Unit – II

UNDERSTAND, OBSERVE AND DEFINE THE PROBLEM :Search field determination - Problem clarification - Understanding of the problem - Problem analysis - Reformulation of the problem - Observation Phase - Empathetic design - Tips for observing - Methods for Empathetic Design - Point-of-View Phase - Characterization of the target group - Description of customer needs.

Problem clarification:

The Design Thinking Process: Define the Problem

Once you've empathized with your users, you can move on to the second stage of the Design Thinking process and define the problem your users need you to solve.

if you've read our **introduction to User Experience (UX) Design**, you'll know that UX is essentially about solving the problems that prevent users from accomplishing what they want to do with our product.

Before you can go into problem-solving mode, however, there is one very crucial step that you need to complete—one that will shape your entire design project from start to finish. In **the Design Thinking process**, this step is what's known as the "define" stage.

As the second step in the Design Thinking process, the **define** stage is where you'll establish a clear idea of exactly which problem you will solve for the user. You'll then shape this into a **problem statement** which will act as your northern star throughout the design process.

In this guide, we'll tell you everything you need to know about this stage in the Design Thinking process, as well as how to define a meaningful problem statement.

Here's what we'll cover:

1. What is the define stage and why is it necessary?

As the second step in the Design Thinking process, the define stage is dedicated to defining the problem: what user problem will you be trying to solve? In other words, what is your design challenge?

The define stage is preceded by the **empathize phase**, where you'll have learned as much about your users as possible, conducting interviews and using a variety of immersion and observation techniques. Once you have a good idea of who your users are and, most importantly, their wants, needs, and pain-points, you're ready to turn this empathy into an actionable problem statement.

The relationship between the empathize and define stages can best be described in terms of analysis and synthesis. In the empathize phase, we use analysis to break down everything we observe and discover about our users into smaller, more manageable components—dividing their actions and behaviour into "what", "why" and "how" categories, for example. In the define stage, we piece

these components back together, synthesising our findings to create a detailed overall picture.

Why is the define stage so important?
The define stage ensures you fully understand the goal of your design project. It helps you to articulate your design problem, and provides a clear-cut objective to work towards. A meaningful, actionable problem statement will steer you in the right direction, helping you to kick-start the ideation process (see **Stage Three of the Design Thinking process**) and work your way towards a solution.

What is a problem statement?

A **problem statement identifies the gap between the current state (i.e. the problem) and the desired state (i.e. the goal) of a process or product**. Within the design context, you can think of the user problem as an unmet need. By designing a solution that meets this need, you can satisfy the user and ensure a pleasant user experience.

A problem statement, or point of view (POV) statement, frames this problem (or need) in a way that is actionable for designers. It provides a clear description of the issue that the designer seeks to address, keeping the focus on the user at Problem or POV statements can take various formats, but the end goal is always the same: to guide the design team towards a feasible solution. Let's take a look at some of the ways you might frame your design problem:

- **From the user's perspective:** "I am a young working professional trying to eat healthily, but I'm struggling because I work long hours

and don’t always have time to go grocery shopping and prepare my meals. This makes me feel frustrated and bad about myself.”

- **From a user research perspective:** “Busy working professionals need an easy, time-efficient way to eat healthily because they often work long hours and don’t have time to shop and meal prep.”
- **Based on the four Ws—who, what, where, and why:** “Our young working professional struggles to eat healthily during the week because she is working long hours. Our solution should deliver a quick and easy way for her to procure ingredients and prepare healthy meals that she can take to work.”
- As you can see, each of these statements addresses the same issue—just in a slightly different way. As long as you focus on the user, what they need and why, it’s up to you how you choose to present and frame your design problem.
- We’ll look at how to form your problem statement a little later on. Before we do, let’s consider some problem statement “do”s and “don’t”s.

What makes a good problem statement?

A good problem statement is human-centered and user-focused. Based on the insights you gathered in the empathize phase, it focuses on the users and their needs—not on product specifications or business outcomes. Here are some pointers that will help you create a meaningful problem statement:

- **Focus on the user:** The user and their needs should be front and center of your problem statement. Avoid statements that start with

"we need to…" or "the product should", instead concentrating on the user's perspective: "Young working professionals need…", as in the examples above.

- **Keep it broad:** A good problem statement leaves room for innovation and creative freedom. It's important to keep it broad enough to invite a range of different ideas; avoid any references to specific solutions or technical requirements, for example.
- **Make it manageable:** At the same time, your problem statement should guide you and provide direction. If it's too broad in terms of the user's needs and goals, you'll struggle to hone in on a suitable solution. So, don't try to address too many user needs in one problem statement; prioritize and frame your problem accordingly.

How to solve problems using the design thinking process

Summary

The design thinking process is a problem-solving design methodology that helps you develop solutions in a human-focused way. Initially designed at Stanford's d.school, the five stage design thinking method can help solve ambiguous questions, or more open-ended problems. Learn how these five steps can help your team create innovative solutions to complex problems.

As humans, we're approached with problems every single day. But how often do we come up with solutions to everyday problems that put the needs of individual humans first?

This is how the design thinking process started.

What is the design thinking process?

The design thinking process is a problem-solving design methodology that helps you tackle complex problems by framing the issue in a human-centric way. The design thinking process works especially well for problems that are not clearly defined or have a more ambiguous goal.

One of the first individuals to write about design thinking was John E. Arnold, a mechanical engineering professor at Stanford. Arnold wrote about four major areas of design thinking in his book, “Creative Engineering” in 1959. His work was later taught at Stanford’s Hasso-Plattner Institute of Design (also known as d.school), a design institute that pioneered the design thinking process.

This eventually led Nobel Prize laureate Herbert Simon to outline one of the first iterations of the design thinking process in his 1969 book, “The Sciences of the Artificial.” While there are many different variations of design thinking, “The Sciences of the Artificial” is often credited as the basis.

A non-linear design thinking approach

Design thinking is not a linear process. It’s important to understand that each stage of the process can (and should) inform the other steps. For example, when you’re going through user testing, you may learn about a new problem that didn’t come up during any of the previous stages. You may learn more about your target personas during the final testing phase, or discover that your initial problem statement can actually help solve even more problems, so you need to redefine the statement to include those as well.

The design thinking process is a never-ending iterative process. Your design team can choose when the user's needs are met to form a final product, or they can choose to iterate on the design to create alternate variations that solve for different needs.

Why use the design thinking process

The design thinking process is not the most intuitive way to solve a problem, but the results that come from it are worth the effort. Here are a few other reasons why implementing the design thinking process for your team is worth it.

Focus on problem solving

As human beings, we often don't go out of our way to find problems. Since there's always an abundance of problems to solve, we're used to solving problems as they occur. The design thinking process forces you to look at problems from many different points of view.

The design thinking process requires focusing on human needs and behaviors, and how to create a solution to match those needs. This focus on problem solving can help your design team come up with creative solutions for complex problems.

Encourages collaboration and teamwork

The design thinking process cannot happen in a silo. It requires many different viewpoints from designers, future customers, and other stakeholders. Brainstorming sessions and collaboration are the backbone of the design thinking process.

Foster innovation

The design thinking process focuses on finding creative solutions that cater to human needs. This means your team is looking to find creative solutions for hyper specific and complex problems. If they're solving unique problems, then the solutions they're creating must be equally unique.

The iterative process of the design thinking process means that the innovation doesn't have to end—your team can continue to update the usability of your product to ensure that your target audience's problems are effectively solved.

