





Design Thinking: a Global Study on Implementation Practices in Organizations  
Past - Present - Future



Stefanie Gerken | Falk Uebernickel | Danielly de Paula

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# About This Study

*The Why – The Drivers  
Behind this Study*



## Intro

At the time of writing, as of 2021, Design Thinking is no longer a ‘new approach’. Among practitioners, as well as academics, interest in the topic has gathered pace over the last two decades. However, opinions are divided over whether Design Thinking as a phenomenon is merely old wine in new bottles, a passing trend, (Liedtka, 2018), or thriving as it is spread to an increasing number of organizations and industries (De Paula et al., 2021; Dunne, 2018; Elsbach & Stigliani, 2018). Despite its growing relevance and the diffusion of Design Thinking, knowledge on the actual status quo in organizations remains scarce.

In 2015, the Hasso-Plattner-Institute (HPI) and the Stanford Design Thinking Research Program conducted one of the most extensive global studies looking into different topics on the current state of Design Thinking practice in organizations (see Schmiedgen et al., 2015). The aim was to better understand what organizations actually do when they claim they practice Design Thinking. In 2021 we conducted a replicative study to compare the results of the 2015 study with current practices and requirements to analyze the development of the last six years and outline the future of Design Thinking practices in organizations. It is the first longitudinal study of this scope. Our aim was to determine temporal developments and changes in Design Thinking practices in organizations over the past years. Companies of all sizes and from different parts of the world participated in the survey. The findings from qualitative interviews with experts, i.e., people who have years of knowledge with Design Thinking, were cross-checked with the results from an exploratory

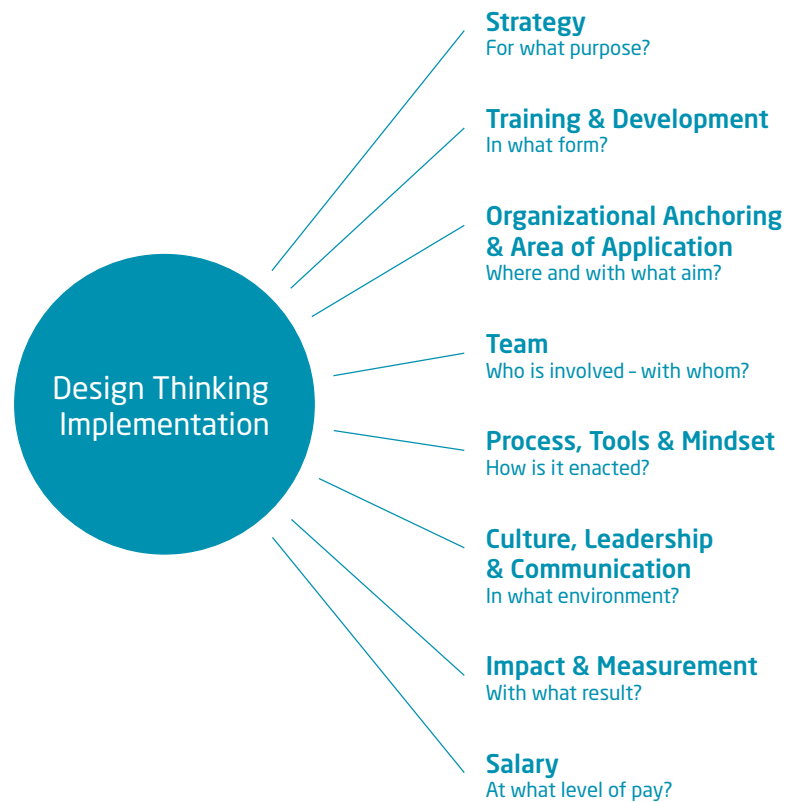
analysis of the survey data. This analysis uncovers significant differences as well as similarities in how Design Thinking is interpreted and applied in businesses between 2015 and 2021.

In our study, we adapted (see Figure 01) the Design Thinking implementation wheel developed by Wolf (2019) and used it as a content structure to further explore the following points:

- *What organizations do when they state they practice Design Thinking,*
- *whether they follow a strategy when implementing it,*
- *how they learn Design Thinking and how they spread the mindset,*
- *where and how Design Thinking is embedded,*
- *how organizations use and support it,*
- *where it has an impact,*
- *if its success is measured,*
- *and how much people earn when working in the field of Design Thinking.*

## Executive Summary 2015 and 2021

Figure 01: Design Thinking implementation aspects. Based on the design thinking implementation wheel (Wolf, 2019)



Based on the 2015 study, we compare some of its major findings with related topics of the 2021 study to identify how Design Thinking practices have evolved in organizations. We added further findings in these sections that we consider relevant to the outlook on the additional research areas we undertook in 2021. The table below presents a summary, with more results and detailed explanations presented in the subsequent chapters.

Table 01 Executive summary 2015 vs. 2021

Comparison Topics	Parts Without a Whole - The Current State of Design Thinking Practice in Organizations (2015)	Design Thinking: a Global Study on Implementation Practices in Organizations Past - Present - Future (2021)	Implications from both studies
<p><b>Industry Sectors</b> <i>Has Design Thinking been translated from theory into practice?</i></p>	<p>Organizations of all sizes and from various industries have practiced Design Thinking. The Information and Communication sector has been the strongest, represented by 22% of respondents.</p> <p>→ <a href="#">Chapter 3.2</a></p>	<p>Organizations of all sizes and industries practice Design Thinking. The Information and Communication sector is still the largest, with 20% of our respondents.</p> <p>→ <a href="#">Research Design &amp; Industry Overview (Attachment)</a></p>	<p><i>Design Thinking continues to be found not only in the more obvious industries such as Information and Communication sector, but is increasingly adopted in more traditional sectors such as Manufacturing (+140% growth), Finance &amp; Insurances (+86%), and Human Health (+250%). From the data, we can conclude that Design Thinking is increasingly gaining acceptance in organizations and becoming more established.</i></p>
<p><b>Understanding Design Thinking</b> <i>What does it mean, and why are organizations using it?</i></p>	<p>The researchers could not identify a common understanding of Design Thinking. People apply various interpretations as a result of their Design Thinking training. The diversity of opinions influences practice, i.e., how Design Thinking is interpreted in firms. The different entry points to a company and the diverse applications of Design Thinking could explain this observation.</p> <p>31% of survey respondents used a different terminology for Design Thinking. It was frequently equated with 'human-centered design', 'innovation', 'logical thinking' or adapted to a specific context of operation, e.g., 'Biothinking'.</p> <p>→ <a href="#">Chapter 5</a></p>	<p>Our data shows that the organizations that were the more successful in applying Design Thinking were those that have a shared organizational understanding of what Design Thinking is and were able to link it to their corporate strategy.</p> <p>Compared to 2015, 22% of participants of the 2021 study used other terms to describe the concept of Design Thinking. Companies customize the term to their specific goals to reach a larger audience of potential adopters. Some employees are averse to the term 'Design Thinking,' their businesses preferring the following terms:</p> <ul style="list-style-type: none"> <li>1 _ Human-Centered Design (16%)</li> <li>2 _ User-Centered Design (10%)</li> <li>3 _ Customer-Centered Design (4%)</li> </ul> <p>→ <a href="#">Strategy Chapter</a></p>	<p><i>The purpose of the implementation and why the organization initiated Design Thinking in a specific way has to be communicated at all company levels.</i></p> <p><i>However, just as there are many diverse ways of implementing Design Thinking in a company, the strategic intention underlying the adoption of Design Thinking varies from company to company as does its understanding of the concept and the value of Design Thinking. The terminology appears to be more accepted in organizations, as 29% fewer respondents reported using an alternative term compared to 2015.</i></p> <p><i>One of the consequences of not understanding the concept and the value of Design Thinking is to have a superficial and partial engagement of employees and in particular failing to undertake proper needfinding without actually developing any critical thinking.</i></p>

Comparison Topics	Parts Without a Whole - A Current State of Design Thinking Practice in Organizations (2015)	Design Thinking: a Global Study on Implementation Practices in Organizations Past - Present - Future (2021)	Implication of both studies
<p><b>Design Thinking Application</b> <i>What is Design Thinking used for?</i></p>	<p>Organizations tackled a wide range of challenges using Design Thinking. Interestingly, customer-facing product or service innovation is often not the main or only focus. Many firms plan to use it to assist with internal process improvements and team and departmental cultural shifts.</p> <p>→ <a href="#">Chapter 6.4</a></p>	<p>In 2015, the authors stated that localization influences application. Moreover, strategic aims influence an organization's ambition to innovate using Design Thinking. Survey respondents who claimed that their organization successfully implemented Design Thinking were asked about their organization's ambition to innovate using Design Thinking, based on the Innovation Ambition Matrix (multiple answers were possible):</p> <ul style="list-style-type: none"> <li>- 82% of respondents used Design Thinking to identify new customer needs and enter new markets (Transformational strategy),</li> <li>- 77% of respondents used Design Thinking to serve existing markets and customers (Core Business strategy),</li> <li>- 75% of respondents had set out a strategy to enter adjacent markets and customers (Adjacent Market strategy).</li> </ul> <p>→ <a href="#">Strategy Chapter</a></p>	<p><i>Depending on whether a company plans to implement Design Thinking to improve products/services or to change its organizational culture, requires different types of expertise and training. Without a well-defined strategy, it is not possible to define and prioritize what skills and time are necessary for the successful completion of goals.</i></p> <p><i>Even though our findings do not show a large difference between the transformational, core business, and adjacent market strategies, they indicate that most successful companies use Design Thinking as part of a transformational strategy.</i></p>
<p><b>Strategic Intention</b> <i>Does a strategic aim help implement Design Thinking?</i></p>	<p>10% (23 out of 235) of all respondents had stopped their Design Thinking activities because it was seen as a one-off affair, or because of lack of management support. Insufficient diffusion and implementation were also often named as reasons for discontinuation.</p> <p>→ <a href="#">Chapter 8</a></p>	<p>In 2021, 4% (21 out of 481) of survey respondents claimed that their organization had stopped using Design Thinking, down by 60% compared to 2015. Although the lack of management support decreased in the ranking of the main reasons for discontinuation, from second place in 2015 to third place in 2021, it still remains a hindrance factor.</p> <p>→ <a href="#">Strategy Chapter</a></p>	<p><i>Design Thinking initiatives were stopped less frequently compared to 2015. In contrast, 333 (57%) respondents had started to implement Design Thinking in their department since 2015. 2017 was the year in which most companies implemented Design Thinking.</i></p> <p><i>Our 2021 findings indicate that employees whose company did not have a specific strategic goal tended to perceive their Design Thinking implementation strategy as less successful, compared to those whose organization had a clear strategic aim.</i></p>

Comparison Topics	Parts Without a Whole - A Current State of Design Thinking Practice in Organizations (2015)	Design Thinking: a Global Study on Implementation Practices in Organizations Past - Present - Future (2021)	Implication of both studies
<p><b>Design Thinking Experience</b> <i>Did the maturity level of Design Thinking practitioner's change?</i></p>	<p>75 % of all respondents had been actively engaged with the concept for four years or less.</p> <p>→ Chapter 4</p>	<p>Increase in the experience of Design Thinking of participants: 61 % (n=360) had three years' experience of DT, and only 39 % (n=226) less than three years' experience.</p> <p>→ Training &amp; Development Chapter</p>	<p><i>In addition to the length of time participants exposed to Design Thinking, we compared the number of years participants had been practiced Design Thinking and their self-assessed level of expertise. Not only have our survey participants increased the length of their experience since 2015, but 51 % (300 participants) rated themselves as either advanced or experts in Design Thinking.</i></p>
<p><b>Design Thinking Learning Channels</b> <i>How do people learn Design Thinking?</i></p>	<p>Design Thinking enters organizations through a variety of channels:</p> <ul style="list-style-type: none"> <li>- 63% of survey respondents learned Design Thinking at an educational institution.</li> <li>- 35% of survey respondents were self-taught.</li> <li>- 20% of survey participants learned Design Thinking through their own organizational coaches.</li> <li>- 10% of survey participants used an external agency, consultancy or coaches.</li> </ul> <p>→ Chapter 4</p>	<p>Design Thinking still enters organizations through a variety of learning channels:</p> <ul style="list-style-type: none"> <li>- 57 % of survey respondents learned Design Thinking at an educational institution.</li> <li>- 33% of study participants taught themselves Design Thinking.</li> <li>- In-house training offerings with internal coaches increased to 27 %</li> <li>- external agencies and consultants brought in to develop Design Thinking increased to 22 %</li> </ul> <p>→ Training &amp; Development Chapter</p>	<p><i>Overall, we can see that knowledge about Design Thinking is growing in companies through education and training.</i></p> <p><i>Design Thinking is increasingly being offered as part of a variety of traditional academic disciplines and part of the 'initial training' of new entrants to the profession.</i></p> <p><i>As Design Thinking is a practice-based approach, employees typically develop expertise in an industry-specific work context, which could explain the increased in-house training by internal or external coaches. Individual study participants shared a range of topics focused on specific areas of interest, such as Leadership &amp; Design Thinking, Manufacturing &amp; Design Thinking, or Design Thinking &amp; Scrum.</i></p>

Comparison Topics	Parts Without a Whole - A Current State of Design Thinking Practice in Organizations (2015)	Design Thinking: a Global Study on Implementation Practices in Organizations Past - Present - Future (2021)	Implication of both studies
<p><b>Localization of Design Thinking</b> <i>Where is Design Thinking applied?</i></p>	<p>72 % of all respondents localized Design Thinking in parts of their organizations in traditional customer-facing front-end departments, such as Marketing and Research &amp; Development. According to the interviewed experts, Design Thinking is more likely to fail if used in isolation without the rest of the organization practicing, appreciating, or even being knowledgeable about the concept.</p> <p>→ <a href="#">Chapter 6.1, 6.2</a></p>	<p>79% localized their Design Thinking activities in parts of the organization, with 55 % of survey participants in R&amp;D as the most common area in which Design Thinking was applied the most in their daily routines.</p> <p>Since 2015, Design Thinking has grown by 46% in IT departments and by 92 % in Operations &amp; Manufacturing.</p> <p>Also, considerable potential is seen in the areas of Marketing, where Design Thinking has increased to/by 54 % in Marketing, to/by 61 % in Operations &amp; Manufacturing and to/by 113% in Finance &amp; Accounting in 2021.</p> <p>→ <a href="#">Organizational Anchoring Chapter</a></p>	<p><i>Similar to the spread of Design Thinking across different industries, we can also identify the dissemination of Design Thinking across various departments.</i></p> <p><i>Organizations employ Design Thinking to increase external customer-centricity - which is what Design Thinking is mostly known for - but it also has internal benefits, including knowledge transfer, communication, and process optimization.</i></p> <p><i>In general, one can see that the usage of Design Thinking among all departments has and will further increase in the future.</i></p>
<p><b>Design Thinking Teams</b> <i>Who is involved with whom?</i></p>	<p>Although how to compose Design Thinking teams was not discussed in the 'Parts Without a Whole' study, almost half of the participants stated they were part of a Design Thinking team, while the remainder were managing Design Thinking teams.</p> <p>→ <a href="#">Chapter 3.2</a></p> <p>In addition, the authors often mentioned specific aspects regarding teams, e.g., cultural change and the improvement of the way of working.</p>	<p>When analyzing how our participants composed Design Thinking teams, three dimensions emerged as being highly important: team size, individual expertise, and individual personality traits.</p> <ol style="list-style-type: none"> <li>1_ The ideal team size is up to 10 members.</li> <li>2_ The most mentioned specialist expertise are design, IT, and business. Moreover, survey participants stated psychology.</li> <li>3_ Several survey participants mentioned individual personality traits are teamwork, open-mindedness, and analytical mindset.</li> </ol> <p>→ <a href="#">Team Chapter</a></p>	<p><i>In the 2015 study, participants stressed the importance of having Design Thinking teams in organizations.</i></p> <p><i>In contrast, in 2021, some participants argued that instead of having dedicated Design Thinking teams, organizations should also deploy other actions to develop a Design Thinking mindset throughout the company. Our findings confirm the need to have experts who can understand the organizational setting and define a comprehensive strategy to embed Design Thinking. Another key point raised in 2021 was that orgs should consider how to improve as a team, rather than merely invest in individuals' Design Thinking expertise.</i></p>

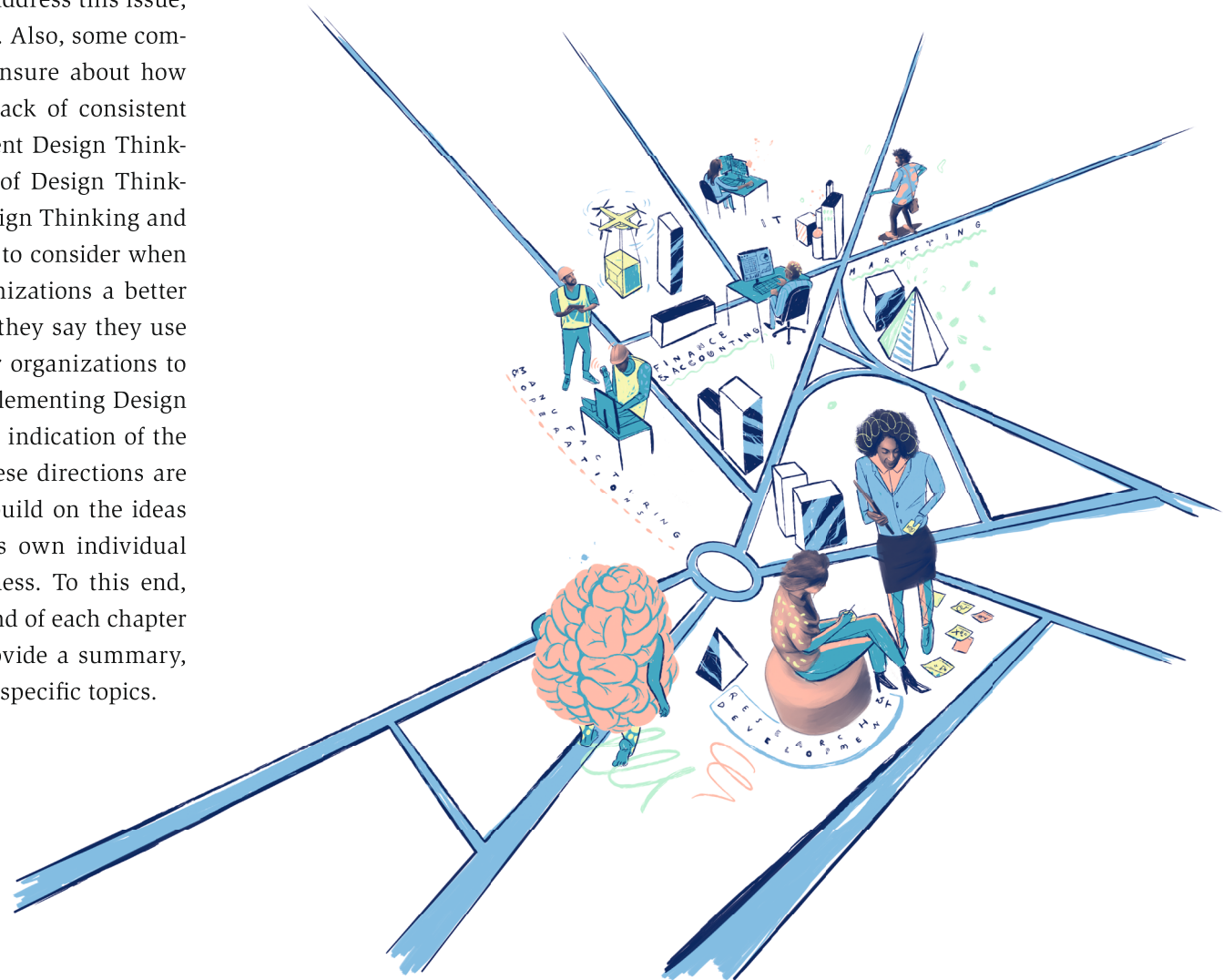
Comparison Topics	Parts Without a Whole - A Current State of Design Thinking Practice in Organizations (2015)	Design Thinking: a Global Study on Implementation Practices in Organizations Past - Present - Future (2021)	Implication of both studies
<p><b>Implementation Approaches</b> <i>What is the right way? Process or mindset?</i></p>	<p>In terms of implementation approaches, the study categorized participants' understanding of the concept of Design Thinking along a spectrum between two poles: at the one end, Design Thinking as a tool(box), and at the other, Design Thinking as a mindset (in between Method/Process/Protocol and the Methodology)</p> <p>→ <a href="#">Chapter 5</a></p> <p>As a system, the total is greater than the sum of its parts, according to the experts interviewed as they emphasized the mindset and attitude perspective of Design Thinking. These experts also highlighted organizational shortcomings when the organizations only apply isolated Design Thinking elements without an awareness of the interdependencies of mindsets, principles, practices, and tools that make up the overall concept.</p> <p>→ <a href="#">Chapter 10</a></p>	<p>To complement the 2015 findings along the spectrum between two poles, in the 2021 study, we categorized the implementation approaches into three different levels of complexity and analyzed how they differ in terms of company size and the intended reasons for implementing Design Thinking. Design Thinking is normally used as a:</p> <p><b>Tool:</b> Design Thinking as an approach to create artefacts</p> <p><b>Process:</b> Design Thinking as a problem-solving activity</p> <p><b>Mindset:</b> Design Thinking as a reflective practice</p> <p><b>Holistic approach:</b> Design Thinking as a holistic approach for problem-solving that includes the mindset, the process, and the appropriate tools</p> <p>The larger the company, the more likely it is that Design Thinking will be incorporated as a process. One of the many innovation challenges faced by our participants is how to spread the Design Thinking mindset throughout the company. According to many participants, large firms are slower and less adaptable than SMEs, and one of the numerous innovation challenges they encounter is how to propagate the Design Thinking approach throughout the organization.</p> <p>→ <a href="#">Process, Tools and Mindset Chapter</a></p>	<p><i>In 2015 and 2021, most respondents used a range of Design Thinking process models to implement Design Thinking as a process, which is not considered as negative per se when used as a guide for successful implementation in a supportive cultural environment. In contrast to the popular belief that Design Thinking is a one-dimensional process, in 2021, 31 % of respondents favored a more holistic approach to integrating Design Thinking in many circumstances.</i></p> <p><i>The purpose should guide the decision for strategic implementation steps. Our participants gave us the following feedback for these purpose-driven decisions:</i></p> <ul style="list-style-type: none"> <li>- Most companies (80%) that embed Design Thinking into the overall corporate culture implement Design Thinking in a holistic approach.</li> <li>- 68% of companies that use Design Thinking as an external source implement Design Thinking as a process.</li> <li>- In the cases where Design Thinking is practiced in parts of the organization, 56% of companies stated that they implement it as a process, whereas 16% do so in a holistic approach.</li> </ul>

Comparison Topics	Parts Without a Whole - A Current State of Design Thinking Practice in Organizations (2015)	Design Thinking: a Global Study on Implementation Practices in Organizations Past - Present - Future (2021)	Implication of both studies
<p><b>Leadership</b> <i>Are Design Thinking initiatives supported by leadership?</i></p>	<p>When management focus on the innovation outcome of Design Thinking, they often neglect internal changes. According to the study's authors, it is equally important to review leadership and innovation capabilities as part of implementing Design Thinking.</p> <p>→ <a href="#">Chapter 10.2</a></p>	<p>The 2021 study confirms the 2015 study's findings about leadership support:</p> <ul style="list-style-type: none"> <li>- Almost half (43%) of respondents felt that the leadership support for Design Thinking activities in their company was either high or very high.</li> <li>- By contrast, 26% of all participants did not feel supported by their leaders, and 23% only felt moderately supported, which leads us to conclude that there is an obvious need for leadership to support Design Thinking in most companies.</li> </ul> <p>→ <a href="#">Culture, Leadership &amp; Communication Chapter</a></p>	<p><i>More than half (54%) of survey participants envisioned Design Thinking to have a clear impact upon their company's corporate culture in the year 2023. This represents a significant increase (26%) compared to the 2015 study. This highlights the importance of adequate support given by leaders and managers, in particular to align the strategic intent of Design Thinking projects with their organization's strategy.</i></p> <p><i>To support the implementation of Design Thinking, Cultural aspects can only be successful if they are adopted by the leadership.</i></p>
<p><b>Impact of Design Thinking</b> <i>What is the perceived impact?</i></p>	<p>When asked about the perceived impact of Design Thinking in their organization,</p> <ul style="list-style-type: none"> <li>- 71% of respondents stated that Design Thinking has improved their working culture on a team level.</li> <li>- 69% of respondents reported a more efficient innovation process when using Design Thinking, and</li> <li>- 48% integrated their users more frequently.</li> <li>- 18% of survey participants stated that Design Thinking helped to save costs.</li> </ul> <p>→ <a href="#">Chapter 7</a></p>	<p>In 2021, survey participants stated their perception of the impact of Design Thinking in their organization as follows:</p> <ul style="list-style-type: none"> <li>- 60% stated that Design Thinking has improved their working culture.</li> <li>- 67% of the respondents reported a more efficient innovation process when using Design Thinking.</li> <li>- 58% integrated their users more frequently.</li> <li>- 30% of survey participants stated that Design Thinking helped to save costs.</li> <li>- 25% reported that Design Thinking helped increase profitability, and</li> <li>- 33% of survey participants asserted that Design Thinking helped increasing sales.</li> </ul> <p>→ <a href="#">Impact &amp; Measurement Chapter</a></p>	<p><i>Given the strong increases seen between 2015 and 2021, regarding the impact of Design Thinking on cost savings, increased sales and profitability, we were wondering what, in particular, had led to this increase, and whether the respondents' perception of positive impact could be backed up by hard data.</i></p> <ul style="list-style-type: none"> <li>- 81% of all participants agreed or strongly agreed that Design Thinking reduces development risks.</li> <li>- 63% felt that Design Thinking shortens the duration of the development process.</li> <li>- 62% felt that Design Thinking results in trade-offs, such as those arising from cost savings and generating value for the customer.</li> </ul>



Comparison Topics	Parts Without a Whole - A Current State of Design Thinking Practice in Organizations (2015)	Design Thinking: a Global Study on Implementation Practices in Organizations Past - Present - Future (2021)	Implication of both studies
<p><b>Measurement of Design Thinking</b> <i>How is Design Thinking measured in organizations?</i></p>	<p>In 2015, 17% (40 out of 235) of respondents measured the success of Design Thinking in their company, whereas 68 participants did not answer the question.</p> <p>→ <a href="#">Chapter 9</a></p> <p>Many respondents found it challenging to find the right metrics, resulting in a lack of evidence of its financial benefit.</p> <p>→ <a href="#">Chapter 7</a></p>	<p>Between 2015 and 2021 little has changed in the overall measurement of Design Thinking activities: 19% of practitioners monitored their Design Thinking endeavors, whereas 81% had no monitoring and evaluation in place.</p> <p>Within the group of study participants who monitored the impact of Design Thinking, we found that the two main points of focus of measurement were:</p> <ol style="list-style-type: none"> <li>1 _ Human-centered measures: customer satisfaction, feedback from clients, NPS (Net Promoter Score), staff retention, employee engagement, etc.</li> <li>2 _ Innovation-focused measures: number of ideas, innovation rate, sales of innovative products, and innovation speed (time to market).</li> </ol> <p>→ <a href="#">Impact &amp; Measurement Chapter</a></p>	<p><i>No monitoring was reported for the case of where respondents believed that Design Thinking had been deployed (very) unsuccessfully. People who monitor Design Thinking, on the other hand, are more likely to describe the Design Thinking implementation as successful (i.e., 40% who do compared to 10% who do not). We found disparities within organizations based on the departments that apply Design Thinking.</i></p>
<p><b>Salary</b> <i>How much do people earn when working with Design Thinking?</i></p>	<p>Salary did not feature as a topic in the 2015 study.</p>	<p>The general factors that primarily influence salary - work experience, education, company size and industry, region, and gender - apply equally to Design Thinking. We took a closer look at both environmental and knowledge factors and found a salary gap of 16% between women and men in Design Thinking. We also determined average values for the various levels of Design Thinking expertise, which can provide a guide for both job applicants and HR managers.</p> <p>→ <a href="#">Salary Chapter</a></p>	<p><i>Salary is still an important motivating factor for employees. Our findings can provide a useful guide for employers and HR managers when it comes to pay. Since Design Thinking already exists in various companies and will continue to grow, salary is also an issue that researchers and practitioners should monitor in the future. Furthermore, regular surveys also allow comparisons, not least to counteract gender differences.</i></p>

Design Thinking is supposed to add value to complex environments in which organizations are embedded. Although companies acknowledge the importance of innovation, to achieve innovation is invariably challenging, and Design Thinking can address this issue, among many other benefits (Hassi & Laakso, 2011). Also, some companies working with Design Thinking are still unsure about how to quantify its value in their organization. The lack of consistent guidelines might hinder organizations to implement Design Thinking and/or to measure it to evaluate the impact of Design Thinking activities. The multilayered components of Design Thinking and the different goals for its use are obviously factors to consider when measuring this impact. Our study will give organizations a better understanding of what other companies do when they say they use Design Thinking. We do not think it advisable for organizations to follow any specific step-by-step guidelines for implementing Design Thinking; rather, our results should be seen as an indication of the paths adopted by the companies in our study. These directions are intended to provide guidance and inspiration to build on the ideas and experiences of others when developing one's own individual (holistic) Design Thinking approach to the business. To this end, and for further inspiration, we have added at the end of each chapter so-called 'success factors and challenges' that provide a summary, follow-up reading and weblinks to further explore specific topics.



# Preface

# Preface

## Prof. Uli Weinberg

*Founder and Director HPI School of Design Thinking  
Hasso Platter Institute at University of Potsdam*

Soon after the HPI School of Design Thinking was launched in Potsdam in 2007, it was not only students who wanted to learn new approaches to dealing with innovation and complex problems. The project-based approach of the study program also brought companies and organizations into contact with the Design Thinking principles and it quickly became clear that these not only provide individual learners with new design patterns but also entire organizations.

Multi-professional teamwork, non-linear work processes, and flexible work environments are what companies need today on the path to digital transformation, and it is precisely these three core elements that shape everyday learning at the HPI School of Design Thinking. It is these cultural and social factors that play an essential role in finding the way out of analog patterns of thought and action and into a digital, increasingly networked world of thought and action. The changes, and effects, achieved by learning the new principles as part of transformation processes are correspondingly wide-ranging.

In 2015, a team of researchers at HPI had looked into these changes and made an attempt to trace the effectiveness of Design Thinking in companies and organizations with an initial study entitled ‘Parts

Without a Whole’. Design Thinking had only arrived in the corporate world a few years earlier, training processes were still being designed and tried out, cultural change processes had just been initialized, and product and service innovations were still the main focus. The present study continues this research and investigates the question of what goals companies pursue when adopting Design Thinking and how the approach affects with – and how it should interact with – strategy, organizational development, process design, leadership issues, innovation, and corporate culture.

In many companies, especially larger ones, Design Thinking has now become an integral part of innovation development for products and services. In digital transformation processes, agile frameworks are required that make rigid corporate structures more flexible, open the view to user perspectives and enable a dynamic, adaptive, and resilient corporate culture. Design Thinking is a holistic approach that not only looks at processes and tools but also promotes a mindset shift with a focus on communication, working environments, leadership behavior, and reward models, thus addressing not only the technical but also the cultural and social dimensions of digital transformation.

# Preface

## Prof. Dr. Falk Uebernickel

*Chair for Design Thinking and Innovation Research  
Hasso Platter Institute at University of Potsdam*

Over almost two decades, Design Thinking has been on the rise in global enterprises, governmental organizations, and startups. It has become a standard for developing human-centric products, services, processes, and business models and was recently adapted for digital platform design. Furthermore, it is a successful methodology for shaping the corporate culture towards open-mindedness, agility, and creativity by supporting digital transformation projects.

Still, amongst entrepreneurs and corporations, doubts remain concerning the future of Design Thinking. Recent articles pointed out the limitations and boundaries. It is in that context that a first global survey about the use and utility of Design Thinking was conducted in 2015 by our colleagues Dr. Jan Schmiedgen, Dr. Holger Rhinow, Dr. Eva Koeppen, and Prof. Dr. Christoph Meinel. The study demonstrated that Design Thinking was being adopted across many different industries and by educational institutions, worldwide.

With this study, we aimed to replicate the 2015 study to learn about the current and future situation of Design Thinking on a global scale, and to survey the recent developments in industry and in the educational sector. To this end, we talked to globally recognized experts, on Design Thinking trends and surveyed 581 practitioners about the use of Design Thinking in their environment. The results clearly show the ongoing and fast-growing adoption of Design Thinking in all industries and across departments. Companies and educational institutions are seen to become more effective with their innovation efforts by systematically applying Design Thinking. The outlook for the coming three years is even more optimistic about the Design Thinking adoption.

# Research Design

*The Research Methods  
and Study Sample*

# Study Design

This study followed a mixed-method approach combining qualitative and quantitative approaches, alternating between one and the other in 4 successive phases, plus a final analysis phase. Each phase and its aims are shown in Table 02:







In **phase 1**, the dimensions from the Design Thinking Implementation Wheel informed the development of a **quantitative global survey on Design Thinking implementation** to understand the current state of Design Thinking implementation in organizations. **A total of N = 581 practitioners** answered the survey with valid answers between May and July in 2021. The current study’s survey differs from the 2015 ‘Parts Without a Whole’ study by having fewer optional questions, and those few were mainly concerned with personal data. Of the total respondents, **364 people completed 50% of the survey questions and 217 answered it in its entirety**. Accordingly, the total numbers of respondents varies for each question. Similar to the 2015 survey, we chose ‘N’ to denote the total of the entire sample, and ‘n’ for the subsamples from each of the individual questions. The survey included open-ended questions and was distributed via our LinkedIn profiles, HPI website and to our network via email.



In **phase 2**, we selected and invited Design Thinking experts to be interviewed for the **explanatory expert interviews**. In total, we interviewed 23 experts in a semi-structured approach. The goal was

Table 02 The four phases of our research design

Phase		Goal
1	<b>Global Survey on Design Thinking Implementation Practices in Organizations</b>	 A survey was created and distributed online in an effort to understand the current state of Design Thinking implementation in organizations following the seven dimensions of the adapted version of the Design Thinking Implementation Wheel.
2	<b>Explanatory Expert Interviews (Qualitative Research)</b>	 Semi-structured interviews were conducted with experts to explain the key insights from the Global Design Thinking Survey by collecting more in-depth information.
3	<b>Large-Scale Survey on the Open HPI Platform (Quantitative Research)</b>	 To understand relevant indicators related to the salary of practitioners working with Design Thinking.
4	<b>Final Analysis</b>	 To analyze and interpret the data from the previous phases.

to enrich the data from the ‘Global Survey on Design Thinking implementation practices in organizations’ by collecting more in-depth explanations on its main findings.



In **phase 3**, we created a *large-scale survey* aimed to investigate the salary of the practitioners working with Design Thinking. In particular, we looked at relevant indicators such as background, gender, and age. The 2015 study did not integrate the participants’ salary working in Design Thinking, but we included it in the 2021 survey as an optional question (phase 1). As we identified a high interest in this topic, we decided to ask a specific set of questions around the salary in a second online survey to increase the number of participants. The survey was integrated in our OpenHPI platform in 2021 through the free online courses ‘Mastering Design Thinking in Organizations’ and ‘Beyond Brockhaus Thinking: With Design Thinking to a Networked Culture’. Eight thousand course participants were asked to answer the survey. In total, N= 918 responses retained valid after we looked for completeness of the data set. The survey consisted of 10 mandatory questions, which all 918 participants answered in full. Therefore, each question has the same total number of respondents. This survey’s results were only used in the Chapter Salary and are not connected to the data/figure displayed in any of the other chapters.

In **phase 4**, we analyzed and compared the findings from the three surveys and the interviews, and discussed our interpretation of the data in several discussion rounds, before writing up this study. The limitations of our study are provided in this section as well.





# Explanatory Expert Interviews (Qualitative Research) - The sample

To obtain a more in-depth analysis of the findings of the Global Survey on Design Thinking Implementation Practices in Organizations, in phase 2, we interviewed 23 Design Thinking experts in phase 2. In this section, we describe the sample of this research phase.

## Explanatory Expert Interviews

Stefanie Gerken and Katrin Schneider interviewed a total of 23 Design Thinking experts in 2021. The semi-structured expert interviews lasted around 45–60 minutes and were recorded and coded for further analysis. These interviews were conducted to enrich the data from the Global Survey on Design Thinking implementation by supporting the results with in-depth explanations and explicit examples. All interview quotes used in this study come from these interviews. The characteristics of our interviewees were:

- They were based either in Germany or Switzerland.
- 10 of the 23 interviewees were managers. Other job roles included designer, consultant, and professor.
- Interviewees came from a variety of industry sectors (e.g., automotive, health care, insurance, education).
- On average, they had 6 years of experience applying Design Thinking. From 2 years up to 16 years of experience.

Table 03 provides an overview of the interviewees' background. Some interviewees agreed to have their names included in this study, whereas others preferred to stay anonymous. Accordingly, we refer to interviewees either by their names, or by their code, as displayed in the following table (e.g. Interviewee I1).

Table 03 Interviewees' background

Code	Job Description	Company	Number of Employees	Industry Sector	Country
I1	<i>iX Design Lead</i>	Anonymous Company I	> 350.000	Professional, Scientific & Technical Activities	CH
I2	<i>Product Group Manager - Innovation Methodology</i>	Nestlé S.A.	> 270.000	Food Processing	CH
I3	<i>User Experience Manager</i>	Anonymous Company II	> 132.000 (Germany)	Manufacturing	DE
I4	<i>Head of Ideation:Hub</i>	Volkswagen AG	> 120.000 (Germany)	Automotive	DE
I5	<i>Innovation Manager</i>	Anonymous Company III	> 110.000	Transport/Logistics	CH
I6	<i>Integrated Strategy Lead</i>	Anonymous Company IV	> 97.000	Pharma	CH
I7	<i>Agile &amp; UX Consultant</i>	Anonymous Company V	> 53.000	Financial and Insurance Activities	CH
I8	<i>Design Thinking Facilitator and Requirement Engineer</i>	Anonymous Company VI	> 39.000	Transport/Logistics	CH
I9	<i>Head of Exploration</i>	Swisscom AG	> 19.300	Information and Communication	CH
I10	<i>Portfolio Manager</i>	Anonymous Company VII	> 13.700	Health Care	DE
I11	<i>Professor for physics education</i>	Universität zu Köln (University of Cologne)	> 9.000 employees > 51.000 students	Education	DE
I12	<i>Business Development Consultant Digital (R2DL)</i>	Rolls-Royce Deutschland Ltd. & Co.KG	> 6.000 (Germany)	Mechanical Engineering & Industrial Engineering	DE
I13	<i>Head of Production Management at DB Station &amp; Service AG</i>	Anonymous Company VIII	> 6.000	Transport/Logistics	DE

Code	Job Description	Company	Number of Employees	Industry Sector	Country
I14	<i>Innovation Manager</i>	Anonymous Company IX	> 4.400	<b>Financial and Insurance Activities</b>	CH
I15	<i>Customer Journey Designer</i>	AXA Versicherungen AG	> 4.300 (Switzerland)	<b>Health Care</b>	CH
I16	<i>Blockchain Strategist, Innovation Incubator Lead, Senior Manager</i>	Anonymous Company X	> 3.800	<b>Professional, Scientific &amp; Technical Activities</b>	CH
I17	<i>Digital Client Journey Strategist</i>	Anonymous Company XI	> 3.400 (Switzerland)	<b>Financial and Insurance Activities</b>	CH
I18	<i>Customer Experience Manager</i>	Anonymous Company XII	> 3.300	<b>Health Care</b>	CH
I19	<i>Innovation Manager</i>	PostFinance Ltd.	> 3.200	<b>Financial and Insurance Activities</b>	CH
I20	<i>Project Lead Agile Transformation and Owner User Experience</i>	Anonymous Company XIII	> 2.000	<b>Manufacturing</b>	CH
I21	<i>Senior Project Manager Digital Solutions</i>	Anonymous Company XIV	> 220	<b>Real Estate</b>	DE
I22	<i>Product &amp; Design Conceptorin</i>	Anonymous Company XV	> 200	<b>'Other Service Activities'</b>	CH
I23	Managing Director	Creaholic SA	> 60	<b>Professional, Scientific &amp; Technical Activities</b>	CH

# Quantitative Research - The Two Surveys

This section presents relevant demographic data of our participants from the two surveys – the Global Design Thinking Survey on Implementation and the Large-scale Survey on the Open HPI Platform. All percentages used in the study are rounded, which explains why the total may not always add up to 100 %.

## Global Survey on Design Thinking Implementation

A total of n = 581 individuals (see appendix 01 for a list of the survey respondents) who participated in the Global Survey on Design Thinking Implementation between May and July 2020. The participants were approached similarly to the 2015 study through the HPI network, its websites, and social media. The survey link was publicly accessible. For a comprehensive breakdown of our sample, respondents were asked to answer questions on an individual and on an organizational level.

The *demographic distribution of the participants on an individual level* looks as follows:

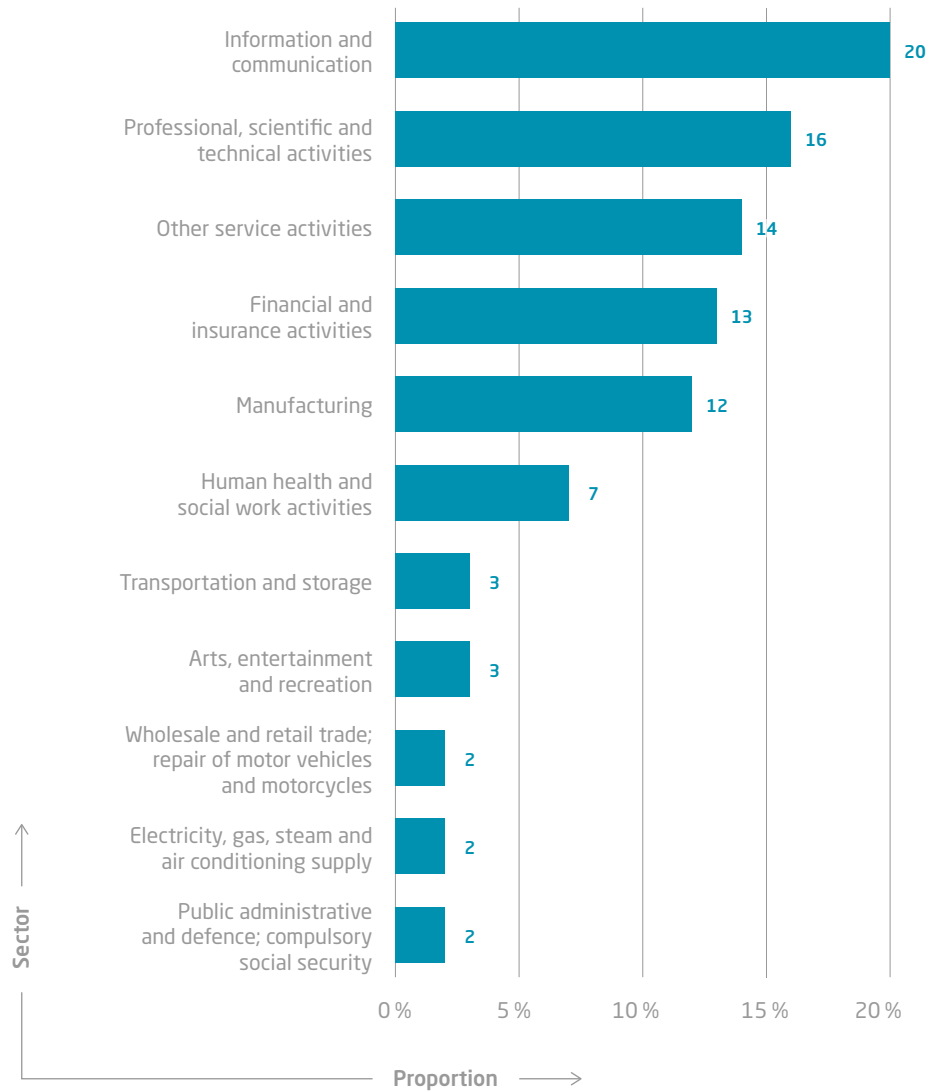
- **Gender**  
221 participants answered the gender question. Of these, 62 % were male, 35 % female and 2 % chose the option of ‘I do not want to specify’.
- **Academic background**  
221 respondents answered this question. Of these participants, 95 % had an academic background, 3 % claimed ‘other,’ and 3 %

‘none.’ Of those with an academic background, nearly half (58 %) had a master’s degree, followed by 19 % with a doctorate, 14 % with a bachelor’s degree, and 4 % were professors.

- **Years of Design Thinking experience**  
581 answered this question. More than the majority of the participants (74 %) claimed to have fewer than 6 years’ experience in applying Design Thinking, whereas 18 % reported between 6 and 10 years, and 8 % over eleven years of experience. The participants had five options available that ranged from ‘less than 1 year’ to ‘equal or more than 11 years’.
- **Design Thinking skills self-assessment**  
When asked to self-assess their Design Thinking skills, 581 participants answered this question: 19 % of the participants rated themselves as a beginner, 30 % as intermediate, 31 % as advanced, and 20 % as experts.
- **Organizational role**  
When asked about their (current) Design Thinking role, we obtained 581 answers (multiple answers were allowed):
  - 48 % uses/used Design Thinking,
  - 37 % were a coach of a team that uses/used Design Thinking,
  - 33 % were a manager of a team that uses/used Design Thinking,
  - 29 % were a manager in an organization where Design, Thinking has/had been applied.

Figure 02: In which industry sector does your organization mainly operate?

Global survey on design thinking usage. n = 564



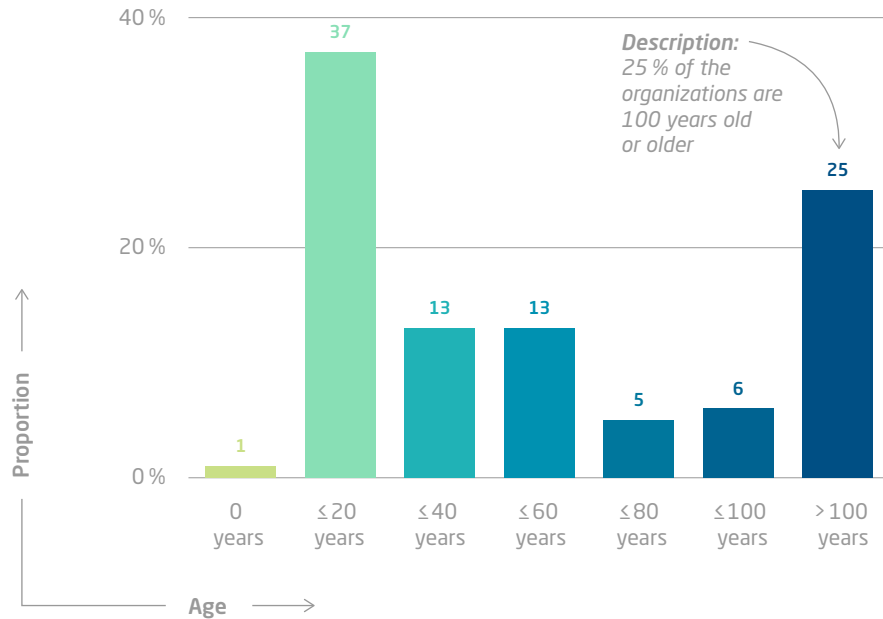
The **organizational demographic data distribution** looks as follows:

→ 564 respondents indicated the **industry sector in which they operate**. The top three sectors were (Figure 02):

1. information and communication (20 %),
2. professional, scientific, and technical activities (16 %), and
3. other service activities (14 %).

Figure 03: What is your organization's age?

