enable customers to actually experience and provide fast, high-fidelity feedback on the proposed solution.
- Use controlled beta testing through the release of early versions of a solution and select a small group of users to test the solution under controlled conditions.
- Use in-situ testing by placing functioning prototype solutions into an actual end use environment and context to validate it in a real world application.
- Use co-creation testing when prototyping complex solutions by incorporating a mix of designers, delivery agents, and customers to collaborate together to simulate the efficacy of various ideas.

Conclusions

Design thinking provides a powerful framework for organizations seeking to become more customer-centric and elevate experiences for both external and internal customers. By deeply understanding user needs, continuously iterating solutions, and embracing ambiguity through rapid experimentation, design thinking places the customer at the heart of problem solving and innovation. Successfully utilizing design thinking requires certain cultural values – a commitment to customer-centricity, accepting change as the norm, and failing fast to enable pivoting. With these underpinnings, organizations can apply the key steps of design thinking: empathizing through ethnographic research, clearly defining problems and opportunities, ideating creative alternatives, prototyping potential solutions quickly and cheaply, and testing concepts with users through co-creation.

For customer experience to be a true competitive advantage, design thinking must transform both external customer interfaces and internal operations and processes. By mapping employee journeys and jobs-to-be-done as thoroughly as the external customer experience, organizations can apply this human-centric methodology holistically across the company. The result is elevated experiences and enhanced loyalty and satisfaction for all stakeholders – customers, partners, and employees alike. Design thinking provides a lens and approach for managing the total experience across an organization. With user needs at the core, and embracing ambiguity as the means to clarity, design thinking enables businesses to continually adapt and offer memorable engagements that connect at functional, social, and emotional levels. This ultimately creates life-long relationships between people and the brands they love.

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CRediT authorship contribution statement

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We have no declarations of interest to declare.

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