Understanding of the problem:

Table 1: Questionnaire to clarify the problem
Source: According to Andler (2016)

	problem	non-problem	solution
Who	has the problem? is indirectly affected? believes that they are affected? makes decisions?	is not affected by the problem?	could use the solution as well? can contribute to solving the problem? does not want the solution? could stand in the way of the solution?
Where	does the problem occur?	does not the problem occur?	has something similar already been successfully resolved? is the best place to solve it? could the solution also be used?
When	did the problem start? does the problem occur? does it become an even bigger problem?	does not the problem occur?	should the solution be available? will it improve?
What	Is the problem? do you know or don't know about the problem? is not understood about the problem? is different than it should be? is particularly noticeable? annoys you about the problem? are the individual aspects of the problem?	is not the problem?	has been made the solution so far? should the solution necessarily be able to do? are the constants that must not/cannot be changed? is needed for the solution? will be different in the future? is (or is not) important for the solution? are your goals for the solution? do you have to discover?
How	does the problem manifest itself? is it related to another problem? can it be formulated differently?	is it usually going?	should the solution look like? is it tried to be solved so far? could the problem be an opportunity?
Why	is it a problem? is the problem unusual?	isn't it a problem for others?	is the solution needed? do we want to solve it? won't it just solve itself? can it be solved? is it difficult to solve?

Based on this catalogue of questions, the following problem analysis according to Kepner/Tregoe compares the problem with a case in which the problem (surprisingly) does not occur. The problem as well as the comparison case have to be checked systematically for their differences. On this basis,

hypotheses are developed and tested that contain the cause of the problem or the cause of the missing problem in the comparison case.

How to do it:

The following table is filled in systematically. For this purpose, a comparative case is sought in which the problem (surprisingly) does not occur. This case can be very similar or can come from a foreign field (other scientific field, foreign industry). Other techniques, such as the fishbone model and root cause analysis (both see chapter 2.4.2), can also be used to analyse the causes.

Table 2: Problem clarification according to Kepner/Tregoe
Source: According to Andler (2016)

	problem	non-problem	discrepancy	Cause (why is there a discrepancy?)
Who	has the problem?	has not the problem?	differences?	assumption about cause
Where	does the problem occur?	doesn`t occur the problem?	differences?	assumption about cause
When	does the problem occur?	does the problem not occur?	differences?	assumption about cause
What	Is the problem?	isn`t the problem?	differences?	assumption about cause
How	does the problem emerge? extensive is the problem??	is it usually going? many parts/areas are not affected?	differences?	assumption about cause

In addition to the description of the problem, initial insights into possible solutions can also be gained. On the one hand, this includes the clarification of framework conditions: What is permitted? What is possible? What is available? Also consider what would happen if framework conditions changed, such as the available or necessary resources, the technical possibilities and/or the political/legal situation.

On the other hand, you should carefully analyse the current state of the art:

- Why are the existing solutions not sufficient?
- Where are their limitations or shortcomings?
- Why are there no adequate solutions so far?

2.3 Understanding of the problem

„There are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns – there are things we do not know we don't know.“
– Donald Rumsfeld, US Secretary of Defense

After clarifying the problem, it is helpful to reflect again on what we know or don't know about the problem. According to Gray et al. (2010), the following matrix with the so-called blind spot of knowledge is helpful for this. The next questions have to be answered in the individual fields:

- What do we know about the problem? Which means we're aware that we know it.
  (**known Knowns**)
- What do we know that we don't know about the problem? Which means we're aware that we don`t know it.
  (**known Unknowns**)
- What do we know without even knowing that this knowledge could help us with the problem? Which means we're not aware that we know it.
  (**unknown Known**)
- What do we know that we don't know we don't actually know? Which means we're not even aware that we don't know.
  (**unknown Unknowns**)

The unknown Unknown area is, so to speak, the blind spot of our knowledge and awareness, which we only get out through the exploratory discovery. This is where Design Thinking begins.

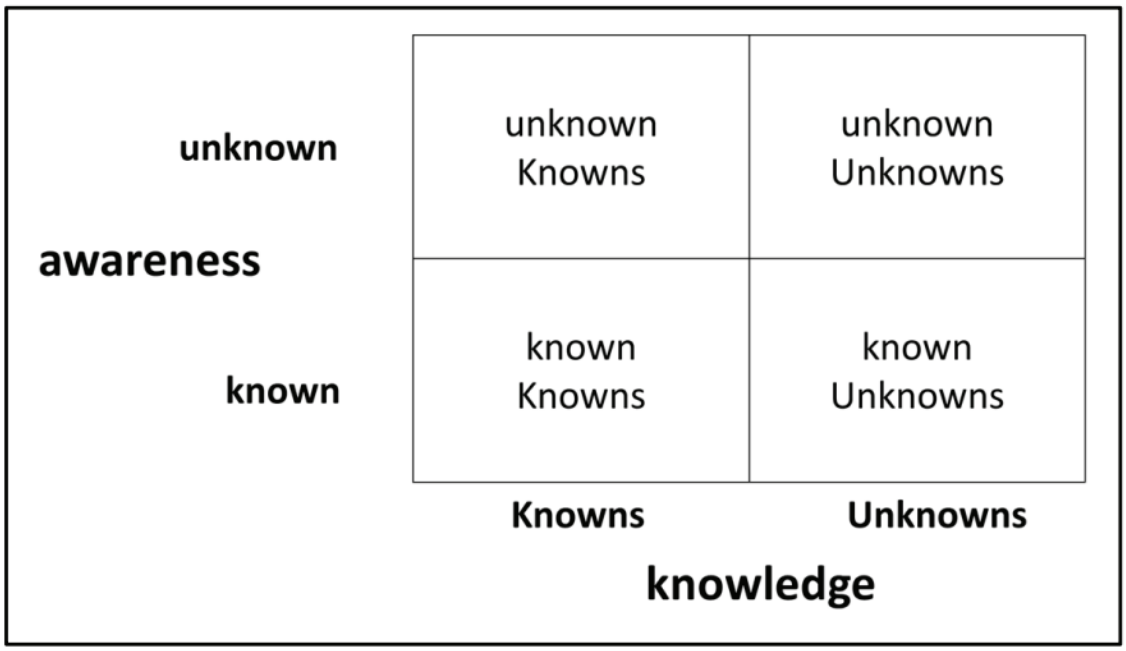


Figure 3: The blind spot of knowledge and awareness
Source: According to Gray et al. (2010) (with changes)

Observation Phase:

3 How to observe

"*See what everyone is seeing, but think differently!*" – Buddha

3.1 Observation Phase

In this phase the focus is on the potential customer/user. In order to gain a comprehensive understanding of the person of the customer/user, a real target group should be selected. Essentially, one should concentrate on customers/users who have the same needs / problems and are looking for appropriate solutions. Christensen (2003 and 2016) speaks here of the so-called "Jobs-to-be-done" concept (see chapter 4.3.1 for details).

If the solution to the problem is based on a radical innovation, it is also helpful not to concentrate on the "average customer" but first to look for progressive customers, the so-called innovators or early adopters. They have a concrete awareness of the problem and are actively or urgently looking for a solution. They will therefore probably be very willing to provide qualified customer feedback. Also search for extreme users who use products in very specific (extreme) situations (cold, heat, permanent use, certain regions etc.), or search for so-called lead users who have already developed their own solutions for the problem. The methods Persona (see chapter 4.2) and Empathy Map (see chapter 3.4.3) are also helpful here.

After selecting the "right" target group, it is advisable to first put yourself in the role of the target customer in the next step, against the background of your own experiences and views: What are your own experiences if you put yourself in the role of the customer? What would you as a customer do, want, wish, expect, be able to do, etc.? How could the customer be? Appearance, age, gender, special behavioural characteristics, etc.