Global survey on Design Thinking usage. n = 575



When asked about their *organization's age*, 575 practitioners answered this question (Figure 03). Most participants worked in either very young companies, like start-ups, or in older established companies that are more than 100 years old. The remaining participants are distributed relatively evenly in between.

574 participants answered *how many employees work in their organization*, which we used to compare with the findings from the 2015

study (Figure 04). We used the EC SME/US Department of Trade classification to categorize the total number of employees by organizational sizes:

- More than half of the participants (59%) worked in **large-sized organizations**, which is an increase of 23% when compared to the 2015 survey.
- The number of **medium-sized companies** (13%) was similar to the 2015 study (12%).
- In contrast, there were 14% fewer **small organizations** (12%) and **micro organizations** (16%) by 10%, compared to the 2015 data.

Figure 04: What is the total number of employees in your organization?

Global survey on Design Thinking usage. 2015: n = 118 / 2021: n = 574

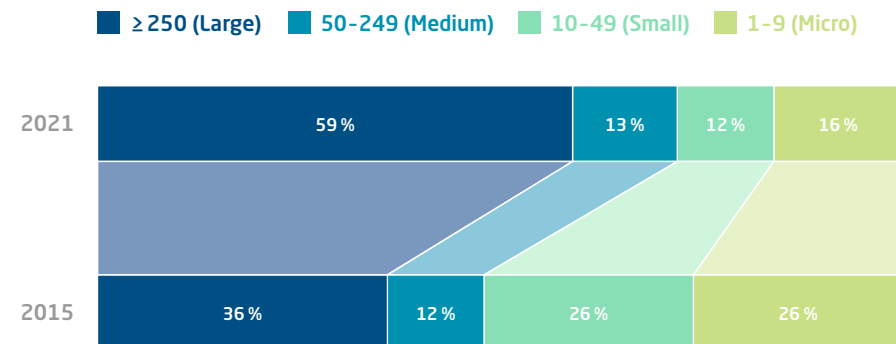


Figure 05 illustrates the organizational structure of the respondents. We compared the results with the data from 2015 to analyze their developments:

- The majority (77 %) of the respondents reported that their organizations were **profit-oriented companies**, which represented an increase of 12 % compared to the 2015 study.
- Like in the 2015 survey, a small proportion of respondents designated their organization as **non-profit, public sector, or a mixed form** – but overall fewer than in the 2015 study.
- Organizations that claimed to be **non-profit had decreased by 7 %**.
- Governmental organizations, public-private partnerships, and respondents who answered ‘other’ were represented the least, which was little different to 2015. Freelancers and consultants were examples of respondents who answered ‘other.’

Figure 05: **What type of organization do you work in?**  
Global survey on Design Thinking usage, 2015: n = 219 / 2021: n = 581

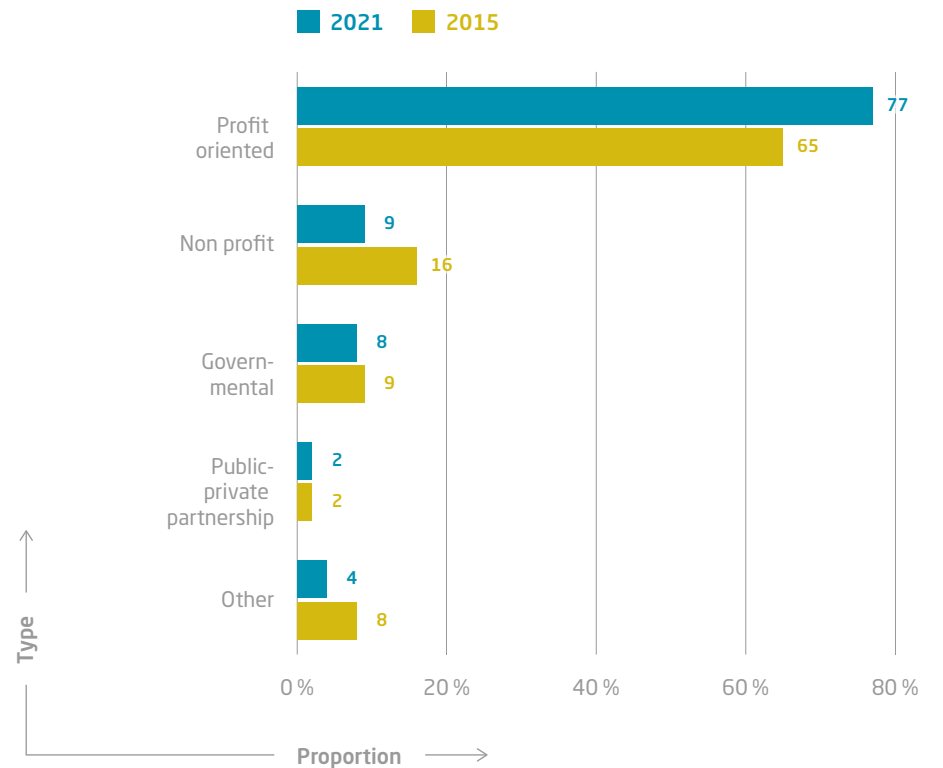
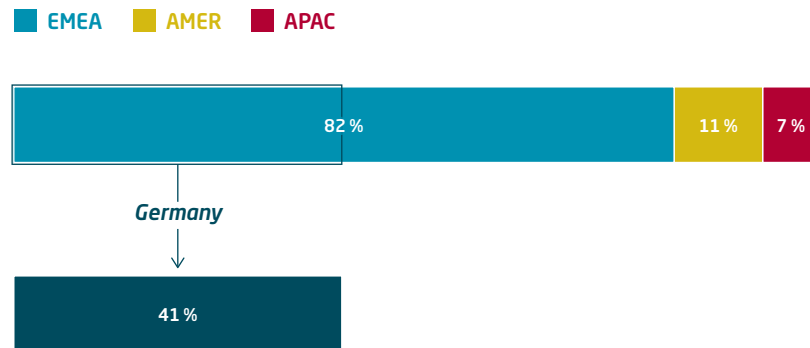


Figure 06: In what region is your organization located?  
Global survey on Design Thinking usage. n = 577



A total of 577 participants answered the question *in what region/ country is your organization located/based?* (Figure 06).

- Similar to the 2015 survey, the majority of our respondents came from Germany (41 %).
- In total, 82 % of respondents indicated the EMEA region,
- whereas 11 % indicated the AMER area and
- 7 % the APAC region.

## Large-scale surveys on the Open HPI Platform

In 2020 and 2021, a total of 918 respondents answered our large-scale surveys on the Open HPI Platform with valid answers. Once again, we asked participants to answer questions about themselves and their organization. The questions were included in the free online course ‘Mastering Design Thinking in Organizations’ and ‘Beyond Brockhaus Thinking: With Design Thinking to a Networked Culture’ on the OpenHPI platform.

The *demographic of the participants on an individual level* looks as follows:

- **Gender**  
69 % of all participants were male, and 31 % were female. We also gave the options of ‘diverse’ or ‘I don’t want to specify,’ but as fewer than 1 % ticked this option, we decided not to include them in our overview.
- **Academic background**  
91 % of participants had an academic background, whereas 9 % answered ‘other’. Of the total number, more than half (55 %) stated they have a master’s degree, followed by 27 % with a bachelor’s degree, 8 % with a doctorate, and 1 % professors.
- **Years of Design Thinking experience**  
Two-thirds of participants (62 %) stated they had less than one year’s experience of applying Design Thinking, whereas 34 % had between 1 and 10 years, and 4 % more than eleven years of experience.



- **Design Thinking skill self-assessment**

When asked to provide a self-assessment of their Design Thinking skills, more than two-thirds (64 %) rated themselves as a beginner, 27 % as intermediate, 8 % as advanced and 1 % as expert.

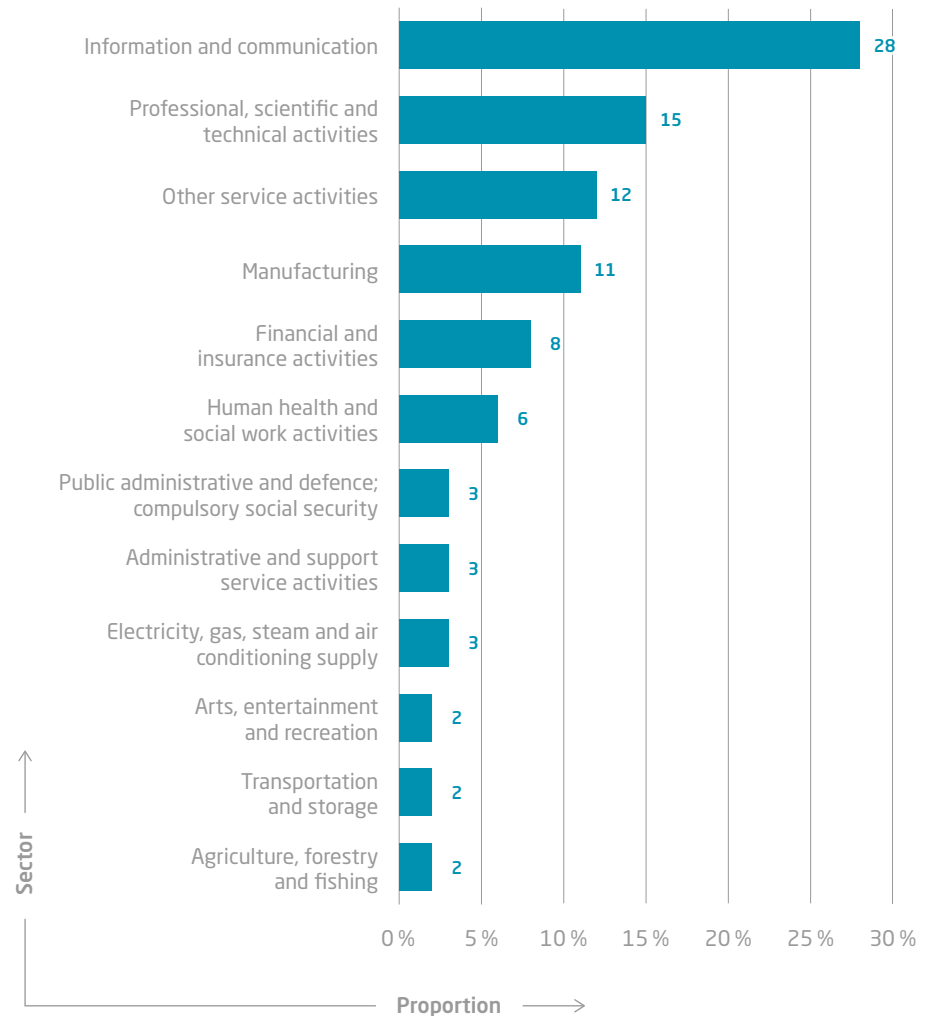
The *organizational demographic distribution looks* look as follows:

The respondents indicated in *which industry sector they operated*. The top five sectors were (Figure 07):

1. *Information and communication (28 %),*
2. *Professional, scientific, and technical activities (15 %), and*
3. *Other service activities (12 %),*
4. *Manufacturing (11 %),*
5. *Financial and insurance activities (8 %).*

Figure 07: In which industry sector does your organization mainly operate?

Large scale survey on the OpenHPI platform. n = 918



When we asked the participants *what is your professional background (Figure 08)*, we obtained the following results:

- 21 % of the participants worked in management positions.
- Half of the participants (50 %) claimed to work in a large organization or medium-sized company.
- 12 % were self-employed,
- 9 % were employed in the public sector,
- 7 % were either looking for a job or answered with 'other.'

Figure 08: What is your employment status?

Large scale survey on the OpenHPI platform. n = 918

- Management position
- Employee in a large/medium-sized company
- Self-employed
- Public sector
- Looking for job/other



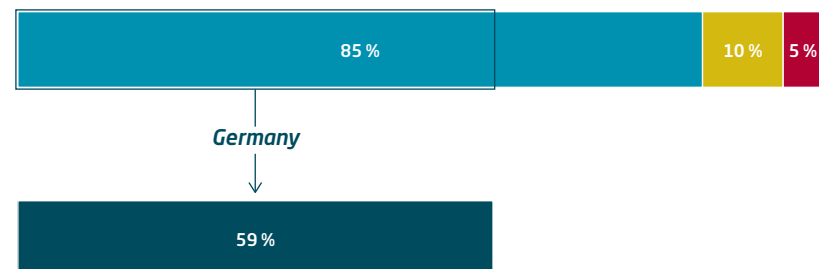
When asked about the question of *where they mainly work (Figure 09)* we gathered the following answers:

- Most of our respondents came from Germany (59 %).
- 85 % of respondents indicated the EMEA region as their local area of work, and only 10 % indicated the AMER area and 5 % the APAC region.

Figure 09: In what region is your organization located?

Large scale survey on the OpenHPI platform. n = 918

- EMEA
- AMER
- APAC



## Final Data Analysis

The quantitative findings were analyzed using 'R' – a programming language for statistical computing. The results were interpreted by us and colleagues who are experts in data analysis and Design Thinking.

The qualitative findings were deductively coded using the software MAXQDA. We engaged in several rounds of discussions to comprehensively interpret the data.

We analyzed qualitative and quantitative data in combination, whichever was more relevant. The purpose was to use the qualitative results to complement the quantitative results by providing a deeper perspective on the phenomenon (i.e., the construct underlying each question).

## Limitations

It is important to mention that most of the interviewees were educated at the HPI School of Design Thinking in Potsdam, which presents a limitation of this study. Besides, most of the interviewees were based in Europe and worked in large organizations. Thirteen out of 25 interviewees were from Germany. Table 3 gives an overview of the interview participants.

# Strategy

*Design Thinking and  
Corporate Strategy*



## Intro

The success of Design Thinking implementation in organizations is often linked to it being firmly rooted in an organization's corporate strategy. We define Design Thinking implementation as the use of Design Thinking-related tools, methods and/or mindset to add value to a company's business. The purpose of the implementation, and why it was initiated, has to be clearly communicated at all levels of the organization. However, just as there are many diverse ways of implementing Design Thinking in a company (e.g., in one department, or in the entire organization), the strategic intention underlying Design Thinking adoption varies from company to company, and its understanding of the concept and value of Design Thinking. Moreover, the many barriers to the successful implementation of Design Thinking need to be considered.

To devise a Design Thinking strategy, companies have to answer the following questions:

- *What is our strategic goal for adopting of Design Thinking?*
- *How do we understand Design Thinking for our organization?*
- *What are the common challenges and barriers to implementing Design Thinking?*

To help you answer these questions in relation to your organization and its adoption of Design Thinking, this chapter will guide you in terms of understanding the main drivers of Design Thinking in companies that have successfully implemented it, and how this is connected to their understanding of what Design Thinking is. Additionally, you will gain an understanding of the most common challenges that companies are facing in their endeavors of devising a Design Thinking strategy.

## Background

In 2015, the Parts Without a Whole study identified the different ways whereby companies define Design Thinking through analyzing the most commonly used synonyms used by them when referring to Design Thinking. The study also explained the main reasons that led companies to discontinue the Design Thinking implementation. To compare whether the results have changed, five years on, we asked our participants similar questions and extended the findings by analyzing the answers of successful companies about their view of Design Thinking, in terms of their strategic aim for its implementation.

## Understanding the Strategy of Successful Companies

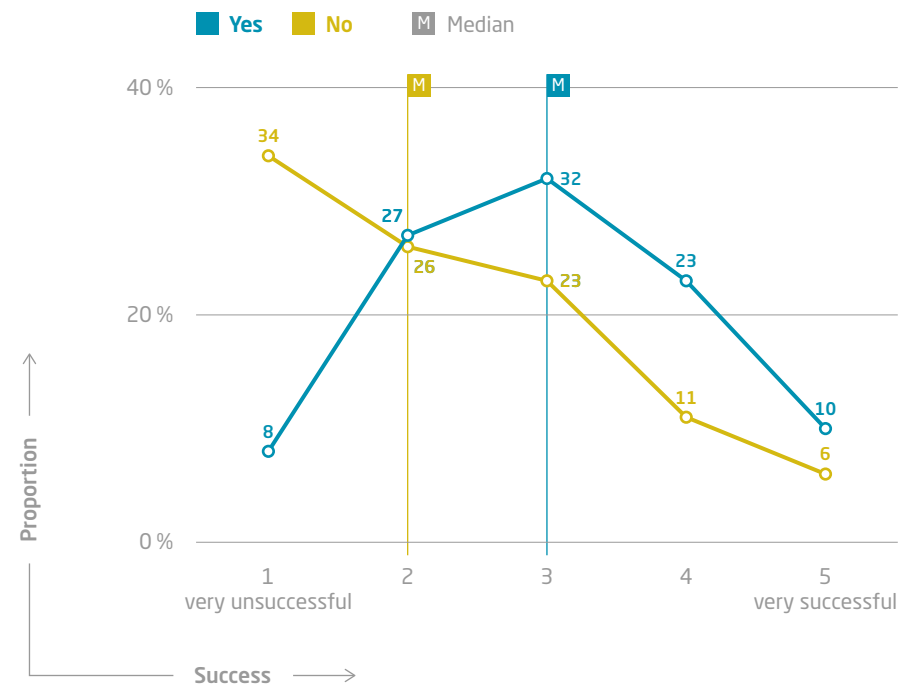
Based on academic evidence (Vetterli et al., 2016; Dell’Era et al., 2020; Magistretti et al., 2021), which showed that a strategic goal for Design Thinking is more likely to lead to its successful implementation. Accordingly, we asked our survey respondents for their reasons for adopting Design Thinking. We then asked them to what extent they thought their companies had successfully implemented Design Thinking on a Likert scale between 1 (very unsuccessful) and 5 (very successful). Figure 10 illustrates the comparison between the two. The dotted line shows the median of the results, which separates the higher from the lower half of the sample. A total of 286 participants answered both questions.

- 221 respondents **had a specific aim** for introducing Design Thinking in their organization.
- 65 respondents **did not have any specific goal** underlying their adoption of Design Thinking. In these cases, the majority of respondents claimed it to have been unsuccessful.

Our findings indicate that employees whose company did not have a specific strategic goal tended to have the perception of the Design Thinking implementation having been less successful, compared to those whose organization had adopted a clear strategic aim.

Figure 10: Did your organization have a specific goal for adopting Design Thinking?  
~ How successful is your organization at using and implementing Design Thinking?

n = 286



In order to confirm that the underlying distributions of success ratings differ between both groups, we performed a two-tailed 2-sample Kolmogorov-Smirnov test\*, which yielded a significant result ( $D = 0.262$ ,  $p = .002$ ). This shows that employees indeed tended to rate the success of the Design Thinking implementation more highly when their organization had a specific aim for their implementation of Design Thinking. Having a strategic goal is fundamental for the success of the Design Thinking implementation for many reasons, including the fostering of a shared organizational mindset, the ability to monitor progress, and resource management.

*\*The two sample Kolmogorov-Smirnov test is a nonparametric test that compares the cumulative distributions of two data sets.*

**“We introduced Design Thinking in my organization to reverse the researchers’ way of working and to let them understand that it is important to look at problems from a user perspective when creating solutions using the technologies they invented.”**

\_R265

A shared organizational mindset provides overall guidance for organizational decision-making and a compass for organizational action. It includes organizational values that are usually developed by the leadership based on the organization’s strategy and objectives and then adopted by the other members of the organization. Shared values enable the creation of an organizational culture that works towards a common goal.

Additionally, having a strategic aim enables companies to monitor progress to identify potential flaws and define strategies to overcome them. Moreover, it helps individuals to develop a sense of achievement, which enhances employee engagement and motivates them to create a more productive work environment.

Understanding how to best manage the organization’s resources relies on having a clear strategy. Depending on whether the company plans to implement Design Thinking to improve products/services or change organizational culture, requires different types of expertise and training. Without a well-defined strategy, it is not possible to define and prioritise what skills and time are necessary for the successful completion of goals.

**Statement:** *We can conclude that having a strategic goal for adopting Design Thinking leads to the more successful implementation of Design Thinking.*

To understand their strategic aims, the 221 participants who claimed that their organization had successfully implemented Design Thinking were asked about their organization’s ambition to innovate, based on the Innovation Ambition Matrix (Nagji, B., & Tuff, G., 2012). The matrix was published in a Harvard Business Review article and is a tool that supports companies to manage their innovation portfolio. According to this tool, companies that have distinguished themselves in their innovation efforts invest in three levels of ambition:

**Transformational, Core Business, and Adjacent Market.**

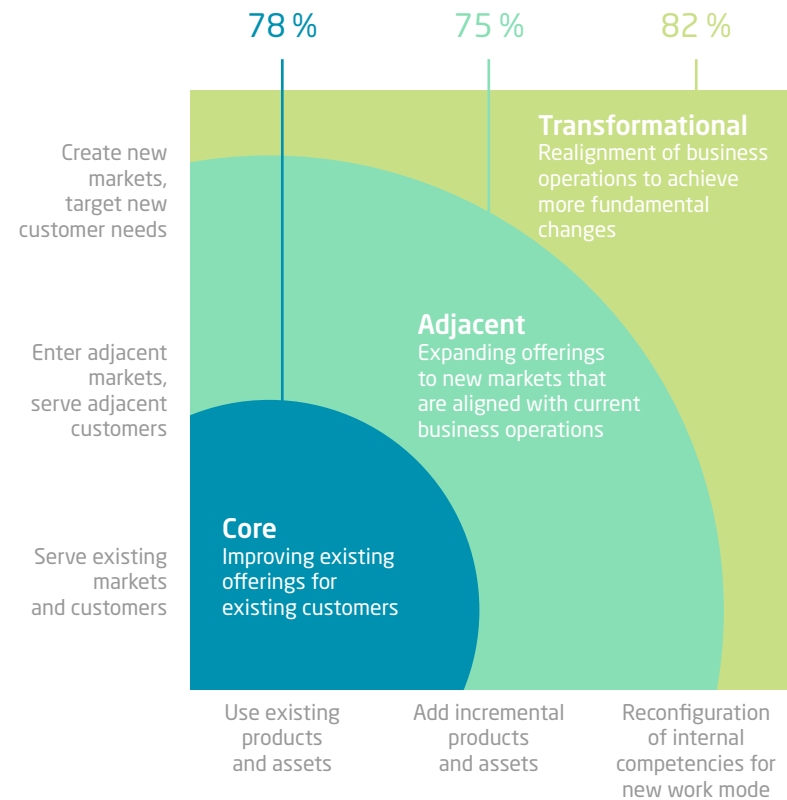
In total, 72 respondents answered this question. Multiple answers were allowed. Figure 11 shows the answers.

- 82 % of respondents used Design Thinking to identify new customer needs and enter new markets (Transformational strategy),
- 77 % of respondents used Design Thinking to serve existing markets and customers (Core Business strategy),
- 75 % of respondents has adopted a strategy to enter adjacent markets and customers (Adjacent Market strategy).

Companies whose strategic intention for Design Thinking was more transformational sought to use it to expand their core business to create new business models. This is reflected in their user-orientation focus to understand the users’ problems fully, elicit their latent needs, and then create solutions targeted at these identified needs. Moreover, business leaders that had a Transformational strategic aim had a clear interest in new ways of working as part of their corporate culture.

Figure 11: What was your organization’s ambition to innovate using Design Thinking?

n=72





“We have been working with this approach for 6 years now. The reason for that is that we have a big organization and are very successful in putting products on the market. But not all products that you put on the market have a high impact. That, combined with lower entry barriers for competition, globalization and online sales, is making it much easier for our competitors active on the same playing field as the one we have been dominant in for quite a while. This makes it more and more important to differentiate. The other aspect is that due to online reviews, brands are not the main buying reason for users. They mostly look into what other users say about the products. This means that we have to stand out even more with our products. All these developments made us realize that we have to become more and more user-centered, even more so than we already are. That is the reason why we went on this journey.”

By focusing on **Core business** activities, leadership tends to have a more external strategic aim in order to increase the value of the product/service and to enhance the competitive advantage perceived by the customers. Companies that adopt Design Thinking to serve existing markets and customers particularly rely on existing Design Thinking capabilities to identify and improve critical functions and experiences of their products or services. For instance, one of our respondents who works in the health sector mentioned that: *“We (as an industry) are headed in the right direction with human-centered health initiatives that enabled us to design more effective patient-engagement programs and experiences. By championing a biopsychosocial model of thinking into healthcare and leveraging the lens of design to facilitate more innovation we are fueling more positive outcomes in the US. I think anthropology and Design Thinking are the cornerstones of the continued evolution of our system(s) of care.”* \_R158

Companies that seek an **Adjacent Market strategy** focus on adding new Design Thinking capabilities to identify new customers and enter adjacent markets. To expand a business to an adjacent market, business leaders tend to leverage Design Thinking with a more internal strategic aim by focusing on improving internal mindset, culture and skills.

Even though our findings do not show a large difference between the three strategies, they indicate that most successful companies use Design Thinking with a Transformational Strategy. Therefore, we hypothesize that:

#### HYPOTHESIS

Design Thinking leads to more positive results when it is used to develop a transformational strategy compared to merely maintaining the company’s core business or entering adjacent markets.

There were also cases of companies that follow more than one strategic aim – up to three, in our sample. These are analyzed in the next section.

## Design Thinking Understanding and its Connection to Strategic Intent

Design Thinking is broadly defined as a *“design-based approach to solving human problems”* (Nakata and Hwang, 2020, p. 118). This broad definition takes into account the variety of ways that Design Thinking can be implemented such as a **1\_ toolbox, 2\_ process, and 3\_ mindset** (Brenner et. al, 2016; Dobrigkeit & de Paula, 2019), and the range of reasons, including to create artefacts, to solve problems, and to reflect on one’s practice (de Paula et. al, 2021). Accordingly, Table 04 illustrates selected definitions of Design Thinking given by our interviewees:

Table 04 How our interviewees define Design Thinking

Definitions	
<b>Design Thinking as an approach to create artefacts (toolbox)</b>	<i>"For us it's kind of a tool to become more customer oriented."</i> _ Interviewee I18
<b>Design Thinking as a problem-solving activity (process/method)</b>	<i>"Design Thinking is a process process with which to support the creation of new business models, products, and services."</i> _ Respondent R200
<b>Design Thinking as a reflective practice (mindset)</b>	<i>"It (Design Thinking) is a concept and mindset."</i> _ Respondent R150

Within the context of Design Thinking as an approach to creating artefacts, it is mainly used as a **toolbox**, which includes aspects of the process and the mindset, but only for a limited period of time, within e.g., a workshop, and to solve specific problems (user-centered with yet uncertain solutions). *"People in the organization see it as a 'tool' to use in workshops with our clients."* \_ Respondent R5

By using Design Thinking as a problem-solving activity, companies tend to see it as a **process/method** with the main goal of producing an understanding of the problem and a testable solution based on

it as a result. One respondent described it as *"A modern, innovative way of solving problems, looking for solutions, develop products. The 'new way' of collaborating and way of working."* \_ Respondent R11

Design Thinking as a **mindset**, which focuses on the way people work together and how they approach problems in their daily work, e.g., through cross-departmental teamwork plus explorative and/or experimental work. Elements of the Design Thinking mindset include user-centeredness and involvement, iteration and experimentation, interdisciplinary collaboration, and tolerance of ambiguity and failure (Micheli et al, 2018). *"Now I have a language and methodology for navigating those two skills and it works quite well. For me it's a language and way of thinking. That's why it's actually called thinking or a mindset."* \_ Interviewee I23

Additionally, many companies use synonyms when they refer to Design Thinking. In the Parts Without a Whole study, one-third (31 %) of survey participants used other terms with which to describe the concept of Design Thinking, compared to only one-fifth (22 %) in the 2021 survey, out of 505 survey respondents. Companies customize the term according to their own objectives, to reach a wider audience of adopters. Some employees can be resistant to the term 'Design Thinking' and therefore companies prefer to use alternative terms such as 'human-centred design' or 'user-centred design'. Out of the 113 survey participants who shared their Design Thinking synonyms, the three most frequently mentioned alternative terms for Design Thinking were:

### 1. Human-Centered Design (16 %)

### 2. User-Centered Design (10 %)

### 3. Customer-Centered Design (4 %)

These companies thus primarily emphasized the user-centered aspect of Design Thinking. Less frequently mentioned, but with a more comprehensive approach than being purely user-centered, and including the ecosystem, were the examples of life-centered design or even orbital thinking. Companies that place a special focus on flexibility often equate Design Thinking with the Agile methodology or Lean Method (7 % of survey participants). They have also repeatedly found that Design Thinking is both functional and formal: Service Design (7 %), UX Design (4 %) or simply Design (3 %). Design Thinking was quite often associated with individual methods or forms of work that are used in Design Thinking, but which, on their own, do not constitute Design Thinking. This includes, for example: prototyping, co-creation, exploration, problem-solving, improvisation, or workshop. Twenty percent of survey participants associated Design Thinking with these methods.

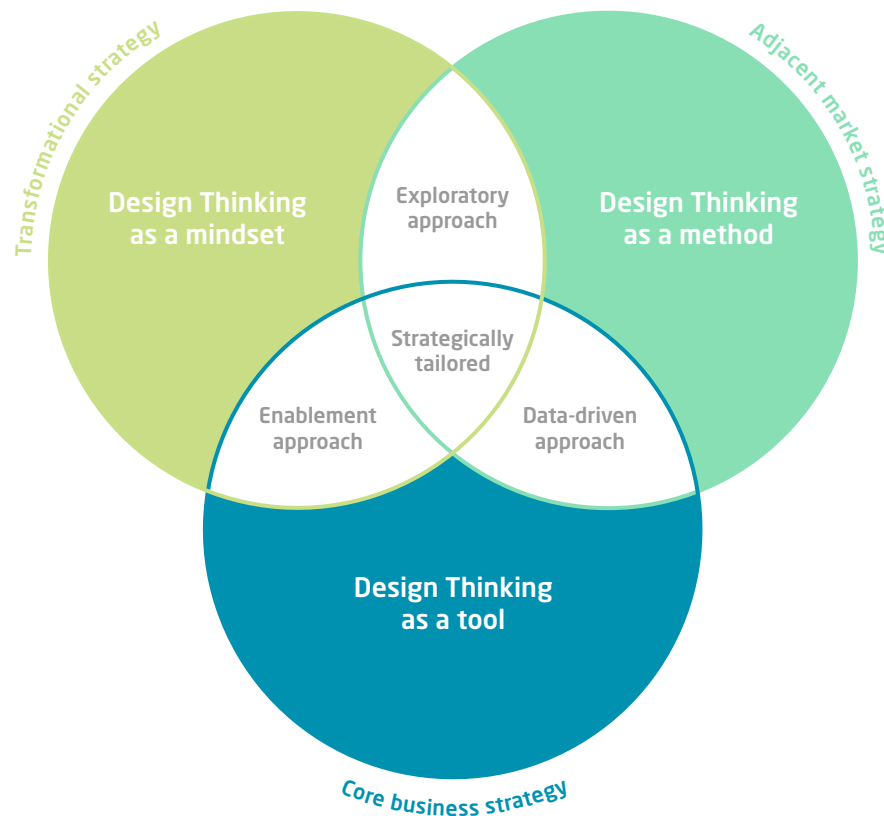
When looking at the variety of reasons and ways that Design Thinking can be implemented, it becomes clear that there is no single implementation recipe. To be successful, the practice of Design Thinking

needs to be based on good understanding of one's corporate environment, which allows for flexibility to make decisions based on conditions on the ground. In particular, as mentioned before, the strategic aim for implementing Design Thinking plays a fundamental role. To learn from those participants who successfully implemented Design Thinking, in terms of their organizational understanding of Design Thinking and how it is connected to their strategic aim, we asked them, *"How would you describe the understanding of Design Thinking throughout your whole organization?"* We then only considered the answers from participants who indicated at least 4 out of 5 as their success rate in implementing Design Thinking (see Figure 10). Afterwards, we cross-analyzed the selected answers together with those given for the Innovation Ambition Matrix (see Figure 11) in order to verify whether there were any patterns in their strategy and understanding of Design Thinking. Figure 12 illustrates the patterns identified in the different strategic aims and how companies define Design Thinking. *"For our organization it is a concept and mindset rather than a pure methodology"* \_ Respondent R200

The idea of Design Thinking as a mindset was associated the most with organizations that had a transformational strategic aim. On their transformational journey, many respondents reported that the Design Thinking mindset is conceptualized as bridging the gap between business and design: *"Translation between Business and Design (...). We actually no longer use Design Thinking explicitly in our offering, as we totally internalized the mindset into our DNA."*

\_ Respondent R451

Figure 12: Companies' strategic aims for Design Thinking and how they described it



A strong factor mentioned several times by respondents was that, although there was a common and widespread understanding of the user-centeredness of Design Thinking in their company, practices vary: *“Human-Centered Design has been a company-wide topic from the start although practices may of course vary... However, the core goal is that employees put themselves in our customers’ shoes and work with customers’ direct feedback.”* Respondent R240 In addition, our respondents reported understanding of Design Thinking as an approach to improve employee morale: *“Design Thinking is an enabler for innovation, to improve efficiency but, more importantly, to raise productivity by delivering higher values with existing or reduced resources. At the practical level, (it is used) to enhance staff morale by delivering quality services to stakeholders and securing their appreciation for the service they received.”* Respondent R11

Considering that companies that have a Transformational strategy aim to achieve substantial changes in their offerings and also in their core competencies, it becomes evident that they need to have a dual view of the concept that reinforces both internal and external change.

In contrast, organizations that had an Adjacent Market strategy aim tended to define Design Thinking as a method. However, organizations that had both an Adjacent and Transformational strategy tended to define Design Thinking as an exploratory approach. One respondent put it as, *“a way of exploring the world and feeling certainty in (an environment of) uncertainty.”* \_ Respondent R1

The notion of Design Thinking as a tool for product development was associated mostly with organizations that had a Core business strategic intent. Additionally, the respondents mentioned that Design Thinking is only practiced in some departments. *“Design Thinking is only used in some departments (IT, product management, parts of sales) whereas others have kept, or retained a traditional set-up.”*

\_ Respondent R8

However, organizations that had both a Core Business and an Adjacent Market strategic aim tended to define Design Thinking as a data-driven approach. Additionally, one respondent mentioned that they were now more focused on how to practice Design Thinking rather than how to defining it. *“Many people follow a strong service design approach which is very data driven rather than observation driven. (...) It's not so much about the understanding of Design Thinking than about different ways of practice.”* \_ Respondent R13

Interestingly, one respondent mentioned political issues having an influence on the employees' understanding of Design Thinking. “Not everyone likes it – because it can disrupt *personal goals*.”

Furthermore, organizations that have both a Core Business and a Transformational strategic aim tended to see Design Thinking as an enabler for change such as Digital Transformation.

Where organizations claimed to use Design Thinking for three strategic aims, the definition of Design Thinking changed throughout the company and were strategically tailored. *“(Name of the company)*

*is too complex to reflect the need and understanding of Design Thinking in one phrase. How does the method fit, when, where, and for whom? And what are the alternatives? Strategically Design Thinking is just as much used to drive innovative culture and behavior.”*

\_ Respondent R17

Overall, it seems that companies that follow a Transformational strategy share a common understanding across the organization of Design Thinking as a mindset. Additionally, our findings show that respondents have a dual understanding of what Design Thinking is due to its value in promoting internal and external change. Moreover, our findings indicate that respondents whose company follows a Core Business strategy tended to conceptualize Design Thinking as a tool, whereas companies following a Adjacent Market strategy tended to define Design Thinking as a method. Where companies followed three strategic aims at once, Design Thinking was strategically, and differently defined for different parts of the organization.

## Reasons for Discontinuation

While it seems fundamental for a company to make a clear connection between strategic aims and its understanding of Design Thinking, companies still face many barriers that can hinder their implementation efforts. It is therefore important to learn from the experiences of those that decided to abandon their implementation of Design Thinking. To extract the common pitfalls from our respondents, we started by identifying how many of them were still implementing Design Thinking and how many had ceased their efforts.

Figure 13 (next page) illustrates when our respondents started to implement Design Thinking in their *department* and when Design Thinking stopped being used in the *organization*. It is important to note that the diagram does not indicate when Design Thinking was first introduced to the company itself, rather, it focused on the survey respondents' department. In total, 481 respondents answered this question and among those, 21 stated that their organization had discontinued the adoption of Design Thinking.

- *333 respondents had started to implement Design Thinking in their department since 2015.*
- *2017 was the year in which the most companies had started to implement Design Thinking.*
- *21 respondents claimed that their organization had stopped using Design Thinking.*

In the Parts Without a Whole study, respondents claimed to have abandoned the concept due to problems with leadership, organizational culture and insufficient internal anchoring. In particular, the top three main reasons were 1\_ Design Thinking as a one-off affair, 2\_ lack of management support, and 3\_ failed dissemination and implementation.

To understand whether the challenges had changed since the Parts Without a Whole Study, we asked our respondents about the main reasons for their organization having stopped/ceased the practice of Design Thinking. We coded their answers and derived five themes, illustrated in Table 05.

Table 05 Reasons for discontinuation

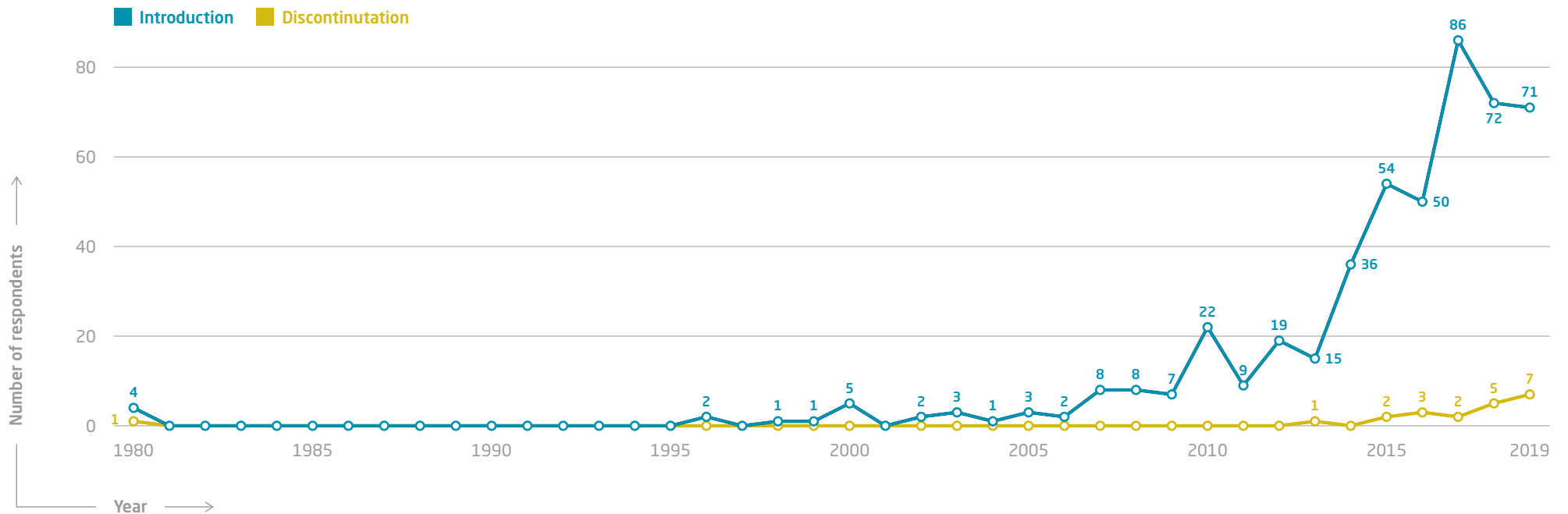
Definitions
1 Wrong understanding about what benefits Design Thinking brings
2 Nobody in charge of 'pushing' Design Thinking on a team level
3 Lack of top management support
4 Lack of in-house capacity
5 Design Thinking as one-off affair (in alignment with Schmiedgen et al (2015))

The most frequently mentioned reason for discontinuation was the **wrong understanding about what benefits Design Thinking brings**. As one respondent mentioned, *“We have probably not dealt with it enough and have not yet been able to recognize the added value for our company and our work.”* \_ Respondent R491 According to our respondents, the engagement of employees in form of short workshops

led to mistrust and misinterpretation of the concept. As one respondent pointed out, *“I didn’t find any real benefit from playing around with it for days, using clay and 50,000 post-it notes.”* \_ Respondent R63 In particular, Design Thinking workshops tended to lead to *“sticky note parties”*, to encourage workshop participants to express their ideas, however, the ideas were not put into context and therefore

Figure 13: When did your organization introduce Design Thinking in your department?  
When did you organization discontinue Design Thinking?

Introduction: n = 481 / Discontinuation: n = 21





they did not bring value to the organization. As our data shows, the respondents who mentioned that their organization was successful in applying Design Thinking were those that had an understanding of what Design Thinking is and were able to link it to their corporate strategy. Not correctly understanding the value of Design Thinking can lead to the partial and superficial engagement of employees and a false feeling of doing proper needfinding without actually developing any critical thinking. In many cases, the hype around Design Thinking led employees to believe in promises that Design Thinking would be a magic wand that solves any problems quickly and happily. *“That’s the mindset I encounter. Let’s have the next Design Thinking workshop, and the next, and the next. An endless chain of Design Thinking workshops. That shouldn’t be the case. They end without a solution.”* \_ Interviewee I11

**“Many only used the term, without really understanding the background and goal of Design Thinking and often used superficially.”**

\_ Respondent R12

Another major issue was the ***lack of anybody responsible for ‘pushing’ Design Thinking on a team level.*** As one respondent said, *“Since I brought with me a strong background in Design Thinking, (work on its implementation) stopped when I left the company a month ago”* (3389). While top management can provide optimal organizational conditions, it is still necessary to have ‘ambassadors’ (champions) in

key positions who work on the ground, proposing interventions that encourage individuals to be more open to change and embrace innovative behaviors. Our respondents also mentioned the importance of having a lively community of practitioners for sharing knowledge, learnings and stories of successes and failures.

Beyond internal communication, our respondents proposed that organizations should promote external networking through interactions across the organization. Other examples included attending or hosting meetups and conferences.

Although ***the lack of management support*** decreased in the ranking of the main reasons for discontinuation, from second place in Parts Without a Whole to third place in our recent study, it still remains a hindrance factor.

Considering that implementing Design Thinking requires commitment to cultural change, and investments in training, it is fundamental to have top managers who can create the right organizational conditions for long-term commitment and openness to change.

Besides management buy-in, expectation management emerged as a topic of high importance as expectations were based on short-term business objectives in order to get quick results. Considering that real change takes time, leaders need to focus on setting realistic expectations about appropriate objectives and metrics of success.

The factor of cultural acceptance towards the Design Thinking mindset was also reported as having an influence on management commitment. As one respondent stated, *“Cultural issue. I don’t think that (...) organizations with a conservative mindset are receptive to a DT approach.”* \_Respondent R303 As elements of the Design Thinking mindset include tolerance of ambiguity and failure and the ability for and openness to change, conservative cultures tend not to be conducive to providing the necessary conditions that enable Design Thinking to flourish.

Additionally, our findings show that a **lack of in-house capacity** hinders the success of the Design Thinking implementation. As one respondent mentioned, *“An initial attempt at introduction also failed because not all employees received a professional introduction to Design Thinking.”* \_Respondent R491 Our respondents recommended that leaders ought to focus on building long-term internal capacity and on providing training programs that are aligned with the company’s strategy and culture. In Chapter 4, we show that most of our respondents learned Design Thinking through professional educational programs from companies such as SAP, IDEO, and IBM, or from d-schools at the Hasso Plattner Institute, for example. Short educational programs promoted by educational institutions or in-house training must be seen as an initial step and not as knowledge transfer. Often organizations send their employees to one-off workshops and expect to see a complete mindset and behaviour change that is adapted to the corporate environment, which is a common problem that leads to our next discontinuation reason.

**Design Thinking as a one-off affair** was the fifth most mentioned reason for discontinuation, whereas in the Parts Without a Whole study, it was identified as the main reason for discontinuation. While in the current study the issue was given less emphasis, it clearly was still a recurrent problem. In many cases, employees were exposed to single workshops with experts and/or single projects in partnership with consultants with the intention of providing a learning environment. However, as soon as the expert practitioners had left, Design Thinking was no longer implemented. As a respondent mentioned, *“Actually, our organization has not even started to use Design Thinking. We only learned about Design Thinking but we never applied it in our daily work.”* \_Respondent R495 Once again, we emphasize that mindset and behaviour change requires time. If companies want employees to learn how to integrate Design Thinking into their daily work, they have to adopt it into a long-term strategy (for it).

In summary, our findings counter the predominant marketing of Design Thinking as a ‘quick fix’ for success, but reinforce that, to get a real beneficial impact, companies must devise a long-term strategy for Design Thinking. When comparing the results from Parts Without a Whole to our current study, it becomes evident that the challenges hindering the Design Thinking implementation were moving from whether companies should implement it to actually understanding how to implement it properly. This creates a clear need for more experts in the area who are able to facilitate a learning culture that is aligned with a company’s culture and strategy.

## Strategy & Vision-Success Factors and Challenges

Based on the analysis of the diagrams in this chapter and also on Wolf (2019), 5 success factors and 8 challenges emerged as being relevant for devising a Design Thinking strategy. Our findings confirm Wolf's (2019) success factors that indicate that for Design Thinking to be successful, leadership needs to have a clear strategy for the implementation of Design Thinking and ideally with a focus on long-term internal capacity.

Participants also stated that, focusing on short-term objectives is not enough because of the longer duration of the mindset learning cycle. Often, in a short timeframe, expectations seemed to be set too high. Instead, our study shows that it is essential to focus on the long-term and on internal capacity building as part of the strategy.

Table 06 Success factors strategy

Success Factors	Description	Further readings
<b>Link understanding of Design Thinking to the corporate strategy</b>	<i>Shared understanding of what Design Thinking is, in connection with a plan for achieving a particular goal.</i>	Vetterli et al., (2016), Dell'Era et al., (2020), Magistretti et al., (2021)
<b>Ensure top management support</b>	<i>Strong support from top managers to create the right organizational conditions based on long-term commitment and openness to change.</i>	Wolf (2019), Liedtka (2014), Vetterli et al., (2016)
<b>Long-term strategic planning</b>	<i>Expectations need to be long-term and based on appropriate objectives and metrics of success.</i>	Wolf (2019), Coco et al., (2020), de Paula (2021)
<b>Create internal communities, champions, and cross-organizational collaboration</b>	<i>Short educational programs promoted by educational institutions or in-house training must be seen as an initial step and not as knowledge transfer.</i>	Wolf (2019), de Paula (2021)
<b>Long-term internal capacity building</b>	<i>Internal and external communication to share knowledge, learnings and stories of successes and failures.</i>	Wolf (2019), Roth et al., (2020), Nagaraj et al., (2020)

Table 07 Challenges strategy

Challenges	Description	Further reading/expert references
<b>Wrong understanding about what benefits Design Thinking brings</b>	<i>Engagements of employees in short workshops lead to mistrust and misinterpretation of Design Thinking.</i>	Wolf (2019), Roth et al., (2020), Nagaraj et al., (2020)
<b>Lack of anybody responsible for 'pushing' Design Thinking on a team level</b>	<i>Lack of 'ambassadors' (or champions) in key positions who work on the ground proposing interventions that encourage individuals to be more open to change and embrace innovative behaviors.</i>	Nagaraj et al., (2020)
<b>Lack of top management support</b>	<i>No commitment from top management to cultural change and investments in training.</i>	Wolf (2019), Vetterli et al., (2016) Magistretti et al., (2021)
<b>Short-term strategic planning</b>	<i>Lack of a more long-term, holistic and value-driven approach to foster innovation on an ecosystems level.</i>	Wolf (2019), Liedtka (2014) Vetterli et al., (2016)
<b>Unrealistic expectations</b>	<i>Underestimating the time it takes to change mindsets and behaviors.</i>	Wolf (2019), Coco et al., (2020)
<b>Superficial and partial engagements</b>	<i>Lack of clear values due to ideas not being contextualized.</i>	Wolf (2019), Nakata, C., & Hwang, J. (2020)
<b>Lack of in-house capacity</b>	<i>Inexistence of training programs that are aligned with the company's strategy and culture.</i>	Wolf (2019) Vetterli et al., (2016)
<b>Design Thinking as one-off affair</b>	<i>One-off employee engagement with Design Thinking through short workshops or single projects.</i>	Vetterli et al., (2016)

# Training and Development

*How to Develop Design Thinking in an Organization*



## Intro

The manifold benefits of Design Thinking to an organization are well-publicized and widely recognized. Regardless of company size, industry, or geographic location, Design Thinking helps organizations transform their business model and, ultimately, generate more revenue through user-centric offerings and better workflows. However, putting it into practice in your own company can be very challenging, leading to the following questions:

- *How do people learn Design Thinking?*
- *How can you cultivate Design Thinking in a company?*
- *How can you evaluate the level of Design Thinking expertise in your organisation?*

This chapter provides practical information and insights from research that will help you develop Design Thinking in your company, consider the range of training opportunities available, and assess how many employees should receive training, and what levels of Design Thinking expertise is needed across the organization.