Next, various methods can be used to directly or indirectly obtain information from the customer about himself or his behaviour and emotions: Analysis of secondary data, written surveys, interviews, observing future users and taking photographs or even shooting videos.

Secondary data about the customer can be very diverse: Search online and offline for studies, news articles, newspaper reports about your target group and collect statements in social networks (Facebook, Twitter, Instagram etc.), contact data or other relevant information. Search for blogs from or about your target customers. Also use internal knowledge sources from marketing/sales and in particular from customer service.

On this basis, you will consider what information you have or still need and how you can best research it through written surveys, interviews and/or observations. For all methods, the two basic questions are the following: What do the customers do and what do they not do? What do they say and what do they not say?

You will find detailed information and numerous tips on the methods of written surveys and especially interviews in chapter 7.

In the following, there are some tips on how to carry out an observation. It's about putting yourself in the customer's shoes, so that one also speaks of empathic design. Subsequently, in chapter 3.4 some methods of empathic design are presented in detail.

3.2 Empathetic design

"*Innovation begins with an eye.*" – Kelley (2001), S. 23

Empathic design means that the (potential) customer is observed during his activities (e.g. the use of a product/service but also during his daily work/service on site), so that the observer can "empathize" with the role of the customer and the situation and thus better understand it. This is in contrast to so-called product clinics or usability tests in which an artificial observation situation is created in a kind of laboratory. If the observer takes part in the situation himself, this is also referred to as "**shadowing**".

In addition to the use of a product/service, the situation to be observed can also include the use of prototypes ("Minimum Viable Products", see chapter 6.2) by the customer. The observation does not only concern the use of a product or prototype, but also the situation and environment of the customer, the general conditions or his daily routine. Also, knowledge about the customer's motivation and behaviour should be gained.

This approach offers numerous inspirations for innovations (observation of usage errors or hand-knitted solutions as well as latent or inarticulate customer needs) and is unfortunately too rarely used in practice. Observations are often only used in the context of usability tests, which, however, take place in a very late phase of the innovation process. Already in a very early phase – as described here in the Design Thinking Process – valuable customer-relevant information for problem solving and new ideas can be found.

In the following, we will first explain how to observe correctly. Subsequently, numerous methods of empathic design are presented in order to carry out observations or to systematically evaluate the observation results.

3.3 Tips for observing

Basically, it should be clarified in advance:

- Who should be observed?
- Who should carry out the observation?
- Which behaviour should be observed?
- How are the observations recorded?

In detail, the following further information should be observed:

During the observation one should become clear before about the place and the time of the observation, whom and what one will see there, which influence one exerts as an observer if necessary on the customers and/or environment. In this context, it is also necessary to clarify in advance how one behaves in the situation itself, where and how one sits, moves, what gestures and facial expressions one has, what and how one says something, how one wants to register the actions, etc. Recordings in the form of videos, photos or audio require the prior consent of the persons observed (preferably in written form). You should also always be aware of what expectations you have of the situation and the people involved. So one should try to let one's own prejudices become clear.

In this context, one should become aware of the numerous possible observation/perception and assessment errors. Above all, the interviewer effect ("observer effect" or also "Hawthorne Effect", see

below) must be taken into account here, that a change in the customer's behaviour can be determined by observation alone. The individual observation/perception and assessment errors are explained below. These can falsify the results and their analysis.

It would be helpful if different persons with different knowledge were to carry out the observation or evaluate the recordings. So psychologists, engineers/computer scientists or design experts can pay attention to very different aspects of the customer.

The observations can be supplemented with a survey of the customer before, during or after the observation situation. For example, this serves to clarify why a customer is doing something or what feelings he feels during this activity. In particular contradictions and discrepancies between the answers and the observations are particularly interesting to investigate further. For this purpose, you should observe the recommendations described in chapter 7.2 or 7.3 for conducting oral or written surveys.

In preparation, you should ask yourself the following questions (you should also be aware of your own bias/prejudices or the possible observation/perception/judgement errors listed below):

- What do you think the customer is doing?
- Why do you believe that?
- Where do you think you will find the customer?
- What will the customer do?
- How often do you think the customer acts like that?
- When do you think the customer will do that?

Situations are very informative when a customer wants to use something for the first time. What problems do the customers have? What do the customers do?

What is observed at all and how this information is to be evaluated must also be clarified in detail in advance. There are numerous schemes ("frameworks") to structure the observations and not disregard any essential aspects. In the following the concepts "nine dimensions of descriptive observation" of Spradley (1980), the "AEIOU-" as well as the "POEMS-" schemes are presented.

The very differentiated scheme of Spradley (1980) comprises the following nine dimensions, which one should pay attention to during observations and make corresponding notes:

Table 8: Nine dimensions of descriptive observation
Source: Spradley (1980)

observation dimensions	Explanation
SPACE	Describe in detail the premises or outdoor area in which the customer is staying.
ACTORS	Write down the names and the relevant information about the persons observed.
ACTIVITIES	Summarize the activities performed by the persons.
OBJECTS	Write down the objects that the persons use or find in the situation (furniture, PC, special equipment, etc.).
ACTS	Emphasize special individual actions of the customers.
EVENTS	Describe the events or situations in which the customers find themselves (meetings, small talk, customer talks, etc.).
TIME	Make a note of the order in which the individual activities/actions take place.
GOALS	Describe which goals the customers want to pursue concretely with their actions.
FEELINGS	In particular, write down the emotions of the customers in the various contexts.

The observation scheme AEIOU of the Doblin Group (see Martin/Hanington (2012): 10) is structured in a similar way, with which, as an extension, the interactions between the individual observation aspects can also be visualized in the form of a matrix (see below).

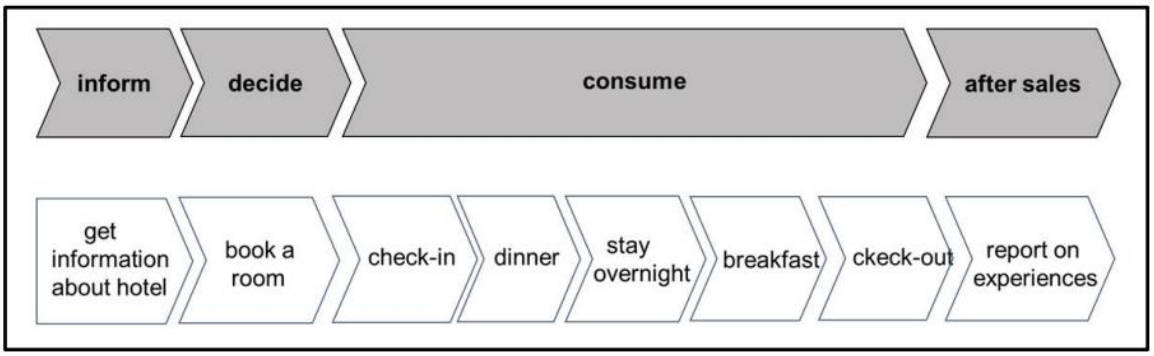


Figure 14: Phases of the Customer Journey with an example of a hotel stay

How to do it:

① First a persona must be created (see chapter 4.2) or selected and supplemented with an empathy map (see chapter 3.4.3). As already mentioned with the persona, different persona can also be used to work out differences and peculiarities in the Customer Journey. Possible persona could be:

Persona of a certain target segment, first-time buyers, extreme users (who frequently or under special conditions use products), non-buyers (negative persona), customers vs. user persona, decision-makers, influencers, possible saboteurs in the sales process, etc.

② With the help of information from surveys (see chapter 7.2 or 7.3 and the Lean Startup method in chapter 6.2), observations (see chapter 3), sales records or own experiences, customer satisfaction analyses or a brainstorming session (see chapter 5.3.1.1), the following phases of a Customer Journey can be summarised in key words (on Post-Its). At first, the phases can be described very roughly in order to describe them – especially the consumption phase – in more detail later.

In addition, there may be different customer journeys for a persona or different persona may have individually different customer journeys.

Phases of the Customer Journey:

Phase 1 – Attention:

How does the customer become aware of his need, his problem or an offer?

Phase 2 – Informing:

How does the customer inform himself about his wishes, a solution to his problem or an offer? How does he compare the offers?

Phase 3 – Decision:

How and by whom or by what is the customer influenced positively or negatively in his purchase decision? Why do customers make a choice?

Phase 4 – Consumption:

What does a potential customer experience step by step when he uses a service or a product? This phase should be described as concretely and in detail as possible. Virtually every step, every activity, every movement and every thought can be considered individually.

Phase 5 – After Sales:

What requirements/tasks/expectations does the customer have in the after-sales phase? How and by whom or what can the customer be encouraged to make another purchase? How and by whom or what can the customer be animated to report on his positive buying experiences or where can he report on them?

③ In each phase the following questions are asked:

- What does the persona want? What does she really want to achieve?

- What does he/she do/what does he/she not do (surprisingly)? How does she try to achieve her goals/wishes?

- What does she use for it and in what order? Who is the persona in contact with? Where are the contact points (points of contact) with the company? How long do the touches with the company last in each case? How long do the individual phases of the Customer Journey last in total?

  Of particular importance here are the contact points – the so-called **"touchpoints"** – which represent places/opportunities/moments where people come into contact with the product or the brand or the company in the broadest sense. Touchpoints can be controlled by the company, e.g. advertisements, TV or radio spots, brochures/catalogues, flyers, trade fairs and events, customer hotline/call centres, mailings, personal consultation/sales, point of sale, shop fittings (see chapter 3.4 as well as chapter 3.4.8 on Service Blueprinting, chapter 3.4.9 on Mystery Shopping or chapter 3.4.10 on Critical Incident Technology), Internet presence, online advertising (e-mail/newsletters, banners, e-shops, landing pages, company/product blogs), etc. In addition, touchpoints that cannot yet be influenced or only indirectly, such as family members, acquaintances, friends of the target group person, social media networks, reports in newspapers/magazines, forums, blogs, comparison/evaluation portals, etc., must be taken into account.

  The touchpoints should be as consistent as possible throughout the entire customer journey (by means of so-called **customer touchpoint management**). This means that everything the customer perceives (see, hear etc., see also the Empathy Map in chapter 3.4.3) should be coordinated with each other. This includes, for example, the visual and linguistic information presented to the customer at the touchpoints. The uniform and harmonious use of logos, images, fonts, messages with their tonalities etc. is part of this. In practice, this is by no means a trivial task, as various internal and (in part uncontrollable) external persons/departments/partners are responsible for the individual touchpoints.

  Each touchpoint (in particular the controllable touchpoints) must be analysed in more detail with the following questions, for example:

3 How to observe

- Which touchpoints are particularly effective from the customer's point of view – which are not?
- To what extent does each touchpoint contribute to positively influencing the customer's experience?
- Are the possible touchpoints along the customer journey coordinated with each other?
- How do your employees evaluate the individual touchpoints in terms of effort vs. benefits? Are there touchpoints that offer little customer benefit but are very complex? Are there too many touchpoints that tend to confuse the customer?
- Which touchpoints does the competitor not have? Why?
- Are the touchpoints along the customer journey enough? Where are there gaps? Which additional contact points can be created for the customer?
- What can be automated and how?

The touchpoints must be analysed more closely, especially in connection with the moments of truth mentioned below.

➲ Which consciously/unconsciously/not (yet) perceived problems or negative emotions are/could there be?

- Customer is annoyed.
- Customer is unpleasantly surprised about price/cost.
- Customer does not know what to do.
- Customer performs activity incorrectly.
- Customer tries to solve the problem himself.
- Customer has to wait and loses time.
- Customer performs useless activities (waste).
- Customer is disappointed about the quality.
- Customer perceives situation/activity as too complex.
- Customer perceives situation/activity as too user-unfriendly.
- Customer fears risks/feels insecurities.
- Customer embarrasses himself in front of others.

These problems/negative emotions could be evaluated in their significance (extent, frequency of occurrence), selected and analysed with regard to their cause. Various techniques are available for cause-effect analysis (see chapter 2.4.5) or the critical incident technique (see chapter 3.4.10). The assumptions behind the causes could also be investigated in more detail (see chapter 6.2 on the Lean Startup Method).

④ For each phase and each step in a phase, the satisfaction of the customer is assessed (so-called **Customer Experience Map**). How does the persona feel? It is possible to work with simple symbols (☺ 😐 ☹).

⑤ Furthermore, the so-called Key Moments of Truth (Carlzon (1989)) can also be identified for each phase/step, i.e. moments/situations that are of particularly high relevance for the customer.
Various "Moments of Truth" can be located along the customer journey:

- "**First Moment of Truth**", if the customer perceives the product/service at all.
- "**Second Moment of Truth**", if the customer is currently using the product or service and during this time evaluates the product/service on the basis of its quality requirements.
- "**Third Moment of Truth**" if the customer has a positive, neutral or negative perception/service after using the product/service.

You can also add more:

- "**Zero Moment of Truth**", when the customer perceives his problem/need for the first time through a stimulus (e.g. advertising) and seeks or compares information about possible problem solutions.
- "**Ultimate moment of truth**", when the customer reports on his experiences/sensations with the product/service to others (e.g. via social networks, opinion portals, virtual communities, etc.).

The Customer Journey combines very well with the **Customer Benefit Matrix**, developed by Kim/Mauborgne (2015), a methodology to develop improvement opportunities for each phase/step. Answer ideas for the following questions need to be developed:

- Where can something be simplified for customers?
- How can you create more benefits for your customers?
- Where can their risks be reduced/minimized?
- Is it possible to add more fun and entertainment?
- What would inspire customers?