## Background

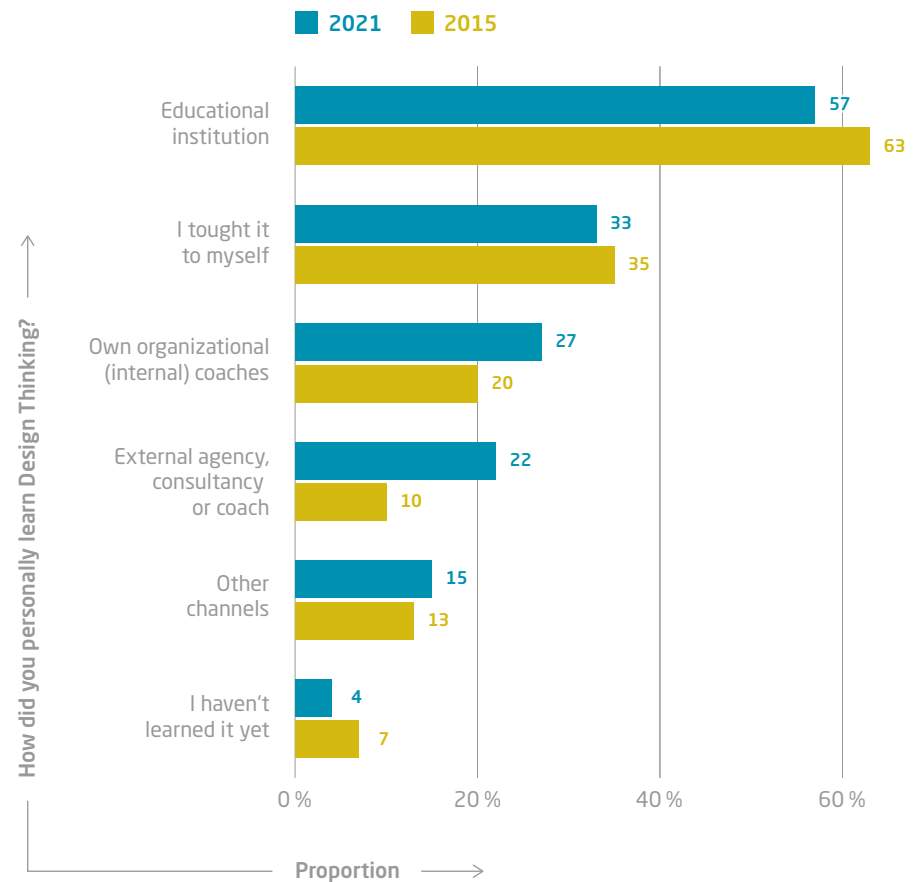
The 2015 ‘Parts without a Whole’ (Schmiedgen et al.) study found that 75 % of the study participants had four years or less of Design Thinking experience. This finding had a significant impact on data interpretation as the researchers often referred back to the limited Design Thinking experience of the majority of their study respondents. In our present study, we compare the data from 2015 on ‘how and where Design Thinking was learned’ and expanded the section on training and development to include ‘benchmarks to train employees’ and different ‘levels of expertise’ to evaluate people’s knowledge.

# How People Learn Design Thinking

Our survey respondents indicated the different ways in which they had learnt about Design Thinking. Figure 14 compares the different learning approaches from the 2015 and the 2021 study and shows the percentage distribution of responses. In the 2015 study, 232 participants and their multiple responses were evaluated, and 416 participants in 2021. In addition to the quantitative survey on learning approaches, survey respondents were also able to provide specific examples as free text. A comparison between the two datasets showed the following differences over the five years that separated the two studies:

- 57 % of survey respondents learnt Design Thinking at an **educational institution**, a decrease of 10 % from the 2015 results.
- 33 % of study participants learned Design Thinking through **self-study**, down by 6 %.
- **In-house training offerings** with internal coaches increased by 35 % from 20 % in 2015 to 27 % in 2021.
- **external agencies and consultants** were brought in to develop Design Thinking by 10 % in 2015 companies, and 22 % in 2021, an increase of 120 %.

Figure 14: How did you personally learn Design Thinking?  
Multiple answers. 2015: n = 232 / 2021: n = 416



“The products are complex to understand because it’s a non-involvement product. Nobody goes nuts about a new fancy insurance, so that’s kind of the key reason why they focus on customer experience. We don’t have these interactions with our clients. The most important interaction we have is when our customers have a claim and that’s already a bad experience. So the trigger is bad and to change this bad trigger into a good experience you really have to make it ‘wow’. That’s our key moment and that’s an issue for the industry. The whole industry tries to get into this customer-oriented view to make a difference.”

\_ Interviewee I17

Overall it has been shown that Design Thinking knowledge is increasing amongst organizations, through education and training. This study focuses on applying Design Thinking in a professional context, aimed at meeting the demand for internal training that is directly relevant to your employees. Our interviewees emphasized that it is essential that Design Thinking coaches, be they internal or external, embed the Design Thinking activities methods in industry-specific knowledge. By working on internal company challenges, and illustrating the learning with relevant and meaningful examples, an organization not only achieves more comprehensible results, but also increases Design Thinking acceptance among employees.

Design Thinking is increasingly being offered in traditional academic education, either as part of a degree (e.g. Design Thinking in management or Design Thinking in informatics) or with its own qualification both at degree and post-graduate levels. It often forms part of newcomers’ ‘initial education’ to a profession. Design Thinking is traditionally offered at Universities in information technology and management. Nowadays, Design Thinking has found its way into other fields of study. Our survey respondents also mentioned subjects such as psychology, social, cultural, organizational, and engineering studies, associated with Design Thinking. Since Design Thinking is a practice-oriented approach, industry-specific expertise is usually developed in a work context. Individual study participants shared a range of topics that focus on specific areas of interest, such as leadership & Design Thinking or manufacturing & Design Thinking or Design Thinking & scrum.

The respondents who **educated themselves** did so through one or more of the following:



Books, papers, and online offerings,



online trainings,



colleagues, customers, events, and personal networks.



Asked about which online training resources they used, our survey participants cited 73 institutions. Our overview presents the top 10, but not in a ranking list. A list with all the online resources can be found in the appendix 04.

Institution	Website
<b>Open SAP</b>	<b>Certified Associate - Design Thinking Course:</b> <a href="https://open.sap.com/courses/dt2">https://open.sap.com/courses/dt2</a>
<b>Open HPI</b>	<b>Free Design Thinking courses for professionals and for students:</b> <a href="https://open.hpi.de/courses?q=design%20thinking">https://open.hpi.de/courses?q=design%20thinking</a>
<b>IDEO U</b>	<b>Various Design Thinking courses:</b> <a href="https://www.ideo.com">https://www.ideo.com</a>
<b>IBM</b>	<b>Free Design Thinking courses:</b> <a href="https://www.ibm.com/design/thinking">https://www.ibm.com/design/thinking</a>
<b>HPI School of Design Thinking</b> <i>Education for Students</i>	<b>Educational long-term programs:</b> <a href="https://hpi.de/en/school-of-design-thinking/hpi-d-school.html">https://hpi.de/en/school-of-design-thinking/hpi-d-school.html</a>
<b>HPI Academy</b> <i>Education for Professionals</i>	<b>Various Design Thinking trainings and certificates:</b> <a href="https://hpi-academy.de/en/index.html">https://hpi-academy.de/en/index.html</a>
<b>Hasso Plattner Institute of Design (d.school Stanford)</b>	<b>Educational Design Thinking courses:</b> <a href="https://dschool.stanford.edu">https://dschool.stanford.edu</a>
<b>Darden School of Business (University of Virginia)</b>	<b>Various Design Thinking courses:</b> <a href="https://www.darden.virginia.edu/online/design-thinking-innovation">https://www.darden.virginia.edu/online/design-thinking-innovation</a>
<b>Coursera MOOCs</b>	<b>Platform for various Design Thinking courses:</b> <a href="https://de.coursera.org/search?query=design%20thinking&amp;">https://de.coursera.org/search?query=design%20thinking&amp;</a>
<b>Acumen Academy</b>	<b>Human-centered supported by IDEO:</b> <a href="https://www.acumenacademy.org/explore">https://www.acumenacademy.org/explore</a>

It was clear from the survey respondents that information on valuable resources, methods and approaches is readily shared among employees in an organization. Respondents emphasized that voluntariness and curiosity on the part of employees are essential prerequisites for introducing this new way of working.

Combined with appropriate Design Thinking learning and development opportunities, this laid the foundation for successfully implementing Design Thinking practices in employees' work environment.

#### HYPOTHESIS

Companies that customize their training offerings through a variety of educational opportunities are more likely to develop employee knowledge gradually.

According to our interviewees, the combination of practical Design Thinking projects in the workplace and online self-study learning opportunities offers a promising approach to the continuous development of Design Thinking, whilst addressing employees' individual needs. The combination of online educational learning and place-based training is also called 'blended learning'.

## How to Disseminate Design Thinking in a Company

Design Thinking is often spread by word-of-mouth in small- and mid-sized organizations, and the methods and activities are shared more informally, as and when needed. To make a real impact on company-wide ways of working, large and very large organizations are more likely to face the challenge of getting the right people in their departments to adopt Design Thinking. For this reason, organizations are often interested in knowing how many of their employees they should train in Design Thinking. We asked our survey participants to estimate how many employees in their organization had heard of Design Thinking and how many actually use it in their daily work. We analyzed this information by company size to estimate what metric organizations would need to use for the effective roll-out of their Design Thinking development.

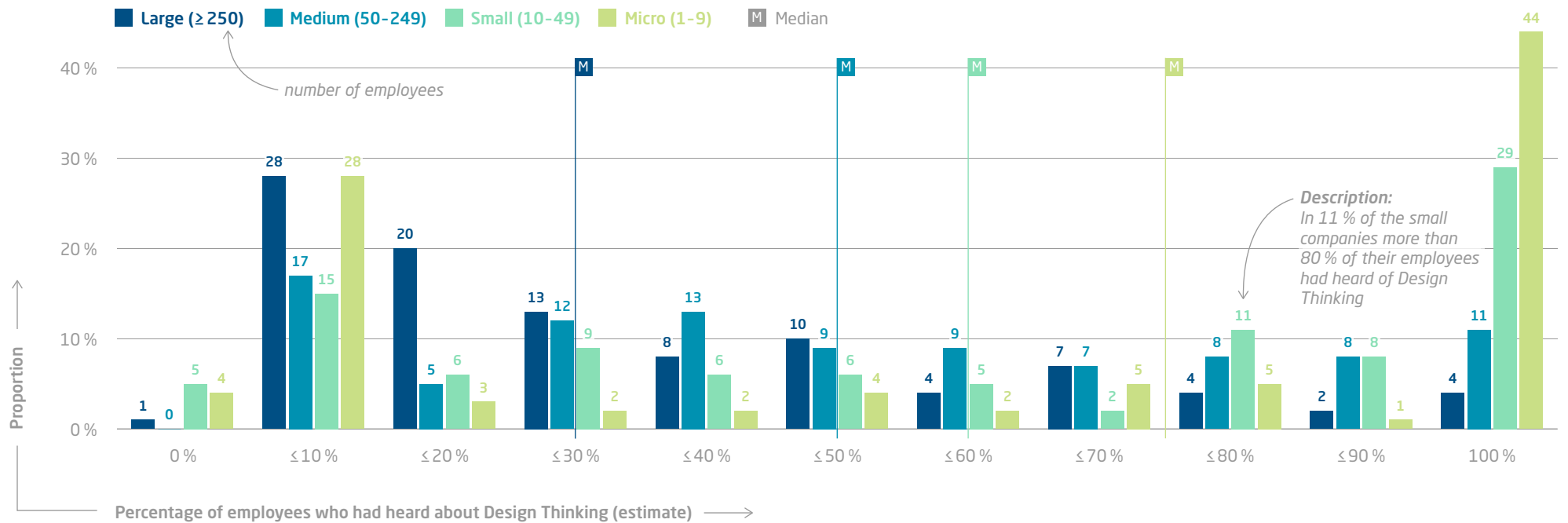
Figure 15 and 16 show the distribution of study participants by company size:

- *16 % of participants worked in micro-sized companies with under 10 employees,*
- *12 % of participants worked in small companies up to 49 employees,*

→ 13 % of participants worked in medium-sized companies with up to 249 employees, and

→ 59 % of participants worked in large companies with more than 250 employees.

Figure 15: Percentage of employees who had heard of Design Thinking by company size  
n = 571



The diagram illustrates an even increase in the number of employees who had heard of Design Thinking across companies of all sizes. Put differently, the smaller the company, the more of its employees had heard of Design Thinking. Considering that smaller companies distribute work tasks more interdepartmentally among individuals, it is not surprising that the median is about 60–75 % of employees who have heard of Design Thinking. In medium and larger companies, this median lies at 30–50 % of employees. Organizations reporting an above average awareness in the large organization group are mostly tech companies with a much higher percentage of 29 %. The main industry sectors represented among the large companies in our sample range from the area of financial & insurance services, via manufacturing, to information & communication technology. To illustrate this result, we are using a made-up example:

#### EXAMPLE

Imagine a software company with 102,000 employees. With a median of 30 % for large companies, 30,600 of its employees should be aware of Design Thinking. A similar example for a mid-sized mechanical engineering company with 220 employees, where the median is 50 %, gives a figure of 110 employees. For small companies, the median is 60 %. Therefore, in a financial services company with 45 employees, 27 of its staff should have heard of Design Thinking.

These calculations give companies an indication of the number of employees they should aim to train in Design Thinking when developing the company's knowledge base. However, one must consider that other factors, such as company structure or longevity of staff might affect the number ideally suited for any individual company and each company has to adapt its training efforts to its own circumstances.

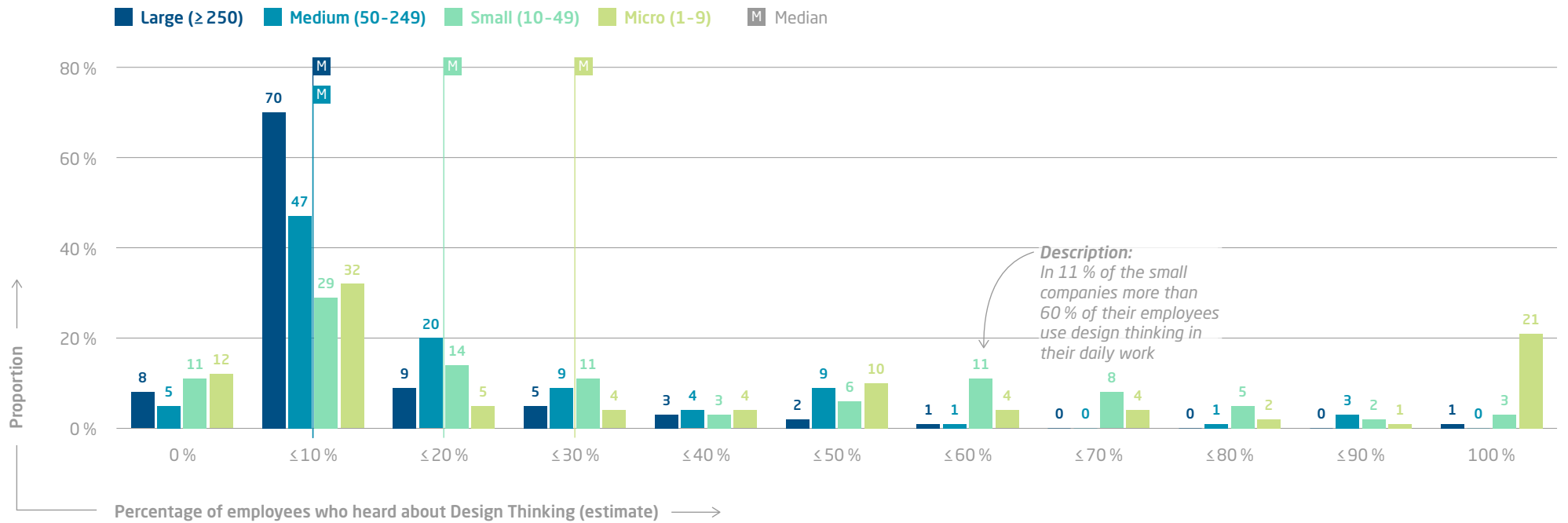
#### HYPOTHESIS

The older (and larger) the company, the more likely it is to have a lower proportion of fresh university graduates bringing new methods from their studies into the organization and, therefore, the higher the ratio of employees who need further training.

Companies can achieve this through, for example, short taster Design Thinking sessions and internal publications illustrating Design Thinking lighthouse projects, or through internal alumni networks. However, this does not mean that each of these employees should acquire the same level of Design Thinking expertise. When it comes to the actual use of Design Thinking in an organization, the numbers are significantly lower. Depending on the company's size, the median lies between 10 %–30 % of employees who use Design Thinking in their everyday work (Figure 16).

Figure 16 breaks down the data by company size and, in this case, the percentage distribution of employees who use Design Thinking in their day-to-day work.

Figure 16: Percentage of employees who use Design Thinking in their daily work by company size  
n=572



## EXAMPLE

Applied to the previous illustrative examples of companies, we get the following numbers of employees who use the Design Thinking mindset and its techniques in their daily work: The median is 10 % for large companies. For the 102,000 strong software company, it means that 10,200 routinely use Design Thinking. The same median for medium-sized companies leads to 22 employees for the mechanical engineering company and its 220 employees. For a small financial services company of 45 employees, with a median of 20 % for this company size, our data suggest that nine of its employees already use Design Thinking in their everyday work.

Moreover, we analyzed the departments in which the survey respondents, who provided this information, were based. The majority of respondents worked in IT, innovation and design departments, followed by sales, R&D, HR, finance & accounting, operations & manufacturing, consulting and marketing. These results are consistent with the data from the ‘Organizational Anchoring’ chapter. Survey respondents indicated that Design Thinking is used for internal and external purposes. As Design Thinking spreads to different departments, the number of employees using Design Thinking will increase rather than decrease. These values also give organizations an indication of the number of employees exposed to Design Thinking practices beyond a taster workshop, primarily in customer-facing departments and future-facing areas that deal with the actual product and service development. Here, we would recommend workshops and long-term projects to promote intensive learning of Design Thinking practices.

## To Develop Design Thinking Needs More than Training

Internal organizational training programs frequently combine various user-centered approaches with design processes such as UX design with Design Thinking or scrum and Design Thinking to tailor the training to the different needs of their employees. *“In the Lab, we had a different perspective, and in the early innovation phases, we automatically used processes similar to Design Thinking approach. But it’s not that they are somehow Design Thinking teams or that it’s specifically emphasized there now. It’s a very user-centric, agile approach, where user experience is a vast topic. And there are many similarities or overlaps. And we now have a relatively large number of UX experts who are also familiar with and use Design Thinking. It is the approach that is taken in these agile project teams. The focus is on user orientation.”* \_ Interviewee I10 Some interviewees with more advanced Design Thinking knowledge told us that they often shared training and specialization opportunities with their employees. For better illustration, we divide these training and specialization options into ‘specialization levels.’ As an example, a large number of employees could be trained at entry-level to get a first understanding of Design Thinking. At the same time, employees can continuously deepen their expertise through further specialization levels and benefit from their new skills and knowledge in their daily work. To reflect the current lack of standardized and graded certification criteria for Design Thinking, and its application in the workplace, we use the analogy of cooking in the next step to illustrate the differences in the levels, which are supported by examples drawn from the authors own Design Thinking experience.

## Design Thinking Specialization Levels *or How to Become a Master Chef*

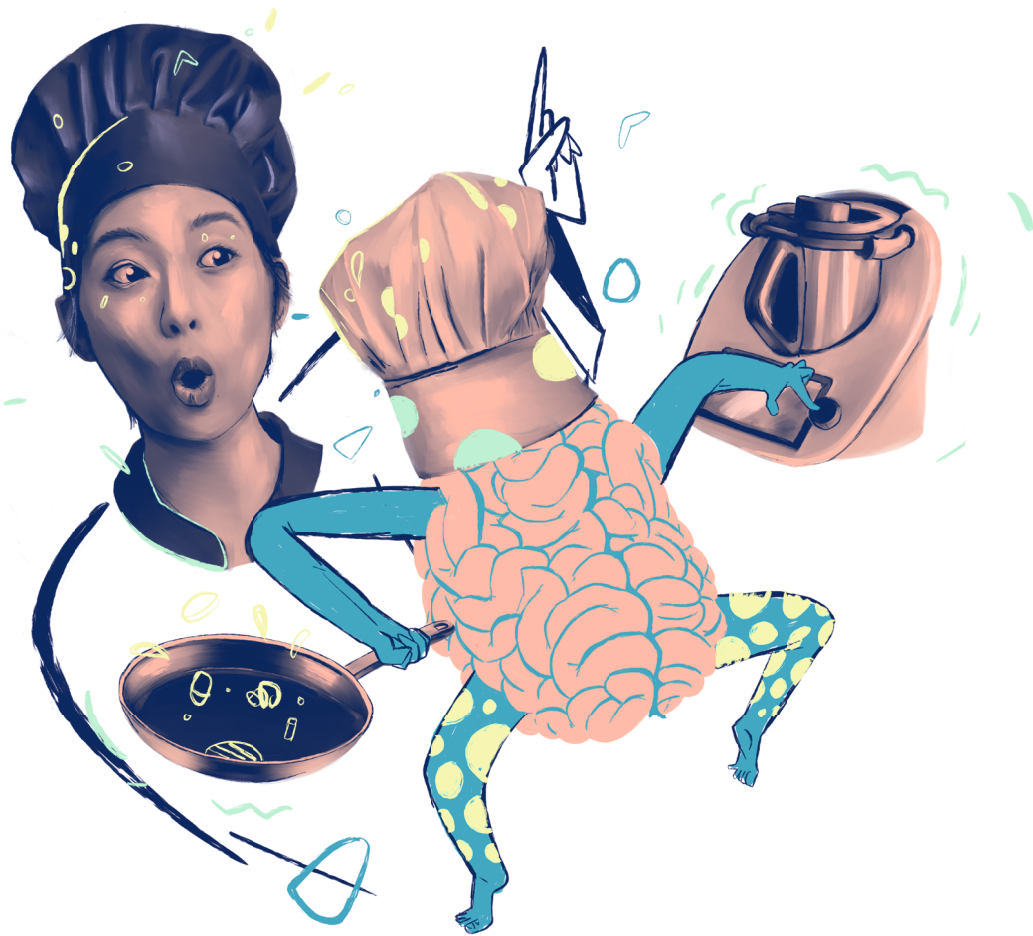
Starting at entry-level 1 and developing expertise through levels 2 and 3, and up to level 4:

### 1 One-day taster workshops

Fast-paced activities to learn Design Thinking principles and the process. We compare this to a beginners' cooking class. The ingredients and steps are provided, and you follow the instructor's directions to get a tasty dish. As a result, you know how to prepare this one dish but have not yet learned the full range of cooking. Short, fast-paced activities are a good entry-level to acquire basic Design Thinking experience and are suitable for training many employees in a short time.

→ *For example, a 1-day format to take the learners through the whole Design Thinking process illustrated with a specific challenge. The aim is to gain a generic overview of the Design Thinking approach and its principles but without solving any issues.*

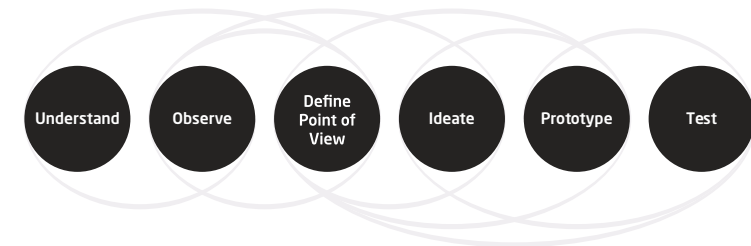




## 2 Foundational cooking techniques

Are you ready to learn how to cook and understand the differences between steaming, blanching, roasting, and grilling? And which methods are suitable for different ingredients? In terms of Design Thinking, this also means having to understand the foundational methods and activities in its different phases. Ideally, you learn the methods and activities through practice. It needs a bit more time and regular practice in different contexts.

→ For example, a full day's training for each Design Thinking process step. According to the HPI process, it would take six days' training to understand the different methods that can be used for individual process steps. Ideally, the learning should be connected to everyday work tasks.

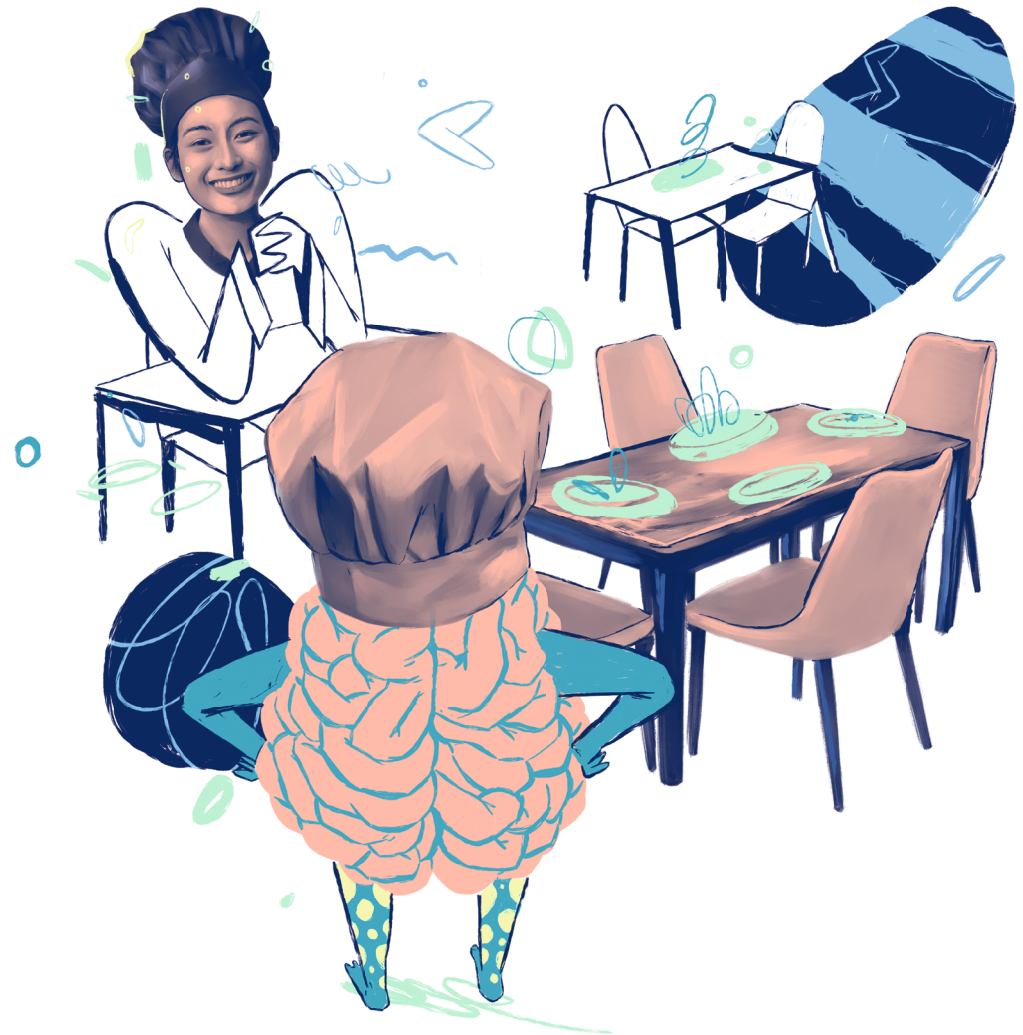




**3 Advanced amateur chef for large celebrations**

You know your craft very well, and feel more confident in creating more complicated dishes, larger groups, or experimental cooking. In internal long-term projects, you work as a reliable team member. Just like an advanced amateur chef, you know how to combine ingredients, like Design Thinking principles, methods, and activities into your daily work, and with/for your colleagues. You like to experiment, are not afraid of setbacks, and feel comfortable incorporating the expertise of others into your own work.

→ *For example, a dedicated Design Thinking team of 4–6 people work on an internal company challenge, to (re-) design an existing product/service. Depending on the company's size, this project may require either the team's full-time attention for the entire project duration or on some days only, alongside their normal tasks. A coach supports the team with structure and organization to concentrate on the content.*





#### 4 Create your own recipes and give cooking classes

By now, you know a lot about different ingredients, how to combine them well, and with which kitchen utensils you can prepare them optimally. You feel confident enough to share your knowledge with and teach others in Design Thinking just like a chef giving cooking classes and sharing their secret recipes. You can develop new methods and activities, and might even customize Design Thinking to your company's needs. Internal coaches train their colleagues in Design Thinking and thus establish and spread this knowledge in the company.

→ For example, training programs for coaches are also often called 'train-the-trainer' or 'facilitator program'. Besides methods and activities, these typically deal with team leadership aspects, identifying and formulating practical Design Thinking challenges, breaking away from dogmatic process sequences to problem space and solution space subdivision.

“So they had been looking for a seminar and participated in a one-day workshop for Design Thinking. However, that was completely stupid, that doesn’t help at all, in my opinion. The method was presented on the basis of six charts. It actually works, based on these six charts. But it doesn’t reach your head or your heart. This creates the danger that people will say: *‘I have understood the method. It works. I know how it works.’* This is a fallacy”.

\_Interviewee I13

Companies often seek to disseminate co-workers' positive experiences with Design Thinking right across the organization to entice the curiosity of other co-workers and thus develop a pull effect. Our interviewees said that they like using so-called lighthouse projects to share concrete positive examples in the company. Some companies also establish innovation alumni networks to spread the mindset as a scalable ambassador program within large and very large companies: *"Because being creative is not a process as such, it's a mindset, it's a behavior"* \_ Interviewee I2 Although many interviewees confirmed that it was easy to explain the Design Thinking process and its techniques to others in a way that is easy to follow, it did not guarantee that the concept's mindset was well understood by all. Developing a Design Thinking mindset needs more time to develop and to practice in context. Also, sending the same employees to taster workshops or other short-term formats can even negatively influence the acceptance approach because there is a risk that such formats can be misinterpreted as a regular meeting or brainstorming activity. *"I see Design Thinking faltering around here in a lot of workshops and sessions because they still conduct 'meetings'. But now they are slapping post-its on white walls and call this a Design Thinking session. It is not. At the end of Design Thinking sessions, there has to be a testable idea. That people can get out into the field and try to find out how it works. That is absolutely mandatory. And I see a lot of Design Thinking sessions failing right there"* \_ Interviewee I11

Such misunderstandings can be avoided if each training session has clear and actionable learning outcomes.

***Statement:*** *We conclude that Design Thinking usage in organizations has become more mature over the past five years, with many offering their own internal training programs with tangible references to employees' work.*

#### HYPOTHESIS

Self-trained staff will increase in the future as inwards-facing departments will use Design Thinking more frequently in their daily work.

The training efforts indicated by the survey respondents and interviewees range from one-day taster workshops to long-time internal or external training programs. The employees are thus trained step by step in the respective phases with concrete, practical relevance to their work. Within organizations, internal train-the-trainer programs were considered especially promising.

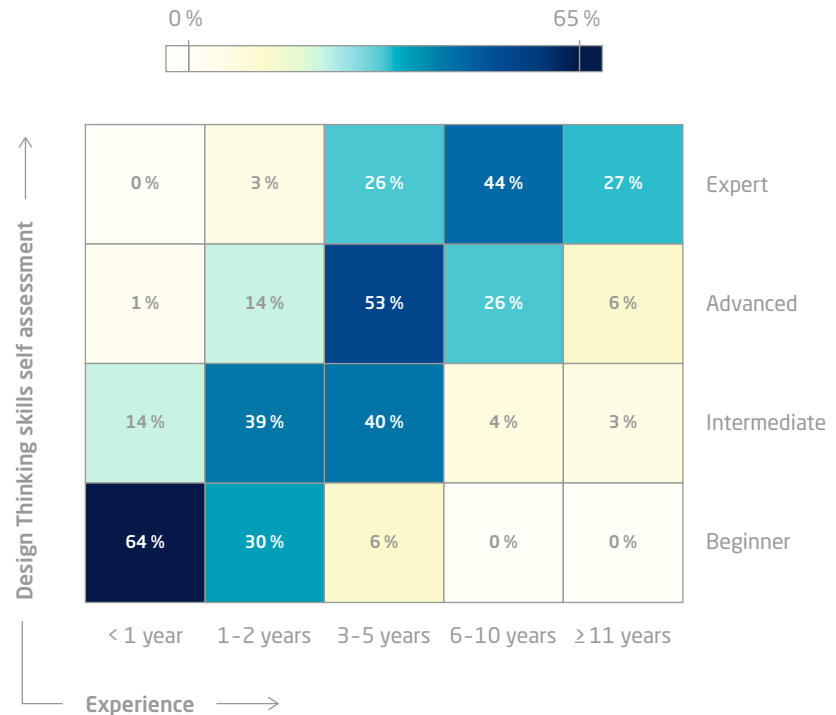
## How to Evaluate the Levels of Design Thinking Expertise

The 2015 survey found that 75 % (n=167) of participants had four years or less of Design Thinking experience. The finding had a significant impact on data interpretation as the researchers often referred back to the limited Design Thinking experience of the majority of their study respondents. These results have shifted, as in 2021 approximately 61 % (n= 360) of participants had at least three years or more of Design Thinking experience, and only 39 % (n= 226) had less than three years' experience (Figure 17).

Diagram 4 depicts the correlation between Design Thinking experience by number of years and their self-assessment in terms of level of expertise, i.e. beginner, intermediate, advanced, or expert. Companies can use these figures as a guideline for their training and development programs.

A closer look at the percentage distribution of experience levels in each section shows that the length of time over which Design Thinking has been practiced plays an essential role for how well people develop their expertise. However, it is very likely that frequency, context and relevance of applying the Design Thinking mindset and techniques in daily routine also play a key role. Accordingly, some survey respondents, despite reporting more than three years of Design Thinking experience, still consider themselves to be at the beginner or intermediate level.

Figure 17: Design Thinking experience vs. Design Thinking skills-self assessment  
n = 581



Calculating the average time of how long survey participants in each **expertise level** have worked with Design Thinking – rounded to an even number of years – gives the following results (indicated in red in Figure 17):

*Beginner level: 1 year of Design Thinking experience*

*Intermediate level: 3 years of Design Thinking experience*

*Advanced level: 5 years of Design Thinking experience*

*Expert level: 8 years of Design Thinking experience*

Not only have our survey participants increased the length of their experience since 2015, but 51 % (300 participants) classify themselves as having advanced or expert level of expertise in Design Thinking.

*Statement: The numbers clearly show that it takes time and regular practice to become an expert in Design Thinking.*

#### HYPOTHESIS

By providing easy access to resources, including time, suitable projects, and money, to develop Design Thinking in their organization, companies are better placed to accelerate their intellectual growth.

Companies who want employees to develop an advanced or even expert level of Design Thinking expertise should consider to start the training as early as possible. Companies aiming to establish a certain level of Design Thinking expertise in a short time, e.g., to support organizational transformation in a goal-oriented way, tend to hire personnel with an appropriate length of time and level of Design Thinking experience. Additionally, when employers assess a candidate's level of expertise, they should ask for evidence based on concrete project examples and how they were involved, i.e. whether in planning, facilitating, or working on a Design Thinking project, rather than making assumptions based on how long someone has been exposed to Design Thinking.

## Who Should Get Certified

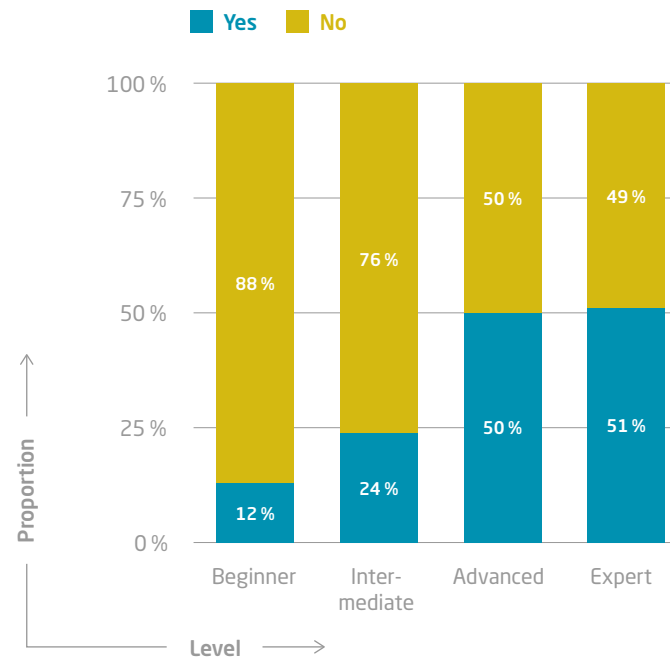
Course certificates are a popular way of proving one’s expertise. However, as of today, there are no agreed standardized guidelines for Design Thinking certificates yet, which means that the value of certificates varies greatly, depending on the course content, its duration, intensity and the assessment of skills, knowledge and competencies. Therefore, we asked our survey respondents whether they obtained a Design Thinking certification as a binary ‘yes’ or ‘no’ question, and several survey respondents added in an open text field where they obtained their certificate. Figure 18 compares survey participants who did receive a Design Thinking certificate with those who did not, and their self-assessed Design Thinking skills level. The distribution is again shown in percentage for each different expertise level.

The diagram illustrates that 64 % of respondents possessed a Design Thinking certificate. The reader must be aware, however, that there currently is no agreed minimum duration or standardized set of training criteria needed to obtain a Design Thinking certification. Survey respondents cited a wide range of institutions that had offered Design Thinking certification. You can find them in the appendix 02.

As can be expected, we found fewer participants with certificates at the beginner level, but 50 % and 51 % of those who self-assessed as advanced and expert obtained a Design Thinking certificate. Yet, it supports the view we expressed at the beginning of the chapter that specific further training opportunities for more job-specific aspects

Figure 18: Do you have any Design Thinking certificate vs. Design Thinking self-assessment?

n = 220



of Design Thinking are more likely to be seized upon after completion of initial education. Thus, we can find a higher percentage of certification in the advanced and expert level group of respondents.

Certification could be of interest to different groups of people:

### *Designers, especially UX designers*

They already feel familiar with Design Thinking, particularly the solution space, and now want to focus on the problem definition area or on how to optimize the way they work with their team and other stakeholders.

### *Design Thinking for freelancers*

Many CEOs and executives want to use the benefits of Design Thinking for their business. Still, they do not necessarily want certification, so they are specifically looking for employees or external coaches with relevant qualifications.

### *As a manager and executive*

You may want to specifically expand your team-leading and your strategic decision-making skills with the help of Design Thinking, which is why certification would also be an option for you. Depending on your company's size, it may be advantageous for you to train your employees and thus save on training costs.

Regardless of which path you choose, you can foster the skills development of your employees and colleagues to enable them to apply them to practical, internal challenges. On a larger scale, you can initiate a creative and user-centered way of thinking and working across the whole company, with a long-term strategy of achieving cultural transformation, which is one of the main reasons why companies introduce Design Thinking. Long-term goals like establishing a mindset for cultural change also need long-term Design Thinking capabilities that should be strategically supported and integrated into an organization. De Paula et al. (de Paula, Dobrigkeit and Cormican, 2018) defined the “*Design Thinking capability as the company's ability to deploy design practice to support its innovation effort on strategic and functional levels.*” Research has shown that the explorative nature of Design Thinking clashes with organizational efficiency (Dunne, 2018). A company must reach a certain number of employees trained in Design Thinking when aiming for long-term impact in an organization, such as a transformational process. The training should not be limited to specific experts inside the company and, by spreading it more widely, the risk of losing valuable skills and knowledge when individuals leave the company can be reduced Carlgren et al. (2014b).



## Success Factors and Challenges

The success factor and challenges result from the survey participants' data and the 23 people interviewed for this study. Participants have used Design Thinking in a professional context – either within their own organizations or as external coaches. As a result, we extracted 8 success factors and 6 challenges of relevance to training and development. We enhanced the data by further reading suggestions to spark inspiration – not to suggest one specific opinion. Interviewees agreed that managers should recognize that acquiring skills in Design Thinking is not a matter of attending one or two seminars but a learning process that requires time, commitment and encouragement, if the training or educational offer is to have a lasting impact.

**“I think we were maybe a little bit naive at the beginning, thinking that the change was going to happen in several years or a couple of years. But this is not the case. It’s very hard to change people’s ways. People are themselves unless they want to change, unless they have identified something and they want to make a change and they work towards that. After that work, then the change is probably done. It was maybe naive to think a change could happen in the earliest stages, because all the feedback was so positive. But it was a drop in the ocean and we have to keep going because it’s a journey that’s going to take years. I think that maybe that is one of the biggest learnings.”**

\_ Interviewee I7

Having the necessary support to facilitate this learning journey is a crucial success factor. The following factors and challenges were also highlighted:

Table 08 Success factors for training and development

Success Factor	Description	Further reading/expert references
<b>Actionable Training</b>	<i>Make training offerings concrete and actionable with direct work relevance.</i>	<b>IDEO U Creative Confidence Podcast:</b> <a href="https://www.ideo.com/blogs/inspiration/advice-from-ideo-s-chief-creative-officer-on-inspiring-creative-work">https://www.ideo.com/blogs/inspiration/advice-from-ideo-s-chief-creative-officer-on-inspiring-creative-work</a>
<b>Actionable Outcomes</b>	<i>Ensure workshop and project days end with actionable results to create impact. These can be work assignments for the subsequent project sessions, such as prototype testing.</i>	<i>“At the end of Design Thinking sessions, there has to be a testable idea. That people can get out into the field and try to find out how it works. That is absolutely mandatory. And I see a lot of Design Thinking sessions failing right there.”</i> _ Interviewee I11
<b>Basic Knowledge</b>	<i>Achieve a foundational knowledge base within the organization to gain acceptance and support for peer activities.</i>	Dunne (2018), Liedtka (2018) and Torabi (2020)
<b>Blended Learning</b>	<i>Offer a combination of online educational training and place-based learning opportunities. Regular adaptation of training materials to the particular working environment is crucial.</i>	<b>MINT live stream created with Design Thinking during Covid19 lockdown times to continue education</b> Bresges, Professor for Physics Education: <a href="https://www.mint-livestream.de/">https://www.mint-livestream.de/</a> <b>Blended learning in organizations:</b> <a href="https://www.valamis.com/hub/blended-learning">https://www.valamis.com/hub/blended-learning</a>

Success Factor	Description	Further reading/expert references
<b>Industry Expertise</b>	<i>Ensure that Design Thinking coaches have basic industry-relevant knowledge. External coaches can only be helpful if they know how to tailor and adapt the workshop content to the organization's reality and to practitioners' needs.</i>	<p><b>HPI Academy:</b>  <a href="https://hpi-academy.de/en/workshops-programs/design-thinking-introduction.html">https://hpi-academy.de/en/workshops-programs/design-thinking-introduction.html</a></p> <p><i>"I guess because, in banking, we are not talking of actual products. It's more a service-oriented industry, and sometimes it's not even tangible."</i>            _ Interviewee I19</p>
<b>Intensive Regular Training Sessions for 'Everyday Users'</b>	<i>Employees should have the opportunity to deal with the topic in greater depth if they so wish or that relates to their area of responsibility. Consider specialized work-related methods of training.</i>	<p><b>Open HPI - Mastering Design Thinking in Organizations:</b> <a href="https://open.hpi.de/courses/designthinkinginorganisations2020">https://open.hpi.de/courses/designthinkinginorganisations2020</a></p>
<b>Separate Team Member Activities from the Coaching Part</b>	<i>Coaching requires different skills to practice Design Thinking. The distance allows the coach to focus on organization and facilitation. Industry knowledge is important, but the expertise comes from within the team.</i>	<p><b>HPI Academy Certification Program for Coaches:</b>  <a href="https://hpi-academy.de/en/workshops-programs/certification-design-thinking-coach.html">https://hpi-academy.de/en/workshops-programs/certification-design-thinking-coach.html</a></p> <p><b>Dark Horse Coaches Certification:</b>  <a href="https://www.thedarkhorse.de/design-thinking-coach">https://www.thedarkhorse.de/design-thinking-coach</a></p>
<b>Support from Top Management &amp; Sufficient Resources</b>	<i>Support from top management in form of financial, time, location, and material resource allocations. The learning process requires time, effort, and motivation. It should be enabled accordingly - not just voluntarily in addition to the normal workload, but as an officially allocated budget to reach a broader employee base.</i>	<p><i>"I'm having strategic support from the whole organization because there's a need for what we do and feedback. Nevertheless, we're talking about many resources, we're investing a lot, so are we investing correctly? Does it make sense, or do we need to shift? How much does a program cost? Do we use our investment on an open cause?"</i>            _ Interviewee I2</p>

Table 09 Challenges for training and development

Challenges	Description	Further reading/expert references
<b>Design Thinking Equals Workshops</b>	<i>Reducing Design Thinking to workshops alone limits its influence on the approach. Yet, Design Thinking goes beyond time-limited work packages and can become an organizational value to adopt a flexible, futures and customer-focused mindset.</i>	<i>"I see Design Thinking faltering around here in many workshops and sessions because they still conduct 'meetings'. But now they are slapping post-its on white walls and call this a Design Thinking session. It is not. At the end of Design Thinking sessions, there has to be a testable idea. That people can get out into the field and try to find out how it works. That is mandatory. And I see many Design Thinking sessions failing right there."</i> _ Interviewee I11
<b>Evaluating Design Thinking Expertise</b>	<i>Lack of uniform training and certification guidelines makes it difficult for employers to assess Design Thinking expertise adequately.</i>	Withell & Haigh (2014); Dosi et al., (2018)
<b>Generic Training Offers</b>	<i>Generic training, e.g. repeatedly focusing on specific Design Thinking aspects or a lack of participant training by inexperienced coaches.</i>	<b>IBM: Design Thinking Adaptation and Adoption at Scale:</b> <a href="https://thisisdesignthinking.net/2019/07/ibm-design-thinking-adaptation-adoption-at-scale">https://thisisdesignthinking.net/2019/07/ibm-design-thinking-adaptation-adoption-at-scale</a>
<b>Missing Knowledge Development</b>	<i>Short set formats without building on the previous learning. Lack of connection to everyday work - sole focus on time-limited projects.</i>	<b>How to implement Design Thinking to your workplace:</b> <a href="https://standardbeagle.com/implementing-design-thinking">https://standardbeagle.com/implementing-design-thinking</a> <b>5 ways to use Design Thinking in your daily routine:</b> <a href="https://brandfolder.com/blog/5-ways-to-use-design-thinking-in-your-daily-routine">https://brandfolder.com/blog/5-ways-to-use-design-thinking-in-your-daily-routine</a>
<b>Misuse of the Term</b>	<i>Misuse of the term Design Thinking for simple meetings without problem focus and a concrete result, or just because supporting materials such as sticky notes are used, or activities such as 'ice-breakers' are conducted.</i>	<i>"Many organizations are not familiar with the 'test or die' principle. They do the same meetings as they used to do, with two or three hours using whiteboards and post-its, and chunks out of the Design Thinking methodology: I know what brainstorming is, let's have the participants first make some ice-breakers, and then the team has to slap their post-its on the wall, and somebody is making a big line around it, and that's what they call a Design Thinking workshop. Everybody is like, 'Okay, fancy management tool, same thing as usual, but now we have to perform funny moves at the start of it.' This way, the curiosity runs off; everybody is like, 'Okay, don't do the Design Thinking; we stick to our normal meetings. We already know how to be creative anyway.'" _ Interviewee I11</i>
<b>Resource Constraints</b>	<i>Limited financial, time, space, or material resources lead to a reduced acceptance of the initiative, as it can be seen as an unpleasant effort in addition to 'real work.'</i>	

# Organizational Anchoring & Area of Application

*How Organizations Embed Design Thinking*



## Intro

The survey findings suggest that, to embed Design Thinking, firms have to make a number of strategic decisions. Depending on the type of organization, and the objective for implementing Design Thinking, each decision has its own advantages and drawbacks. The key questions that firms should ask themselves are:

- *Where in the organization is Design Thinking localized?*
- *How is Design Thinking anchored in your organization?*
- *Where in the company is Design Thinking normally implemented and what finance models do they follow?*

This chapter will provide an overview of how companies have adopted and implemented Design Thinking in their organization, where they have anchored the concept, and how they made it work in this organizational setting.