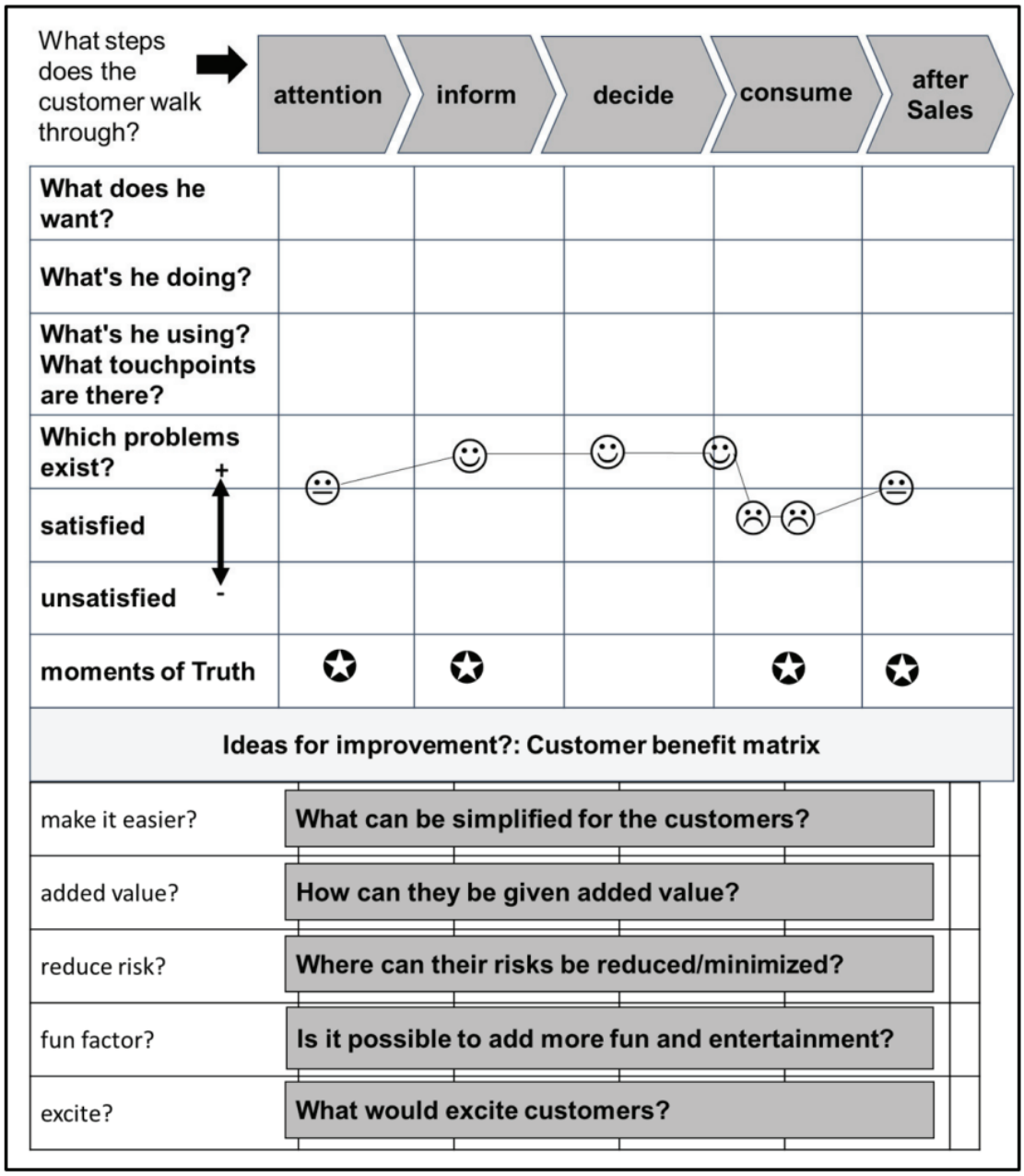


Figure 15: Customer Journey in combination with the customer benefit matrix

One variant of the Customer Journey is to outline a day in the life of a customer ("**A Day in the Life**").

In steps of 15 or 30 minutes, the following questions, for example, can be asked using the example of a concrete persona:

- How/where does the persona spend the day?
- What products/services does she use?
- How much time does she spend using the product?
- How would the persona's life change after receiving her product?
- How often is the persona online? Does she use a PC, laptop, tablet or smartphone?

Persona

With the Persona method, the user is placed in a hypothetical customer/user who represents members of a real customer/user group. This method is universally applicable both in the development of ideas and business models and in the design of marketing activities.

The selected person represents a fictitious person with individual characteristics that represent the target group (or part of it) of the innovation. However, one should not put together an average persona, but rather concretize different personas with actual data. It is recommended to represent different persona with different functions in the buying process. For example: persona of a certain target segment, first-time buyer, extreme user (who frequently or under special conditions use products), non-buyer (negative persona) or customer vs. user persona. The method can also be used in the business-to-business area (so-called buyer persona), in which decision-makers, influencers, possible saboteurs etc. are differentiated between companies in the sales process.

On a DIN A4/3 page, the person with a concrete name should be described in the form of a profile with keywords or short sentences (on post-it). The persona should not be reduced to a single characteristic, as is often the case in classical market research in the context of customer segmentation, but should be described holistically in its entire lifeworld. A (fictitious) quotation or motto of this persona can introduce the description.

The following biographical information can describe this person, for example:

- Gender, age, origin, marital status (married/disabled; children? How many? How old? What style of parenting?)
- Occupation (job, position), educational background, special knowledge, expert on a specific topic
- Friends and social environment, Pets
- Living conditions, own house / condominium / rented apartment / industry / type, design, quality and equipment of the apartment
- Asset status
- Attitudes (values, interests, preferences), frustration tolerance, health awareness, life goals
- Hobbies and leisure activities, sporting? Which sport? How often?
- How much time does the persona have for certain topics/activities?
- Which media/information sources does she use for which topics?
- Attitude towards digital media, users of social networks or rather loners, sharing information generously with others?
- Consumption habits or factors that influence purchasing decisions: How quickly does the decision to buy take place? Is it a spontaneous buyer or more planned? Which information channels does it use? Price, quality or service-oriented? Brand conscious?

It would also be useful to analyse the problems ("Pains") and wishes ("Gains") associated with innovation: For example with the following questions:

- What annoys/frustrates the persona? What problems does she have? What challenges in life does she face? What does the persona find too expensive, too uncomfortable, too time-consuming, too inferior, too user-unfriendly, too complex? What makes them angry? What risks does she fear? Why would she be ashamed of friends? What mistakes does she often make? What can the persona not do? What resistance is she confronted with?
- What needs does she have? What does she want? Where does she dream of? What goals in life does she pursue? What (buying) motives does she have? What offers does this persona need? What would she expect from an offer? What will make her life easier? What would make her happy? What would inspire them? How would she be admired by others?

These questions can be specifically adapted to the problem at hand and extended if necessary. Nevertheless, one should really sketch the answers on one page. It is also helpful to describe the persona and her problems or wishes in a personal form and in an ego form. The persona should also be updated again and again, because needs and desires are variable in the course of an innovation project. The Jobs-to-be-done method described in chapter 4.3.1 is recommended to deepen these "Pains" and "Gains".

Benefits of the Persona technique:

Persona can be used to create distance to the innovator's own person on the one hand and proximity to the customer on the other. This means that this approach creates customer orientation. Developments can thus be better aligned with the person and, if necessary, prioritised to what extent they can satisfy the needs and wishes of this persona. In addition, persona enables employees in the company who do not have frequent customer contact (e.g. employees in research, development and production) to become more sensitive to the needs of customers. Everyone understands the descriptions of the persona. Everybody can better understand the person. Furthermore, the customer is no longer seen as an anonymous something in an undefined mass, but gets a real character and is "brought to life". Furthermore, this method is cost-effective and can be combined with the following other approaches.

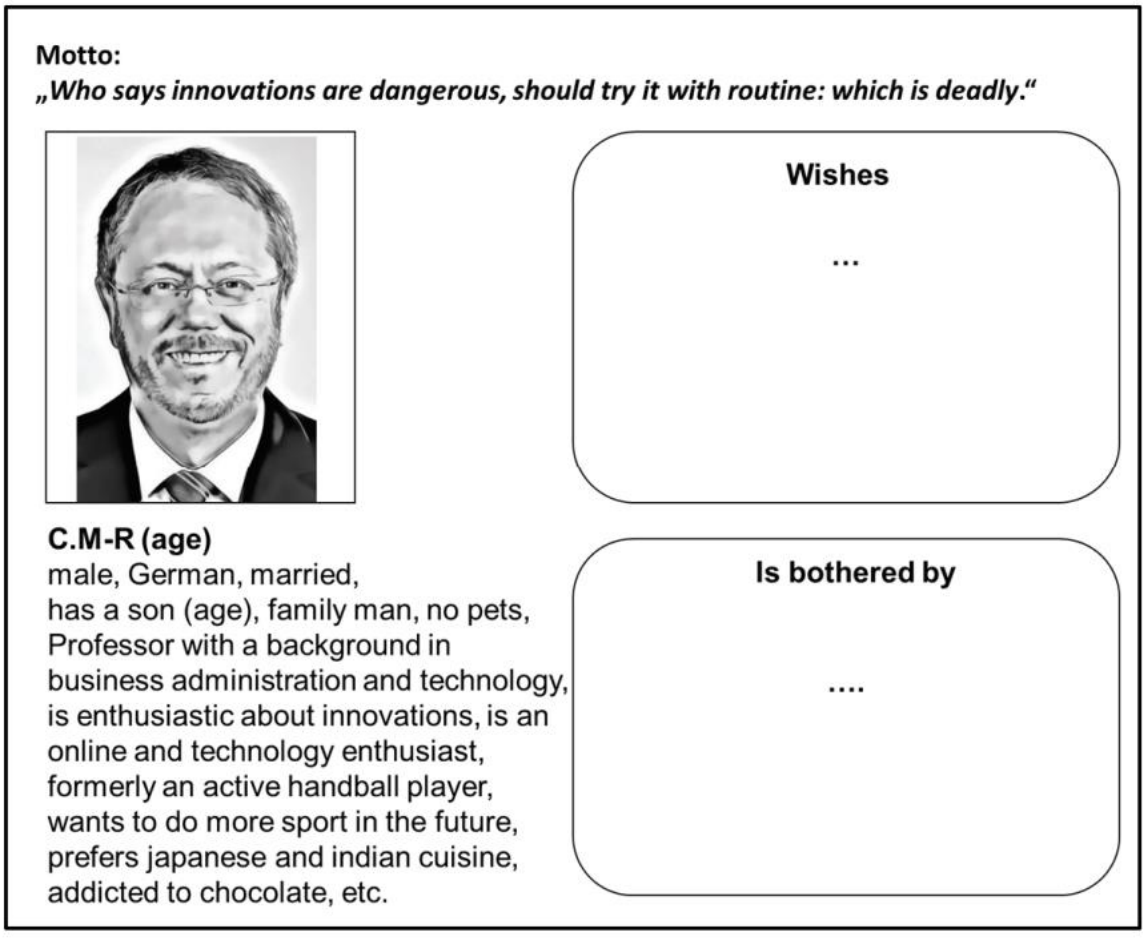


Figure 18: Example for the use of the Persona method

4.3.1 Jobs-to-be-done

„*People don't want to buy a quarter-inch drill. They want a quarter-inch hole.*" – Theodore Levitt (1986), Harvard Business School

The Jobs-to-be-done concept, which was essentially developed by Christensen/Raynor (2003) and Ulwick (2005), focuses on the tasks/activities – the so-called jobs – of or for customers in order to solve a specific problem for the customer, satisfy needs and/or realise wishes. In general Christensen et al. (2016) understands a job as a task that has to be completed in a certain situation or context in order to achieve progress from the customer's point of view. The task is not so much the result ("event") as the process. This job must always take the specific situation or context into account. This means that jobs are always dependent on a specific situation, which may have limitations, specifics, etc. This can be a particular stage in the customer's life, family status, financial or personal situation, local environment or other situational factors. Christensen (2003, 2016) speaks of customers not simply buying products and services, but "hiring" them to do certain jobs (tasks/activities). This concentration on the task and less on the product is also expressed in the above quote from Levitt (1986). Ultimately, customers do not want products, they want solutions for their tasks (problems, needs, wishes).

Jobs can be further differentiated according to Christensen/Raynor (2003) and Ulwick (2005):

- **Functional Jobs:**

  Certain functions / characteristics / activities / process steps must / should (from the customer's point of view) be available / executed / completed.

- **Social Jobs:**

  With the completion of the task/activity the attainment of prestige, power/influence, status or a certain (desirable) image for the customer is achieved. This means that the question is answered how the customer wants to be perceived by others (family members, friends, acquaintances, other organizations).

- **Personal Jobs:**

  The customer enjoys it, finds it interesting, exciting, stimulating, entertaining, "cool", aesthetically pleasing, feels secure or then feels pride or personal satisfaction that the job has been done. This means that the question of how the customer wants to feel after the job is done is answered.

The social and personal jobs (= **emotional jobs**) thus represent a psychological benefit for the customer. With this differentiation it is possible to analyse why customers want certain tasks (jobs) done. The information and answers to the questions mentioned above and below (see following description of the procedure) can again be obtained using various methods. In connection with the development of innovations, personal surveys, observations of customers and workshops with certain customers are to be mentioned here. Tips for the systematic observation of customers can be found in chapter 3. Information on conducting customer interviews can be found in chapter 7.2.

4 How to define the problem

In the following, a concrete procedure for the application of the Jobs-to-be-done concept will be explained.

How to do it:

Based on Osterwalder et al. (2014) (modified and extended)

❶ Identify customer segment

First create or select a persona (see chapter 4.2) and add an empathy map (see chapter 3.4.3). As already mentioned with Persona, different Persona can be used to work out differences and peculiarities of customer problems or customer needs and wishes. Of course, customers can not only be individuals, but also organizations (companies).

Tip:

It is advisable to consciously also take current non-customers (Christensen (2016): 65) and analyse them according to the jobs-to-be-done concept. This will generate interesting new search fields for innovations. Instead of customers, each stakeholder can also be taken in the broadest sense and analysed in this way.

❷ Identify jobs

A possible method for identifying potentially interesting jobs is the so-called **job mapping** by Bettencourt/Ulrick (2008). Job mapping does not analyse what a customer is actually doing or how he interacts with a product/service, but what and why he wants to achieve something in a certain situation/situation. This is also the main difference to the concept of the Customer Journey, which focuses on the activities actually carried out and is explained in chapter 3.4.7. The jobs should therefore be as detached as possible from certain products and services. They are not characteristics, functions or process steps of products and services.

According to Bettencourt/Ulrick (2008), job mapping consists of the following eight steps:

① **Define**
What aspects does the customer need to clarify/what steps does the customer need to take before completing the task/activity? This can include the following: What are the customer's objectives for the task/activity? How does he plan to perform these tasks? How does the customer rate the resources he needs to complete the tasks and how does he select these resources?

② **Search:**
Which necessary resources or aids must the customer look for in order to complete the task? These can be material (tools, materials) or immaterial (information, knowledge) resources. How difficult is it for customers to locate these resources?

③ **Preparing:**
How must the customer prepare/organize the resources and resources or the situation so that the task can be completed?

④ **Confirm:**
What does the customer have to check before the concrete task so that he can actually start with it? Does the customer have to confirm the functionality of the resources and tools?

⑤ **Execute**:
What must the customer do to ensure that the task is completed successfully?

⑥ **Monitor:**
How does the customer check the success after completion of the task?