## Background

In the 2015 ‘Parts Without a Whole’ study Design Thinking was often found in different company areas, resulting in a range of applications and outcomes. The success of the implementation of Design Thinking also depended on the company’s ecosystem, rather than on the company alone. The 2021 data showed that the distribution of the company areas where companies anchor Design Thinking internally remains overall the same, with increases in some areas. The 2021 study participants were very confident that Design Thinking activities will continue to grow in all firm departments, but especially in the area of Manufacturing and Operations, and Information Technology. Ultimately, as a user-centered approach, it relies on the support of external stakeholders, e.g. customers, business partners, and suppliers.

In our 2021 study we aimed to evaluate what had changed or stayed the same over the past five years regarding the organizational anchoring of Design Thinking. Beyond this comparison, we also considered future trends in terms of the type of business units that are more likely to see the application of Design Thinking, according to survey participants, and what this could mean for organizations’ strategic decision making and strategy changes.

## Where Design Thinking is Localized

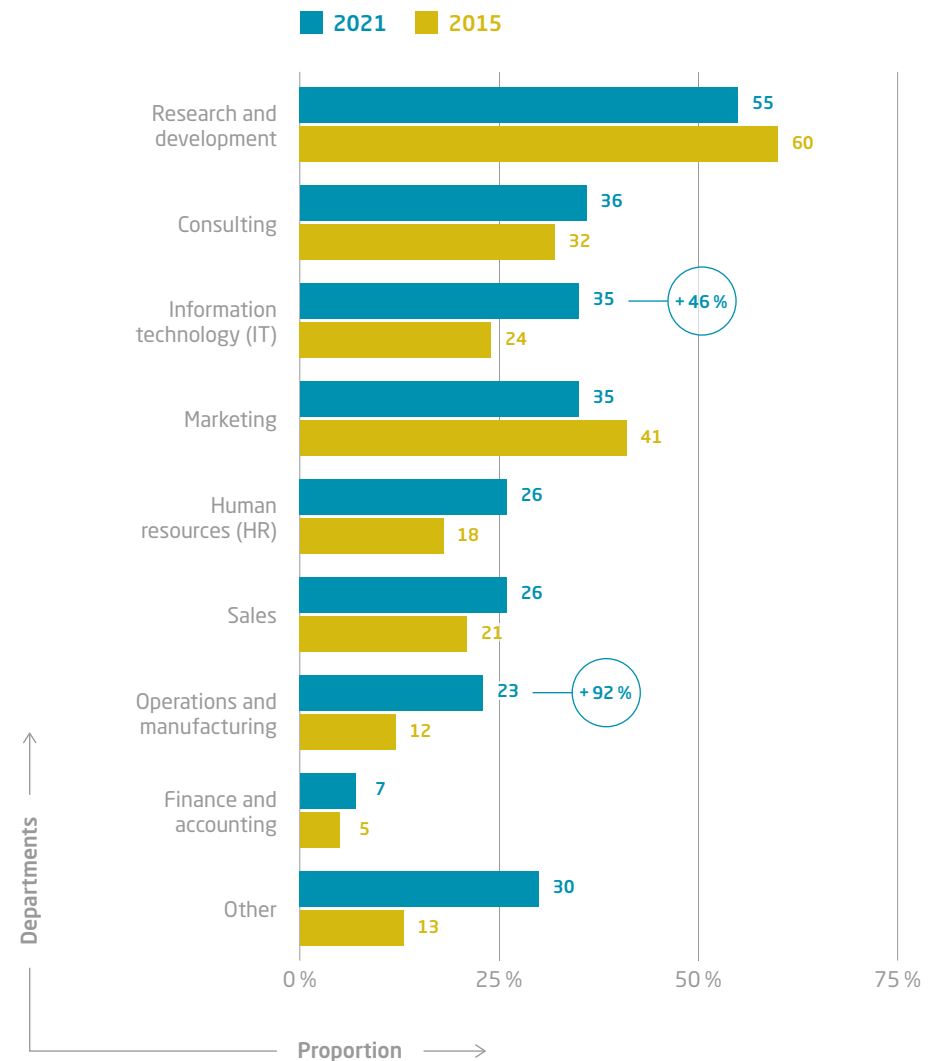
A key determinant of the implementation success proved to be **where** to anchor Design Thinking in the organization. In Figure 19, we asked survey participants in which organizational areas Design Thinking had been applied and compared the results from the 208 responses obtained in 2015 with the 375 responses of the 2021 study. Participants named several areas. Both sets of data are visually compared in Figure 19. In 2021, the following results were found:

- *Research & Development (R&D) was with 55 % of survey participants the area in which they applied Design Thinking the most in their daily routines.*
- *Design Thinking was applied across all departments – with a higher level of practice in product and service development teams.*
- *An increase in Design Thinking actions tended to take place in departments characterized by traditionally routine activities, such as Human Resources (+48 %) and Sales (+28 %).*

Looking at significant differences over the past 5 years, we can highlight two areas that have seen a particularly large increase in the application of Design Thinking.

Figure 19: In which areas of your organization has Design Thinking been applied?

Multiple answers. 2015: n=208 / 2021: n=375



These are:

→ *Information Technology (IT), which increased by 46 %, and*

→ *Manufacturing & Operations, which increased by 92 %.*

Survey participants could also indicate ‘other areas’ in a free text field, and, having coded the responses from 92 participants, we were able to identify the following additional top 5 company areas:

- **Product Development (20 %)**
- **Innovation (19 %)**
- **Education (15 %)**
- **Business Development (9 %)**
- **Design (9 %)**

New technologies and digitalization played a significant role in introducing and increasing the use of Design Thinking in different departments. In Manufacturing and Operations, topics such as automation and services came high on the list. ‘Software as a Service’ was a term already known in the IT world, but ‘Engine as a Service’ was on the rise too. Design Thinking provides the methods with which to reshape traditional activities. New products and services connected to the internet, or new applications offering new services in a customer-centered way, were some of the applications for Design Thinking.

“So, in our industry at the start the people would come and say, oh, it’s obvious, what the product is. It’s an aero engine. If you think about it – not really, because we’re selling services, service packages. If you’re a customer, you might be proud of the engine which powers your aircraft, but actually the key aspect you spend money on, is that it takes you from A to B reliably, at a certain speed. There’re different aspects to it, which need to be thought through to develop the business model accordingly, and that requires different ways of thinking.”

\_ Interviewee I12

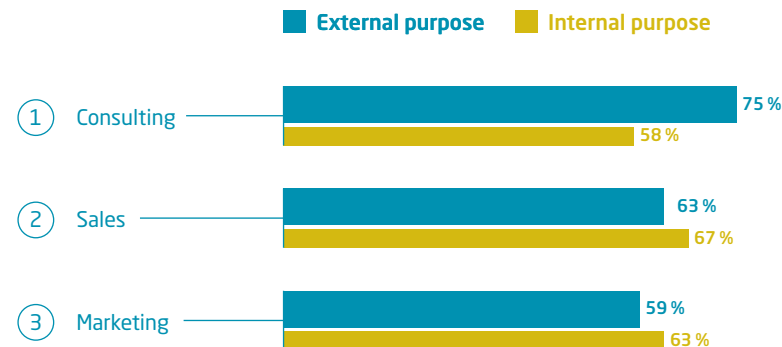
Design Thinking has been adopted in the 1990s for product design (Krouwel, 1991) and more broadly by the business sector in the 2000s (Florida, 2002; Martin 2007, Brown 2009). The main contemporary uses for Design Thinking are to enhance technology in technology-driven firms, and to recreate trust in technology from a user perspective (McKendrick 2018). It is therefore hardly surprising to commonly find Design Thinking in IT departments. However, it does not necessarily mean that an IT solution is automatically the result of Design Thinking, even though it is located in that department, as the outcome might also be non-technology related: *“We (Innovation Methodologies Team – part of the IT department) have taken quite a radical step, we said, maybe IT isn’t always the answer to the problem we’re trying to solve. That gave quite a nice credit to the business (...)*



*They're not just stubbornly trying to sell technologies; they're trying to solve a problem. So, with a 100 % initial IT mission, it shifted around completely into the opposite direction within the first three years. Today the team does 20–25 % of IT engagements and 75 % of global business-related ones. So, now the business comes first. It may end up as an IT solution; it may not, whatever it turns out to be.” \_ Interviewee I12*

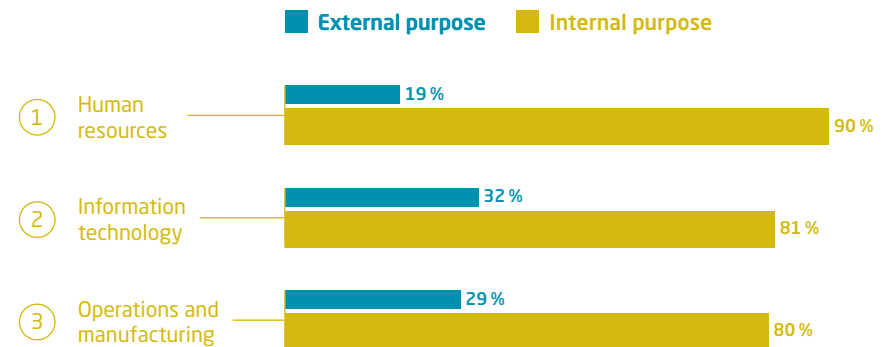
In 2015, Schmiedgen et al. stated that “localization influences application”. Thus we asked our survey participants for what purpose Design Thinking was used in their respective departments – whether for external purposes (e.g., customer-focused projects, projects with external stakeholders) or internal purposes (e.g., internal training, restructuring processes, redesigning workplaces) and how they applied Design Thinking. The only department that used Design Thinking more often for external than for internal purposes was Consulting.

The top 3 departments that used Design Thinking primarily for **external purposes**, in percentage terms, were externally-facing business units:



- 1. Consulting: 75 % (for internal purposes: 58 %)
- 2. Sales: 63 % (for internal purposes: 67 %)
- 3. Marketing: 59 % (for internal purposes 63 %)

Despite the common assumption that Design Thinking primarily brings a user-centric focus, the top 3 departments that tended to use Design Thinking for **internal purposes** were:



- 1. HR: 90 % (for external purposes: 19 %)
- 2. IT: 81 % (for external purposes: 32 %)
- 3. Operations & Manufacturing: 80 % (for external purposes: 29 %)

For both internal and external aims, survey respondents could detail in a free text field how they applied Design Thinking. We coded the information provided by 66 survey participants for internal-facing activities and 64 participants for external-facing ones. Emerging

themes were prioritized depending on how often the topic was mentioned. A percentage distribution with examples of the application areas is shown in Table 10.

Table 10 Design Thinking areas of application

Internal-facing applications, n=66 / External-facing applications, n=64

Internal-Facing Applications	% of participants (n=66)	External-Facing Applications	% of participants (n=64)
<b>Collaboration &amp; Alignment</b> within company, e.g. way to work (as a team), align with other departments, structure meetings, workshops	23	<b>Commercial Communication</b> , e.g. test new campaigns, websites, brand experience with lead users	27
<b>Customer Centricity</b> , e.g. applying methods like customer journey, personas, user research to identify challenges and opportunities	20	<b>Customer Centricity</b> , e.g. improving customer experience, user needs on emerging markets, potential to improve existing solutions by learning from product work-arounds	25
<b>Optimizing internal processes</b> , e.g. new structures, work flows, roles, time to market	15	<b>Co-Creation with internal and external stakeholders</b> , e.g. with customers, business partners, other departments	16
<b>Commercial Communication</b> , e.g. develop new marketing campaigns, product/service descriptions, new websites	12	<b>New product/service development/enhancement</b> , e.g. test potential assumptions and solutions with customers	14
<b>New product/service development/enhancement</b>	12	<b>Decision Making/Strategy</b> , e.g. market entry strategies	8
<b>Decision Making/Strategy</b>	6		
<b>Identifying new markets/business opportunities</b>	6		
<b>Skills development</b>	2		

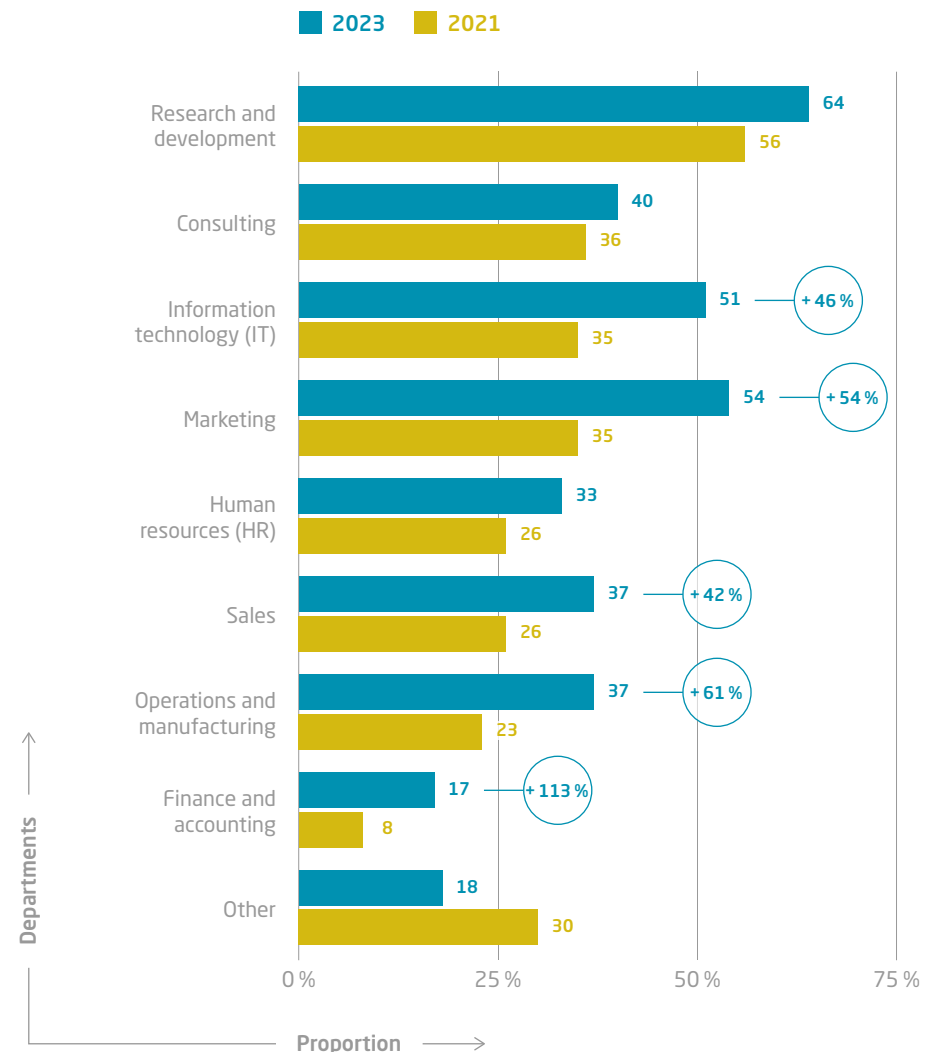
The results support the traditional range of tasks of the respective departments. Equally, they show that organizations use Design Thinking to improve external customer-centricity – what Design Thinking is often associated with in the first place – but that it also has internal company-wide benefits, such as knowledge transfer, communication and process optimization.

After gaining an impression of the departments in which companies were using Design Thinking in 2021, we also wanted to hear participants’ assessment of the future development of Design Thinking in these departments. We deliberately set this future at a manageable level to the year 2023 to obtain as realistic an assessment of developments as possible. We asked survey participants where they saw Design Thinking being applied in the future. Because the two questions – present and future applications – were asked in different places in the survey, and not all respondents fully completed the questionnaire, we obtained a different total for the answers: in the current study the first question was answered by 375 participants, and the 2023 prediction only by 222 participants, with multiple answers having been possible. Figure 20 shows the results of the cross-analysis, with an apparent percentage increase in Design Thinking activities company-wide.

Looking to the future, the survey participants believed that Design Thinking was likely to grow in all departments. In addition to the two departments mentioned earlier (Manufacturing and Operations, and IT), where a strong rise was expected, other departments that were expected to see a huge growth in Design Thinking were Sales and Marketing.

Figure 20: In which areas of your organization has Design Thinking been applied and will be applied in 2023?

Multiple answers. 2021: n= 375 / 2023: n= 222



According to participants, the largest increase would be in Finance & Accounting. The forecast for 'other areas' either resulted in too many different departments, or remained similar to those shown in Figure 19 above.

Sometimes digitization prompts a rethink of activities traditionally deemed routine, typically in Sales, Marketing, and Finance & Accounting. A keyword here is FinTech, whereby new technology is used to enhance or automate financial services and processes. In areas that are traditionally customer-oriented, such as marketing and sales, the benefits of Design Thinking are increasingly valued as part of efforts invested in meeting the growing customer demand for greater individuality and for product and service integration (Fatemi 2019).

***Statement:*** The forecast indicates that Design Thinking has become a mature discipline and is no longer seen as a temporary, short-lived phenomenon.

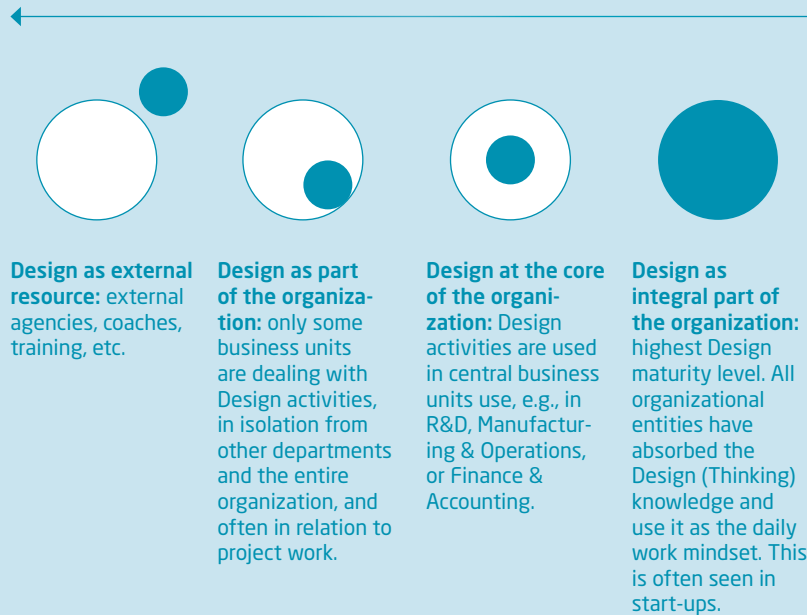
#### HYPOTHESIS

If Design Thinking is iteratively rolled out within organizations, departments can build upon each other's knowledge gains. The more broadly Design Thinking is implemented, the greater its chances of leading to its successful adoption across the whole organization.

## How to Anchor Design Thinking in an Organization

Design Thinking has continued to spread across many industries and companies over the past five years. Thus, one can observe how Design Thinking starts in one part of a company and is gradually being embedded in other departments. Depending on the size and complexity of a company, design activities shift from the center of the company, such as in start-ups, to peripheral sites that are separated from other company activities. As the size of the company increases, Design Thinking may be assigned to different parts of the company, making its localization more complex.

## Design Thinking compartmentalization through increased organization complexity



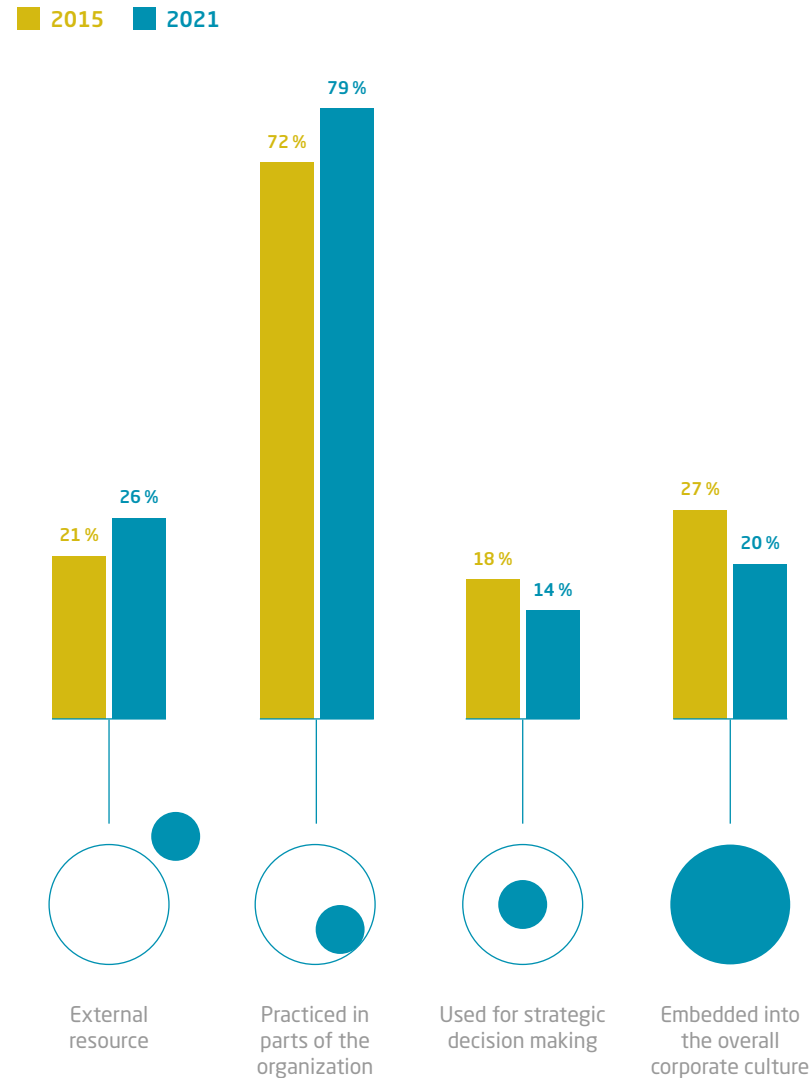
### INFO

In her theoretical framework, Junginger (2009) proposed different archetypes for the localization of Design Thinking and design activities in organizations, which were also taken into account in the ‘Parts Without a Whole’ study in 2015. Although dating from 2009, the framework remains valid and proposes four implementation modes of Design related activities (Graphic 1):

*Graphic 1: Junginger, S. (2009). Design in the Organization: Parts and Wholes. Research Design Journal, 23–29.*

Figure 21: To what extent and for what purpose is Design Thinking currently practiced in your organization?

2015: n=235 / 2021: n=349



In the current survey, we asked participants to what extent and for what purpose Design Thinking was currently practiced. We compared the results with those of 2015 (see Figure 20). Six years ago, 235 participants answered this question, compared with 349 in 2021. Multiple answers were possible.

Mirroring the 2015 findings, Design Thinking was not seen to be widely dispersed in most organizations in the 2021 study. Not only researchers (Dunne 2018, Elsbach & Stigliani 2018, and De Paula et al., 2019) but also the media, such as the Harvard Business Review (Kolko 2015 and Austin 2019), repeatedly refer to a huge drive among companies to adopt a Design Thinking culture. As modern technology, products and services are becoming increasingly complex, and organizations do not want to lose their connections to their customers, Design Thinking seems to offer an appropriate mindset and approach for the whole company to adopt. However, both in 2015 and in 2021, participants stated that Design Thinking was used *only in parts of the organization*. Only a few companies were aware of where and how they were using Design Thinking at any given time. Creative projects are scattered and isolated rather than joined up, and lack a shared goal or vision (Junginger, 2009). Instead, participants reported that the integration of Design Thinking into the wider corporate culture decreased from 27% to 20% between 2015 and 2021. In contrast, the use of Design Thinking as an external resource increased by 24%. This may be due to a number of reasons.

Depending on the depth and maturity of an organization, Design Thinking may:

- *Either apply to an entire department or be confined to individuals and their activities,*
- *Either be used in isolation for innovation projects or be embedded more widely in everyday work,*
- *Either build on previous practices that were operating in an agile and experimentation-oriented manner, or forms part of a transformation process.*

In the current study, the participants came from companies varying greatly in size, industry, and country, and with different levels of maturity in terms of Design Thinking adoption.

**Statement:** *Organizations may use Design Thinking in all areas, but not necessarily for all activities and at all times. Design Thinking is frequently used for new creations or redesigns; it has the most significant benefit in product and service development. For tasks where quality is achieved through reproduction and repetition, Design Thinking is not always the best option.*

This learning process may also have led to the finding that, currently, Design Thinking continues to be used more as an external resource, to enhance new organizational areas through Design Thinking activities. Our interview participants reported that the main areas that benefited from Design Thinking in this regard were in-house innovation departments, labs, hubs or incubators, cross-disciplinary research programs, and internal consulting services.

## Design Thinking Implementation Areas

The rise of digital technology has meant a huge increase in companies adopting digitalization. Organizations often use digitalization not only to develop products and services, but also for internal process flow and to redesign manufacturing through digital applications – which is why Design Thinking is very often used as an approach in the development of so-called digital innovations (DIs). Organizations have begun to take advantage of the potential to turn their entire company into a digital enterprise because of DIs normally involving several business units.

*“In the past, IT was just guys sitting in the basement or a side corridor, helping the business to do the job, but not really interacting with the business. Today IT becomes part of the product portfolio, because you cannot sell a product without actually having digital interaction at any level. So the mission we have today is to make IT an inspiring partner to the business. A relevant business partner to the business. If you look at it from a business model of IT, you ask yourself, who are then the competitors of the internal IT? That’s what you need to look at.”*

\_ Interviewee I2

As we were able to ascertain from our interview participants, many organizations set up digital innovation units (short: DIUs\*)

*\*“Digital Innovation Units are organizational units with the overall goal to foster organizational digital transformation by performing digital innovation activities for existing and novel business areas” (Barthel, P., Fuchs, C., and Hess, T. 2020. “Embedding Digital Innovations in Organizations: A Typology for Digital Innovation Units,” in International Conference on Wirtschaftsinformatik.)*

in their company to develop digital innovation and digital transformation on a higher level. These DIUs, which often work with agile methods such as Design Thinking, usually operate across departments, even though they are traditionally assigned to the IT department. This could also explain why survey participants often indicated that Design Thinking was limited only to “parts of the organization”.

We found that digital innovation units are often detached from traditional organizational structures. Their relative independence means that while they benefit from a degree of start-up flexibility and are less constrained by long chains of command or the administrative obstacles of larger companies, they are, however, expected to develop innovative solutions faster. These prerequisites are also relevant to Design Thinking activities, which are usually introduced for innovation work, i.e., fast communication and decision-making channels to exploit the approach’s full potential. This strategy can bring advantages, as mentioned earlier, but it can also entail other challenges since the spin-off labs/hubs ultimately have to be relayed to the headquarters: *“Initially, in 2015/2016 we were in the situation where several labs had been founded. In Munich we had a data lab-base, and in Berlin, a digital lab. So teams were working as ‘black operations’ (hidden or unofficial operations that are not connected to the organization that conducts them) or on the edge of the organization to bring in a new style of work, new*

*ideas, and stuff like that. The purpose of our team was to build bridges between those labs on the edge of the organization and the headquarter. (For) both (to) work on a joint project and have a common understanding of what could be a potential idea to work on. That was how we got started.”* \_ Interviewee I4

In some cases, the independent business units are so detached from the company that, once the desired results have been achieved, they may get sold to other companies: *“Then human-centered Design was a field where Design Thinking was adopted and used very heavily. There was a unit that was only doing that and was coaching the entire company. Two years ago, we decided to sell part of it and integrate it into (another Consultancy Company) because we learned that more and more people could do it themselves. Hence, it’s not necessary to have a unit just focusing on the methodology of iterating and thinking about customer needs before developing things.”* \_ Interviewee I9

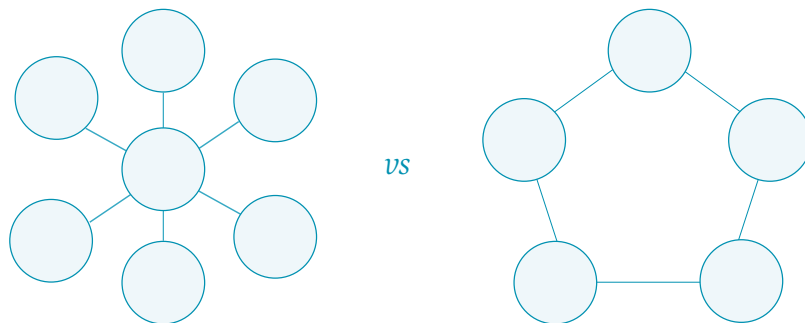
Another challenge, in terms of Design Thinking acceptance, and detaching the department from the ‘motherhood’, can also be the lack of acceptance by colleagues of the solutions developed – the typical ‘not invented here’ syndrome: *“Maybe my team (Design Thinking Innovation Team) then became too big and too strong. In hindsight, we should have kept it smaller and started working with a partner much earlier. I think it’s smarter to stay small within the company and work with a partner because it’s more politically acceptable, because a partner is stronger.”* \_ Interviewee I23



If only the same people are confronted with new ways of working, over and over again, it could lead to new silos, which is precisely what Design Thinking was initially intended to avoid. Different implementation strategies of Design Thinking can bring various advantages and disadvantages for a company to consider. The situation is similar to the financing of Design Thinking activities and its long-term strategic roll-out.

## Design Thinking Finance Models

This section considers two main financing models available to anchor innovation activities in an organization and support the spread of Design Thinking to other business departments. The question that is widely debated is how to fund Design Thinking activities. Should this be handled centrally by the organization or left to individual departments, in a decentralized model?



To help an organization decide which finance model to adopt we looked at the benefits of each based on the answers in the survey:

### Central Financing

This model should be adopted by organizations where innovation methods have recently been introduced and where it is planned to extend them to other business units. The benefits of Central Financing include:

- **Lower barriers** that might arise from financial department constraints to embracing new working formats without having to worry about the budget limitations of your department;
- **Greater acceptance among business units to experiment with** the new approach and methods;
- **More time for the value of the new approaches to unfold** as the benefits might not be realized immediately. Depending on the strategic intention for introducing Design Thinking – whether for project work, to become more method-focused, mindset-focused, or aiming for cultural transformation – employees need time, e.g. by applying specific methods and principles in different situation, to develop their Design Thinking knowledge accordingly.
- **More time to change long-established habits.** The support of middle and top management is essential at this stage.

### Decentralized Financing

This is more suitable for organizations that have been using innovative methods for some time, and with a greater maturity level after

the procedures have been applied independently in several business areas. In this case, the organization can start to decentralize the financing of Design Thinking to individual business units. At this stage, however, Design Thinking activities need to be able to pay for themselves by providing value to other departments or product or service development activities. However, organizations should not underestimate that self-marketing leads to a new operating model, which would bring new challenges in the form of marketing efforts and additional budgetary needs, for example. A central budget often continues to be used for further employee training while all other innovation activities financing stay decentralized on an operational level.

**“We are in internal consultancy. That’s why the people we are trying to target are our colleagues from other departments (...) our internal customers. (...) We are focused on refinancing ourselves, so we got our internal staff cost and with every project we need to work against those costs, so to speak. This is our major KPI.”**

\_ Interviewee I4

## Long-term Strategic Roll-out

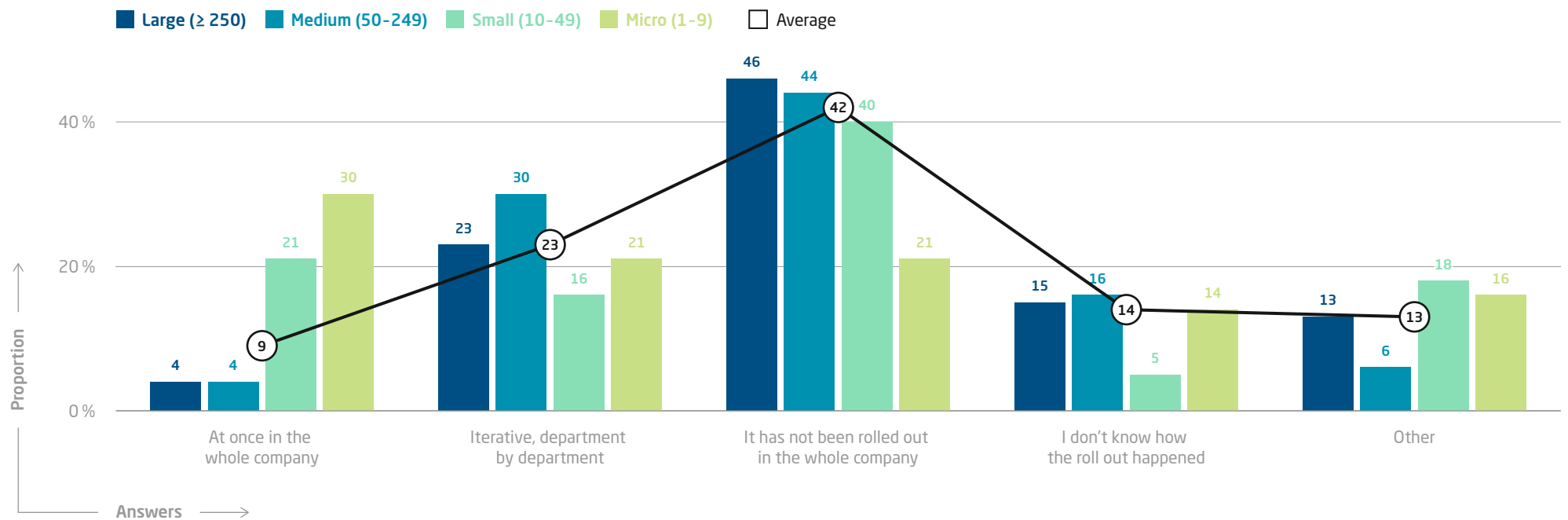
To better understand the strategic approach behind Design Thinking in a company, we asked survey participants whether their organization had already started to roll out Design Thinking across the organization, or had plans of doing so. Participants were given five multiple answers to select from. We cross-analyzed the responses with the company size. A total of 374 participants answered this question, which is visually represented in a percentage distribution in Figure 22. We see that 156 (42 %) participants indicated that their organization had not (yet) rolled out Design Thinking across the whole company. It confirms the data shown Design Thinking is more likely to be found in some specific parts of the organization, e.g. departments. However, 9 % of all participants stated that Design Thinking had been rolled out simultaneously in the whole company, and 23 % had opted for an iterative approach for spreading it to further departments.

Choosing an iterative approach to embed Design Thinking from department to department, which allows to incorporate each others’ learnings, bears out our hypothesis. An iterative approach typically starts in departments with an external customer focus before being introduced to departments with internally-oriented functions to optimize processes and workflows. In this way, employees can gain confidence in the approach and learn from other departments’ mistakes and best practices.

Considering company size in relation to how Design Thinking is rolled out, shows that micro and small companies were more likely to carry out a comprehensive roll-out across the whole company: **the larger the company, the more iterative the roll-out of Design Thinking** tended to be. The same trend can be observed when comparing the data differentiated by company-size with the overall average values of long-term strategic roll-out across all companies:

- Micro (30%) and small (21%) companies had undertaken a complete roll-out within the company, which is higher than the average for all company sizes (9%);
- Medium (44%) and large (46%) companies had introduced Design Thinking iteratively, i.e. slightly more than the average (42%).

Figure 22: Design Thinking roll-out vs. company size  
By company size: n=374



Only a small percentage of survey participants did not know whether or how the roll-out had taken place, suggesting that respondents were not always involved in the Design Thinking roll-out or that there was little communication on this topic in the organization. We also looked at different industry sectors for possible differences in the roll-out pattern but could not find any apparent variations from the organizational size-specific data. Again, participants confirmed that Design Thinking had either not yet been rolled out across the whole organization, or, if it had, it was done in an iterative way. In all of the industry sectors represented in the survey – manufacturing, information & communication, financial & insurance, science industry, and other service sectors – roll-out took place iteratively from department to department.

## Project Example

Digital solutions have been developed worldwide, with the help of Design Thinking. One example is Knowstlé. In 2020 Nestlé initiated a collaboration with the Hasso Plattner Institute/University of Potsdam (Germany) and the University of Sao Paulo (Brazil) to investigate how to foster collaboration and information sharing between its company branches across the globe. Nestlé is the largest food and beverage company in the world, operating in 186 countries

and selling over 2000 brands<sup>1</sup>. As a global company, Nestlé needs to adapt to a multitude of languages and cultures, which can be a challenge. <sup>1</sup><https://www.nestle.com/aboutus>

Over a period of 9 months, 6 master and bachelor students from both universities, guided by the teaching team and with input from Nestlé's corporate liaison officers to bring in a business perspective, set out to tackle the following design challenge:

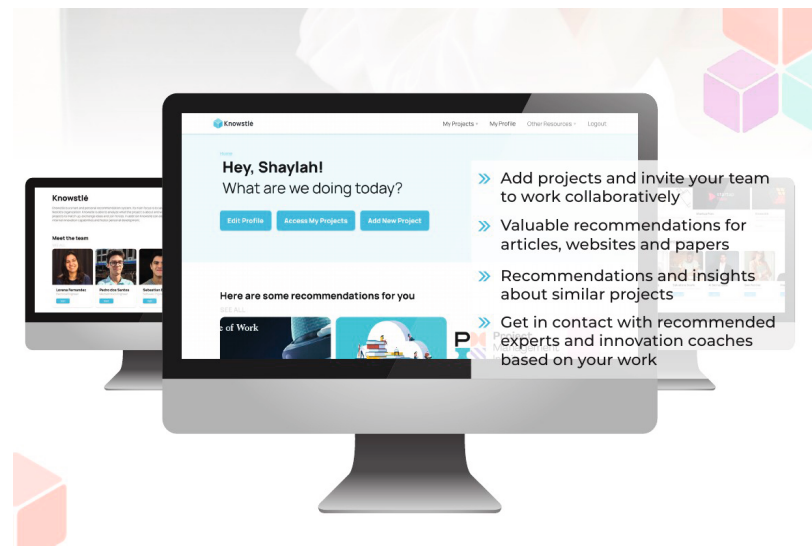
***How might we design a solution that leverages digital (technology) experiences to efficiently scale global innovation and to foster an environment conducive to the development of innovation capabilities adapted to Nestlé's Global culture?***

The aim of the project was to increase awareness among Nestlé's employees, spread across its branches worldwide, about projects and capabilities with a view to breaking silos and increasing collaboration, information sharing, and transparency. The solution developed by the project is called Knowstlé.

Knowstlé is an online platform that aims to identify and connect relevant projects across the globe and spotlight relevant capabilities for certain projects. Through a recommendation system, Knowstlé automatically detects similar projects and invites team members to connect with each other across projects, wherever they are located.

Additionally, the system recommends Nestlé employees with relevant capabilities to relevant projects anywhere in its network.

Figure 23 Knowstlé - A collective intelligence for Nestlé's organization.



The value of Knowstlé is not only to provide a structure to connect peers and share information around the globe, but also to reduce duplication and frustration by identifying similarities between projects at an early stage.

Knowstlé was developed as part of an Industry-University collaboration in the context of the SUGAR Network<sup>2</sup>. SUGAR is a <sup>2</sup><https://sugar-network.org> global network that brings together students, universities and corporate partners from 25 universities and 4 continents to support innovation through developing and implementing design solutions to corporate design challenges. By enabling students to participate in cross-disciplinary practice-based learning for the duration of one academic year, the SUGAR network allows students to get acquainted with human-centered design tools. University-industry collaborations aim to benefit both sides, whereby industry gains valuable new knowledge of technologies and higher education institutions (HEIs) enabling students to develop their skills by working on real-world problems. According to academic literature, encouraging students to learn Design Thinking by tackling a corporate challenge leads to higher levels of students' motivation and empowerment (Roth et al., 2020), and a competitive advantage when seeking jobs (Chen et al., 2018).

The student teams in each of the two universities were guided by their teaching team to implement the Design Thinking process that is described in Uebernickel et al., (2015). Nestlé representatives worked with the teams to ensure that the solution developed is aligned with Nestlé's company culture.

The team involved in the development of Knowstlé:

#### *Student Team*

- \_ **Lorena Fernandez** (USP)
- \_ **Almir Couto** (USP)
- \_ **Pedro dos Santos** (USP)
- \_ **Sebastian Brito** (University of Potsdam)
- \_ **Jan Westphal** (University of Potsdam)
- \_ **Zoe Hille** (University of Potsdam)

#### *Teaching Team*

- \_ **Falk Uebernicker**, *Professor for Design Thinking and Innovation Research*, Hasso Plattner Institute/University of Potsdam
- \_ **Danielly de Paula**, *Senior Researcher for Design Thinking and Digital Innovation*, Hasso Plattner Institute/University of Potsdam
- \_ **Eduardo Zancul**, *Professor for Production Engineering*, University of Sao Paulo
- \_ **Mariana Oliveira**, *Design Thinking Researcher*, University of Sao Paulo

#### *Nestlé's corporate liaison officers*

- \_ **Tomás Gamboa**, *Global Innovation Methodologies and Specialist*
- \_ **Joern Bruecker**, *Global Product Group Manager – Innovation Methodology*

## Organizational Anchoring & Operating Model - Success Factors and Challenges

Overall, interviewees emphasized that embedding Design Thinking in an organization depends heavily upon the nature of the organization and its context. For example, B2B was seen as a particularly challenging environment for Design Thinking because the end-user who uses a product or service is often not directly involved in the development process or is weighted differently by respective business partners. The emphasis on costs and development and the diversity of stakeholders often acted as barriers to developing a customer experience-driven and human-centered approach to innovation, interviewees reported.

When planning new implementation areas with Design Thinking, including its financing aspects, organizations should not underestimate the novelty of the strategy and the challenge of marketing this comparatively new method/approach/mindset. Therefore, companies tend to quantify and illustrate the business impact of Design Thinking to convince other business units in the organization to invest in internal Design Thinking. Despite its potential of being applied in all departments, organizations often tend to implement Design Thinking only in technology-oriented and customer-focused areas. Survey participants nevertheless considered it likely that this approach will eventually be applied to all areas – both those with an external and an internal focus. An overview of success factors and challenges looks as follows:

Table 11 Success factors for organizational anchoring

Success Factor	Description	Further reading/expert references
<b>Areas of Implementation</b>	<i>Design Thinking is not limited to one area but can be implemented in different areas. The financing model can be centralized or decentralized depending on the maturity of Design Thinking within the company.</i>	<b>Mastering Design Thinking in organizations:</b> <a href="https://open.hpi.de/courses/designthinkinginorganisations2020">https://open.hpi.de/courses/designthinkinginorganisations2020</a>  <i>"We are focused on refinancing ourselves, so we got our internal staff cost, and with every project we need to work against those costs, so to speak. This is our major KPI."</i> Head of Ideation:Hub, VW
<b>Iterative Roll-Out</b>	<i>Build on the knowledge of other departments to learn from mistakes and best practices. Start with customer-focused departments and continue with internal-oriented divisions.</i>	<b>Ten building blocks for rolling out Design Thinking in your organization:</b> <a href="https://www.meyerjohannes.com/rolling-out-design-thinking-in-an-organization">https://www.meyerjohannes.com/rolling-out-design-thinking-in-an-organization</a>
<b>Horizontal and Vertical Integration</b>	<i>Applying Design Thinking as a horizontal layer or in separated innovation labs, but spreading the mindset throughout.</i>	<b>The mindset behind the methods: applying Design Thinking in your organization:</b> <a href="https://www.thedesigngym.com/mindsets-behind-methods-applying-design-thinking-organization">https://www.thedesigngym.com/mindsets-behind-methods-applying-design-thinking-organization</a>
<b>Rebuild Trust in Technology</b>	<i>Design Thinking is applied as mindful design to recreate trust in technology from a user perspective.</i>	<b>How can Design Thinking build trust in the age of machine learning:</b> <a href="https://spotify.design/article/how-can-design-thinking-build-trust-in-the-age-of-machine-learning">https://spotify.design/article/how-can-design-thinking-build-trust-in-the-age-of-machine-learning</a> <b>Building trust with prototypes: An IoT solution at Piller:</b> <a href="https://thisisdesignthinking.net/2019/07/piller-trust-prototypes-iot">https://thisisdesignthinking.net/2019/07/piller-trust-prototypes-iot</a>

Table 12 The challenges of organizational anchoring

Challenges	Description	Further reading/expert references
<b>B2B Projects</b>	<i>No direct involvement of the end-user in the design process. Business partners weigh up the focus of the project and the results differently.</i>	<b>B2B Design Thinking: Product innovation when the user is a network:</b> <a href="https://thisisdesignthinking.net/2021/03/b2b-design-thinking-redesigning-product-innovation-when-the-user-is-a-network">https://thisisdesignthinking.net/2021/03/b2b-design-thinking-redesigning-product-innovation-when-the-user-is-a-network</a> <b>The Design Thinking process optimized for B2B:</b> <a href="https://theaiminstitute.com/innovation/the-design-thinking-process-optimized-for-b2b">https://theaiminstitute.com/innovation/the-design-thinking-process-optimized-for-b2b</a>
<b>Bureaucracy</b>	<i>An overly complicated administrative process, for example, assembling cross-departmental teams or allocating resources.</i>	<b>The end of Bureaucracy:</b> <a href="https://hbr.org/2018/11/the-end-of-bureaucracy">https://hbr.org/2018/11/the-end-of-bureaucracy</a> <b>Creative Bureaucracy Festival:</b> <a href="https://creativebureaucracy.org">https://creativebureaucracy.org</a>
<b>Classical KPI's &amp; Project Management</b>	<i>Only focus on quantitative factors, such as price, cost, and growth. Using classic project management parameters and not allowing flexibility when planning Design Thinking projects.</i>	<b>Are KPIs compatible with human-centered design?</b> <a href="https://blog.prototypr.io/are-kpis-compatible-with-human-centered-design-2e3613d9b7">https://blog.prototypr.io/are-kpis-compatible-with-human-centered-design-2e3613d9b7</a> <b>Made to measure: Getting design leadership metrics right:</b> <a href="https://www.mckinsey.com/business-functions/mckinsey-design/our-insights/made-to-measure-getting-design-leadership-metrics-right">https://www.mckinsey.com/business-functions/mckinsey-design/our-insights/made-to-measure-getting-design-leadership-metrics-right</a>
<b>Organizational Silos</b>	<i>"Not invented here" syndrome: detaching the department from the "mothership" can also turn into a lack of acceptance by work colleagues of the solutions developed.</i>	Hannen et al., (2019); <i>"I always try to break up those silos up by doing learning and challenging sessions. You have to push them to do it because they like to be experts in their topic, and that's not necessarily something that matches Design Thinking. It's easy to learn from customers in an area that you can respond to and know what to talk about, but it's more challenging to learn about methodological components or what not to do." _Head of Exploration, Swisscom</i>
<b>Right Projects</b>	<i>In activities, in which quality comes through reproduction and where repetition is needed, Design Thinking is not always the best choice.</i>	<b>Design Thinking is not the answer - especially if you don't know the question:</b> <a href="https://innov8rs.co/news/design-thinking-not-answer-especially-dont-know-question">https://innov8rs.co/news/design-thinking-not-answer-especially-dont-know-question</a> <b>Why Design Thinking is failing in most organizations:</b> <a href="https://www.frog-design.com/designmind/design-thinking-failing-organizations">https://www.frog-design.com/designmind/design-thinking-failing-organizations</a>
<b>Size and Diversity</b>	<i>The size and diversity of the organization impact on the implementation activities of Design Thinking. A strategic plan to implement Design Thinking is therefore necessary.</i>	
<b>Slow Decision-Making Processes &amp; Regulations</b>	<i>The bigger the company, the slower the decision-making process. This hinders the flow of the Design Thinking advantage to react faster and work more flexibly. Focus on security and compliance can inhibit risk-taking and innovative solutions.</i>	IBM Center for the Center for the Business of Government (2018)



# Teams

*Building the Dream Team*



## Intro

When striving for innovation, many organizations establish interdisciplinary teams due to the belief that innovation is more likely to arise from greater diversity of employees and the knowledge they bring in. Indeed, academics and practitioners often emphasize that, in order to create desirable, feasible and viable solutions, Design Thinking teams should be composed of individuals with a diverse range of expertise that is relevant to the challenge as well as knowledge about the industry and the market. It is recommended that an ideal team encompasses people from a range of disciplines, such as design, software development, and business. One challenge involves composing teams that can overcome cognitive boundaries and be integrated for optimal collaboration. In this chapter, we address the following questions:

- *What are the relevant factors to consider when composing Design Thinking teams?*
- *What is the ideal composition of a Design Thinking team?*
- *What is the current understanding of Design Thinking teams in organizations?*

## Background

In the ‘Parts Without a Whole’ study, nearly half of the participants declared themselves to be part of a Design Thinking team, with the remainder managing Design Thinking teams. In our current study, therefore, we set out to find out more about the participants’ experience and perceptions regarding the ideal team composition. Although team composition in general has featured in the literature for several years, it has not been sufficiently discussed in the context of Design Thinking. Consequently, this chapter is among the first to provide a description and analysis of how a Design Thinking team should be composed, and questions whether there is actually the need to have a dedicated Design Thinking team. The latter argument was raised by some of the participants, who felt that all relevant functions should develop a design-driven mindset rather than the task being left to a single Design Thinking team. Overall, this chapter raises the need to further investigate in what contexts whether and in what context it is worth having a dedicated Design Thinking team/teams.