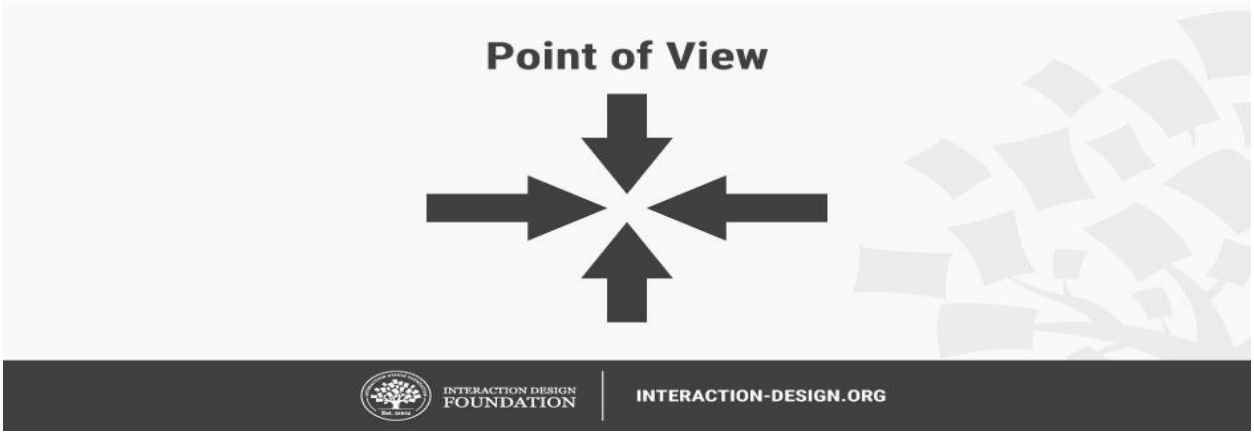
⑦ **Adaption:**
What does the customer need to adjust if the task is to be completed successfully?

⑧ **Closing:**
What must the customer do to complete the task? What are the steps that follow or must be completed after this task?

These steps of job mapping must always be analysed against the background of the specific situation. One challenge is to identify the jobs at the right level of abstraction. It must not be too abstract, as this will result in the loss of important detailed information. It must also not be too small, in order not to limit the search space too much for the later generation of ideas. The evaluation of the jobs below can provide information on the correct level of abstraction.

In addition to job mapping, the following checklist should be used to identify (relevant) jobs.

Point Of View – Problem Statement



A Point Of view (POV) is a **meaningful and actionable problem statement,** which will allow you to ideate in a goal-oriented manner. Your POV captures your design vision by defining the RIGHT challenge to address in the ideation sessions. A POV involves reframing a design challenge into an actionable problem statement. You articulate a POV by combining your knowledge about the user you are designing for, his or her needs and the insights which you've come to know in your research or Empathise mode. Your POV should be an actionable problem statement that will drive the rest of your design work.

You articulate a POV by combining these three elements – **user, need, and insight.** You can articulate your POV by inserting your information about your user, the needs and your insights in the following sentence:

[**User** . . . (descriptive)] needs [**need** . . . (verb)] because [**insight.** . . (compelling)]

"How Might We" Questions:

When you've defined your design challenge in a POV, you can start to generate ideas to solve your design challenge. You can start using your POV by asking a specific question starting with: "**How Might We**" or "in what ways might we". How Might We (**HMW**) questions are questions that

have the potential to spark ideation sessions such as brainstorms. They should be broad enough for a wide range of solutions, but narrow enough that specific solutions can be created for them. “How Might We” questions should be based on the observations you’ve gathered in the Empathise stage of the Design Thinking process.

For example, you have observed that youths tend not to watch TV programs on the TV at home, some questions which can guide and spark your ideation session could be:

- How might we make TV more social, so youths feel more engaged?
- How might we enable TV programs to be watched anywhere, at anytime?
- How might we make watching TV at home more exciting?

The HMW questions open up to Ideation sessions where you explore ideas, which can help you solve your design challenge in an innovative way

The Take Away

The second stage in a typical Design Thinking process is called the **Define** phase. It involves collating data from the observation stage (first stage called **Empathise**) to define the design problems and challenges. By using methods for **synthesising** raw data into a meaningful and usable body of knowledge — such as **empathy mapping** and **space saturate and group** — we will be able to create an actionable design problem statement or **Point of View** that inspire the generation of ideas to solve it. The **How Might We** questions open up to Ideation sessions where you explore ideas, which can help you solve your design challenge in an innovative way.

Characterization of the target group:

Can you get by without doing a target group analysis?

The short answer is no. Without a target group analysis, you run the risk of your website failing to reach your potential customers or your ads being displayed to the wrong audience. The result will be high levels of wasted coverage for your ads and costs per click, as well as high bounce rates for

your website. Potential customers won't get to see your advertising and your marketing measures will fail to hit the mark.

It's essential that your marketing reaches the appropriate people for your product or service. To accomplish this, you have to be familiar with their needs, lifestyle, and buying behavior, and you need to know how to trigger certain emotions in them. This is where a target group analysis comes in – and you can conduct one in just three steps.

Step 1 of the target group analysis: Determine the target group

Start by deciding whether your marketing is aimed at companies (B2B) or consumers (B2C). If you want to reach consumers, you can use the following attribute template to classify them:

- **Demographics:** Define general characteristics such as age, gender, marital status, place of residence, and household size.
- **Socioeconomics:** Research the level of education, income, and scope of your target group, as well as their profession.
- **Psychographics:** Motivation, opinions, wishes, values, hobbies, lifestyle, and daily routine are important factors when defining your target group.
- **Buying behavior:** How does your target group make purchases? What are its characteristics in terms of price sensitivity, satisfaction, purchasing scope, media usage?

If your target group focuses on companies, use this template to assign attributes:

- **Organizational:** Determine the company's size, location, industry, and market share.
- **Economic:** Research their fixed and current assets and the use of financial resources.
- **Buying behavior:** Try to establish when the company makes purchases and whether it has a regular supplier base.
- **Modernity:** What do you know about the company's attitude to innovation and the level of its digital transformation?

Define it using the following characteristics: goals, needs, priorities, and problems.

Your marketing will only be successful if you can offer your target group added value. Your campaign will only deliver results if your target group has a reason to buy your products or book your service. It's important that you make your target group feel that it's in the right place, and to achieve that, you need to ask yourself the following questions:

- Whose problem/problems can I solve?
- Whose needs can I meet?
- Who can I make happier, better, richer, stronger, healthier, or more satisfied?
- Who else do I offer added value to?

Step 2 of the target group analysis: Analyze buying behavior

Once you've defined your target group for your marketing, you should then analyze this target group and their buying behavior in more detail. This is an important step so you can

- identify the right pricing and price models (subscription, scale of prices, etc.),
- find the right way to address them,
- design the right media strategy,
- select the right marketing strategy, and
- use the right marketing and sales channels.

Think about the needs of your customer group. How can you positively influence their decision to make a purchase? Use the answers to both these questions to shape the design of your website and how you address your potential customers.

Step 3 of the target group analysis: Generate even more data

You've found your target group and analyzed their buying behavior. But how can you actually reach them? Ask yourself where the people in your target group are active online, what appeals to them, do they still read things or do they now simply scan though content. Find out which social networks they use, whether they like reading text, and what kind of images they enjoy. Which channels do they use to make purchases and what advertising/marketing strategies appeal to them?

There’s no shortage of information for your target group analysis: you can use surveys, interviews, and statistics, and plenty of research on this topic is available online. But as already discussed, the most important sources are definitely surveys that you conduct yourself. Ask your customers and targets – and listen to their answers! Evaluate their responses to newsletter and social media campaigns, use that information to keep refining your target group, and make sure that your information is always up to date.

Description of customer needs:

CUSTOMER NEEDS THROUGH DESIGN THINKING

Once you’ve assessed user needs, find ways to meet them. Although there are several tools you can use to find solutions, design thinking is among the most effective.

Design thinking is a solutions-based, human-centric mindset. It's an empathetic method that involves strategizing and designing innovative solutions based on insights gleaned from observations and research

- Clarify: This stage focuses on clarifying a problem by conducting research to empathize with your target audience. The goal is to identify key pain points, enabling you to find the right solution.
- Ideate: The ideation stage focuses on idea generation to solve problems identified during your initial research. This stage requires overcoming biases to ensure innovative ideas.
- Develop: The development stage involves exploring potential solutions generated during ideation. Prototyping is used to validate a solution's effectiveness.
- Implement: The final stage is implementation. This involves advocating for a developed idea to stakeholders and encouraging its adoption at your organization.

Within this framework are parallels between assessing customer needs and design thinking’s clarify stage. Both require research and observation that

ultimately lead to empathizing with the consumer. This intersection is why design thinking can be leveraged to develop innovations that serve customer needs.

WHAT DO CUSTOMERS WANT?

After collecting and organizing observations around customer needs and solutions, you can analyze your data for further insights, such as overlooked pain points, latent needs, or new problem framing. This final step is vital to understanding your customers fully. It's also closely related to creative problem-solving—another effective innovation tool you can leverage to improve customers' experiences.

Finding ways to make customers happy doesn't have to be complicated. If you solve their problems and give them what they need, they're likely to not only purchase from you once but multiple times thereafter.

Identify customer needs

Step 1: Decide on a target segment.

This is something obvious, but really difficult to nail. Let's say you're starting Airbnb, you cannot conquer the world on day one. You need to start small, you need to start somewhere — in their case, (i) it was apartments listed on Craigslist for the initial supply, and (ii) travelers looking for short term accommodation while attending conferences [3].

The more specific and identifiable your target segment, the less time it will take to understand their needs. A quick gauge — can you think of at least 10 people who fit the profile you have in mind?

In practice, it's quite difficult to have this nailed down right from the beginning. So let's start with something broad let's say "recruiters".

Step 2: Identify their 'jobs-to-be-done'.

The 'jobs to be done' [4] is a simple, but really effective framework to understand customer needs. In essence, the theory is, 'people hire a product or service to do a job they want to get done'. For example, I use Airbnb ***to book travel online***, I take Uber ***to get to work***.

You can start by Googling "a day in the life of _____". There are loads of people who have written blogs about how they spend their day at work. Its the quickest was to start identifying what "jobs" your target segment needs to get done. Example — A day in the life of a recruiter [5]. Once you read through 5–10 of such entries, you'll have an initial list of things they get done every day.

If your target segment is more specific (which is a good thing) this quick hack may not work. You can conduct user interviews with your target segment and ask them to describe a day in their life. The goal at this point is just to get a list of things that your target segment 'gets done' regularly.

At first, it might seem that it's just a bunch of random things they're talking about. And you can't really tell what the "jobs" they're trying to get done through the day. You can start making sense of this data by applying

thematic analysis. Which is an iterative process of categorizing the data from your research into “jobs”, evaluating if those categories make sense?

Here’s an example from — A day in the life of a recruiter

Code the jobs you find.

“And so I begin a passive search. I try not to rely too much on job boards, so I hit up the holy grail of recruiting — LinkedIn. I start with my network, looking for referrals, and then expand out into the cold calling abyss.”

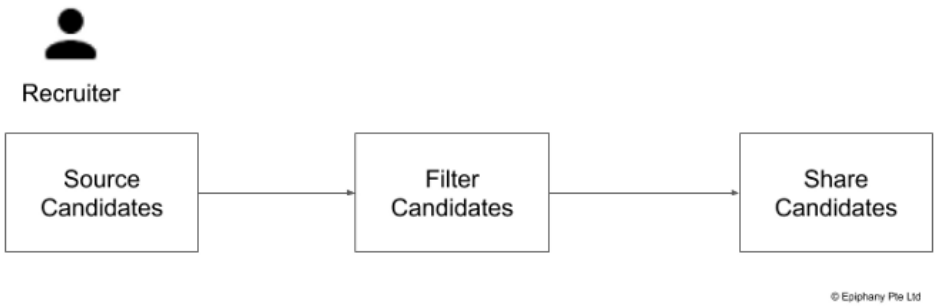
The jobs: search candidates, source candidates.

I’ve written about how to apply how thematic analysis to user interviews over here [6] — you can apply the same process to identify jobs-to-be-done from your user interviews. It’s worth the effort to do the analysis because, by the end of it, you’ll start getting an idea of things like which jobs are done more frequently, which ones take up a lot of time, which ones are the most common across people in your target segment.

Understand how they currently get things done.

With your initial analysis, you’ll have a starting point to dig deeper. Not every job they do will be relevant to your product or service at that time. So think about the objectives that are driving your business forward and start digging deeper.

For example, let’s say that you’re building a recruitment platform. And you identify recruiters have three key jobs “source candidates”, “filter candidates” and “share candidates” which you want to serve.



Interview users about how they do that job.

Pick one and dig deeper by talking to people in your target segment. Ask them how they get that job done. Here are some questions to ask when getting started:

- Can you describe the last time you did _____?
- How much time do you spend doing _____?
- How often do you do _____?
- What is the hardest part of doing _____?

- Do you use any tools to help you do _____?

Asking these questions should help you build an understanding of the “job(s)” you’ve chosen to focus on. Based on their answers you can start working out (i) what their goals are for that “job” and, (ii) how they currently go about getting it done.

The goals are usually some sort an optimization problem the customers are trying to solve. While “sourcing candidates” the recruiters’ goal could be something like — “reach out to as many relevant candidates as possible, in the least amount of time possible”. The element of optimization opens them up to new solutions. The solutions help them achieve those goals in a cheaper or faster way.

Identify pain-points/problems.

Customer needs are the specific challenges they face while trying to get their job(s) done. These challenges lead to inefficiencies in achieving their goals. Here are a couple of possible examples while “posting job descriptions on online job boards”:

- “manually having to post on multiple job-boards”
- “not having a central place to view all candidates across job boards”

These could be problems in their existing way of doing things. They cause inefficiencies in the job of “sourcing candidates”.

Discovering customer needs is an iterative process.

Identifying needs and understanding the customers' job(s) is an iterative process. Sometimes you may discover that the initial definition of your target market wasn't quite right. Or your definition of their jobs wasn't accurate. But over time, your research helps you classify them better and improve your understanding of their needs.

Let's say you started with "recruiters" as your target segment. Within a few interviews, you'll realize that each of their jobs seems to be different. This should nudge you to improve your segmentation and classify them better. Perhaps as "headhunters", "smb recruiters", and "those in charge of graduate programs". Pick one to focus on and continue.

Evaluate customer needs with experiments

Step 1: Formulate a theory.

Let's say you completed a few interviews and have observed that "manually having to post on multiple job-boards" is a problem faced by recruiters in your target segment. Use these observations to formulate a theory about the behavior of your target segment.

For Airbnb, their theory about the customer needs was “price is an important concern for customers booking travel online, hotels leave them disconnected from the city and it’s a culture. No easy way exists to book a room with a local or become a host.”

In our example, the theory can be “smb recruiters want to source candidates from multiple job boards, but don’t have an easy way to list their posting on multiple boards”.

Step 2: Make a prediction about their behavior.

Now that you have an amazing theory about the customers’ needs based on your research and observations. It’s likely to be true, but what if it isn’t?

Nearly ⅔ of all the money spent on building software generates an underwhelming ROI($400B/yr wasted) [7]. 80% of the features that get built never get used [8]. Companies end up spending a lot of time and money into solving a problem that isn’t interesting and doesn’t help in achieving your business objectives.

Generate hypotheses

The most efficient way to minimize that risk is to evaluate the need by making a prediction about measurable customer behavior, and seeing if it holds up to actual evidence. For Airbnb, the prediction was — “we will find several listings for temporary housing on non-purpose built websites.”