## Design Thinking Team Composition

*“If I had to set up a Design Thinking team, it should consist of members of diverse backgrounds – experience, education, age, gender, culture, etc. They should all be willing to dedicate themselves to the approach and to experiment and be capable of dealing with ambiguity.”*

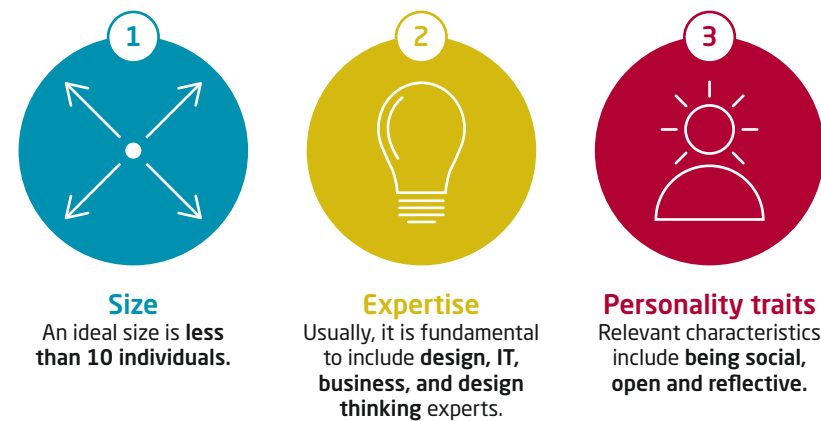
\_ Respondent R290

To better understand how companies are composing teams, we asked our respondents, ‘What does the ideal composition of a Design Thinking team look like?’ In total, 331 participants answered this open question. When analyzing the answers, three dimensions emerged as being key to composing a team: 1\_ team size, 2\_ individual expertise, and 3\_ individual personality traits. Figure 24 illustrates these three dimensions.

Our participants repeatedly mentioned that the ideal **team size** is up to a maximum of 10 team members. As one respondent wrote, *“It depends on the specific task and the organizational setup. Team members should be creative, open-minded, (and) heterogeneous. The team should be multidisciplinary and include relevant stakeholders. (A) manageable number of people (fewer than 10) is a prerequisite for success.”* \_ Respondent R200

The question about ideal team size has been raised for decades. The earliest known discussion dates back to 1913 when the French engineer Maximilien Ringelmann conducted an experiment that showed

Figure 24: Three dimensions to consider when composing Design Thinking teams



that people’s efforts quickly diminish as team sizes increase. The experiment is also known as the Ringelmann Effect and its underlying assumption is that the greater the team, the less responsible team members feel for the output (Ringelmann, 1913). More recent observations mention that a team of 3–6 individuals works well in terms of accountability and productivity<sup>1</sup>. For instance, Amazon instituted a rule, which they call the 2-Pizza Rule<sup>2</sup>, according to which a team should be small enough that it can be fed by two pizzas.

<sup>1</sup> <https://www.forbes.com/sites/jaimepotter/2020/04/27/the-ideal-team-size-at-work-may-be-smaller-than-you-think>

<sup>2</sup> <https://hbr.org/2013/07/how-to-innovate-faster>

When analyzing the *expertise* that individuals should bring to Design Thinking teams, the four most frequently mentioned types of expertise were: design, IT, business, and Design Thinking. According to our participants, these were reflected in the following roles:

- **UX Researcher or UI/UX Designer** to represent Desirability,
- **Project Manager/Business Developer** to represent Viability,
- **Software Developer** to represent Feasibility,
- **Design Thinking Coach.**

The purpose of a **UX researcher** is to provide data-driven insights based on comprehensive user need investigation. The UX researcher is responsible for drafting a research plan with clear objectives that includes what tools should be used for collecting, analyzing and presenting user data. The purpose of a **Project Manager** is to draft a plan on how to complete the project within time, budget and scope. The Project Manager is responsible for ensuring that the teams have adequate resources to perform the necessary tasks. The purpose of the **Software Developer** is to support the team in identifying the technologies required to implement the solution. The Software Developer is responsible for understanding digital trends and leading the implementation of the solution.

While many respondents pointed out the importance of having a coach in the team, they also expressed a desire for the role of the coach to change. The participants stated that coaches should act

more than just as facilitators who help the team to navigate through the process. Instead, they should also contribute to the discussions with relevant concepts for the given challenge. As one respondent stated, *“Everybody in the team can take a job, nobody is only a generalist that moderates the work of others. More is needed, (such as) persons with knowledge in digital technologies or with knowledge about sustainability topics”* \_ Respondent R252

A fifth type of expertise, which was mentioned several times and which seems to gain more recognition in the innovation community, was psychology. Our findings indicate that for innovation to happen, it is becoming increasingly important to understand the cognitive mechanisms of users’ behaviours in order to develop an effective solution. In behavioural science, the concept of nudging has been extensively discussed by researchers and practitioners since 2008 after a publication of ‘Nudge: Improving Decisions About Health, Wealth, and Happiness’ by Thaler and Sunstein. Nudges refer to “any aspect of the choice architecture that alters individuals’ behavior in a predictable way without forbidding any options or significantly changing their economic incentives” (Thaler and Sunstein, 2008, p.6). The concept of nudging and the underlying concepts of behavior change helps us to create solutions that enable humans to make better decisions. Psychological expertise, then, emerges as a valuable type of expertise that can complement Design Thinking teams.

<sup>3</sup> <http://ideonomy.mit.edu/essays/traits.html> In terms of **personality traits**<sup>3</sup>, the most mentioned characteristic was of a social order – in particular, an attitude conducive to teamworking. As one participant stated, *“Most important is to have a good understanding of working as a team.”* \_ Respondent R252 Knowing how to work in a team is fundamental to designing solutions, as it is about jointly developing knowledge and sharing information in a way that supports other team members to better investigate the problem and solution space (Dosi et al., 2018).

Additionally, respondents highlighted the importance of being open to new ideas. Our participants stated that this is an essential attribute for a well-functioning Design Thinking team by enabling the joint exploration of different perspectives, especially in diverse teams. In particular, diversity was not only interpreted in terms of different areas of expertise, but also in terms of different ways of thinking (e.g. analysts, pragmatists).

The third most mentioned personality trait needed for critically analyzing a situation was reflectivity. Critical thinking is understood as the careful consideration of any belief or supposed form of knowledge (Dewey, 1997), and as such, is fundamental to reflect on information and to challenge design assumptions by “asking the right questions” (Drews, 2009, p. 41). One participant mentioned the importance of combining analytical with more pragmatic thinkers, in order to create value, *“Analytical people and practical people (...) get on well together. In other words, doers and thinkers. Thinkers question the status quo (...) and doers aim to make things happen.”*

\_ Respondent R550

Overall, the three main individual personality traits identified in our study were:

→ *being social,*

→ *being open,*

→ *being reflective.*

When comparing our insights from practice with theoretical studies, our participants confirmed some of the personality traits that have been identified in a previous study about how to measure the Design Thinking mindset through personality traits (Dosi et al., 2018). Different personality traits are often used to identify the learning profiles of individuals, which, in turn, increases the chances of teams to successfully implement Design Thinking (Haskamp et al., 2020).

## Should We Have a Design Thinking Team or Should We Become a Design-driven Organization?

In the Parts Without a Whole study, there was a common understanding about the importance of Design Thinking being embedded in the organization through the composition of Design Thinking teams. In our recent findings, many respondents mentioned that there should be actions to enable a prevalence of a Design Thinking mindset in the whole company instead of merely leaving it to Design Thinking teams. *“In my opinion, Design Thinking should be a mindset and not (...) a task. Therefore, there should not be a specific Design Thinking team. Rather, all employees should know, understand, and apply Design Thinking”.* \_Respondent R290

It seems that the desired diffusion of Design Thinking practice throughout an organization consists of reinforcing the discourse about the importance of becoming a design-driven company. Roberto Verganti (2009) mentions that, to create meaning, design-driven companies go beyond understanding *what* customers and users want to actually discover *why* they want it. Design-driven organizations strategically define design not just as a role but as a fundamental skill which requires a different type of leadership style (leadership characteristics are discussed in the Culture, Leadership, and Communication Chapter of our study). Overall, our findings indicate

that we should further explore in what scenarios dedicated Design Thinking teams suffice and when those teams should only be the first step taken in the journey to become a design-driven organization. A better understanding of this question should help experts put in place more successful Design Thinking implementation strategies in organizations.

## Team Composition – Success Factors and Challenges

Based on the analysis of the findings and insights, 4 success factors and 2 challenges emerged as being relevant when composing Design Thinking teams. Our findings confirm de Paula’s et al. (2021) and Wolf’s (2019) success factors indicating that teams should be cross-disciplinary and that deciding on how to compose a team in terms of areas of expertise, personality and team size can be challenging. Additionally, we identified teamwork, analytical thinking and smaller teams as relevant success factors, as well as adequate support to help teams develop a critical mindset.

Table 13 Success factors for team composition

Success Factors	Description	Further reading
<b>Ability to work in a team</b>	<i>Teams should collaborate towards common goals.</i>	Dosi et al., (2018)
<b>Analytical Thinking</b>	<i>Teams need to be able to challenge assumptions and critically analyze situations.</i>	Dosi (2018), Drews (2009)
<b>Cross-disciplinary teams</b>	<i>Teams should be composed of different skills and areas of expertise that match the needs of the project.</i>	de Paula et al. (2021), Wolf (2019)
<b>Small teams</b>	<i>Teams should not be bigger than 10 individuals.</i>	Ringelmann (1913)

Table 14 Challenges for composing teams

Challenges	Description	Further reading
<b>Deciding about the right types of expertise, personality and team size for the given challenge</b>	<i>Teams should be diverse according to the needs required by the given challenge.</i>	de Paula et al. (2021), Wolf (2019)
<b>Lack of a critical mindset</b>	<i>Lack of ability to ask questions about certain things in ways that lead to better outcomes.</i>	Dosi (2018), Drews (2009)

# Process, Tools and Mindset

*Implementing Design Thinking*





## Intro

Often companies want to implement Design Thinking, but do not know how to start due to the variety of ways that Design Thinking can be implemented. For instance, when looking at existing studies and stories shared by companies, Design Thinking is consistently associated with process models, toolboxes and/or a mindset (or approach). Accordingly, deciding how to implement Design Thinking in line with existing organizational structures, the organization's size and sector, and processes (e.g. SCRUM and Lean Startup) can be challenging. Another challenge is to understand and translate the concept of user-centredness to your organization: how frequently should users be involved in the innovation process? To help you navigate through these challenges we guide you through the following questions:

- *In what different ways can Design Thinking be enacted?*
- *To what extent are users involved in the innovation process?*
- *How can the recommended approaches be combined with Design Thinking?*

Although the overall goal of this chapter is to clarify how Design Thinking is practiced in organizations, it is not our intention to pro-

vide either a recipe for companies to follow or to claim that there is only one path to take. Rather, the purpose of this chapter is to find patterns in how our respondents enacted Design Thinking and present an indication of the overall direction that companies of all sizes across many industry sectors have been adopting.

## Background

The 'Parts Without a Whole' study categorized participants' understanding of the concept of Design Thinking along a spectrum between two poles, in terms of the available implementation approaches – at the one end, Design Thinking as a tool(box) and at the other, Design Thinking as a mindset. To complement their findings, in our current study, we categorized the different implementation approaches into three different levels of complexity and analyzed how they differ depending on the company size and the intended reasons for implementing Design Thinking. For each phase of the Design Thinking process model, we provide a list of the most recommended user research methods and an analysis of other recommended complementary approaches.

## How Design Thinking is Enacted in Organizations

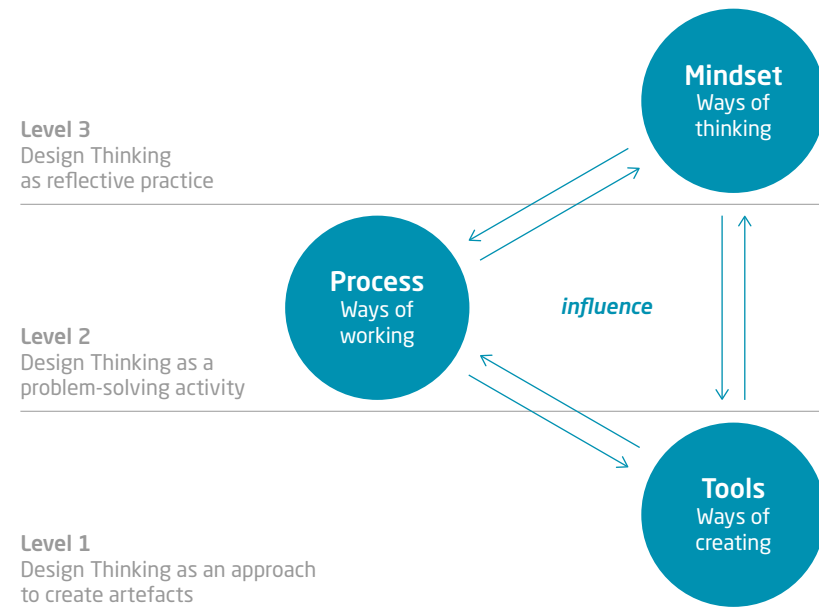
Design Thinking is implemented as the interplay between process, tools and mindset, which means that they are connected and influence each other. Figure 25 illustrates the different ways that Design Thinking can be enacted and their level of complexity.

Design Thinking as an approach to creating artefacts (level 1) enables companies to use related methods and techniques such as brainstorming to encourage novices to start experiencing its user-centred approach. At the next implementation level, companies move from using single tools in specific scenarios to understanding how the tools can collectively influence the process of problem-solving.

Design Thinking as a problem-solving activity (level 2) allows organizations and decision-makers to reduce their complex real-world problems to more manageable problems. The process offers a structure that is interactive and non-linear which companies use to identify needs, to frame and reframe problems and to create solutions. Given that actions lead to a mindset change, the action towards experiencing the Design Thinking process creates mental representations, which in turn shapes the Design Thinking mindset.

From a cognitive perspective, Design Thinking can be used as a way of thinking – i.e. Design Thinking as a reflective practice (level 3). When it is developed on an organizational level, the Design Thinking mindset enables a shared understanding of innovative behaviours that together drive a creative response to innovation. Con-

Figure 25: Enactment of Design Thinking in organizations based on Carlgren et al. (2016a) and Wolf (2019)

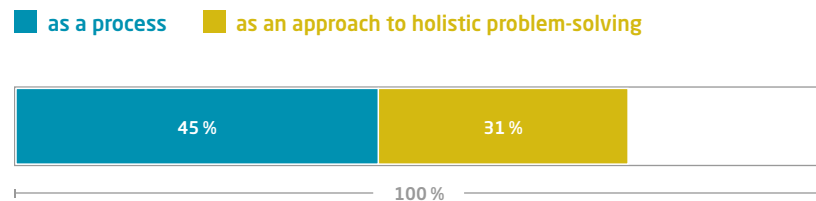


sidering how challenging the development of a mindset is, companies wanting to cultivate the conditions that give rise to the Design Thinking mindset need to understand that mindset-process-tools are intertwined and require constant alignment and reciprocal reinforcement.

To have a more detailed understanding of how Design Thinking is implemented, we first asked our respondents, ‘How is Design Thinking implemented in your company?’. Based on our respondents (N=325), the majority of organizations enact Design Thinking as either a process or as a holistic approach for problem-solving that includes the mindset, the process, and the appropriate tools, as can be seen in Figure 26.

Figure 26: How is Design Thinking implemented in your company?

n=325



Although the difference is not big, the majority of our respondents implement Design Thinking as a process by using a variety of Design Thinking process models. For instance, the most well-known model was proposed by Tim Brown from IDEO, and consists of a cyclical model with three phases: inspiration, ideation, and implementation that focus on opportunity identification and problem-solving. Similarly, the Hasso Plattner Design Thinking School proposed a six-

phase process that was aimed at teaching students and professionals on how to become design thinkers: to understand, to observe, to develop a point of view, to ideate, prototype, and test. Similarly, the Stanford M310 process model<sup>1</sup> proposed the following six consecutive steps: definition, needfinding, synthesis, ideation, prototyping, and test. *“The Design Thinking framework we’ve been using was the classical one that you can also find at the HPI, a six-step model. I find it quite important that the first phase is the ‘understand’ phase and not right away the empathy phase. There are a ton of different models online. But I think that the idea of figuring out the actual challenge, whether you’re working on the right question is quite crucial before you go out into the field, and talk to users or customers about a specific problem.”* \_ Interviewee I3 <sup>1</sup> <http://our310.stanford.edu>

Our respondents mentioned that, although they follow a process, they do not necessarily follow the same steps. *“We all use the Design Thinking process with different stages. I recognize that, depending on the innovation, the focus lies on a different part of the process. So, no, I wouldn’t say it’s always the same”* \_ Interviewee I5 Similarly, another interviewee stated, *“We follow this approach but then depending on the topic you change certain steps. You do different user research, different workshops or the design phase may be longer or shorter.”* \_ Interviewee I22

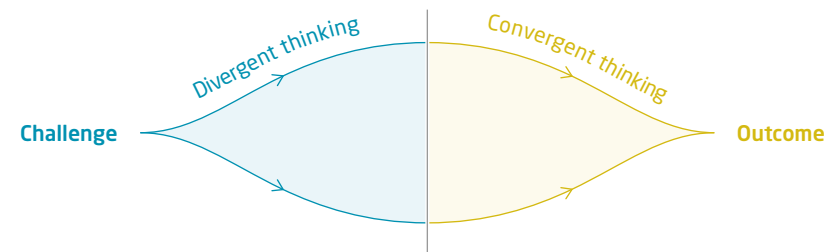
Some companies adapted the Design Thinking process model to their different needs and created their own framework. For in-

stance, when adapting the process, our respondents mentioned the importance of having clear objectives and internal communication for sharing stories about what works. As mentioned in the Strategy Chapter, creating internal communities for storytelling and having clear objectives are one of the critical success factors for setting up a design thinking strategy. Moreover, our respondents highlighted the need to define the metrics of project success.

*“We added a few extras to our Enterprise Design Thinking framework. We call them Keys – to align us over time, with reality and across our teams, to work better and more efficiently within our giant enterprise. (...) More specifically, sponsor users are people in a project that represent and stand up for the users that we’re trying to create the solution for. (...) We also use a system of Playbacks, which might be kind of weekly stand-ups or biweekly standups after a sprint, where we’re telling human-centered stories to our Sponsor users. We have something called Hills. These Hills are objective statements that we define upfront in a project to be a KPI, our criteria for success. So, each Playback is judged with these Hills in mind: ‘Does it answer the challenge of the Hill?’. The Hill statement might be something like ‘a supply chain manager can do their specific task ten times faster and it can be done on a mobile application’ – something like that and often with greater levels of detail, of course. With these clear objectives, everyone is aligned to what we’re trying to do. This was something we realized was missing in the last 30 years of projects. We have these regular check-ins, these Playbacks, and we have the users there. The Playbacks, Hills and sponsor users are the ‘keys’ to project success, and we made sure our project executives and managers knew how to enable them.”* \_ Interviewee 11

Although some of the steps of existing models might differ, the learning foundation underpinning them all follows the notion of divergent thinking and convergent thinking for creative problem solving (Osborn, 1953). The UK Design Council developed a Framework for Innovation<sup>2</sup> that illustrates the idea of diverging and converging in the form of a Double Diamond. In the context of our study, many of our respondents reported to have used the Double Diamond to creatively develop products and services in their organizations. Figure 27 illustrates an adapted version of the Double Diamond of the Innovation Framework and of Alex Osborn’s creative problem solving model (Osborn, 1953).

Figure 27: The learning foundation of Design Thinking (adapted from the Design Council’s innovation framework and Osborn, 1953)

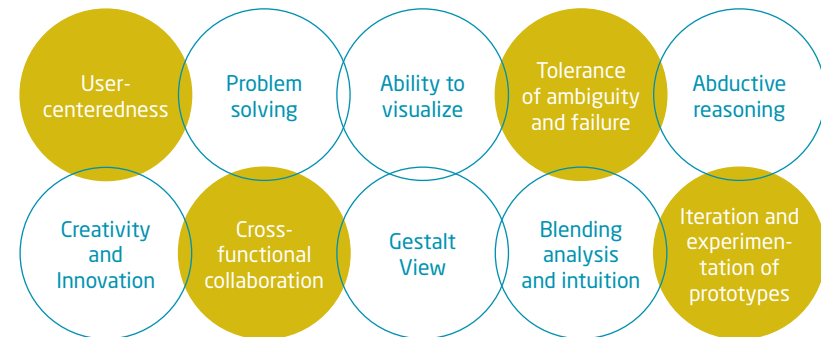


Creative problem solving is a mental process aimed at being used to creatively develop solutions to a given challenge. While divergent thinking enables teams to explore the problem space and be creative with experimenting with diverse ideas, convergent thinking helps them to learn how to make decisions in ambiguous situations. When diverging or converging, teams have to question and analyze possible directions and the potential impact of their decisions on the journey to the solution. The model suggests that anyone can develop creative thinking and innovative solutions: *“The first step is to listen to the client and identify their needs. What are their gains, pains, and jobs to be done? The second part is to open up the double diamond and close it again with the point of view. Then you reopen the double diamond again, and you go into solution finding and creation or co-creation. Then you close it again by testing these prototypes with clients. In the best case scenario, you have some prototypes which you can take to the next phase, called the delivery phase.”* \_ Interviewee I18

In contrast to the view that Design Thinking is a pure process, 31 % of our respondents advocate a more holistic approach of implementing Design Thinking that is applied to different contexts. *“Maybe I’m wrong but my thinking on Design Thinking is more so that Design Thinking is a mindset, a meta stage, then we’ve got the disciplines of service design, of future design, transformation design, strategic design and business design. That’s why I say there are different methods within those disciplines, but the thinking, the general, as I said, meta stage, is, to me, Design Thinking”* \_ Interviewee I4

According to our respondents, the attributes that are most associated with the Design Thinking mindset are user-centeredness, experimentation and iteration of prototypes, cross-functional collaboration and tolerance of ambiguity and failure. Our analysis confirms some of the findings that have been previously reported by other researchers (Micheli et al., 2019). Micheli et al., (2019) proposed 10 principles for the Design Thinking mindset. Four of these were confirmed by our participants, as highlighted in Figure 28.

Figure 28: Principles associated with Design Thinking (yellow circles were identified by our participants) (adapted from Micheli et al., 2019)



*“If we start a project, no matter what it is, we try to be hyphenated from the beginning. If we don’t know a lot about the topic, we start doing research through field research. If it is about iterating the current*

*product, we do the research and gather pain points. Then with these we learn in which direction it could go. Based on that we come up with designs or workflows or whatever it is. In another iteration we test again and iterate it again. We recently started to work in more cross-functional teams, so that everybody sits round the table and is in contact with users and gets the insight of what went well and what didn't go well and to understand why something needs to be iterated."*

\_ Interviewee I22

**"We keep it, I'd say 90 or 95 % systemized and consistent. But we definitely have teams that are creating some specific workshops or facilitate exercises. There is Design Thinking for AI (artificial intelligence) and there's Design Thinking specifically for blockchain and dealing with a large group of ecosystem partners within a blockchain. In the end, the general framework, the mindset and the terminology that everyone has been using is consistent. And this was something that we really pushed from the very beginning. We realized doing it by hand wasn't going to work, so we created an online platform to reinforce that language and that systematic approach. Again, I'm not saying that it's a systematic step by step process, but it's a framework that has these pieces, everyone agrees on**

**what those pieces are, and we gave everyone lots of tools. It's even 'opened source' now, so that anyone from outside our organization can access it."**

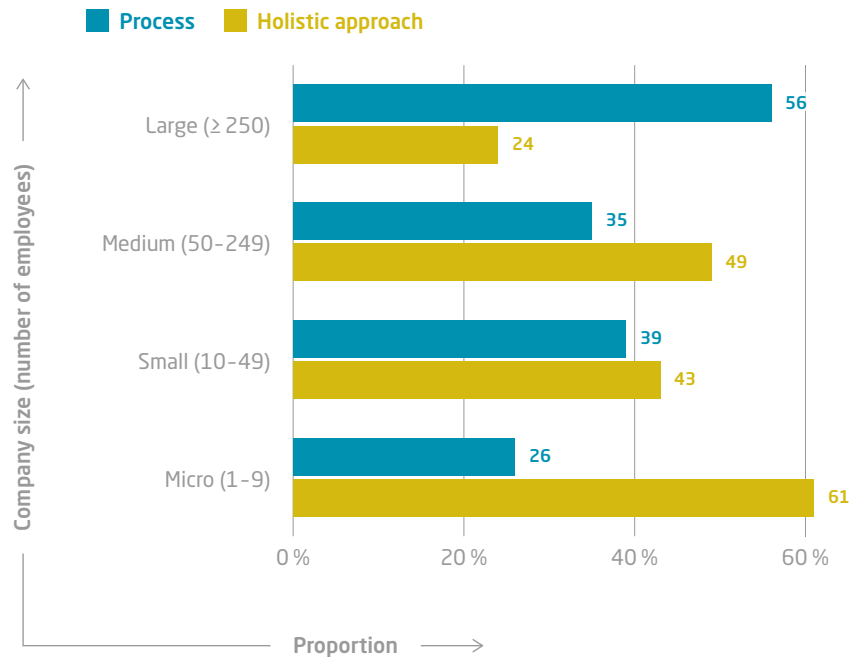
\_ Interviewee II

In addition to the complexity of the different implementation approaches, companies differ by size and implementation strategies. While some use Design Thinking as external resources or start small with a workshop or sprint in parts of the organization, others embed Design Thinking in the overall corporate culture. For instance, from financial services such as Deutsche Bank (Vetterli, Uebernickel, Brenner, Petrie, & Stermann, 2016), to information technology companies including SAP (Carlgren et al., 2014a), Samsung (Chang et al., 2013), IBM (Clark & Smith, 2008), and many others. Therefore, there are two main key factors that influence how Design Thinking is implemented in organizations: company size and where Design Thinking is anchored in organizations.

To be able to compare how Design Thinking is implemented in relation to company size, we asked participants whether they applied Design Thinking more as a process or more as a holistic approach. We define an approach as holistic when the company is able to implement Design Thinking as a tool, process or mindset when needed in different parts of the organization. Figure 29 illustrates the answers.

Figure 29: In your organization is Design Thinking implemented more as a process only or as a holistic approach? ~ What is the total number of employees in your organization?

n = 299



- Only large organizations reported to implement Design Thinking more as a process (56%) than as a holistic approach.
- Participants from small and medium-sized organizations (SMEs) provided balanced answers between implementing Design Thinking as a process and as a holistic approach.
- In the case of micro-sized companies (e.g. Startups), the number of participants that claimed to use Design Thinking as a holistic approach (61%) was almost three times the number of those that saw it as a process (26%).

Interestingly, the majority of respondents from **large organizations** answered that they implement Design Thinking as a process. Our findings indicate that how to spread the mindset of Design Thinking throughout the company is one of the many innovation barriers that our participants face. For many of our participants, **large organizations were seen as slower and less adaptive** than SMEs and therefore how to spread the mindset of Design Thinking throughout the company is one of the many innovation barriers they were faced with.

Our interviewees mentioned that *management style is a key factor in influencing a company's ability to be agile and adaptable*. Rigid structures and traditional management styles enforce obsolete mental models that prevent employees from developing a Design Thinking mindset. For instance, as mentioned before, the Design Thinking principle of tolerance of ambiguity is important in order to learn how to properly explore the problem space. *“The biggest challenges are customer centricity, because that takes time, and to get people to the point where they are willing to focus a bit longer on the problem space instead of heading directly to the solution space. That’s a challenge.”*

\_ Interviewee I14

When compared to large organizations and SMEs, startups tend to be led by more flexible management styles with a transformative mindset, which explains why most of our participants from micro-sized companies implement Design Thinking as a holistic approach.

#### HYPOTHESIS

High organizational agility (i.e. practiced in parts of the organization) leads to the successful development of Design Thinking as a holistic approach.

It is important to mention that ‘organizational agility’ does not mean that the entire organization needs to be on that level, rather, it suffices if only relevant parts of the organization (e.g. departments) are.

In addition to company size, a key factor that influences how Design Thinking is implemented in organizations is where Design Thinking is anchored. As shown in the Organizational Anchoring Chapter, Design Thinking can be anchored either

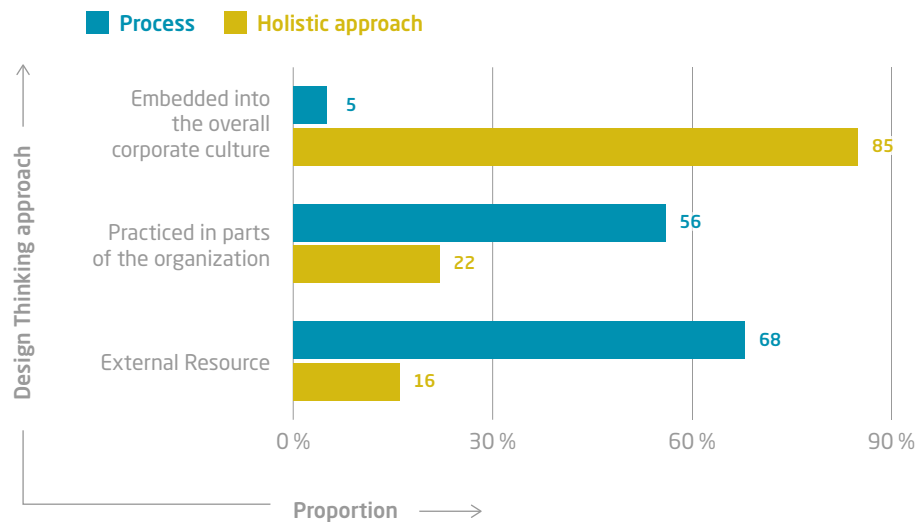
- 1\_ as an external resource,
- 2\_ in parts of the organization,
- 3\_ used for strategic decision making, or
- 4\_ embedded into the overall corporate culture.

Depending on whether Design Thinking is used internally by some departments or externally by agencies, the implementation differs. To understand the differences, we analysed and intersected participants’ answers about how Design Thinking was implemented (see Figure 26) with the reason for which Design Thinking was practiced in their organization (see Figure 21 in Organizational Anchoring Chapter). However, as we did not obtain any conclusive result in this intersection, we did not consider this for this study. Figure 30 illustrates the answers.



Figure 30: How is Design Thinking implemented in your company? ~ For what purpose is Design Thinking currently practiced in your organization?

n = 209



→ Most companies (80 %) that embedded Design Thinking into the **overall corporate culture** implemented Design Thinking as a holistic approach.

→ 68 % of companies that used Design Thinking as an **external source** implemented Design Thinking as a process.

→ In the cases of Design Thinking **being practiced in parts of the organization**, 56 % of companies stated that they implemented it as a process, whereas 16 % do as a holistic approach.

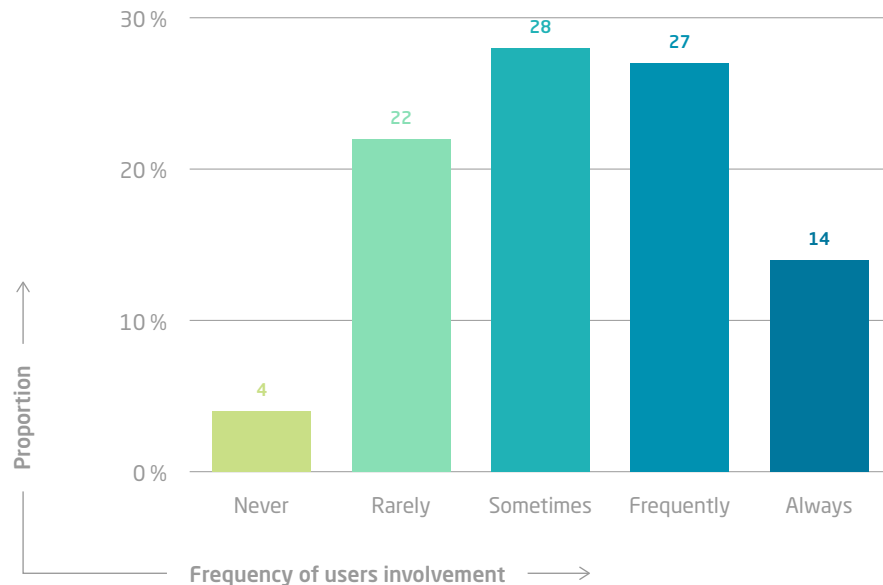
It is interesting to note that most companies that use Design Thinking **as an external source** implement it as a process, whereas most companies that **embed Design Thinking in their overall corporate culture** adopt it as a holistic approach. The findings shown in Figure 30 reinforce the analysis presented in the Strategy Chapter, in that, when companies want to enable an organizational mindset change, Design Thinking must be strategically integrated into the organization with a particular focus on training policies to build internal capacity.

## User Involvement and User Research Techniques

Considering that Design Thinking is a user-centred approach, the involvement of users in the innovation process is fundamental. To better understand how users are engaged, we asked our participants how users are involved in co-creative innovation processes. In total, 317 participants answered the question, the answers to which can be seen in Figure 31.

Figure 31: How often does your department involve users in co-creative innovation processes?

n = 317



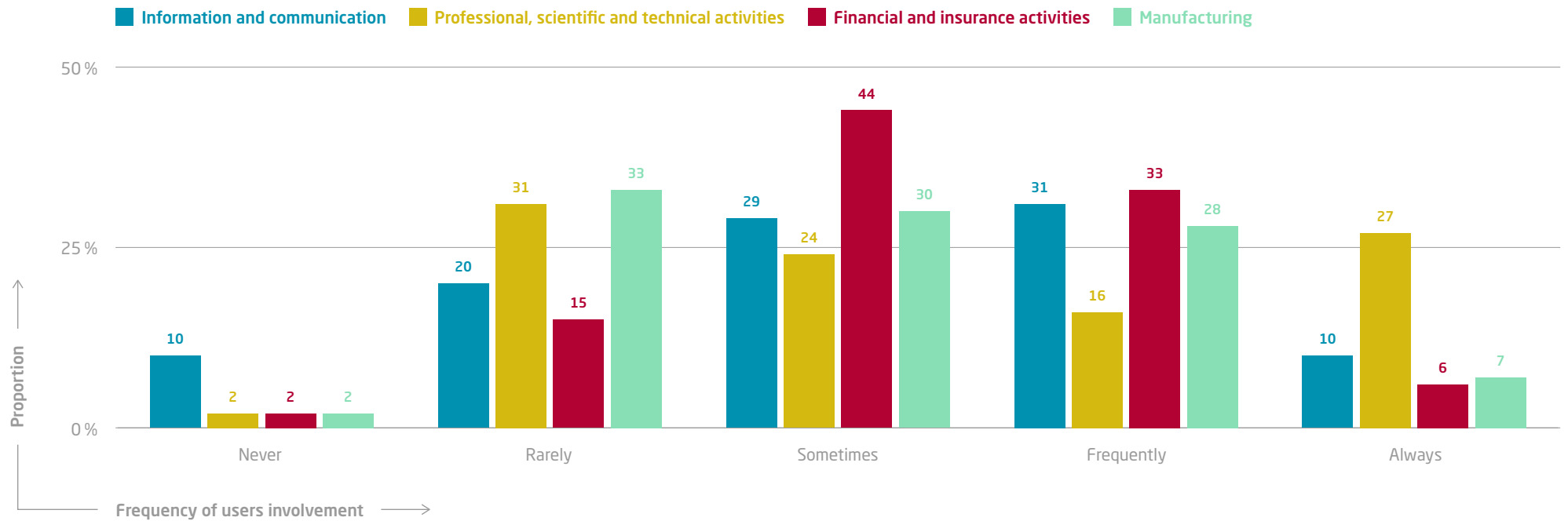
- 41 % of our participants answered that they either 'always' or 'frequently' involve their users.
- 28 % of our respondents indicated that they 'sometimes' involve users.
- 26 % of our participants claimed to either 'never' or 'rarely' involve users in co-creative innovation process.

Similarly to the diverse ways that Design Thinking can be implemented, the frequency of user involvement in the innovation process also varied, ranging from always involving a community of users to having no user involvement at all (de Paula et al., 2018). In order to better understand how the focus on users shifts, we compared the extension of user engagement against three key factors: 1\_ industry sector, 2\_ how Design Thinking is implemented, and 3\_ where Design Thinking is anchored.

The first factor to be analyzed is how the nature of user involvement changes according to the industry sector that a company operates in. The analysis can be seen in Figure 32.

Figure 32: How often does your department involve users in co-creative innovation processes?  
 In which industry sector does your organization mainly operate?

n=222



Our results indicate that *professional, scientific and technical activities* is the industry sector that involves users the most with 43 % of the answers ranging from ‘always’ to ‘frequently’, followed by *information and communication* with 41 %. By contrast, the Information and Communication sector showed the highest incidence of respondents

(10 %) that claimed to never involve users. While most of the respondents claimed to considerably involve users in their innovation process, our study shows that many information and communication companies still lag behind when doing user-centered innovation.

Compared to the other three industry sectors shown in Figure 31, users seem to be given a less active role in the context of manufacturing companies. Indeed, manufacturing companies showed the highest number (35 %) in the answers ranging from ‘rarely’ to ‘never’. Moreover, *financial and insurance activities* showed the strongest presence in the middle ground, with 44 % of answers stating ‘sometimes’.

Our findings present the extent of user involvement in the innovation process within each industry sector. We do not suggest that companies should ‘always’ involve users in their innovation process, rather, that our results in our survey(s) should be seen as an indication of which direction most companies have adopted.

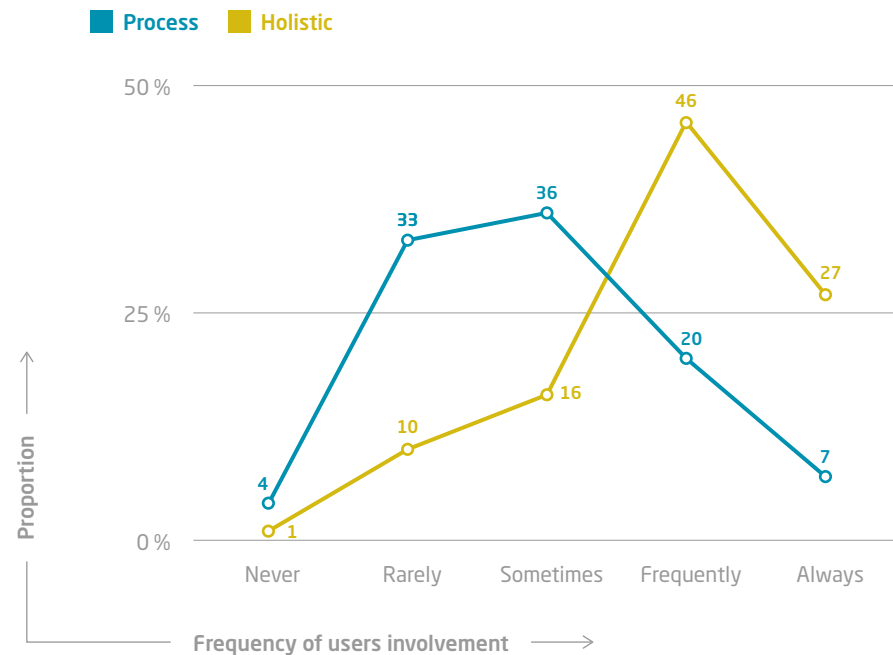
The second factor we analysed was the relationship between how Design Thinking was implemented in the organization and the extent to which they engaged users in the innovation process in the respondents’ department. Figure 33 illustrates the results.

→ 73 % of respondents who used Design Thinking as a **holistic approach** indicated that they **frequently or always** involve users in the innovation process, whereas the answers from respondents that used Design Thinking as a **process** was only 27 %.

→ Most companies (36 %) that used Design Thinking as a **process** indicated that they **sometimes** involve users in the innovation process.

→ Most companies (46 %) that used Design Thinking as a **holistic approach** indicated that they **frequently** involve users in the innovation process.

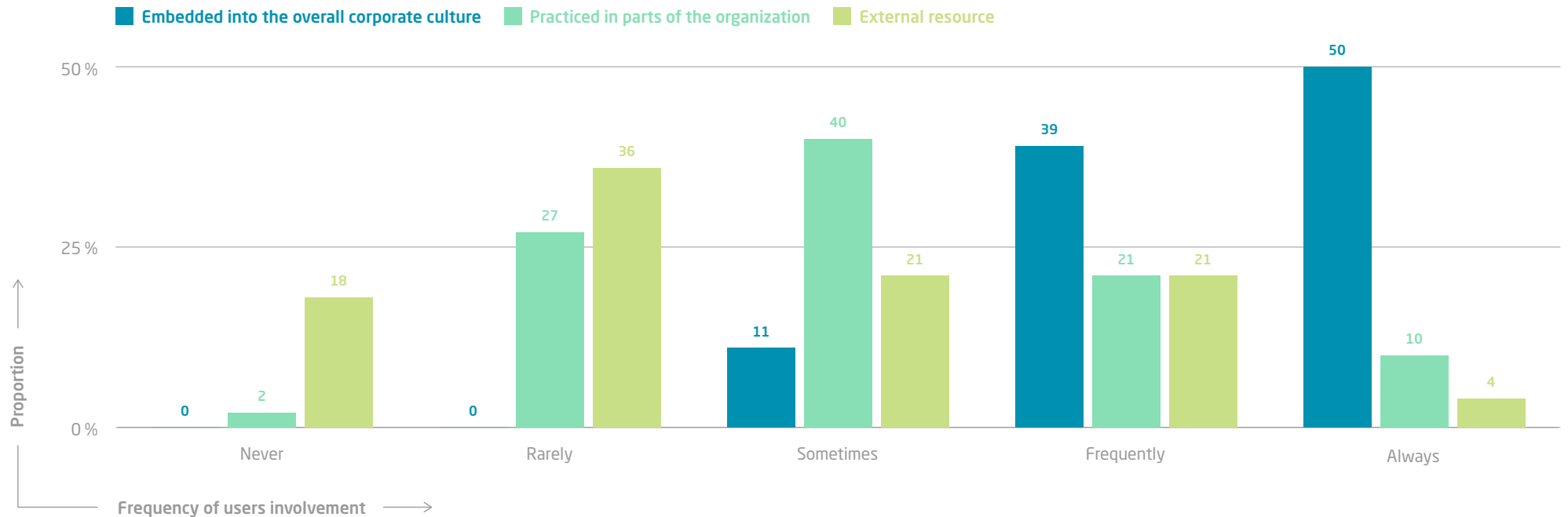
Figure 33: How often does your department involve users in co-creative innovation processes? ~ How is Design Thinking implemented in your company?  
n = 233



The third factor we analysed was the relationship between how Design Thinking is anchored in the company and the extent to which they engage users in the innovation process in the respondents' department. Figure 34 illustrates the results.

→ Where Design Thinking was embedded overall, 89% of respondents reported that users were 'always' or 'frequently' engaged, compared with 31% where it was practiced in parts of the organization, and 25% where it was used as an external resource only.

Figure 34: How often does your department involve users in co-creative innovation processes?  
 For what purpose is Design Thinking currently practiced in your organization?  
 n=193



- *54 % respondents from companies where dt was used as an external resource, and 29 % where it was practiced only in parts of the organization reported either 'never' or 'rarely' engaging users.*
- *40 % of respondents whose companies practice Design Thinking in parts of the organization voted for 'sometimes', external resource indicated 21 % and embedded into the overall corporate culture 11 %.*

Overall, our results indicate that companies that have a higher level of user engagement are those that use Design Thinking as a holistic approach embedded into the overall corporate culture. Our findings confirm the importance of user-centeredness as a fundamental principle of the Design Thinking mindset. Therefore, we hypothesise that:

#### HYPOTHESIS

The Design Thinking mindset on an organizational level leads to a higher user involvement in the innovation process.

## Recommended Approaches to Be Combined with Design Thinking

Design Thinking is not a magic wand – “*We don't want to say Design Thinking is the best or that it is the only one we should be using.*”

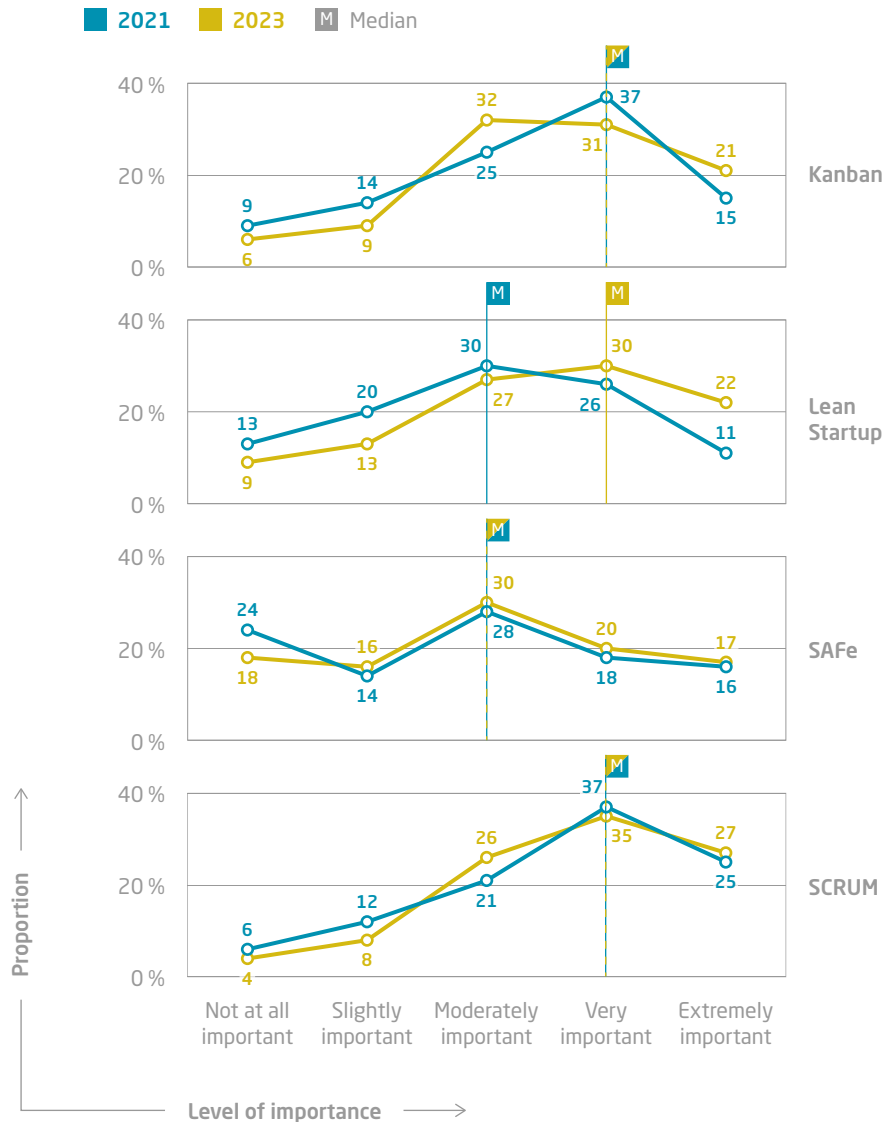
\_ Interviewee I7

If managers want to successfully integrate Design Thinking in their organization, it is essential to learn which of the existing approaches to Design Thinking have the strong potential to be combined. In light of this, the respondents were asked about the present and future importance of approaches that are normally associated with Design Thinking implementation (see Figure 35). The green line shows the median of the answers given to the importance of the approaches at present, and the orange line shows how the participants envision the it from 2021 to 2023.

- *At the time of the survey, Kanban and SCRUM were considered to be the most important approaches to be combined with Design Thinking.*
- *Our respondents felt that the importance of Lean Startup is likely to grow in their organization by 2023, moving from 'moderately important' to 'very important'.*

The benefits brought about by Design Thinking should be complemented with benefits from other approaches. Particularly companies that are more experienced in implementing Design Thinking

Figure 35: How important would you rate the following approaches to your organization now and in 2023?  
n = 222



are now combining it with other approaches such as Lean Startup, SAFe, SCRUM and Kanban. As one interviewee pointed out, *“Initially we had the normal Design Thinking framework, but as I said, we are now (...) working to develop an agile Design Thinking methodology by using the stages of Design Thinking and incorporating agile methodologies into it.”* \_ Interviewee I7 Similarly, another interviewee stated, *“We are not always using the whole process of Design Thinking. We sometimes merge Design Thinking with lean approaches.”* \_ Interviewee I5 Agile methods (e.g. Kanban, Scrum) have been recommended for several years due to their benefits in terms of reducing the development time, and increasing the flexibility and quality of the product (Ries, 2011).

Lean startup is becoming more and more recognized as a valuable approach to be combined with Design Thinking due to its focus on quick market introduction and real testing in the market. *“We sometimes merge Design Thinking with lean approaches. It doesn’t conflict as soon as it comes to prototyping, it makes sense. You always want to build a MVP (Minimal Viable Product) and want to test it.”* \_ Interviewee I13

Due to the potential of integrating different approaches with Design Thinking, some efforts have been made to create a combined model. For instance, the InnoDev model is a software development approach that intertwines Design Thinking, Lean Startup, and Scrum in order to create an agile software development process geared to delivering innovative user-oriented products and services (Do-

brigkeit et al. (2019); Dobrigkeit et al. (2020)). Additionally, Blosch et al., (2016) developed the Gartner Framework that also combines the three mentioned approaches in order to develop new products. While Design Thinking is used to uncover hidden needs and propose a creative solution, SCRUM helps to develop the technology with focus on agility, while Lean Startup helps to develop the business aspect of a solution with a focus on clear metrics.

*“Initially we had the normal Design Thinking framework, but as I said, we are now collaborating with operations and transformation organization. They are working to develop an agile Design Thinking methodology by using the stages of Design Thinking and incorporating agile methodologies into it. So yes, we initially started with the industry-standard Design Thinking. We had external coaches come in and take us through that, but now, with the internal coaches we are more than capable of doing that ourselves. So it’s kind of evolved into an agile methodology.”* \_ Interviewee I7

Overall, our findings suggest the importance of investigating how to combine Design Thinking with other approaches such as Lean Startup and Scrum in order to create an agile development process that can deliver the innovative user-oriented products and services required by competitive companies.

## Process, Tools & Mindset-Success Factors and Challenges

Based on the analysis of the findings presented in this chapter and also on Wolf (2019), 7 success factors and 3 challenges emerged as being relevant for defining how Design Thinking can be implemented. Our findings confirm Wolf’s (2019) success factors that suggest that companies adapt Design Thinking to their organizational environment. This would enable employees to conduct serious user research and to experiment with several prototypes in an interactive way, while allowing them to customize the process and complement it with other approaches. Our findings indicated that other success factors that companies ought to consider include cross-functional collaboration, a user-centred approach and tolerating ambiguity and failure. Finally, our findings are in alignment with Wolf (2019) who stated that the lack of ability to complement Design Thinking with other approaches is a challenge that many companies face. In addition, we found that it is also very challenging for companies to develop a Design Thinking mindset.



Table 15 Success factors for process, tools and mindset

Success Factors	Description	Further reading
<b>User-centredness</b>	<i>Users should be the focal point of attention.</i>	Micheli et al. (2019), Wolf (2019)
<b>Experimentation and iteration with several prototypes</b>	<i>Prototypes are important to quickly test assumptions and identify potential failures.</i>	Przybilla et al. (2020), Micheli (2019), Wolf (2019)
<b>Having cross-functional collaboration</b>	<i>The combination of different expertises are needed to enable diverse point of views to emerge.</i>	Nagaraj et al. (2020), Micheli et al. (2019), Vetterli et al. (2016)
<b>Conducting proper user research</b>	<i>Users need to be engaged in the development process.</i>	de Paula et al. (2019), Wolf (2019)
<b>Tolerance of ambiguity and failure</b>	<i>Ambiguity and failure are normal during the innovation process and should not be avoided.</i>	Micheli et al. (2019), de Paula et al. (2019), Beckman et al. (2007), Wolf (2019)
<b>Adapting Design Thinking to the organizational environment</b>	<i>Design Thinking needs to be aligned with the existing corporate culture.</i>	Appleyard et al. (2020), Nakata et al. (2020), Carlgren et al. (2016b), Wolf (2019)
<b>Combining Design Thinking with relevant approaches</b>	<i>Design Thinking does not cover all the necessary steps to deliver innovation and therefore it needs to be complemented with other approaches.</i>	Dobrigkeit et al. (2020), Dobrigkeit et al. (2019), de Paula (2019), Blosch et al. (2016), Wolf (2019)

Table 16 Challenges for process, tools and mindset

Challenges	Description	Further reading
<b>Failure to customize the process</b>	<i>Lack of alignment of the Design Thinking process to the needs of the organization.</i>	Carlgren et al. (2016b), Wolf (2019)
<b>Neglecting the potential of combining Design Thinking with other approaches</b>	<i>Erroneous belief that only Design Thinking is enough to deliver innovation.</i>	Dobrigkeit et al. (2020), Dobrigkeit et al. (2019), de Paula et al. (2019), Wolf (2019)
<b>Difficulty to develop a Design Thinking mindset</b>	<i>An environment that does not foster conditions conducive to a mindset change.</i>	Fischer et al. (2019), de Paula et al. (2018)

# Culture, Leadership, and Communication

*How Design Thinking Flourishes  
in an Organization*



## Intro

If you are thinking about implementing Design Thinking in an organization, or have already started doing so, it is important to realize that company culture is a crucial factor for the success of the endeavor. Its culture represents a company's underlying beliefs and assumptions, which drive employee behavior. On the one hand, there is the Design Thinking **process**, which provides a step-by-step guidance – especially for beginners – through which employees can learn new approaches to better understand user-focused problems and develop suitable solutions. The process can also be used temporarily for individual workshops and has only little impact on the overall corporate culture. On the other hand, Design Thinking is based on **principles** that can significantly impact corporate culture, such as, for example, how people approach problems, how they work across different departments, and how the outcomes are delivered. However, these principles need the right breeding ground to flourish and are realized positively for the employees and the company. In this chapter, we will focus on the following questions:

- *What kind of corporate culture does Design Thinking nurture?*
- *What essential aspects of leadership are needed when implementing Design Thinking?*

- *What is the likely future impact of Design Thinking on company culture?*

This chapter provides practical information and insights from research that will help you identify cultural characteristics that support Design Thinking, and highlight key leadership skills and attributes to successfully defend the implementation and spread of Design Thinking with tips and examples on how to foster and communicate Design Thinking values in the organization..

## Background

In the 2015 ‘Parts Without a Whole’ study, the authors emphasized that, independently from company size, the successful implementation of Design Thinking on a company level depends on how management promotes and enables it. Otherwise, success can stop at the team level. Rather than following the goal of managing and measuring Design Thinking and ultimately maintaining the status quo, i.e., adhering to the very paradigm that Design Thinking was originally intended to replace, leaders should act as role models and adopt an inspiring purpose and values-driven attitude. This is particularly important for establishing trust among employees on an individual level. Trust in the leadership and in the Design Thinking approach is paramount. Depending on the prevailing corporate culture, employees are either already accustomed to being able to experiment and encounter failure, whilst still deriving added value from learning to develop better solutions. Alternatively, employees may not be used to this way of working and not feel comfortable with it because the corporate culture has been based on control, perfection, and hierarchies. The reader should be aware that Design Thinking cannot be propagated as the ‘one true solution’, but that it can complement other agile *methods*\* used in organizations. To avoid losing sight of the reality of business needs, it is important to understand when it is best to use any specific method instead of arguing which approach is the better one.

However, the ‘Parts Without a Whole’ study did not specifically investigate leadership or cultural attributes with survey participants,

and accordingly, did not evaluate them either. The 2015 study was based on assumptions and secondary references regarding new demands placed on management and how employee behavior can change when applying Design Thinking at a corporate level. In the 2021 study, we set out to explore these aspects further to draw out more detailed insights and conclusions, and to make recommendations for their future corporate Design Thinking initiatives. We asked our survey participants specific questions about their company’s culture, its characteristics, leadership attitudes and attributes. These will be further explored next.



### \*INFO

**Design Thinking** adopts an empathic approach that places user needs at the heart of initiatives by asking questions about the specific issues that need to be solved. It **examines the ‘why’ of a problem**, emphasizing the importance of new ideas created and tested by teams through a series of user-centered activities. The objective of Design Thinking is to define a solution that meets the actual requirements of consumers.

The techniques deployed with **agile methods concentrate on the ‘how’ of project delivery**, breaking down the planning and scope of work into smaller chunks. Teams may make changes based on real-time input from testing, iterating and continually improving projects throughout the development process. (IBM, 2018)

## Characteristics of Company Culture to Nurture Design Thinking

Based on the findings and discussion of the 2015 study, the recent study also asked specific questions regarding the degree of impact of Design Thinking on company culture and leadership. In the current study 43 % of survey participants rated the impact of Design Thinking on the culture of their department/business unit as high or very high. However, 22 % didn't see any impact at all or only a modest one (Figure 36).

To more fully understand what kind of corporate culture these respondents identified in their company, we asked about specific cultural characteristics, following up on the insights from the thesis findings by Wolf, 2019, which identified, foremost, a positive attitude toward change which was seen as the cornerstone of enabling a positive impact of Design Thinking on the organization. In the 2021 study the 505 survey participants were asked whether they agreed with the following statement “To what extent do you think Design Thinking has impacted on your department/business unit culture?” on a 5-point Likert scale, from strongly disagree to strongly agree; multiple answers were possible. In order of the most agreed-upon characteristics, these are:

Figure 36: To what extent do you think Design Thinking has impacted on your department/business unit culture?

n = 237

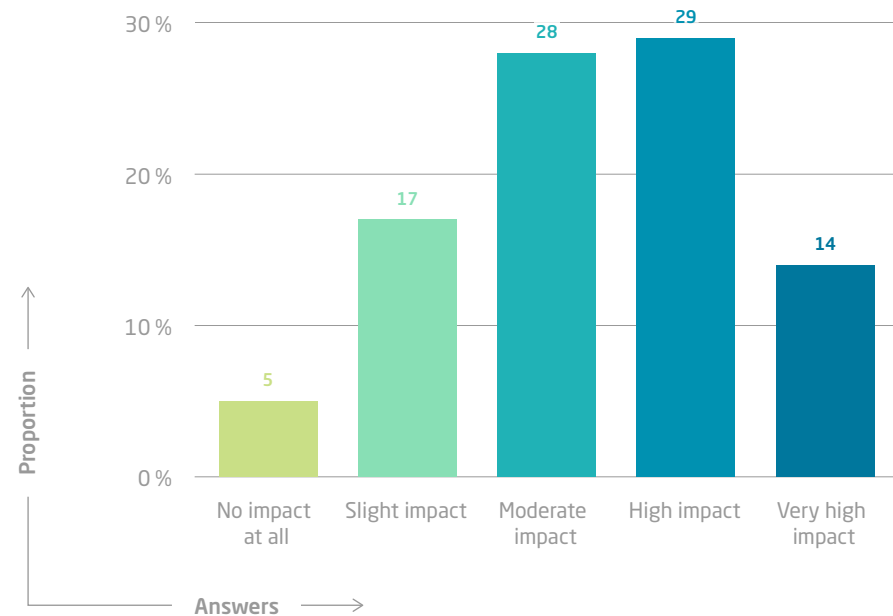


Table 17 Cultural characteristics in your organization. Multiple answers possible

n=505.

Cultural Characteristics	Description	Percentage %
<b>We have a culture that strives for continuous learning</b>	<i>An open mindset helps to <b>absorb new information and to use this ability effectively in projects</b>. Organizations can continuously improve existing products and services or internal processes since the environment and users' needs are constantly evolving.</i>	43 %
<b>We have a culture that builds on collaboration</b>	<i>Working <b>together, with shared responsibility for a team outcome</b> is mission-critical for Design Thinking projects. The team will be faster, and its members learn more quickly, because of their knowledge exchange and preparedness to learn from experience.</i>	41 %
<b>We have a culture that encourages self-initiative</b>	<i><b>Self-initiative enables team members to delegate responsibilities to everyone within the team</b> and not only to its leaders and managers. This allows to leverage the capability of entire teams, because everyone is responsible for its success and the process is sped up. Working as a team, individuals can perform faster and in a more agile manner.</i>	39 %
<b>We have a culture of open communication</b>	<i>36% of survey participants carry out open and honest communication. <b>Openly addressing challenges and finding solutions together or discovering the potential for new projects is an essential attribute</b>, but individuals often neglect it. This also applies to teamwork. Conflicts should be addressed openly and resolved early on to make positive use of the team's productivity.</i>	36 %

Cultural Characteristics	Description	Percentage %
<b>We have a culture that fosters empathy</b>	<i>An organization is a social entity with a common aim and connection to the outside world. Each company has its own distinct identity. A culture that fosters empathy and curiosity is perceived as very supportive of Design Thinking implementation. Note: sympathy does not equal empathy. "Walking in the shoes of your users" and immersing yourself in specific situations enables you to <b>understand and share the feelings for others</b>.</i>	35 %
<b>We have a culture that embraces experimentation</b>	<i>This is about <b>having the mindset of quick prototyping and experimentation</b>. It's not always about the best possible planning and highest quality from the beginning of the project, but about exploration and experimentation to stay curious and being open to new opportunities throughout the project.</i>	31 %
<b>We have a culture that encourages risk-taking</b>	<i>Risk-taking in an educated and confident manner and learning from failures to steadily improve still seems to be a cultural characteristic in earlier stages of development. However, encouraging <b>risk-taking means also experimenting and taking responsibility for yourself</b>. It enables true innovation because no one might have gone down this road before.</i>	27 %
<b>We have a culture of flat hierarchies</b>	<i>Design Thinking is an agile approach, in which you deal with <b>quick decision-making and quick results</b>. Strict hierarchies often prevent quick and open communication needed for fast decision-making. Flat hierarchies help to speed up communication and agile working on a daily basis.</i>	25 %

Cultural Characteristics	Description	Percentage %
<b>We have a culture that embraces playfulness</b>	<i>Playfulness and experimentation often go hand in hand, but survey participants rated this characteristic lower in their organizations. Playfulness doesn't mean flippancy but <b>being open to new ideas, encouraging curious, and being ready to improvise</b>, which are key attributes for agile working.</i>	22%
<b>We have a culture that embraces failure</b>	<i>Failure still appears to be seen as negative in corporate culture, as it is the lowest-ranked characteristic mentioned by the survey participants. However, failure shouldn't be understood in terms of 'lack of success', but rather failing with the assumptions one had at the start of a project. <b>Failures are important to learn from as a team and to develop further. Each failure should be treated as a 'learning success'</b> because the team did not integrate wrong assumptions into a solution. Interestingly the characteristic 'continuously learning' is ranked highest by participants. It shows that learning per se is seen as something positive.</i>	21%

Interestingly, aspects typical of innovation, such as risk-taking, playfulness, flat hierarchies, and embracing failure, came last in the survey. Culture does not only differ on a company level but also between countries. Different values traditionally characterize different cultures. For example, some cultures are more inclined towards risk-taking and feel more comfortable with a trial and error mentality. In other cultures, perfection and hierarchies are key values.

To give an example of the perceived cultural differences between different countries, we focused on the top 3 countries represented by the majority of survey participants\*: Germany, Switzerland, and the USA, who were distributed worldwide. We will highlight the cultural facets or aspects that are most controversial or even negatively perceived in each country.

*\* Unfortunately, we lack a sufficient number of participants from other continents or countries (e.g., Asia, South America, or Africa) to make a more international comparison. However, this could be an interesting approach for future research.*

**EXAMPLE**

Participants with headquarters in Germany (41 %) and Switzerland (19 %) gave very similar insights:

**We have a culture with flat hierarchies**

- 43 % of Germans (53 % of Swiss) agreed with the statement
- 39 % of Germans (40 % of Swiss) disagreed predominantly with the statement

### EXAMPLE

#### **We have a culture that encourages risk-taking**

- 37 % of Germans (33 % of Swiss) agreed
- 34 % of Germans (40 % of Swiss) disagreed

#### **We have a culture that embraces playfulness**

- 35 % of Germans (29 % of Swiss) agreed
- 43 % of Germans (38 % of Swiss) disagreed

#### **We have a culture that embraces failure**

- 32 % of Germans (23 % of Swiss) agreed
- 37 % of Germans (41 % of Swiss) disagreed

All other characteristics were moderately or predominantly agreed upon.

In contrast, participants with US headquarters (7 % of participants) by and large agreed upon all cultural characteristics from the overview, except for two:

#### **We have a culture of flat hierarchies**

- 31 % agreed
- 42 % disagreed predominantly

#### **We have a culture that embraces failure**

- 27 % agreed
- 42 % disagreed.

All other characteristics ranged from moderately to strongly agree (especially in terms of a culture of open communication 67 %, a culture that fosters empathy 72 %, a culture of self-initiative 92 %, and a culture of continuous learning 92 %).

The cultural characteristics in playfulness and risk-taking have the potential to being developed in German-speaking Europe in contrast to the USA. Especially if one equates playfulness with open-mindedness, curiosity, and the ability to improvise, these attributes can prepare a company with being more agile and responsive to unplanned events. It's a similar story with 'risk-taking'. If a company's goal is to innovate, it also involves taking risks and breaking new ground.

Nevertheless, the areas of 'flat hierarchies' and 'embracing failure' seem to be a somewhat controversial topic in all three countries. For many participants, these aspects are present in the company, but for many others they are not. Interestingly, according to U.S. participants, while organizations support risk-taking with 53 %, 42 % say they do not have a culture of failure. One could conclude that employees may take a risk, but that they have to take care not to fail, or at least be well prepared if they do.

Of course, you cannot pigeonhole companies. However, there seems to be a tendency that organizational culture has a role in facilitating the implementation of Design Thinking. Some corporate cultures show many attributes that are conducive to Design Thinking.



#### EXAMPLE

To increase Design Thinking, you could ask yourself the following questions in terms of the specific cultural values prevalent in your company:

- 1) *How do you or your company currently measure your employees' performance?*
- 2) *Are these measurements based on efficiency or on an increase of revenue?*

One option would be to try to change the reward system to incentives based on the cultural characteristics of Design Thinking, such as

- experiments or prototypes created, or
- new projects/challenges identified and openly communicated, or
- lessons learned and subsequently applied in your teamwork, etc.

As an indicator, you could challenge yourself as a leader: reframe your business needs to human needs and set actions to reach defined goals.

#### HYPOTHESIS

The more cultural characteristics that are typical for Design Thinking a company can identify, the more likely it is to implement the approach successfully.

Not all elements are expected to be perfect within your company, but what organizations should consider is how to **improve as a team and not only as an individual**. However, these cultural elements can only be successful if the leadership is also adopting these premises.

## Leadership Essentials for Design Thinking

In addition to the corporate culture, leadership also plays a critical role in adopting Design Thinking in an organization. Given the environment we all live in – a volatile, uncertain, complex, and ambiguous, VUCA for short – classic management approaches based on long-standing and rigid planning are often no longer deemed effective. Design Thinking can provide the necessary space to foster greater creativity, speed, and flexibility with which to consider unpredictable events more proactively. The IBM Institute for Business Value (IBV) launched its most extensive Chief Executive Officer (CEO) research project around the globe in 2021. This includes experiences from the Covid-19 pandemic and what CEOs and leaders learnt from its impact on the world. New opportunities have opened

up, including new business models, new expectations about remote working, and the acceleration of technology. *“From Asia to the Americas, the status quo evaporated both within and across industries. The future is murkier than ever – yet presents both new opportunities and new risks... Flatter, faster, and more flexible structures are succeeding”*  
\_ IBM 2021

The IBM study highlights one critical priority: agile ways of working need to be more focused and purpose-driven. Also, in our study, the leadership attribute, ‘purpose and value-driven’, is ranked #1. Agile approaches should include a clear focus on business outcomes and policies. These should have a clear emphasis on business goals and rules that show where innovation will lead to critical next-level benefits so that agile efforts result in tangible, beneficial improvements and real-world outcomes.

We asked our survey participants about attributes that were considered successful in applying an agile approach as part of Design Thinking. In addition to positive-sounding attributes, we also included in this list rather negative-sounding attributes, such as critical, hierarchical, controlling, and selfish, to counterbalance response tendencies in the survey instrument due to attributes that are formulated in a too one-sided manner and thus create spillover effects. The following attributes best describe the leadership in their department/business unit (multiple possible answers, n=222). In order of the most agreed-upon characteristics (2nd highest confirmation: agree), they are:



**Purpose- and value-driven: 45 %**

*Focus on business outcomes and added value to next-level advantages.*



**Feedback-driven: 41 %**

*Value customer and employee feedback - intelligent feedback, selected in real-time, and powered by AI.*



**Critical: 41 %**

*Constructive and respectful criticism on an individual and team level to improve processes and outcomes.*



**Empowering, enabling: 38 %**

*Proactive leaders care about their employees' well-being, even if it means sacrificing profits at first, e.g., when planning for the difficulties and possibilities that come with remote or hybrid working.*



**Trusting: 36 %**

*Trust on different levels and ultimately as a business advantage. Trust by/in: customers, team, technology, and business partners. To maximize the benefits of open innovation, partnerships must be trustworthy, secure, and reliable.*



**Explorative, playful: 32 %**

*An explorative leader is conscious of and at ease with the reality that they don't know what the future holds. Circumstances may force the leader to pivot on any given day to stay competitive and relevant.*



**Creative: 32 %**

*Think differently and support creativity: in terms of product and service creativity, but also to encourage and measure innovation and creative work.*

As a company, you may continuously generate, create, and develop innovative ideas that drive your business as a firm or you plan to restructure your company – e.g. in terms of digital transformation – but it’s also important to put activities in the context of fulfilling a purpose. The purpose is critical as leaders have to communicate effectively to their teams why they should work on a specific topic or participate in a particular endeavor.

This also applies to the use of new approaches such as Design Thinking:

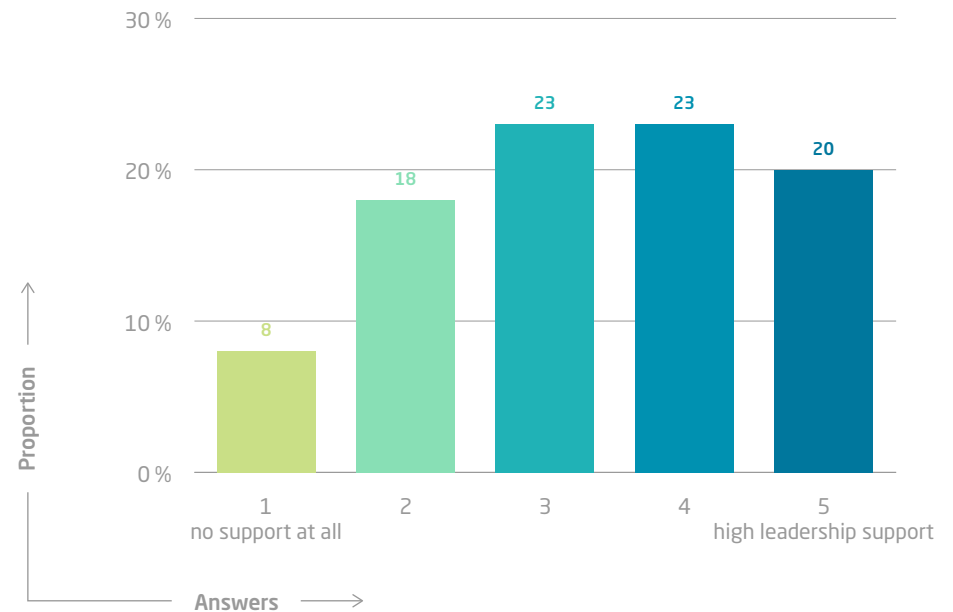
- *Why use Design Thinking?*
- *What is it good for?*
- *How can Design Thinking help achieve the company’s vision?*

The leadership role is to ensure that the initiatives are consistent with the strategic plan of the organization, prioritize them, and assign financial and human capital appropriately (McKinsey, 2015).

For these reasons we asked our survey participants to rate their leadership support regarding the implementation and practice of Design Thinking in their organizations. Participants rated their perceptions on a 5-point Likert scale from *no support at all* to *high leadership support* (Figure 37).

Almost half (43 %) of respondents felt that the leadership support for Design Thinking activities in their company was either high or very high. By contrast, 26 % did not feel supported by their leaders, and

Figure 37: Degree of leadership supporting the implementation and usage of Design Thinking at your organization  
n=222



23 % only felt moderately supported, which leads us to conclude that there is an obvious need for changing leadership styles in most companies. During the pandemic, ways of working have changed. While many companies are still in the process of adopting new working practices, this moment presents an ideal opportunity for making a long-lasting impact in terms of how leadership can support their employees in this change process.

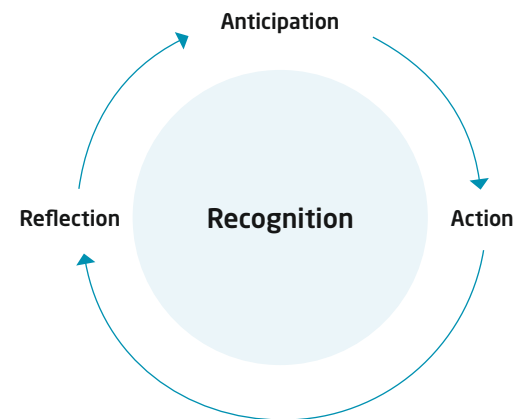
“A team lead, for me, needs to empower teams, maybe to have a strong vision so that the teams are kind of autonomous but aligned in the same direction of travel. You need to make sure that they decide in favor of the company or have a strategy or vision. Then a leader has to trust the team and be okay with us when something doesn’t work out. It’s a culture where your failures have to be accepted to a certain extent, at least.” Comparis, Product & Design Concept

Leadership should enable their teams to speak up, share their thoughts, take risks, and assume responsibility, with leaders acting as role-models. However, for the whole company to succeed requires a company culture with the relevant leadership skills mentioned previously, alongside an environment that supports trust and psychological safety, where all staff can share their ideas and understanding of the future, or a novel goal. Creative leaders are not only good at steering such teams in terms of changing behaviors and making them work, but also by enabling their teams to think both in a converging and a diverging mode,\* to reflect upon their learnings and integrate these new experiences into future tasks.

*\*There are two components to creative thinking: the production of novelty (through divergent thinking) and the assessment of novelty (via convergent thinking). Knowledge is fundamental in convergent thinking since it serves as a source of ideas, offers paths to solutions, and gives criteria for efficacy and originality (Cropley, 2006)*

Good leadership should involve:

- Taking **actions**, being explorative, curious, and open to new experiences.
- Taking risks and learning from failures. **Reflecting** and exchanging experiences from different viewpoints.
- **Anticipate** learnings in a new context and enhance future activities with wisdom from the past. **Informed Actions**.
- **Recognizing** individual and group learning, acknowledging each participant’s contribution to a project.



Graphic 01: Based on the Anticipation-Action-Reflection (AAR) Cycle, OECD Learning Framework 2030

The Anticipation-Action-Reflection (AAR) cycle is frequently used in Design Thinking teamwork to continuously learn and improve outcomes. It can help leaders establish Design Thinking principles and a mindset that embraces ambiguity, experimentation, and learning.

#### EXAMPLE

##### **Questions that can initiate Design Thinking projects:**

- What do we try to learn?

##### **In answer to questions such as:**

- What can we do to learn about it?
- How can we convert learnings into actions?

**TIP** Set up small projects for a limited period allowing team members to experiment and learn from them. Incorporate positive learning outcomes into work routines to improve step-by-step (Kaizen)\* instead of setting expectations too high and projects too broad.

*\*KAIZEN™ means improvement.*

*Moreover, it means continuing improvement in personal life, home life, social life, and working life. When applied to the workplace KAIZEN™ means continuing improvement involving everyone – managers and workers alike. The 5 principles are: Know your Customer, Let it Flow, Go to Gemba, Empower People and Be Transparent.” (Kaizen, 2021) originality (Cropley, 2006)*

**Statement:** By applying both converging and diverging modes of thinking creative leaders can help their teams to step outside the area of familiarity – their comfort zones – to support the creation of novel solutions.

Corporate cultures are often driven by plans and forecasts of what is likely to happen over the next 5 years – but this is no longer that simple. This is especially the case when it comes to challenges caused by so-called wicked problems that Design Thinking is applied to, where the available information is incomplete, contradictory or the number of stakeholders is heterogeneous and driven by different opinions, economic and social restrictions.

#### HYPOTHESIS

The more flexible leadership is in the planning and adoption phases, the more likely it is that the company can improve its performance.

For example, when communicating a goal to teams, they could be given several options of how to reach it, so that they can adapt to the constantly changing market environments. However, this does not mean the absence of any fixed structure or rules. Specific policies and procedures for communication, milestones, and timeboxing as goal oriented strategy can even support productivity and creative work.

## Future Impact of Design Thinking on Company Culture

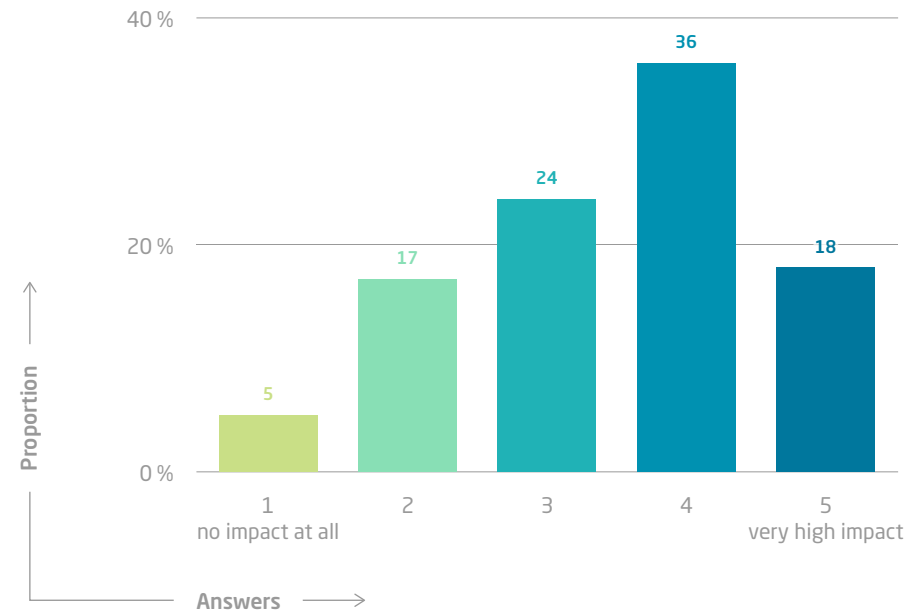
Since we also wanted to analyze our survey participants' thoughts about the future of the impact of Design Thinking on corporate culture, we asked them how strongly they would rate the influence that Design Thinking might have by 2023. A total of 207 participants shared their projections (Figure 38).

More than half (54%) of survey participants envision a clear impact on their corporate culture by 2023. This represents a significant increase of 26% since their 2021 impressions in terms of Design Thinking on respondents' company culture. Interestingly, the proportion of participants not seeing an impact or only a slight impact stayed constant at 22% in both surveys. For an impact to occur in 2023, various strategic questions should be asked and answered in the company, such as:

- *What does the company want to achieve?*
- *How can it get there?*
- *Where does the company currently stand in relation to its vision?*
- *Is the company ready for an agile approach like Design Thinking?*
- *Which projects/departments lend themselves to getting started or continuing with?*

Figure 38: In 2023, what will be the impact of Design Thinking on the organizational culture?

n = 207



- *How can the Design Thinking mindset be scaled up in the company?*
- *What might hold the managers/leaders/employees back from supporting Design Thinking?*

**TIP** Bring together people that share a similar mindset towards a specific problem. Set new incentives that are human needs-based and which support the kind of mindset that you would like to see growing in your company. Behavioral change takes time and effort. The motivation for applying new methods and principles should be rooted in positive experiences.

The agility of Design Thinking allows companies to react flexibly and confidently to unforeseen events. Meanwhile, this agile way of working is no longer limited to the world of business. Schools and universities are also starting to offer courses that are designed to enable participants to deal creatively with uncertainty and unpredictable events. Next generations of employees will be educated accordingly and start their jobs equipped with new skills and different expectations than previous generations.

It is essential that an understanding of the approach is spread more widely to enable Design Thinking to impact the broader corporate culture. An organization can achieve this through transparent communication to reach long-term acceptance by the employees. An initial 'hype' regarding a topic is undoubtedly helpful to support the initial introduction, but leadership should prepare and initiate a long-term implementation plan. Sometimes negative Design Thinking experiences arise out of ill-designed workshops, or the mismanagement of expectations of such trainings. Some companies even avoid the term 'Design Thinking,' although they use Design Think-

ing components to gain acceptance (see Strategy chapter). Therefore, companies that intend to introduce Design Thinking with a view to establishing it in the long term should think about a suitable communication and implementation strategy.

Examples of internal communication around Design Thinking to change the company's mindset include:

- Design Thinking spaces that are open to everyone.
- Light-house projects to communicate via newsletters, blog posts etc.
- Free access to (voluntary) introduction workshops on the topic.
- Regular quick and informal company get-togethers/exchanges, e.g., lunch roulette, where people have a break at the same time and draw names to have lunch together for meeting new colleagues randomly.
- Develop an internal Design Thinking community, incl. ambassadors in key positions with in-depth knowledge about the approach.
- External networking used to extend the Design Thinking community and allow regular exchange and inspiration across organizational and industry boundaries.

**“Working in agile, cross-functional teams is mostly a significant mindset shift, and only a little bit of it is around processes. If you talk about Design Thinking only as a process you’re not giving enough credit to it. The whole topic of Design Thinking is only one of several ways that helps our organization to change its culture and mindset.”** \_ Interviewee I3

A combination of different communication approaches is recommended to reach employees at all levels and demonstrate Design Thinking as a versatile approach – rather than a one-off workshop, which would offer the potential to enrich organizational culture and a sense of working towards the same goal.

**“Culture is not something you can touch. Culture is how you eat together at lunch, how you make decisions and strategies, how you launch products. Also, within HR, how you employ people, whom you employ, etc. We started to rewrite the profiles for open positions.”** \_ Interviewee I23

## Culture, Leadership, and Communication - Success factors and Challenges

The implementation of Design Thinking is influenced by organizational culture and cultural variations between generations, regions, and nations. We propose that leaders and executives embrace the transformation of corporate culture that Design Thinking requires to take hold in a company. In our interviews and survey results we also observed that the acceptance of Design Thinking is aided by an enabling and purpose-driven leadership style, excellent communication, community-building, and ambassadorship. Companies should break up silo thinking to overcome personal and organizational barriers. These changes may lead to new challenges and the adoption of a different kind of success factors. Also, every company is unique and has to adopt its own strategy for change. The previously mentioned characteristics and leadership attributes can certainly guide organizations intent on improving their creative leadership and enabling a Design Thinking supporting culture. The current-day environment is characterized by fast turn-overs and life-spans. If your company is planning for change, consider its current structures and management hierarchies. Analyze the goals of each layer and how changes are perceived at different levels, and develop a strategy to take people with you. Any agile strategy requires a clear focus on business objectives, policies and procedures that demonstrate how innovation may lead to crucial next-level advantages. Only then can agile initiatives result in tangible, positive outcomes and real-world consequences.



Table 18 Success factors for culture, leadership, and communication

Success Factor	Description	Further reading/expert references
<b>Culture of Experimentation</b>	<i>Nurturing a culture of experimentation, failure, and feedback to support innovation activities.</i>	<b>Design Thinking Comes of Age:</b> <a href="https://hbr.org/2015/09/design-thinking-comes-of-age">https://hbr.org/2015/09/design-thinking-comes-of-age</a> <b>Using Design Thinking to create cultural change:</b> <a href="https://www.innovationtraining.org/using-design-thinking-to-create-culture-change">https://www.innovationtraining.org/using-design-thinking-to-create-culture-change</a>
<b>Defining Own Terminologies</b>	<i>Establish a company culture with matching language, and avoid 'bad' Design Thinking experiences, e.g. ill-designed workshops that spread misinformation or raise expectations without adequate follow-up.</i>	<i>"Sometimes it's also a challenge because, you know, Design Thinking is a buzzword, and if you call it Design Thinking, people are skeptical sometimes, which also led us not even to use the term."</i> _ Interviewee I14
<b>Early Adopters</b>	<i>Finding the right ambassadors within the organization. Identify and support employees, who are intrinsically motivated to adopt Design Thinking methods and principles.</i>	<i>"We use people going through the academy program, internal or external, as scalable ambassadors who will bring this mindset into the organization. Because being creative is not a process as such, it's a mindset, it's a behavior, and that's what we're practicing within this community, so we have intense work on community activities within our organization, working with the size that we are."</i> _ Interviewee I2
<b>Employees as Internal Users</b>	<i>Promoting empathy towards internal and external 'users'. Employees should be deemed as important as customers to maintain morale and motivation.</i>	<b>Building a human-centered organization - Breaking down insights from 7 years of research and application:</b> <a href="https://www.ibm.com/design/thinking/page/hco">https://www.ibm.com/design/thinking/page/hco</a>
<b>Internal Promotion</b>	<i>Promoting Design Thinking internally through lighthouse projects, ambassador programs, or mentor programs to build trust towards the approach.</i>	<b>How do I tell them? Five steps for thoughtful communication in the transformation process:</b> <a href="https://www.meyerjohannes.com/how-do-i-tell-them-five-steps-for-thoughtful-communication-in-transformation-processes">https://www.meyerjohannes.com/how-do-i-tell-them-five-steps-for-thoughtful-communication-in-transformation-processes</a>
<b>Knowledge Sharing</b>	<i>Building a community for knowledge sharing and storytelling to spread Design Thinking throughout the company.</i>	<i>"I would be happy if every one of the Volkswagen employees is using at least the intro workshop for one day to learn how you could run a project. That would be one thing I would be pleased with, but then, in the long run, to have a community of like-minded, willing people, this is something which grows naturally from my point of view."</i> _ Interviewee I4

Success Factor	Description	Further reading/expert references
<b>Leadership Skills Matching Company Culture</b>	<i>Providing the right company culture with the right type of leadership skills that help to embed Design Thinking within a larger cultural and mindset change.</i>	<b>The right way to lead Design Thinking:</b> <a href="https://hbr.org/2019/03/the-right-way-to-lead-design-thinking">https://hbr.org/2019/03/the-right-way-to-lead-design-thinking</a>
<b>Supportive Cultural Characteristics</b>	<i>Building a design-led innovation culture, which enables continuous learning, collaboration, and self-initiatives.</i>	Elsbach & Stigliani (2018);  <b>Why Design Thinking should also serve as a leadership philosophy:</b> <a href="https://www.forbes.com/sites/forbesagencycouncil/2018/07/19/why-design-thinking-should-also-serve-as-a-leadership-philosophy/?sh=4e1341b65a90">https://www.forbes.com/sites/forbesagencycouncil/2018/07/19/why-design-thinking-should-also-serve-as-a-leadership-philosophy/?sh=4e1341b65a90</a>

Table 19 Challenges for culture, leadership, and communication

Challenges	Description	Further readings/expert references
<b>Existing Organizational Culture</b>	<i>Changing habits and traditions is a long-term process that organizations have to plan for accordingly and review continuously. Depending on the size of the company, you should expect that long-term impact may take between 3-7 years.</i>	Eddington et al., (2020);  <b>Implementing Design Thinking: Understanding organizational conditions:</b> <a href="https://journals.sagepub.com/doi/abs/10.1177/0008125619897606">https://journals.sagepub.com/doi/abs/10.1177/0008125619897606</a>
<b>Failure to connect Design Thinking to cultural change</b>	<i>Design Thinking might be associated only with the process or time-limited workshops, but the complete spectrum, including principles and behaviors, is not considered.</i>	<b>Design Thinking is a mindset, not a workshop:</b> <a href="https://www.hyve.net/en/blog/design-thinking-mindset/">https://www.hyve.net/en/blog/design-thinking-mindset/</a> <b>Why Design Thinking workshops don't work:</b> <a href="https://uxdesign.cc/why-design-thinking-workshops-dont-work-4f5a5cbe36a5">https://uxdesign.cc/why-design-thinking-workshops-dont-work-4f5a5cbe36a5</a>

Challenges	Description	Further readings/expert references
<b>Focus on traditions</b>	<i>Traditions have positive aspects and give stability, for example. However, a 'we've always done it this way' mentality and a fundamental refusal to change are barriers.</i>	<p><b>How to transform your organizational culture with Design Thinking:</b>  <a href="https://www.mjvinnovation.com/blog/how-to-transform-your-organizational-culture-with-design-thinking">https://www.mjvinnovation.com/blog/how-to-transform-your-organizational-culture-with-design-thinking</a></p> <p><b>The most dangerous phrase In business: We've always done it this way:</b>  <a href="https://www.forbes.com/sites/forbeslacouncil/2019/01/28/the-most-dangerous-phrase-in-business-weve-always-done-it-this-way/?sh=499c2b6c40f7">https://www.forbes.com/sites/forbeslacouncil/2019/01/28/the-most-dangerous-phrase-in-business-weve-always-done-it-this-way/?sh=499c2b6c40f7</a></p>
<b>Generational barriers</b>	<i>Some employees are more receptive to change than others, whether based on age or longevity in the company. Change resistance, and skepticism towards new ways of working undermines the introduction of Design Thinking.</i>	<p><b>5 ways to improve change management through Design Thinking:</b>  <a href="https://www.insidehr.com.au/change-management-design-thinking">https://www.insidehr.com.au/change-management-design-thinking</a></p>
<b>Hierarchy, Politics, and Power Dynamics</b>	<i>Internal structures and hierarchies can lead to individual power struggles for positions, control and protectionism. Organizations should consider current hierarchies strategically when restructuring.</i>	<p>Ishio et al., (2020);</p> <p><b>How Design Thinking can disrupt HR:</b>  <a href="https://www.aihr.com/blog/design-thinking-disrupting-hr">https://www.aihr.com/blog/design-thinking-disrupting-hr</a></p>
<b>Non-Supportive Cultural Characteristics</b>	<i>Risk aversion, difficulty to accept feedback, ambiguity and open outcomes.</i>	<p><b>How to use Design Thinking for better leadership, collaboration, and innovation:</b> <a href="https://www.experiencetolead.com/how-to-use-design-thinking-for-better-leadership-collaboration-and-innovation">https://www.experiencetolead.com/how-to-use-design-thinking-for-better-leadership-collaboration-and-innovation</a></p>
<b>Regional and National Cultures</b>	<i>The company culture, regional and national cultures play a crucial role in implementing Design Thinking. Different strategic approaches might be needed to establish a Design Thinking culture.</i>	<p>Thoring et al., (2014)</p> <p><b>The complete guide to cross-cultural design:</b>  <a href="https://www.toptal.com/designers/ux/guide-to-cross-cultural-design">https://www.toptal.com/designers/ux/guide-to-cross-cultural-design</a></p> <p><b>Organisational Culture - Compare Countries:</b>  <a href="https://www.hofstede-insights.com/product/compare-countries">https://www.hofstede-insights.com/product/compare-countries</a></p>

# Impact and Measurement

*Assessing the Value of Design Thinking to Organizations*

*Dr. Martin Schwemmler & Selina Mayer*



## Intro

Research and practitioners alike describe multiple benefits of implementing Design Thinking into organizations. This chapter describes ***the value that Design Thinking brings to organizations*** and, based on our research, how practitioners go about measuring this value. We answer the following three guiding questions:

- *What is the impact of Design Thinking on organizations?*
- *Which type of organizations measure Design Thinking?*
- *How do organizations measure Design Thinking?*

This chapter provides an overview of the impact of Design Thinking to organizations by exploring the areas where practitioners perceive a change through Design Thinking. Furthermore, we demonstrate how this change is currently assessed (or not) in organizations, understanding how measurement is used to support the implementation of Design Thinking by evaluating the added value Design Thinking brings to the organization.

## Background

Since the first study in 2015, many more companies have implemented Design Thinking and the topic of Design Thinking has further become a topic of academic inquiry. Using the same questions as in 2015 allowed us to compare results over time. To complement the results from 2015, we asked additional questions about specific impact areas related to the Design Thinking mindset, such as openness to change or a culture that is more positive towards failure. Furthermore, we added questions to better understand why practitioners decided to measure (or not) Design Thinking.

## What is the Impact of Design Thinking on Organizations?

An increasing number of organizations worldwide are applying Design Thinking, resulting in numerous Design Thinking initiatives and training (Carlgren et al., Rauth et al., 2014; Rauth, Carlgren and Elmquist, 2014; Liedtka et al., 2019; Micheli et al., 2019). Given the investments taken, many organizations seek to identify the impact of Design Thinking to evaluate the added value of these initiatives. Yet, studies investigating the impact of Design Thinking are scarce. This chapter, therefore, focuses on the impact of Design Thinking, offering insights from our study and ways of evaluating Design Thinking in your organization.

We asked our survey respondents about their *perception of the impact of Design Thinking in their organization*. In total, 235 respondents answered the question (see Figure 39). Multiple answers were allowed. There was little difference over time on overall perception of the impact of Design Thinking in organizations between the two studies (2015 and 2021). A positive change of the working culture is still seen as a major impact by 60 % of the respondents. However, we noticed a drop from 2015 to 2021 of 11 %. One reason could be that the expected or desired cultural transformation did not happen yet or as fast as expected. Another prominent impact mentioned in the studies was the integration of users and the efficiency of the innovation. In percentage terms, the highest changes occurred in relation to profit and costs: in 2021, 25 % of respondents (18 % in 2015) per-

ceived an impact of Design Thinking on their profitability and 30 % (18 % in 2015) stated that they ‘have the impression’ that Design Thinking helps them to save costs. Practitioners often struggle with the implementation of Design Thinking, as it is perceived as an additional task, especially in the beginning, taking up time and creating costs. These numbers suggest that applying Design Thinking can potentially help to increase profit and save costs. Previous research in large corporations, such as Siemens or IBM, has demonstrated such benefits (IBM, 2018; Appleyard, Enders and Velazquez, 2020). As Design Thinking not only brings new methods to organizations, but also changes the mindset of employees, the increase in the perception of the financial benefits between 2015 and 2021 could stem from the fact that Design Thinking needs time to be implemented before its effects on profit and cost savings actually occur. Another explanation could be that organizations now have better tools in place to assess the effects that Design Thinking has on financial performance.

While these numbers show that, even though there seems to be an increase in the perceived impact on profits and cost savings, between 2015 and 2021, *a much higher value seems to be attributed to soft outcomes*, such as working culture and the integration of customers into organizational processes, e.g., product development.

In 2021, the majority of respondents (in %) had the impression that Design Thinking creates impact through:

- *Making innovation processes more efficient (67 %).*
- *Improving working culture (60 %).*
- *Helping to integrate users more frequently (58 %).*

Given the strong increases seen between 2015 and 2021, regarding the impact of Design Thinking on cost savings and profitability, we were wondering what, in particular, has led to this increase, and whether the respondents' perception of positive impact could be backed up by hard data. If they reported measurements, how did the organizations go about measuring the impact of Design Thinking? We will address these questions in a subsequent section, but will first focus on the areas that were found to benefit the most from Design Thinking. In turn, we consider both process- and outcome-related factors, followed by internal factors, such as collaboration and engagement.

Figure 39: **What is your perception of the impact of Design Thinking in your organization?**

Multiple answers. n = 235

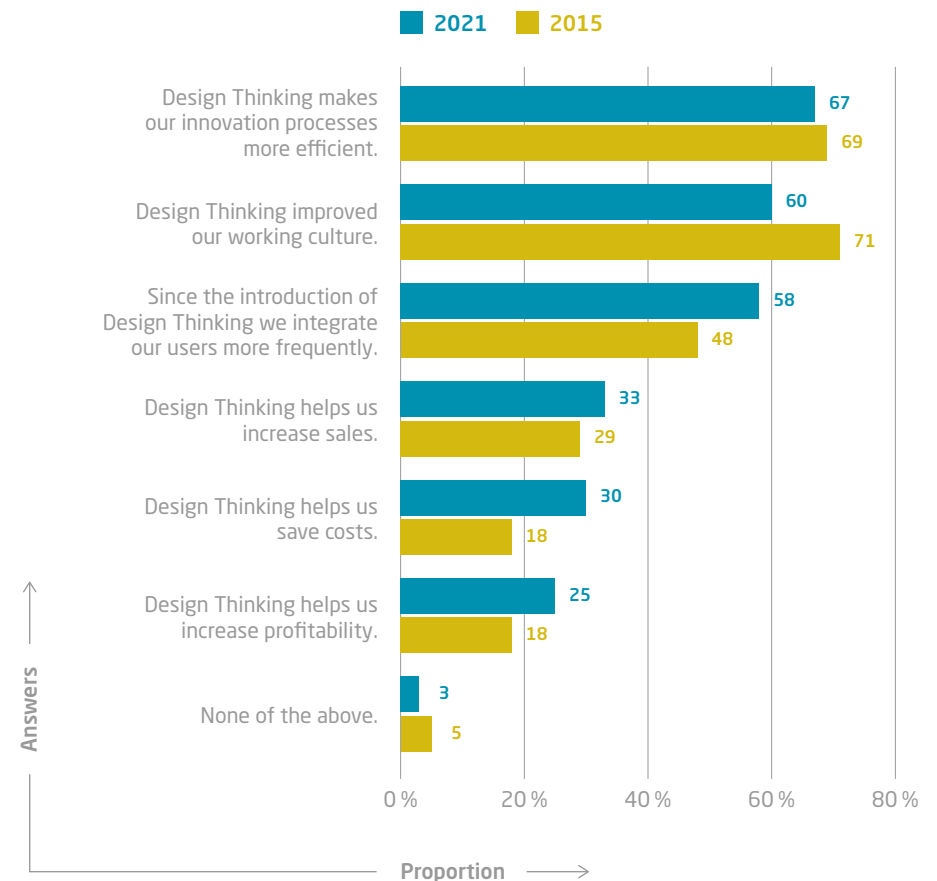
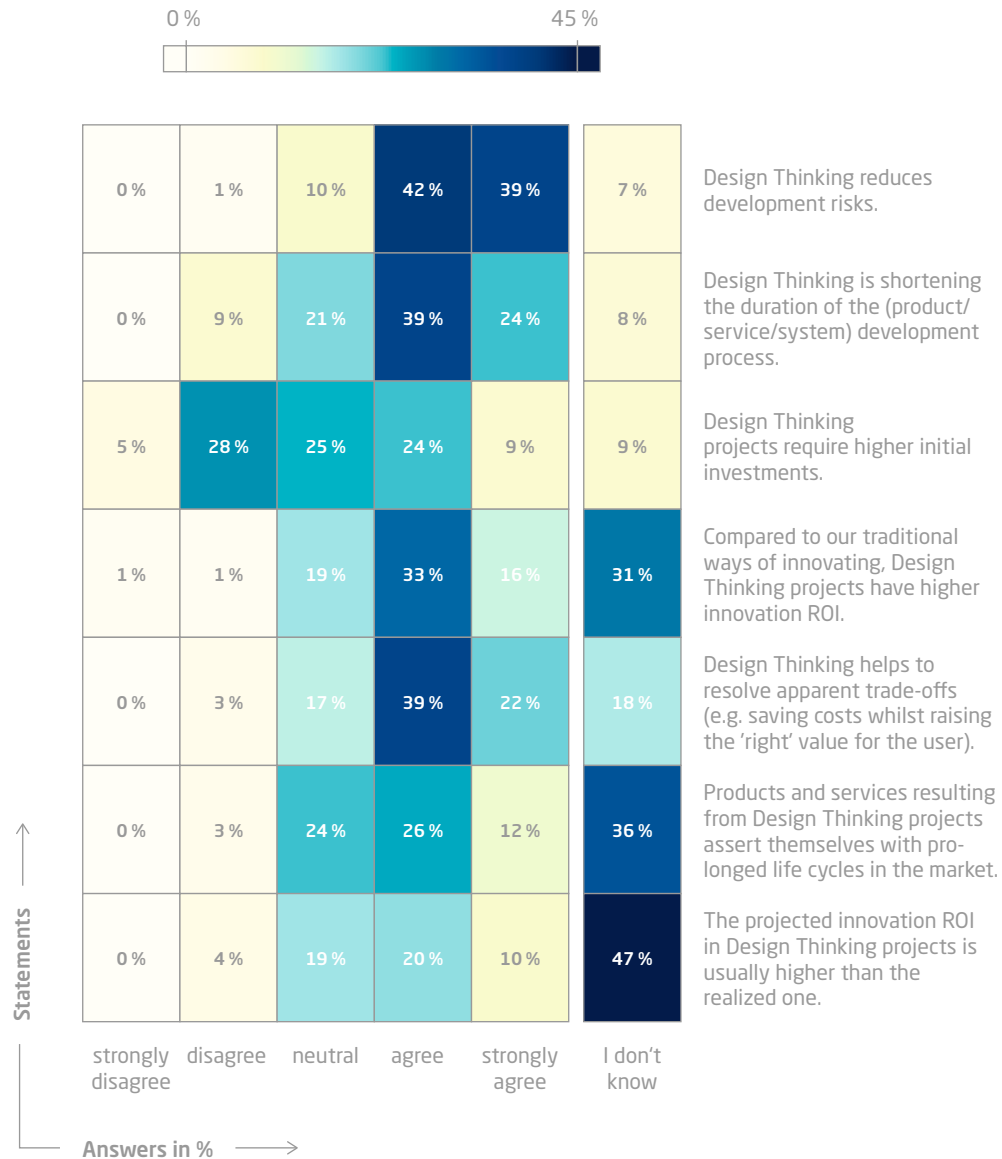


Figure 40: Areas impacted upon by Design Thinking.  
Do you agree with the following statements?  
n = 226



### Specific Areas of Impact: Process and Outcome-related Factors

We asked our survey participants about specific areas impacted by Design Thinking. In total, 226 respondents answered these questions (see Figure 40), indicating on a scale from 1 (strongly disagree) to 5 (strongly agree) whether and to what extent they had seen any impact in relation to seven respective suggested impacts:

The three most commonly mentioned outcomes of Design Thinking relate to risk management, speeding up the development process, and positive trade-offs:

- 81 % of all participants agreed or strongly agreed that *Design Thinking reduces development risks.*
- 63 % of all participants agreed or strongly agreed that *Design Thinking shortens the duration of the development process.*
- 62 % of all participants agree or strongly agree that *Design Thinking results in trade-offs, such as those between effecting cost savings and generating value for the customer.*

Whilst there was clear agreement about the areas with the highest impact, a very high proportion of participants were rather uncertain about how Design Thinking impacted on other areas, as demonstrated by the high number of proportion of 'don't know' answers.



These areas of *uncertainty about the impact* were:

- *The projection of the ROI of Design Thinking for innovation projects is higher than the realized ROI (47 % stated “I don’t know”).*
- *Products and processes developed with Design Thinking have longer life-cycles (36 % stated “I don’t know”).*
- *Design Thinking projects have a higher innovation ROI than traditional projects (31 % stated “I don’t know”).*

The survey also revealed *an ambiguous picture* with regard to participants’ assessment of whether Design Thinking projects require a higher initial investment. While 33 % of participants disagreed or strongly disagreed, the same proportion (32 %) agreed or strongly agreed, while another 25 % were neutral.

It is hardly surprising that these results present an ambiguous picture of the impact, given the measurable assessment of Design Thinking (e.g., costs, return); however *roughly 80 % of our participants reported that their organization does not at all measure the impact of Design Thinking* (further details will be provided in the next section). Comparing the participants whose organizations measure Design Thinking separately with those you do not, we get a clearer picture: Organizations measuring Design Thinking show higher rates of agreement and strong agreement over all seven areas, compared to those lacking any such measurement. Hence, and as can be expected,

measuring Design Thinking impact provides the foundation for assessing its overall impact, especially in terms of hard outcomes. More details on who measures and what are provided in the next section.

### Specific Areas of Impact: Internal Factors

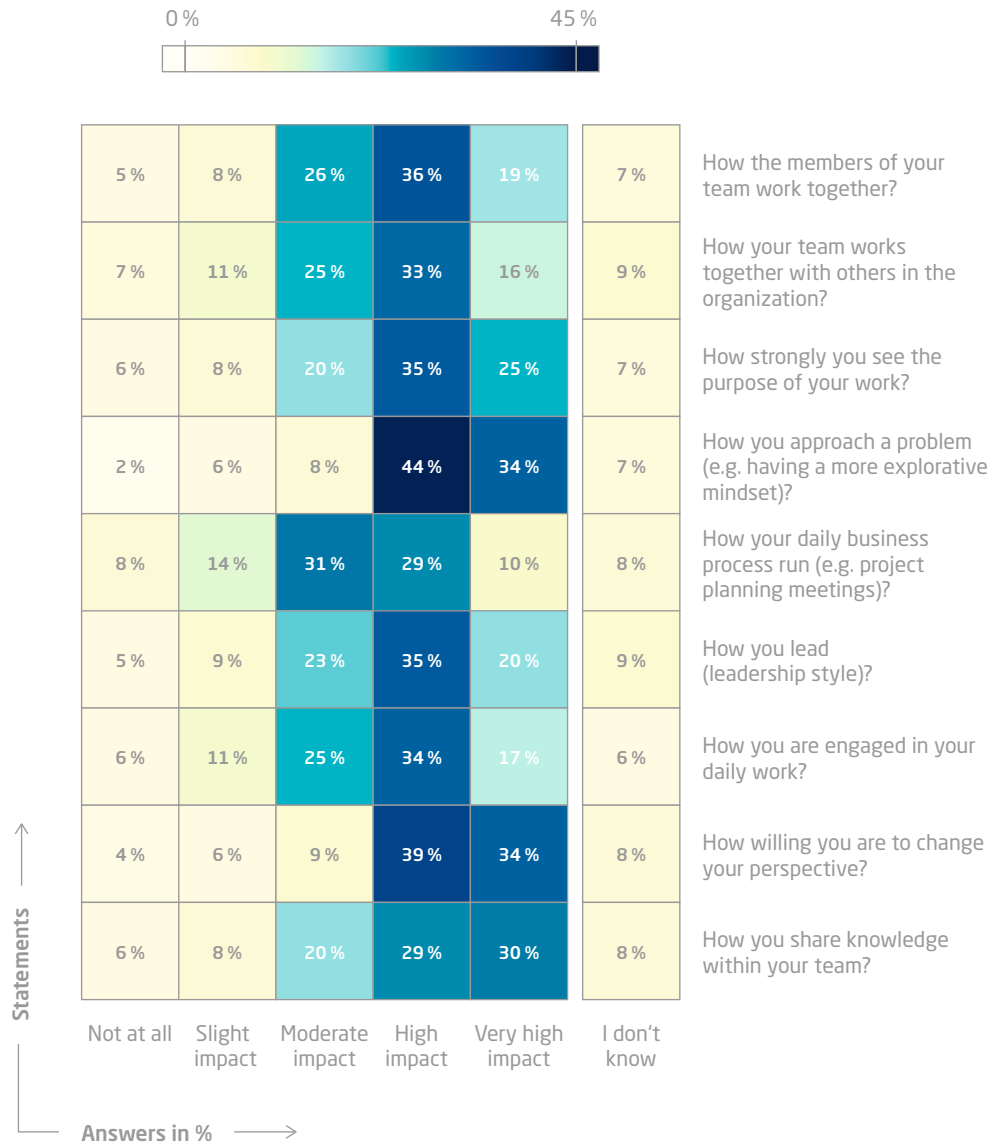
In addition to process- and outcome-related factors, we also asked about the *impact of Design Thinking on internal aspects*, such as practices of working together or changes of mindsets. Figure 41 shows an overview of all the internal impacts as perceived by respondents. For these nine questions, respondents could answer from 1 (no impact at all) to 5 (very high impact), and the additional option of indicating lack of knowledge: 6 (don’t know). The strongest impact of Design Thinking referred to a mindset shift, more specifically, the highest impact of Design Thinking was perceived to have changed:

- *How they approach problems (78 % mentioned a high to very high impact).*
- *How open practitioners are to changing their perspective (73 % see a high to very high impact).*

These results are in line with the ongoing discussion about similarities and differences of Design Thinking compared to other agile methods. While there are many overlaps between them, the exploratory and human-centered nature of Design Thinking is often highlighted as its distinctive feature (Rhinow, 2018).

Figure 41: Internal attitudes and practices impacted upon by Design Thinking. How strongly did Design Thinking impact on...

n = 236



In a similar vein, more than half of all respondents rated the impact of dt as high or very high on:

→ *Seeing a clear purpose in your work (60 %).*

→ *Knowledge sharing (59 %).*

→ *Leadership style (55 %).*

→ *Working together (54 %).*

→ *Being engaged at work (52 %).*

These results reflect **the effects of Design Thinking to foster 'real' collaboration** instead of just cooperation, a leadership style embracing coaching, and a strong orientation towards understanding people's needs. These effects reach beyond one's team, since 49 % reported experiencing a high or very high impact on working together with others in the organization (49 %). However, since respondents were aware of the aim of this study, results might include a slight overestimation due to social desirability. Nevertheless, we believe these results also reflect the strategic goals of implementing Design Thinking, as it is seldom implemented to reduce cost, but rather to change the way of working within organizations.

A considerable number of respondents perceived either no or little impact of Design Thinking on, for instance:

- *Daily business processes (22 % reported no or only a negligible impact).*
- *Working together with others in the organization (18 %).*
- *Sense of higher engagement at work (17 %).*

This might stem from the fact that for most respondents, Design Thinking is not applied throughout the entire organization, but only in certain departments or projects.

**Statement:** *We can conclude that Design Thinking practitioners report the impact of Design Thinking in the areas of the development process ('hard outcomes') and a mindset shift caused by Design Thinking ('soft outcomes').*

#### HYPOTHESIS

The role of Design Thinking in transforming organizational culture and fostering a mindset that is open to change might be as important as supporting innovations as such.

## Which Type of Organizations Measure Design Thinking?

In this study, 43 out of a total of 231 respondents (19 %) confirmed that their organization monitors and evaluates the success of Design Thinking activities, in contrast with 81 % that do not. To better understand these numbers, we delved deeper into finding out who is (and isn't) involved in evaluation, and whether the perception of people who have specific measures in place differs from those who do not:

- *Overall, 19 % of all practitioners monitor their Design Thinking endeavors, whereas 81 % have no monitoring or evaluation in place.*
- *The **industries with the highest proportion** of Design Thinking monitoring in our study were:*
  - *Information and communication sector (41 %).*
  - *Professional, scientific and technical activities (19 %).*
  - *Financial and insurance activities (16 %).*
- *More practitioners **from smaller companies (38 %)** implement some form of measurement than those from larger companies (17 %).*

However, there seemed to be little, if any, difference between different types of organization. Whether the respondents worked for a profit oriented, a non-profit, a governmental or any other type of or-

*ganization*, the pattern matched the overall numbers of roughly one fourth of respondents who had measurements in place.

Within organizations, we looked at differences according to the departments in which Design Thinking was applied. It is important to recall that multiple answers were possible, since Design Thinking can be applied in multiple departments in the same organization. According to our survey, *Finance & Accounting* is the most represented department that monitors Design Thinking activities, with 33 % of respondents reporting it for those departments. This may well be due to the nature and practices of monitoring and evaluating expenditures and revenues that is the purpose of these departments. Interestingly, one might expect to see similar trends in IT departments, as they tend to work with data. Yet we did find that only 15 % of IT departments have adopted Design Thinking monitoring, which is actually slightly below the average of all departments.

Looking at the size of organizations, we expected to find that the proportion of organizations monitoring and evaluating Design Thinking might be smaller for small compared to large organizations. However, we did not find this in the data. While 38 % of practitioners in small organizations (10–49 employees) reported to use measures for Design Thinking, this was only the case for 17 % of practitioners in large organizations ( $\geq 250$  employees). The difference in organizations' size could be related to the fact that smaller companies implement Design Thinking more centrally, while larger organizations

tend to have more distributed initiatives. Therefore, smaller organization might find it easier to set up monitoring systems.

We also looked at organizational age, i.e., whether respondents from younger or incumbent organizations might have a higher fraction of measuring Design Thinking than older organizations, but could not identify any such pattern. Comparing the youngest third of organizations in the data (20 years and younger; 32 % of respondents) with the oldest third (older than 100 years; 31 % of respondents) reveals that, on average, 18 % of young organizations and 15 % of old organizations are monitoring Design Thinking.

### Differences in the Assessment of the Impact and Success of Design Thinking

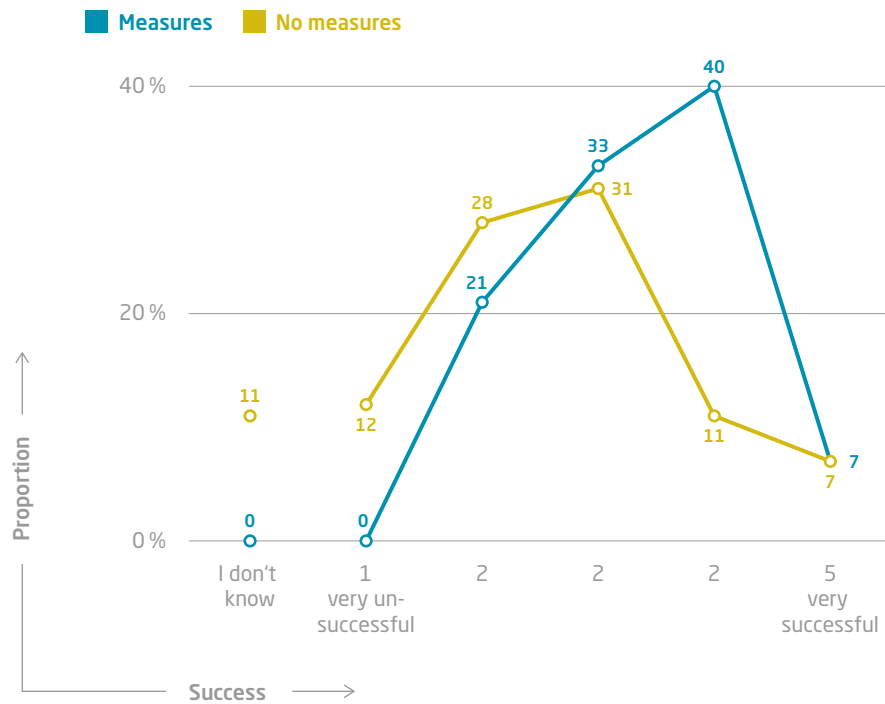
In addition to discovering patterns in the characteristics of survey respondents in organizations, we also looked into whether the difference between monitoring and non-monitoring organizations is reflected in people's perception of the success of Design Thinking in their organization. The differences are shown in Figure 42.

The data shows a clear difference:

→ *All respondents who considered Design Thinking to be implemented (very) unsuccessfully do not have any monitoring in place.*

Figure 42: Differences in the assessment of Design Thinking success and Impact

n = 231



→ On the other hand, people who did monitor Design Thinking were more likely to view the Design Thinking implementation as successful (i.e., 40% who did compared to 10% who did not).

Since these numbers are only descriptive, we cannot say if higher (perceived) implementation success is linked to monitoring or whether the existence of systems in place (and the top-management pressure associated with it) leads to a higher (perceived) success of Design Thinking implementation. Nevertheless, this pattern would support either of these two causalities.

**Statement:** We can conclude that the monitoring of Design Thinking is not yet widely practiced.

**HYPOTHESIS**

Monitoring Design Thinking positively affects how the success of its implementation is perceived.

## How do Organizations Measure Design Thinking?

We asked respondents to describe what exactly they measure, when and how. An overview of the findings can be seen in Figure 43. Within the group of study participants who monitor the impact of Design Thinking, we found **two major types of measures**:

→ *Human-centered measures*

→ *Innovation-focused measures*

We also found a difference in **how** they were measured, in terms of:

→ *Hard outcomes*

→ *Soft outcomes*

### What do Organizations Measure?

In alignment with the nature of Design Thinking, the first and largest type of measurements mentioned are **human-centered measures**. With this cluster, we refer to aspects such as customer satisfaction, feedback from clients, number of interactions with clients, quality of insights from customers, customer loyalty, net-promoter score<sup>1</sup>,

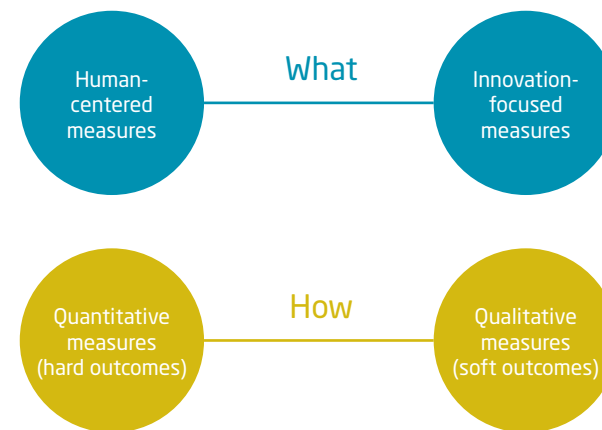
<sup>1</sup> *net-promoter score* (= the ratio of promoters to detractors) is a performance indicator suggested by Reichheld, 2003 but also to measures with a focus on outcomes for 'internal' staff, such as staff retention and employee engagement. On the other hand, we found a second group of **measures related**

**to innovation outcomes**, including the assessment of the innovativeness of ideas, number of ideas, innovation rate, sales of innovated products, and innovation speed (time to market).

*"I could not think of a KPI with which we could now really measure it. One of the things is also that the maturity level of our organization is not high enough to be measured. However, there are a few things which you could measure, overall employee satisfaction. Do people feel empowered? Do people feel that individually and as a team they are able to contribute in a significant way to the business results?"*

\_ Interviewee I20

Figure 43: Measurement dimensions



*“We’ve got a couple of KPIs but not one on raising people’s awareness of Design Thinking. We are focused on refinancing ourselves, so we got our internal staff cost and with every project we need to work against those costs, so to speak. This is our major KPI. Then of course we’ve got our KPIs, especially the feedback we get, on the projects we are running. After every project (‘s completion), and in between, we are asking how people are satisfied with our work, with communication, results, and so on, so we can bring that on board. For me a very important KPI is the diversity of the team, so who has joined the team recently, and what is the spread of staff in terms of diversity of backgrounds.”*

\_ Interviewee I4

### How do Organizations Measure Design Thinking?

Concerning the ‘how’ of measurement, respondents describe the use of **hard and soft outcomes**. For the soft outcomes, many respondents mentioned a need for more qualitative measures, but were rather unspecific about what exactly they meant. In Table 20 we give examples of soft and hard outcomes that were measured.

These findings are in line with current research, showing that measurements found in Design Thinking projects can be categorized mainly as customer-oriented or financial metrics (Mayer, 2021). Furthermore, current research indicates that practitioners face multiple challenges when measuring Design Thinking, such as, for example, how to demonstrate the value of soft outcomes, where hard metrics are unsuitable (Mayer, Haskamp and De Paula, 2021).

Table 20 Examples of soft and hard outcomes

Hard outcomes measured	Soft outcomes measured
- net-promoter score	- evaluations from feedback sessions in workshops
- ROI (Return of Investment)	- customer feedback
- number of sales	- estimation of project success
- development cycle time	- qualitative assessment in retrospective meetings
- number of successful projects	
- number of workshops conducted	
- number of ideas generated	

*“We established a stream with which we measure strategically, the net promoter score and operationally the customer experience on every interaction with an important product. With that you can do almost everything. Once you see the strategic direction of a product and that is not how it should be you can start responding to it. We compare strategic solid designs with what happens in reality and then put new measures up all the time. You also need an internal measurement so that you can measure it before something comes on the market. On a strategic level, we apply the customer-centricity score as internal measure which was the same level as the net-promoter-score. On the culture level, more operationally, we measured how people feel with the per-*

*spective of using all the skills and underlying principles that Design Thinking offers. We have a software, which we call Pulse KPI, which is fun to use and it doesn't take more than seven minutes. Teams can say how they are and whether they can do a great job with the agile Design Thinking principles. We put agile together with design, and this is very good because it's transparent to everybody. That's the first measurement ever that is transparently sharing such data. Now you can see which teams are happy in what way, and you can see the qualitative feedback of whether they're happy to do a great job. That of course, puts a soft pressure on the team leads because if you are several times in the lower range, something is probably not working."*

\_Interviewee I23

### Measurement in the Future

Measurement is a topic of interest to Design Thinking practitioners and might become even more so. While only 19 % of the 2021 study respondents reported that their organization does measure the success of Design Thinking, 50 % expected Design Thinking to be measured by the year 2023. In an open question format, we asked the other half (that did not expect Design Thinking to get measured) about the reasons. We found **differences in the levels of awareness and intentionality**, as displayed in Table 21. Roughly, respondents can be categorized into three types, depending on their attitudes towards measurement:

→ Unaware – blind spot

→ Aware – but unclear on how to measure

→ Aware – but do not want to measure

Table 21 Reasoning for not measuring

Unaware - Blind Spot	Aware - but unclear on how	Aware - do not want to measure
<ul style="list-style-type: none"> <li>- Never Considered Measurement</li> <li>- Too early in implementation process to measure</li> </ul>	<ul style="list-style-type: none"> <li>- Measurement perceived as difficult</li> <li>- No resources allocated</li> <li>- Not clear how to single out Design Thinking as a working mode when other approaches are in place as well</li> </ul>	<ul style="list-style-type: none"> <li>- Design Thinking is everywhere and therefore not measured separately (success of organization like profit is success of Design Thinking)</li> <li>- Measuring Design Thinking is contradicting the holistic and open nature of Design Thinking</li> <li>- People believe in Design Thinking and do not need 'proof'</li> </ul>



First, we discovered that some people had not even considered the possibility of measuring Design Thinking, either because they had ‘never thought about it’ and are unaware of this option. A larger portion of survey participants was partly aware, but found that, since they were still very early into their projects or the overall Design Thinking implementation, they did not consider measurement as applicable right now and might consider it later. While this argument seems logical at first glance, it is also problematic. In order to understand impact at a later point in time, measures need to reflect the organization’s goal. Not knowing what to measure in the beginning might indicate that it is also unclear what the desired achievement should look like, which might impede any later impact assessment.

The largest group of respondents was aware of the potential of measurement, had the intention to leverage it, but were unclear on how measurements could be applied to Design Thinking. There was a general sense of difficulty, but also some more specific reasons, such as lack of time or budget allocation for measurement activities. In addition, one key challenge for measuring Design Thinking seemed to be the question of how to single out the Design Thinking approach when it is tightly connected to other approaches, such as SCRUM or Lean Startup, but also if it was implemented as mindset and not easily distinguishable from the overall corporate culture.

As 50 % of respondents expected to find measurement to be in place by 2023, there were still 50 % who didn’t anticipate any such measurement in the foreseeable future. A small number in this group

might be covered by the unawares described above, while the majority seemed *to be aware of the possibility of measurement*, but did not intend to do so. Here we see practitioners with a high maturity of Design Thinking in their organizations seeing Design Thinking as ‘pervasive’ and being present everywhere and at the core of the organization, therefore being unable and unwilling to separate the impact of Design Thinking from the overall performance of the organization. Others did strongly believe in its impact, because they did “feel a positive impact” and saw no need to back this up with measurements. And lastly, some were opposed to measurements as they see them as contradicting the open and holistic nature of Design Thinking.

*“It (measurement) is an interesting factor. We have been testing that unsuccessfully over the last couple of years. We haven’t found a golden middle, where you say, hey, where can we grab and put a number on mindset and capability changes? It’s an ongoing topic where we’re behind and have been looking into, to say, okay, what actually makes the difference? What would that be, what are the crucial relevant numbers?”* \_ Interviewee I2

***Statement:*** *Overall, Design Thinking measurement is a controversial topic. Right now, less than 20 % of respondents measured their Design Thinking activities. While 50 % of all respondents planned to measure Design Thinking in the future, that still left over 50 % not planning to do so, indicating that many do not see the application of measurements as applicable or desirable to Design Thinking.*

**HYPOTHESIS**

The availability of more suitable measurement systems is likely to increase the willingness of practitioners to measure Design Thinking.

## Success Factors and Challenges

Overall, we identified eight success factors and challenges when it comes to the impact and measurement of Design Thinking. These factors are based on the reporting of practitioners in this study as well as matching insights from recent literature. An overview of these factors and the respective literature is presented in the following tables. They do correspond with findings from previous research, such as for example the success factors identified by Wolf (2019).

Table 22 Success factors for impact and measurement

Success Factors	Description	Further reading
<b>Reconsidering success</b>	<i>In particular in times of transformation, a mindset shift or change in how people collaborate and communicate might be equally as important as creating innovative products for the market.</i>	Mayer, S., Schwemmler, M., Nicolai, C., & Weinberg, U. (2021)  Haskamp, T., Mayer, S., Lorson, A., & Uebernickel, F. (2021)
<b>Accepting that Design Thinking can be measured and showing willingness to do so</b>	<i>Some respondents described a strong aversion to measurement, referring mainly to classical, often financial KPIs. Seeing measurements as a valuable tool might be a first step to finding a fitting approach to prove the value of Design Thinking.</i>	Haskamp, T., Lorson, A., de Paula, D., & Uebernickel, F. (2021)  Haskamp, T. (2021)
<b>Taking a broad measurement approach, reflecting hard and soft outcomes, as well as human-centered and innovation-focused.</b>	<i>Using existing measurement systems mainly based on hard measures creates a misfit especially with the exploratory nature of Design Thinking. Including soft factors as well as other management control systems might be more appropriate.</i>	Mayer, S., Haskamp, T., & De Paula, D. (2021)
<b>Connecting measures with the reason behind implementation (strategic fit)</b>	<i>Understanding the impact of Design Thinking means connecting the initial goal with later outcomes. Therefore, it is crucial to consider measurements as early as possible, in the initial implementation stages.</i>	Marx, C., Haskamp, T., de Paula, D., & Uebernickel, F. (2021)

Table 23 Challenges for impact and measurement

Challenges	Description	Further reading
<b>Overseeing major effects of Design Thinking impact</b>	<i>Focusing on established KPIs that are easy to measure might lead to overlooking the added value that Design Thinking is bringing, for example to the transformation of organizations.</i>	Mayer , S., Schwemmler, M., Nicolai, C., & Weinberg, U. (2021)
<b>Investments in Design Thinking are hard to justify based on soft and fuzzy outcomes alone</b>	<i>Currently, most incumbent organizations rely on financial justifications for implementing new initiatives, such as Design Thinking. Exploratory endeavors with open outcomes are hard to 'sell' in a classical business mindset.</i>	Mayer, S. (2021)
<b>Long term effects need time to become visible</b>	<i>Starting with Design Thinking as an early exploration tool leads to long periods of time until potential positive effects become visible when looking at financial factors such as product sales.</i>	Mayer, S., Haskamp, T., & De Paula, D. (2021)
<b>Non-availability of suitable measures and management systems</b>	<i>The perception of the unavailability of suitable measurement options impedes the search and development of finding fitting approaches.</i>	Mayer, S., Haskamp, T., & De Paula, D. (2021)

# Salary

*How Much do People Working  
in Design Thinking Earn?*



## Intro

Salary is one of the first things job seekers pay attention to, and is a motivating factor for many. Equally, remuneration is one of the ways that companies use to attract talent. So what kinds of salaries can applicants and human resource departments expect for Design Thinking practitioners? Apart from pay, transparency about company practices, values and culture, and non-salary benefits are all becoming increasingly relevant. Design Thinking is a user-centered approach that addresses future-oriented issues such as, for example, the environment people interact in, how systems treat people, and diversity. Disclosing pay rates is one way of ensuring that an employer is committed to excellence and parity. Information about what a position is worth is more likely to encourage applications from well-qualified and committed candidates. Besides money, non-monetary benefits, such as a company valuing diversity and the ability to work remotely, can also be important drivers for job candidates.

In this chapter, we will look at the following questions:

- *How do environmental factors influence salaries in Design Thinking?*
- *What impact does Design Thinking expertise have on salaries?*
- *Are there gender pay differences?*

The general factors that primarily influence the salary – work experience, education, company size and industry, region, and gender – apply equally to Design Thinking.

## Background

Salary development reports are available for different countries, industries, and age groups. However, there is no comparable data so far regarding salaries in the area of Design Thinking. To achieve a meaningful amount of data, we set a relevant question about pay as a voluntary option at the end of our global survey. We asked comparable questions about salary in two Design Thinking MOOC's on Open HPI. Further information about the two surveys can be found in the Research Design chapter. We analyzed a total of 918 answers for this chapter. About 31% of the respondents were female, and 69% male. This gender distribution is also consistent with the global survey. Besides gender, we also compared salaries by country, industry, academic degree, and length or level of Design Thinking experience to guide employers and employees on the matter of future salary expectations.



## Factors That Have an Impact on Salary

In addition to survey respondents working in Design Thinking, our data showed that many other factors determine the final salary.

- **The region:** Countries, but also regions within a country, have a significant impact on salary. Salaries can vary greatly depending on the location of companies, policies (e.g., minimum wage), and cost of living.
- **The type of industry sector exerts a significant influence on salary:** For example, wages are less lucrative in administrative and support services, and the highest salaries are found in mechanical engineering, pharmaceuticals, or the automotive industry. The reason for this is the strength of sales in the industry. This also applies to the area of Design Thinking.
- **Company size and age:** Large and long-established companies often pay higher salaries than small firms. However, as large companies tend to be less flexible, due to their more complex decision-making processes, organizations are often keen to introduce Design Thinking to break down this complexity and become more agile. The bigger the company, the higher the logistical effort when introducing and maintaining Design Thinking initiatives.
- **Employees with people management responsibilities:** depending on the professional position and industry expertise, there are substantial differences in salaries between employees with and without people management responsibilities, even within the same industry.
- **The higher the educational degree and the higher the Design Thinking expertise level, the higher the wage.** In our study, the following applies: For each higher level of academic degree, survey participants earn up to about 10 % more than those at the previous level. The same applies to Design Thinking expertise levels, accounting for an average jump of around 10 % per level.
- **Lack of qualified personnel:** A shortage of skilled workers has a substantial impact on income, such as Design Thinking. If companies require skilled workers in a specific area, they are willing to pay higher wages to attract them.
- **Gender Gap:** One can observe a gender gap in the innovation sector across countries, industries, academic levels, and levels of Design Thinking expertise, with women earning 16 percentage less than men.

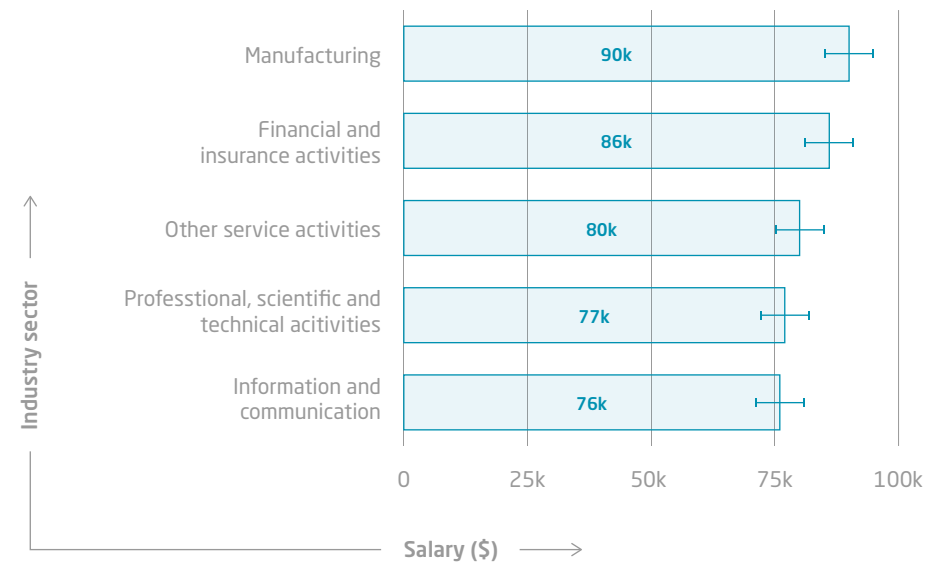
## Environmental Factors on the Salary

The country and region where a company is placed play an essential role when it comes to salary. The more (especially large) companies are located in an area, the higher the average income and the higher the costs of living. In Germany, for example, many large organizations have their headquarters located in the southern regions. Stuttgart, for example, is known for its automotive, high-tech, and consumer goods sectors, Frankfurt for its airport and financial sector, Hamburg, in the north of Germany, for its harbor, media houses and consumer goods firms.

Let's take a closer look at the industry-specific differences in salaries. We can see a clear divergence that job applicants and organizations (and HR departments) can use to guide their salary decisions. Applicants can refer to the relevant industry-specific salary differentials published regularly for each country. To do this, we compared the salary information provided by the 918 survey participants as gross-salary income in a free text field in US\$ by the top 5 industry sectors they selected. The average Design Thinking salary for these industries is as follows (Figure 44).

One can see that Design Thinking is also subject to classic industry-specific salary trends. Between Information and Communication, which had the lowest salary average of the top 5 industries at \$76,000, and Manufacturing, which had the highest salary average at \$90,000, there is an 18-percentage point gap between the two sec-

Figure 44: Average Design Thinking salary by industry sector  
Confidence level of 95 %. n = 918



tors. It means that one should inquire about industry salary trends when setting salary expectations. Wages in some specific industries dealing with Design Thinking are lower than in others. The cause for this is the industry's high sales volume. Besides, the industry itself, the job content, (personnel) responsibilities, and specific qualifications are just some of the factors that also explain salary differences.

The same applies to an employee's Design Thinking experience to fulfill particular tasks, e.g., hosting introductory workshops compared to a strategical roll-out of Design Thinking, which requires sound knowledge and more significant logistical expertise to accomplish on a big scale. Higher salaries can be a reflection of an industry and the complexity of the tasks. Even if we were to control for all of the above causes, we found in a regression analysis that the industry variable still had a significant effect on salary.

Based on the responses of 918 participants, we also compared the top 5 industry average incomes in US\$ by gender<sup>1</sup>. Selecting the top 5 with a response rate of at least N < 30 participants each, we had in total 638 male (69%) and 280 female (31%) participants. To enable a salary comparison, we based the figures on the actual number of each gender as a percentage, which leads to the following overview on the right.

<sup>1</sup> gender options in the survey were: female, male, diverse, and 'I don't want to specify'. Diverse, and 'I don't want to specify' had non or less than 1% of indication.

We found gender-based pay differences in some of the industries. We observed differences in payment between 2–4 percentage points between women and men, which is comparatively low, compared to the Design Thinking gender pay gap we discovered in relation to other salary factors. Only the information and communication sector stands out with a difference of 23 percentage points between women and men. Knowledge factors, such as education and Design Thinking expertise levels, could also influence the salary, such as information and communication, which we will look at next.

Table 24 Top 5 Design Thinking industry average incomes in US\$ by gender

n=918

Industry	Average Design Thinking Salary	Average Design Thinking Salary for Men	Average Design Thinking Salary for Women	Gender Difference in Average Design Thinking Salary
<b>Manufacturing</b> total N=101 men n=81 (13%) women n=20 (7%)	\$90.000	\$90.000	\$87.000	3%
<b>Financial and Insurance activities</b> total N=77 men n=58 (9%) women n=19 (7%)	\$86.000	\$87.000	\$83.000	5%
<b>Other service activities</b> total N=108 men n=70 (11%) women n=38 (14%)	\$80.000	\$81.000	\$79.000	2%
<b>Professional, scientific and technical activities</b> total N=134 men n=93 (14%) women n=41 (15%)	\$77.000	\$78.000	\$74.000	4%
<b>Information and Communication</b> total N=257 men n=184 (29%) women n=73 (26%)	\$76.000	\$81.000	\$62.000	23%



## Influence of Knowledge on Salary

In addition to environmental influences, levels of education and expertise also had a high correlation to salary. We also compared the self-assessment for each industry section to further analyze differences in the participants' Design Thinking knowledge to explain a potential income difference. Results are shown in Table 25:

There can be substantial differences even within an industry depending on professional position, personnel responsibility, and industry expertise. Nevertheless, one can notice a difference in pay by gender, which is not due to the distribution of the different self-assessment levels, as they are balanced between men and women.

Table 25 Design Thinking self-assessment vs. top 5 industry vs. gender by an actual participant distribution based on gender

male=638 / female=280

Design Thinking Self-Assessment	Manufacturing	Financial and Insurance Services	Other Service Activities	Professional, scientific and technical activities	Information and Communication
<b>Beginner/Female</b>	13 (5%)	14 (5%)	27 (10%)	21 (8%)	44 (16%)
<b>Beginner/Male</b>	52 (8%)	37 (6%)	39 (6%)	52 (8%)	121 (19%)
<b>Intermediate/Female</b>	5 (2%)	3 (1%)	6 (2%)	13 (5%)	21 (8%)
<b>Intermediate/Male</b>	22 (3%)	14 (2%)	19 (3%)	29 (5%)	59 (9%)
<b>Advanced/Female</b>	2 (1%)	2 (1%)	3 (1%)	5 (2%)	6 (2%)
<b>Advanced/Male</b>	6 (1%)	7 (1%)	11 (2%)	11 (2%)	4 (1%)
<b>Expert/Female</b>	-	-	2 (1%)	2 (1%)	2 (1%)
<b>Expert/Male</b>	1 (< 1%)	-	1 (< 1%)	1 (< 1%)	-

We were again able to determine in a regression analysis that the various self-assessment levels – Beginner, Intermediate, Advanced and Expert – significantly influence salary development. In the top 5 industries, men and women were also evenly distributed in percentage terms to the actual number of participants from each group. One must keep in mind that this representation is limited. There is no information about, for example, work content, working hours (e.g., full- or part-time work), or additional areas of responsibility. To give an example, information and communication is a comparatively young industry for women, which has seen increased growth in recent years. However, different factors can lead to different job choices in regards to industries, e.g., tastes and preferences for job attributes like risk and competition, social contribution and money, or gender identity and social norms (Cortes & Pan, 2018). In addition to the Design Thinking self-assessment that we surveyed – in which there were no significant differences in the distribution between the genders – the length of on-the-job experience can explain the lower salary values. In terms of educational attainment (Statista, 2021), women in Germany are on a par with men. So, this should not be an

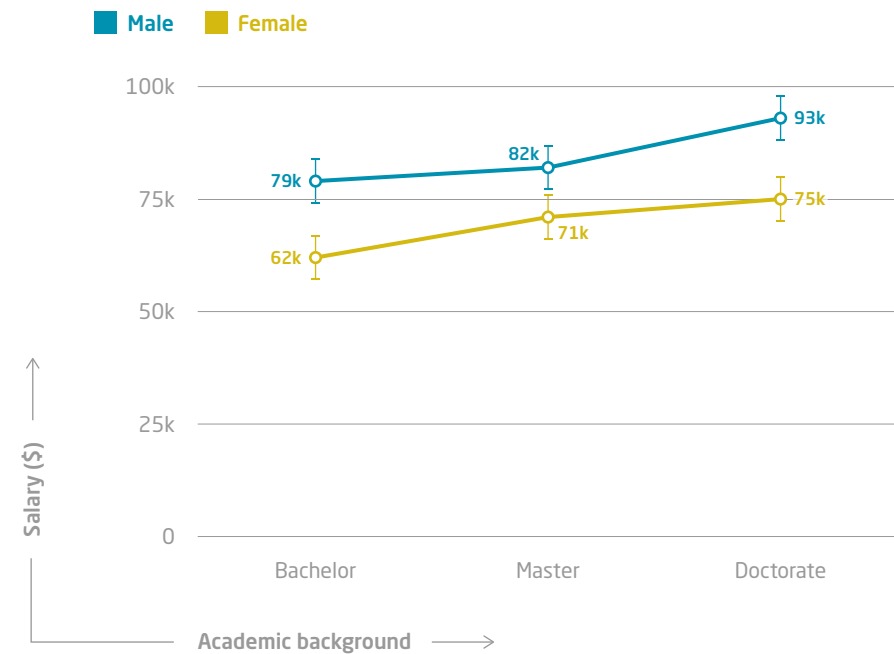
explanation for the (noticeable) pay gap. Additional knowledge factors other than Design Thinking self-assessment within an industry can also influence salary developments, such as academic qualifications and Design Thinking experience in years, which we will elaborate on further.

The 918 survey participants indicated their academic degree\*, which was cross-referenced with the average wage they indicated and their gender (Figure 45).

*\*in the survey, the participants had the choice between Bachelor, Master, Doctorate, Professor, and Others. As Professor and Others had a deficient number of participants, we excluded these options from the overview.*

Figure 45: Average Design Thinking salary vs. academic degree vs. gender

Confidence level of 95 %. n = 819 (918 in total. The two categories 'Professor' and 'Other' are not shown here)



For both genders, we observe a roughly 10 percentage point increase per academic degree in the salary differences. However, we can also still identify a difference between a man's and a woman's salary within each category of academic degree level. On average, a difference of 16 percentage points was observed between men's and wom-

en’s salaries when comparing differences between Bachelor, Master, and Doctorate degrees. We also looked at the gender distribution of 638 men and 280 women based on their academic degrees and made the following observation:

Higher education is particularly relevant for people who are just starting out in their professions. In our study, women had a slightly higher level of education/qualifications than their male counterparts, which is also confirmed by a large-scale OECD study (OECD, 2021a). Job experience and the learning of new skills becomes increasingly important as one progresses one’s career. Since various factors can also strongly influence the salary of a graduate, e.g., the field of study and specialization, we again found in a regression analysis that the academic degree, on all levels of bachelor’s and

Figure 46: Gender vs. academic degree  
n = 819 (918 in total. The two categories ‘Professor’ and ‘Other’ are not shown here)

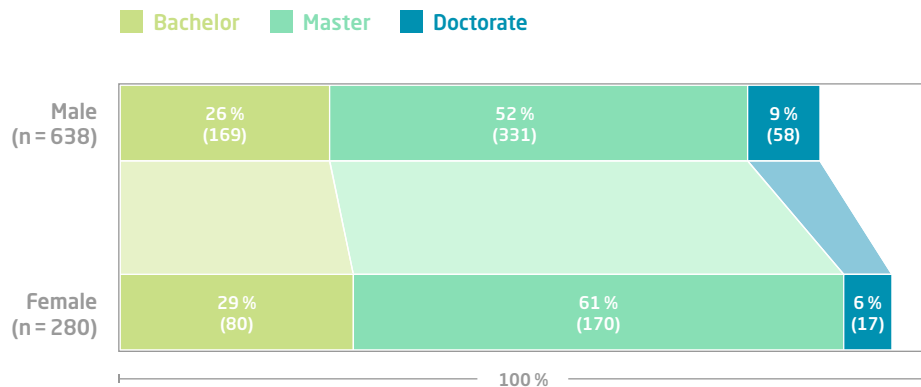
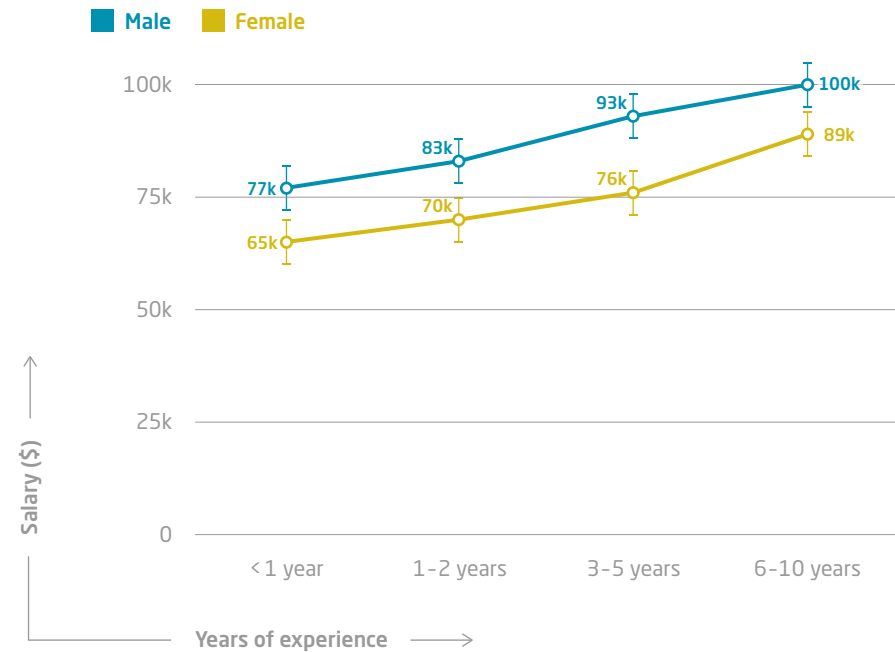


Figure 47: Design Thinking salary vs. Design Thinking experience vs. gender

Confidence level of 95 %. n = 918



master’s and doctoral degrees, had a significant influence on salary. Since we have already related the Design Thinking self-assessment to the industry in the study, we also wanted to bring in the temporal assessment – for how many years the participants had been employing Design Thinking and how they classified their expertise. We compared this assessment with the salary development according to

the data on expertise, average Design Thinking salary, and gender provided by the 918 survey participants (Figure 46).

The increase from one expertise level to the next translated into, on average, a 10 percent higher salary. We also observed a difference of 16 percent between men's and women's average Design Thinking salaries when comparing the different levels of Design Thinking experience with each other. Again, the regression analysis also confirmed a statistically significant relationship between salary and number of years' experience in Design Thinking.

In the Training and Development chapter, we calculated the average time of how long survey participants in each expertise level had worked with Design Thinking. In terms of salary, this gives the following indication when looking again at the gender distribution of 638 men and 280 women by respective levels of Design Thinking expertise (see table 26 to the right).

The salary levels based on level of experience and expertise can give both employees and employers a guide to pitching salary negotiations for job entry and subsequent salary negotiations at higher job levels with increased Design Thinking experience, for example, after having developed one's knowledge in Design Thinking over a certain number of years and risen to the next level of expertise.

Also, considering that the participants of the global survey expected to see a future company-wide increase in the use of Design Thinking in all divisions – especially in Operations & Manufacturing or in

Table 26 Average salary by level of Design Thinking expertise and gender

n=918

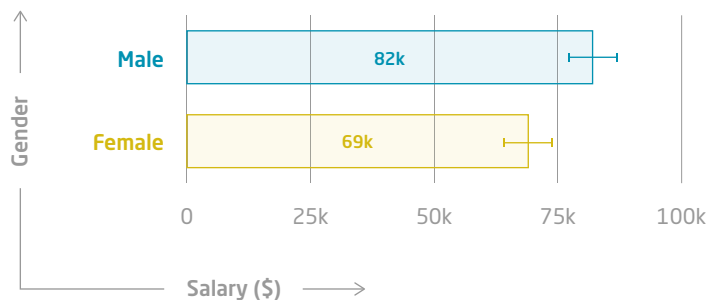
Design Thinking Expertise Level	Average time working with Design Thinking	Average Salary	Average Man Salary	Average Female Salary
<b>Beginner</b> male n=404 (63%) female n=183 (65%)	1 year	\$75,000	\$80.000	\$65.000
<b>Intermediate</b> male n=182 (29%) female n=63 (23%)	3 years	\$80,000	\$83.000	\$72.000
<b>Advanced</b> male n=48 (8%) female n=27 (10%)	5 years	\$87,000	\$91.000	\$81.000
<b>Expert</b> male n=4 (1%) female n=7 (3%)	8+ years	\$97,000	\$106.000	\$93.000

Finance & Accounting (see organizational anchoring chapter) – one can assume a future increase in the salary development of employees who are professionally trained in Design Thinking in addition to other skills.

## Gender Gap in Design Thinking

Based on this survey we found a gender-specific difference in Design Thinking salaries. We compared the gender and salary information of the 918 survey respondents (Figure 47), where 31 % were women and 69 % men. On average, the difference in salaries and gender without a third cross-correlation also shows a difference between men's and women's wages of 16 percentage points.

Figure 48: Average Design Thinking salary by gender  
confidence level of 95 %. n = 918



Even though multidisciplinary teams and diversity are important aspects of Design Thinking, one can also see an imbalance in the salary structure between women and men in this discipline. Research shows that many companies need to catch up in terms of equality in management positions and salaries (Sander et al., 2018; Bmfsfj 2020). The distribution between men and women (Figure 48)

Figure 49: Professional background vs. gender  
n = 918

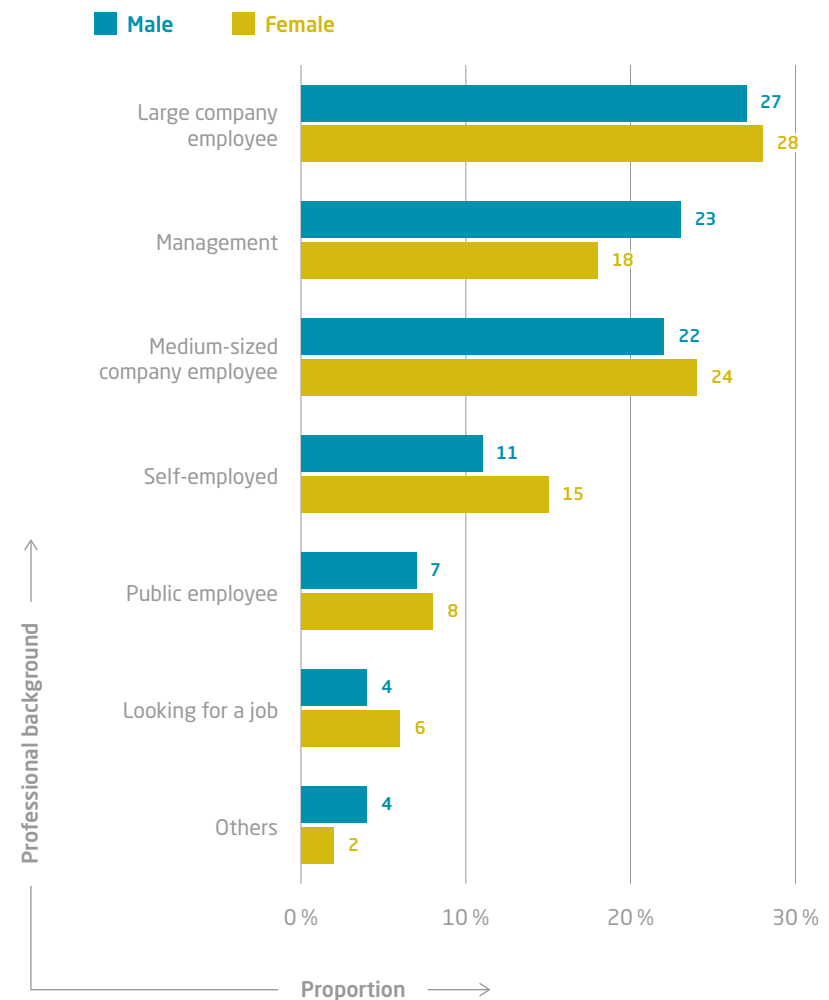


Table 27 Distribution of participants by professional background and gender

n=918

Gender	Management	self-employed	large company employee	medium-sized employee	looking for a job	public employee	others
<b>Male (n=638)</b>	148 (23%)	70 (11%)	175 (27%)	143 (22%)	23 (4%)	55 (7%)	24 (4%)
<b>Female (n=280)</b>	50 (18%)	42 (15%)	77 (28%)	66 (24%)	17 (6%)	23 (8%)	5 (2%)

in management positions (2/3 of all survey participants stated that they were in management) is representative of the statistical distribution of management positions in Germany and Switzerland, with only every third management position being occupied by a woman (Destatis, 2020; Bfs, 2020). This distribution is different to the USA, where almost every second leadership position is held by a woman (Kfw Research, 2019). We asked survey participants for their professional background and compared this to their distribution by gender (Figure 49). Most participants worked as employees in medium- and large-sized companies. Once again, we extrapolated the percentages to the number of participants among men (638) and women (280) to ensure better comparability.

From this overview, we can observe a difference of five percentage points for female survey participants who worked in management positions, compared to men, which was confirmed by a regression analysis as having a significant effect on salary. We found four percentage points of difference between female and male participants who are self-employed. The distribution of genders in the profession-

al work areas is relatively balanced; however, we can also see that the work background itself has a significant impact on salaries.

Whether in a job or performance review or simply networking, self-promotion is a critical strategy for career growth. However, it is not something that everyone feels at ease with. According to a study by Exley & Kessler (2021), men are considerably more comfortable with self-promotion than women, resulting in a wide gap in promotions and salaries. Despite having the same average score, women continually assessed their performance on a test lower than men. We wondered if women might have rated their Design Thinking self-assessment differently to men, which would further explain the gender pay gap (In the Training and Development chapter, we have already pointed out the need to review the actual Design Thinking work experience in terms of, e.g., project work instead of looking only at the years of experience). We cross-checked the survey participants' self-assessment with their Design Thinking experience and gender – for a total of 638 men and 280 women (Table 28).

Table 28 Design Thinking self-assessment vs. Design Thinking experience vs gender

n=918

Gender	Beginner	Intermediate	Advanced	Expert
Female - 1 year	<b>158 (56%)</b>	17 (6%)	2 (1%)	-
Female - 3 years	21 (8%)	<b>24 (9%)</b>	5 (2%)	-
Female - 5 years	1 (< 1%)	16 (6%)	9 (3%)	1 (< 1%)
Female - 8+ years	3 (1%)	6 (2%)	<b>11 (4%)</b>	<b>6 (2%)</b>
Male - 1 year	<b>346 (54%)</b>	42 (7%)	2 (< 1%)	-
Male - 3 years	37 (6%)	<b>64 (10%)</b>	9 (1%)	1 (< 1%)
Male - 5 years	9 (1%)	46 (7%)	<b>19 (3%)</b>	1 (< 1%)
Male - 8+ years	15 (2%)	20 (3%)	18 (3%)	<b>2 (&lt; 1%)</b>

There was little difference between men and women in our survey in terms of self-assessment regarding Design Thinking experience. They rated their Design Thinking experience in terms of time and their self-assessed level of expertise relatively equally. Of course, this self-assessment could look differently regarding actual performance, which other studies often aim to do. Still, in terms of experience and expertise level in Design Thinking, we cannot find any gender difference that could explain salary differentials.

The OECD calculated the gap in median earnings for men and women in comparison to men's median earnings for full-time workers. For the 37-member states, the median is 13 %. The figure for Switzerland is 15 %, for Germany 15 %, and for the USA 19 % (OECD, 2021b). Regarding the Global Gender Gap Report 2021, it would take 135.6 years to narrow the global gender gap if existing trends were to continue. Covid-19 has made this development even worse. Whereas before the pandemic, it took a global average of 99.5 years to compensate for this situation, we currently need 36 more years. Pre-existing gender disparities have exacerbated the problem asymmetrically between men and women, including the fact that women have been at the forefront of crisis management as critical staff. Women also work more frequently in the low-wage sectors and unpaid work, such as house-duties, childcare, and elderly care than men, to combine family and work. Lockdowns and accelerated digitalization have had the most impact on industries where women are frequently employed. The crisis has stalled progress toward gender diversity in many economies and sectors, particularly when combined with the additional demands of delivering care-giving roles at home (World Economic Forum, 2021).

## Success Factors and Challenges

The transparency of business processes, the behavior of a company towards the environment (e.g. in terms of sustainability) and its employees, and individual performance are becoming increasingly important for both employees and employers in the “war for talents” (McKinsey, 2021). Design Thinking is a user-centered approach that addresses future-oriented questions such as how people interact with their environments, like organizations, ecosystems, social settings, and the diversity of needs within these systems. A future-oriented company should take this into account for its salary policy and make no distinction between genders. A company that strives for a positive corporate culture, and aims to create a safe and collaborative environment should not risk causing dissatisfaction through non-transparency of salaries.



Table 29 Success factors for salary

Success Factors	Description	Further reading
<b>Equal Gender Distribution on Job Roles</b>	<i>Design Thinking promotes diverse teams for various reasons. A company, which incorporates Design Thinking into its corporate culture should consider a mixed distribution of genders for, e.g., leadership positions.</i>	<b>Using Design Thinking to fight gender bias in the workplace:</b> <a href="https://deloitte.wsj.com/articles/using-design-thinking-to-fight-gender-bias-in-the-workplace-1536638533">https://deloitte.wsj.com/articles/using-design-thinking-to-fight-gender-bias-in-the-workplace-1536638533</a> <b>The gender gap in employment: what's holding women back?</b> <a href="https://www.ilo.org/infostories/en-GB/Stories/Employment/barriers-women#persistent-barriers">https://www.ilo.org/infostories/en-GB/Stories/Employment/barriers-women#persistent-barriers</a>
<b>Non-Monetary Benefits</b>	<i>Non-monetary benefits such as a safe and collaborative company environment, based on acknowledgment, development, and support.</i>	<b>Rethinking total rewards for the post-COVID era:</b> <a href="https://www.mckinsey.com/business-functions/organization/our-insights/the-organization-blog/rethinking-total-rewards-for-the-post-covid-era">https://www.mckinsey.com/business-functions/organization/our-insights/the-organization-blog/rethinking-total-rewards-for-the-post-covid-era</a>
<b>Personal Development</b>	<i>Leaders nurture teams on a personal level: mentorship (career advice and coaching); sponsorship (leaders being the advocates for their employees in the company); advocacy (well-being of employees).</i>	<b>Design Thinking - Crafting the employee experience:</b> <a href="https://www2.deloitte.com/us/en/insights/focus/human-capital-trends/2016/employee-experience-management-design-thinking.html">https://www2.deloitte.com/us/en/insights/focus/human-capital-trends/2016/employee-experience-management-design-thinking.html</a> <b>13 Ways To Regularly Support Your Employees' Personal Development:</b> <a href="https://www.forbes.com/sites/forbescoachescouncil/2017/05/31/13-ways-you-can-regularly-support-your-employees-personal-development/?sh=4a05e5904647">https://www.forbes.com/sites/forbescoachescouncil/2017/05/31/13-ways-you-can-regularly-support-your-employees-personal-development/?sh=4a05e5904647</a>
<b>Salary Transparency Based on Job Levels</b>	<i>Transparent communication about salaries for different job levels. A company can show a range of salaries for a job level and show this to their employees to increase fairness in payment and to motivate them.</i>	<b>Transparency Is Key To Removing The Gender Pay Gap:</b> <a href="https://www.forbes.com/sites/adigaskell/2021/03/08/transparency-is-key-to-removing-the-gender-pay-gap/?sh=3b6137e066c3">https://www.forbes.com/sites/adigaskell/2021/03/08/transparency-is-key-to-removing-the-gender-pay-gap/?sh=3b6137e066c3</a> <b>This company published employees' salaries online. Did it make pay more equal?</b> <a href="https://www.theguardian.com/us-news/2020/feb/05/buffer-company-published-every-employee-salary-online-pay-more-equal-gender-gap">https://www.theguardian.com/us-news/2020/feb/05/buffer-company-published-every-employee-salary-online-pay-more-equal-gender-gap</a>

Table 30 Challenges for salary

Challenges	Description	Further reading
<b>Equal Treatment - Reconciliation of Family and Working Life</b>	<i>Women often fill jobs in the low-wage sector because they lack the necessary training or because it is easier to reconcile family and career. Companies should take over responsibility and enable their employees to combine family and career, e.g., equal parental leave of women and men and affordable childcare.</i>	<b>Gender Equality:</b> <a href="https://www.oecd.org/gender">https://www.oecd.org/gender</a> <b>Women in the workplace 2020:</b> <a href="https://www.mckinsey.com/featured-insights/diversity-and-inclusion/women-in-the-workplace">https://www.mckinsey.com/featured-insights/diversity-and-inclusion/women-in-the-workplace</a>
<b>Industry Differences</b>	<i>Companies can only offer a specific salary based on the sales volume. Different industries have a diverse range of wages, which should be considered in negotiations. However, different factors can lead to various job choices, e.g., tastes and preferences for job attributes like risk and competition or social contribution and money or gender identity and social norms.</i>	Cortes & Pan (2018);  <b>Gender Differences in Sectors of Employment:</b> <a href="https://statusofwomendata.org/gender-differences-in-sectors-of-employment">https://statusofwomendata.org/gender-differences-in-sectors-of-employment</a>
<b>Regional Differences</b>	<i>Highly educated individuals often move to large cities, where there is a greater choice of jobs and leisure activities. It is a challenge for recruitment in rural areas, where small and medium-sized businesses are often located. Even though there might be a more significant gender pay gap on the country level, in some regions, the opposite is the case.</i>	Fuchs et al., (2019); <a href="http://doku.iab.de/discussionpapers/2019/dp1119.pdf">http://doku.iab.de/discussionpapers/2019/dp1119.pdf</a>  <b>The gender pay gap situation in the EU:</b> <a href="https://ec.europa.eu/info/policies/justice-and-fundamental-rights/gender-equality/equal-pay/gender-pay-gap-situation-eu_en">https://ec.europa.eu/info/policies/justice-and-fundamental-rights/gender-equality/equal-pay/gender-pay-gap-situation-eu_en</a>
<b>Self-Assessment and Self-Promotion</b>	<i>According to some studies, men often sell themselves better in job interviews or rate themselves as being more qualified. Preparing young people for job interviews in schools and universities and a job selection process based on practice could offer a ways of getting a better assessment of suitable candidates.</i>	Exley & Kessler (2021);  <b>Women less inclined to self-promote than men, even for a job:</b> <a href="https://news.harvard.edu/gazette/story/2020/02/men-better-than-women-at-self-promotion-on-job-leading-to-inequities">https://news.harvard.edu/gazette/story/2020/02/men-better-than-women-at-self-promotion-on-job-leading-to-inequities</a> <b>Why Don't Women Self-Promote As Much As Men?</b> <a href="https://hbr.org/2019/12/why-dont-women-self-promote-as-much-as-men">https://hbr.org/2019/12/why-dont-women-self-promote-as-much-as-men</a>
<b>War for Talents</b>	<i>Increasing competition among companies for the best talent. Highly specialized jobs require correspondingly specialized skills.</i>	<b>Personal experience of inclusion: Critical to win the war for talent:</b> <a href="https://www.mckinsey.com/business-functions/organization/our-insights/the-organization-blog/personal-experience-of-inclusion-critical-to-win-the-war-for-talent">https://www.mckinsey.com/business-functions/organization/our-insights/the-organization-blog/personal-experience-of-inclusion-critical-to-win-the-war-for-talent</a>

# Outlook

*What Did We Learn?  
What Next?*

## Outro

Given the dynamic social and economic processes of change and differentiation, classic management approaches based on long-term planning and relatively rigid management structures are increasingly being questioned. What is needed are agile management approaches that focus on the needs of the people concerned, whether they are managers, employees, or customers. For years now, Design Thinking has been recognized as offering a user-centered approach that is seen as increasingly valuable in the corporate world. The results of the present study, the first longitudinal study of its kind, also underlines this view. The starting point was the ‘Parts Without a Whole’ study by Schmiedgen et al., (2015), which was the first study to examine the application of Design Thinking in organizations worldwide. In the longitudinal study, it becomes clear that, over the course of six years, between 2015 and 2021, Design Thinking has become more firmly established in the everyday business life of organizations, independently of their size. In our 2021 study, the increase in the importance of Design Thinking is evident not only for profit-maximizing companies but also for non-profit organizations. Design Thinking has become a mature discipline that can no longer be regarded as a temporary, short-lived phenomenon.

Our recent findings also emphasize the importance of organizations incorporating agile ways of working into their wider organizational strategy, to ensure that they are goal-oriented towards clear goals. The agility of Design Thinking enables companies to react flexibly and more confidently in the face of unforeseeable events. Meanwhile,

this agile way of working is no longer limited to the business world. Schools and universities are also offering more and more courses to equip students to deal with uncertainty and unpredictable events. The next generation of workers will be trained accordingly and start their career with new skills and expectations.

The much-cited ‘war of talents’ will give the current generation, trained in Design Thinking, advantages over their competitors. But Design Thinking as a user-centered approach can also provide employers with a basis for better understanding the actions of employees in their organization and their social environment. We investigated the extent to which employers already reward this specific Design Thinking expertise. Here, the general factors that mainly influence salary work experience, education, company size and sector, region, and gender also play a role in Design Thinking. Of specific importance for salary development in Design Thinking are the different levels of expertise (beginner, intermediate, advanced; expert). Regardless of industry and gender, a salary increase of approximately 10% across all levels was recorded. In addition, it became apparent that the field of Design Thinking is not immune to the gender pay gap, at the expense of similarly qualified and experienced female study participants. A company that strives for a positive corporate culture and wants to create a safe and cooperative environment should also strive for equal pay and transparency across all levels of the organization.

For the successful implementation of Design Thinking, appropriately trained leaders are essential. Good leaders should empower their teams so that they feel comfortable to voice their opinions, share their thoughts, take risks, and assume responsibility, and themselves act as role models. However, this only works, if the organization adopts a corporate culture of trust where employees feel comfortable to freely contribute their ideas and perceptions and are not afraid of failure. Creative leaders are good at guiding teams if they encourage behavior changes and empower their teams to think both exploratively and analytically, reflecting on what they have learned, and integrating these new experiences into future tasks.

Concerning the future of Design Thinking, more than half of the survey participants (54%) expected to see a significant increase in its importance and impact on the organizational culture. A differentiated analysis shows that the use of Design Thinking across organizational units and departments is gaining in importance across departments. It is found primarily in all in the classic areas for Design Thinking such as IT, sales, and marketing, and in traditional segments such as operations and manufacturing, and finance and accounting, which have so far been associated more rarely with Design Thinking. For these areas, survey participants predicted a future increase in Design Thinking by 61% (operations and manufacturing) and 113% (finance and accounting). The data from our study also shows that it is advisable to introduce Design Thinking gradually so that departments can build on each other's experience and knowl-

edge growth. The more broadly Design Thinking is implemented, the greater the chances of it being used successfully throughout the organization.

Our data also shows that, from the perspective of study participants, the application of Design Thinking has a demonstrable positive impact on a wide variety of aspects of organizational development, including not only hard factors, such as profits and cost savings, but also soft factors generally more readily associated with Design Thinking, such as working climate, organizational culture, and the integration of customers into administrative processes. To date, only 19% of respondents reported that their organization measures the success of Design Thinking practices, but 50% of study participants expected monitoring tools to be introduced in the near future. Interestingly, the majority of the remaining 50% seem to be aware of the options for measurement but have no intention of doing so. One reason for this could be due to the difficulty of separating out the impact of Design Thinking from the overall performance the impact of Design Thinking is hard to separate out from the overall performance of an organization. In addition, study participants were concerned that measurement could go against the grain of the flexible nature of Design Thinking. We can assume that the availability of more suitable measurement systems would increase the willingness of practitioners to measure the success of Design Thinking.

Although global in scope, the study participants were drawn disproportionately from the European region and the USA, one main reason for this being the location of the study at the Hasso Plattner Institute (Berlin), the associated Schools of Design Thinking, and interconnected networks. This drawback can be seen as an invitation of further studies on the use of Design Thinking in organizations in other regions. The question of how much Design Thinking practitioners should be paid, and the gender pay gap we identified, also offer good opportunities for subsequent studies that could focus on, for example, industry-specific salary differences, actual work content, and the amount of time spent on Design Thinking, to provide further guidance.

# Postface & Acknowledgement

## Acknowledgement

This study would not have existed without the outstanding study undertaken in 2015 by Jan Schmiedgen, Dr. Holger Rhinow, and Dr. Eva Köppen, ‘Parts Without a Whole’. Their work inspired researchers to look deeper into the practical aspects of implementing Design Thinking, as experienced by companies worldwide, and thus laid the foundation for the global survey of Design Thinking activities in organizations presented in this report.

The current study builds on this achievement and extends the original study. Our goal was to compare the data from the previous study (2015) with data collected six years later (2021), to track the development of Design Thinking in organizations and identify any new topics that may have emerged since then. Ideally, this study will be conducted at regular intervals so that future researchers can narrow the scope of the questions and further refine them. We would also like to thank all our participants who patiently worked through the 80–90 questions of the survey. We greatly appreciate their time and effort!

We also would like to thank our interviewees for their time and expertise to enhance the survey responses and add to understanding the ‘why’. Namely, we would like to mention those who gave us permission to do so: André Bresges, Joern Bruecker, Kathrin Hoesli, Andrea Jordi, Luca Sigrist, Jannis Sutor, Christina Taylor and Heiko Witte.

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With ten years of experience in Design Thinking from 100+ workshops/projects in various industries, such as automotive, financial services, healthcare, ICT, manufacturing, retail, pharma, public, transportation, Stefanie has dealt with this topic from various angles: as a team member, as a coach and a facilitator, as a program design lead, as a full-time Design Thinking leader in the corporate world, as a speaker at conferences and as a researcher. She combines different agile approaches with various topics to enable innovation through human interaction, including strategy, system thinking, team- and leadership, scrum, service and product development. For Stefanie, Design Thinking is an exciting field precisely because it is not so easily defined and pigeonholed. Instead, it is constantly evolving and being adapted to its environment.

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*Katrin Schneider*

*Master Thesis: Design Thinking Efforts in Professional Institutions Worldwide*

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*Quantitative Data Analyst*

*Stefan Buch*

*Qualitative Data Analyst*

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## Appendix 01 - Survey respondents' overview

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R1	Program Lead	6-10 years	50-249 (Medium)	Not answered	Germany
R2	Head of Volkshochschule	1-2 years	50-249 (Medium)	'Public administrative and defence; compulsory social security'	Germany
R3	Design Thinking practitioner	< 1 year	1-9 (Micro)	Information and communication	Saudi Arabia
R4	Freelance Product Lead	6-10 years	1-9 (Micro)	Information and communication	Germany
R5	Digital Transformation Director	> 11 years	1000+ (Very Large)	Information and communication	United Kingdom of Great Britain and Northern Ireland
R6	Project Manager	< 1 year	1000+ (Very Large)	Manufacturing	Germany
R7	Senior UX Researcher and Design Thinking coach	6-10 years	1000+ (Very Large)	Human health and social work activities	Germany
R8	Project Manager	1-2 years	250-999 (Large)	Professional, scientific and technical activities	Germany
R9	Strategic UX designer	3-5 years	1000+ (Very Large)	Manufacturing	Germany
R10	Lecturer	1-2 years	250-999 (Large)	Other service activities	Belarus
R11	HR Manager	1-2 years	1000+ (Very Large)	'Wholesale and retail trade; repair of motor vehicles and motorcycles'	Germany
R12	Innovation Catalyst	3-5 years	1-9 (Micro)	Human health and social work activities	United States of America
R13	Design Director	6-10 years	1-9 (Micro)	Professional, scientific and technical activities	Peru
R14	Design strategist	3-5 years	1000+ (Very Large)	Other service activities	Norway
R15	Director	6-10 years	1000+ (Very Large)	Professional, scientific and technical activities	Ireland



Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R16	<i>UX coach</i>	3-5 years	1000+ (Very Large)	'Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use'	Germany
R17	<i>CX Manager</i>	3-5 years	1000+ (Very Large)	Financial and insurance activities	Austria
R18	<i>Project Manager</i>	3-5 years	50-249 (Medium)	Information and communication	Germany
R19	<i>UX/UI Designer</i>	< 1 year	10-49 (Small)	Administrative and support service activities	Germany
R20	<i>CEO</i>	3-5 years	1-9 (Micro)	Financial and insurance activities	Germany
R21	<i>Doctoral Researcher</i>	6-10 years	1000+ (Very Large)	Professional, scientific and technical activities	Germany
R22	<i>UX Owner</i>	3-5 years	1000+ (Very Large)	Manufacturing	Germany
R23	<i>Supervisor of Curriculum and Instruction: Science, Performing Arts, Library Media Broadcast and Technology</i>	< 1 year	250-999 (Large)	Other service activities	United States of America
R24	<i>Ux designer</i>	3-5 years	1000+ (Very Large)	Information and communication	Germany
R25	<i>Educational Technology Consultant</i>	> 11 years	1-9 (Micro)	Information and communication	Egypt
R26	<i>Consultant Digital Welfare</i>	1-2 years	1000+ (Very Large)	Human health and social work activities	Germany
R27	<i>Entrepreneur</i>	1-2 years	1-9 (Micro)	'Wholesale and retail trade; repair of motor vehicles and motorcycles'	India
R28	<i>Freelance Innovation Consultant &amp; DT Coach</i>	6-10 years	1-9 (Micro)	Other service activities	Germany
R29	<i>Building a design culture in the organization</i>	3-5 years	1000+ (Very Large)	Financial and insurance activities	United Kingdom of Great Britain and Northern Ireland
R30	<i>Innovation Strategist</i>	6-10 years	1-9 (Micro)	Other service activities	Germany

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R31	CEO	6-10 years	10-49 (Small)	Professional, scientific and technical activities	India
R32	Zukunftsforscherin	3-5 years	1-9 (Micro)	Arts, entertainment and recreation	Germany
R33	Innovation Facilitator	3-5 years	1000+ (Very Large)	Other service activities	Germany
R34	Managing Director	6-10 years	1000+ (Very Large)	Human health and social work activities	United States of America
R35	Global Congress Lead, Design Thinking	< 1 year	1000+ (Very Large)	Professional, scientific and technical activities	Germany
R36	Scientist	6-10 years	50-249 (Medium)	Professional, scientific and technical activities	United Kingdom of Great Britain and Northern Ireland
R37	Design Thinking Instructor	3-5 years	250-999 (Large)	Professional, scientific and technical activities	Netherlands
R38	Senior Auditor & Design Researcher	3-5 years	1000+ (Very Large)	Not answered	United States of America
R39	Professor	> 11 years	1000+ (Very Large)	Professional, scientific and technical activities	United States of America
R40	Professor @ Stanford University	< 1 year	10-49 (Small)	Human health and social work activities	Turkey
R41	Not answered	3-5 years	10-49 (Small)	Information and communication	Egypt
R42	Not answered	3-5 years	1000+ (Very Large)	Manufacturing	Germany
R43	Not answered	1-2 years	10-49 (Small)	Information and communication	Germany
R44	Strategy Consultant	6-10 years	1000+ (Very Large)	Accommodation and food service activities	Netherlands
R45	Not answered	3-5 years	1-9 (Micro)	Other service activities	Kenya
R46	Not answered	3-5 years	50-249 (Medium)	Information and communication	Germany

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R47	<i>Not answered</i>	3-5 years	1-9 (Micro)	<b>Information and communication</b>	United Arab Emirates
R48	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	United States of America
R49	<i>Not answered</i>	> 11 years	1000+ (Very Large)	<b>Information and communication</b>	India
R50	<i>Consultant</i>	1-2 years	1-9 (Micro)	<b>Human health and social work activities</b>	Germany
R51	<i>freelancer</i>	6-10 years	1-9 (Micro)	<b>Financial and insurance activities</b>	France
R52	<i>Not answered</i>	3-5 years	50-249 (Medium)	<b>Information and communication</b>	Germany
R53	<i>Teamlead in Service Development and Delivery</i>	3-5 years	1000+ (Very Large)	<b>Information and communication</b>	Germany
R54	<i>Not answered</i>	3-5 years	10-49 (Small)	<b>Other service activities</b>	Switzerland
R55	<i>Management Board, Head of Innovation, Climate and Green Infrastructure</i>	3-5 years	250-999 (Large)	<b>Other service activities</b>	Singapore
R56	<i>Not answered</i>	< 1 year	10-49 (Small)	<b>Other service activities</b>	South Africa
R57	<i>Not answered</i>	3-5 years	250-999 (Large)	<b>Information and communication</b>	Germany
R58	<i>Go-To-Market Manager (=New Business Development)</i>	6-10 years	1000+ (Very Large)	<b>Electricity, gas, steam and air conditioning supply</b>	Germany
R59	<i>Business Development</i>	<i>Not answered</i>	1000+ (Very Large)	<b>Agriculture, forestry and fishing</b>	
R60	<i>Not answered</i>	3-5 years	50-249 (Medium)	<b>Other service activities</b>	Germany
R61	<i>Not answered</i>	1-2 years	50-249 (Medium)	<b>Information and communication</b>	Germany
R62	<i>Not answered</i>	1-2 years	1-9 (Micro)	<b>Arts, entertainment and recreation</b>	Turkey

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R63	<i>Not answered</i>	3-5 years	250-999 (Large)	Professional, scientific and technical activities	Switzerland
R64	<i>Not answered</i>	6-10 years	1-9 (Micro)	Other service activities	Switzerland
R65	<i>Consultant</i>	3-5 years	1000+ (Very Large)	Electricity, gas, steam and air conditioning supply	Germany
R66	<i>Not answered</i>	6-10 years	10-49 (Small)	Professional, scientific and technical activities	India
R67	<i>Not answered</i>	6-10 years	1000+ (Very Large)	Human health and social work activities	Netherlands
R68	<i>Studio director</i>	6-10 years	1-9 (Micro)	Financial and insurance activities	Germany
R69	<i>coach</i>	6-10 years	1000+ (Very Large)	Transportation and storage	Switzerland
R70	<i>Not answered</i>	< 1 year	1000+ (Very Large)	Financial and insurance activities	Germany
R71	<i>Not answered</i>	3-5 years	1-9 (Micro)	Professional, scientific and technical activities	Slovenia
R72	<i>Not answered</i>	6-10 years	1000+ (Very Large)	Not answered	France
R73	<i>Not answered</i>	> 11 years	1-9 (Micro)	Information and communication	United States of America
R74	<i>Not answered</i>	1-2 years	1000+ (Very Large)	'Activities of households as employers; undifferentiated goods- and services- producing activities of households for own use'	Germany
R75	<i>UI Design Manager</i>	3-5 years	1000+ (Very Large)	Financial and insurance activities	Germany
R76	<i>Not answered</i>	< 1 year	10-49 (Small)	Professional, scientific and technical activities	United States of America
R77	<i>Not answered</i>	< 1 year	1-9 (Micro)	Manufacturing	Germany
R78	<i>Not answered</i>	3-5 years	10-49 (Small)	Other service activities	Switzerland
R79	<i>Not answered</i>	< 1 year	1000+ (Very Large)	Arts, entertainment and recreation	Germany

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R80	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Germany
R81	<i>Legal Counsel</i>	3-5 years	50-249 (Medium)	<b>Information and communication</b>	Sweden
R82	<i>Not answered</i>	< 1 year	250-999 (Large)	<b>Human health and social work activities</b>	United States of America
R83	<i>Not answered</i>	1-2 years	50-249 (Medium)	<b>Professional, scientific and technical activities</b>	Germany
R84	<i>Not answered</i>	> 11 years	1-9 (Micro)	<b>Information and communication</b>	United States of America
R85	<i>Director</i>	1-2 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Switzerland
R86	<i>Customer Experience Manager</i>	6-10 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Switzerland
R87	<i>Head Business Innovation</i>	> 11 years	1-9 (Micro)	<b>Other service activities</b>	United States of America
R88	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Electricity, gas, steam and air conditioning supply</b>	France
R89	<i>Not answered</i>	< 1 year	1-9 (Micro)	<b>Not answered</b>	Singapore
R90	<i>Not answered</i>	< 1 year	10-49 (Small)	<b>Information and communication</b>	United Kingdom of Great Britain and Northern Ireland
R91	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Switzerland
R92	<i>Design Thinking Expert</i>	6-10 years	250-999 (Large)	<b>Professional, scientific and technical activities</b>	Sweden
R93	<i>Not answered</i>	3-5 years	50-249 (Medium)	<b>Professional, scientific and technical activities</b>	Germany
R94	<i>Not answered</i>	6-10 years	1-9 (Micro)	<b>Professional, scientific and technical activities</b>	Australia
R95	<i>Not answered</i>	3-5 years	1-9 (Micro)	<b>Other service activities</b>	Malaysia
R96	<i>Not answered</i>	1-2 years	1-9 (Micro)	<b>Not answered</b>	Malaysia

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R97	<i>Not answered</i>	< 1 year	50-249 (Medium)	<b>Other service activities</b>	Malaysia
R98	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Information and communication</b>	United Kingdom of Great Britain and Northern Ireland
R99	<i>Not answered</i>	1-2 years	250-999 (Large)	<b>Professional, scientific and technical activities</b>	Malaysia
R100	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Human health and social work activities</b>	Germany
R101	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Information and communication</b>	Germany
R102	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Manufacturing</b>	Germany
R103	<i>Design Thinking Expert</i>	> 11 years	50-249 (Medium)	<b>Professional, scientific and technical activities</b>	Germany
R104	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Agriculture, forestry and fishing</b>	Brazil
R105	<i>Procurement Manager</i>	3-5 years	1000+ (Very Large)	<b>Manufacturing</b>	United States of America
R106	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Manufacturing</b>	Germany
R107	<i>Innovation Designer</i>	< 1 year	1000+ (Very Large)	<b>'Wholesale and retail trade; repair of motor vehicles and motorcycles'</b>	Germany
R108	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>'Public administrative and defence; compulsory social security'</b>	Germany
R109	<i>Consultant</i>	6-10 years	1000+ (Very Large)	<b>Information and communication</b>	Saudi Arabia
R110	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Other service activities</b>	Germany
R111	<i>HR Specialist</i>	1-2 years	10-49 (Small)	<b>Other service activities</b>	Serbia
R112	<i>Not answered</i>	1-2 years	1-9 (Micro)	<b>Activities of extraterritorial organizations and bodies</b>	Malaysia

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R113	<i>Not answered</i>	6-10 years	250-999 (Large)	<b>Professional, scientific and technical activities</b>	Germany
R114	<i>Not answered</i>	< 1 year	1000+ (Very Large)	<b>'Water supply; sewerage, waste management and remediation activities'</b>	India
R115	<i>Not answered</i>	< 1 year	250-999 (Large)	<b>Other service activities</b>	Malaysia
R116	<i>Not answered</i>	6-10 years	50-249 (Medium)	<b>Information and communication</b>	Spain
R117	<i>Not answered</i>	< 1 year	10-49 (Small)	<b>Other service activities</b>	Malaysia
R118	<i>Not answered</i>	< 1 year	10-49 (Small)	<b>Professional, scientific and technical activities</b>	South Africa
R119	<i>Not answered</i>	6-10 years	1-9 (Micro)	<b>Manufacturing</b>	Germany
R120	<i>Not answered</i>	1-2 years	1-9 (Micro)	<b>Human health and social work activities</b>	Germany
R121	<i>Not answered</i>	< 1 year	50-249 (Medium)	<b>Other service activities</b>	South Africa
R122	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Transportation and storage</b>	South Africa
R123	<i>Business Innovation Manager</i>	3-5 years	1000+ (Very Large)	<b>Information and communication</b>	Germany
R124	<i>Not answered</i>	> 11 years	250-999 (Large)	<b>Financial and insurance activities</b>	Switzerland
R125	<i>Not answered</i>	6-10 years	250-999 (Large)	<b>Information and communication</b>	Germany
R126	<i>Not answered</i>	> 11 years	1-9 (Micro)	<b>Information and communication</b>	Germany
R127	<i>Innovation Consultant</i>	3-5 years	1000+ (Very Large)	<b>'Public administrative and defence; compulsory social security'</b>	Argentina
R128	<i>Not answered</i>	3-5 years	10-49 (Small)	<b>Manufacturing</b>	United Kingdom of Great Britain and Northern Ireland
R129	<i>Director</i>	1-2 years	250-999 (Large)	<b>Professional, scientific and technical activities</b>	Germany

Code	Job Description	Design Thinking Experience ( <i>in years</i> )	Firm Size	Industry Sector	Country
R130	<i>Not answered</i>	1-2 years	1000+ (Very Large)	Transportation and storage	Germany
R131	<i>Not answered</i>	6-10 years	50-249 (Medium)	Other service activities	Germany
R132	<i>Not answered</i>	< 1 year	10-49 (Small)	Professional, scientific and technical activities	Germany
R133	<i>Project Manager</i>	3-5 years	50-249 (Medium)	'Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use'	Turkey
R134	<i>Development Consultant</i>	1-2 years	50-249 (Medium)	Information and communication	Germany
R135	<i>Not answered</i>	< 1 year	1000+ (Very Large)	Other service activities	Germany
R136	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Information and communication	Germany
R137	<i>Not answered</i>	1-2 years	10-49 (Small)	Other service activities	Germany
R138	<i>Not answered</i>	6-10 years	1000+ (Very Large)	Manufacturing	United States of America
R139	<i>Not answered</i>	> 11 years	1-9 (Micro)	Other service activities	Portugal
R140	<i>Not answered</i>	> 11 years	1-9 (Micro)	Information and communication	India
R141	<i>Not answered</i>	< 1 year	1000+ (Very Large)	Other service activities	United States of America
R142	<i>Not answered</i>	6-10 years	50-249 (Medium)	Arts, entertainment and recreation	Germany
R143	<i>Youth Associate</i>	3-5 years	250-999 (Large)	'Wholesale and retail trade; repair of motor vehicles and motorcycles'	Sweden
R144	<i>Not answered</i>	1-2 years	1000+ (Very Large)	Professional, scientific and technical activities	Germany
R145	<i>Not answered</i>	6-10 years	10-49 (Small)	Other service activities	Brazil
R146	<i>Network Specialist</i>	3-5 years	250-999 (Large)	Arts, entertainment and recreation	Germany



Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R147	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Germany
R148	<i>Not answered</i>	> 11 years	1000+ (Very Large)	<b>Information and communication</b>	Germany
R149	<i>Not answered</i>	3-5 years	50-249 (Medium)	<b>Real estate activities</b>	United States of America
R150	<i>Not answered</i>	6-10 years	10-49 (Small)	<b>Agriculture, forestry and fishing</b>	Germany
R151	<i>Managing Director Asset Management</i>	3-5 years	50-249 (Medium)	<b>Manufacturing</b>	Germany
R152	<i>CEO</i>	3-5 years	10-49 (Small)	<b>Information and communication</b>	Indonesia
R153	<i>Consultant</i>	> 11 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	India
R154	<i>Not answered</i>	6-10 years	1-9 (Micro)	<b>Arts, entertainment and recreation</b>	United Kingdom of Great Britain and Northern Ireland
R155	<i>Consultant</i>	6-10 years	1000+ (Very Large)	<b>Other service activities</b>	United States of America
R156	<i>Not answered</i>	6-10 years	10-49 (Small)	<b>Human health and social work activities</b>	United States of America
R157	<i>Not answered</i>	6-10 years	10-49 (Small)	<b>Professional, scientific and technical activities</b>	United States of America
R158	<i>Healthcare Anthropologist</i>	3-5 years	1000+ (Very Large)	<b>Information and communication</b>	United States of America
R159	<i>Strategy Director</i>	< 1 year	1000+ (Very Large)	<b>'Public administrative and defence; compulsory social security'</b>	Germany
R160	<i>Not answered</i>	3-5 years	1-9 (Micro)	<b>Other service activities</b>	Netherlands
R161	<i>Referent</i>	> 11 years	1-9 (Micro)	<b>Arts, entertainment and recreation</b>	Poland

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R162	<i>Not answered</i>	1-2 years	1-9 (Micro)	Information and communication	Germany
R163	<i>Not answered</i>	1-2 years	1000+ (Very Large)	Construction	Switzerland
R164	<i>Not answered</i>	1-2 years	250-999 (Large)	Financial and insurance activities	Switzerland
R165	<i>Not answered</i>	6-10 years	1-9 (Micro)	Information and communication	Australia
R166	<i>Business Strategist/Innovation Manager</i>	1-2 years	1000+ (Very Large)	Manufacturing	Pakistan
R167	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Not answered	France
R168	<i>Not answered</i>	1-2 years	50-249 (Medium)	Manufacturing	Switzerland
R169	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Transportation and storage	Germany
R170	<i>COO</i>	1-2 years	1000+ (Very Large)	Financial and insurance activities	Switzerland
R171	<i>General Manager</i>	6-10 years	1000+ (Very Large)	Professional, scientific and technical activities	United States of America
R172	<i>Audit Manager</i>	3-5 years	1000+ (Very Large)	Electricity, gas, steam and air conditioning supply	Germany
R173	<i>Not answered</i>	1-2 years	1000+ (Very Large)	Information and communication	Ireland
R174	<i>Head of Business Development</i>	3-5 years	10-49 (Small)	Information and communication	Germany
R175	<i>Not answered</i>	1-2 years	1000+ (Very Large)	Information and communication	Ireland
R176	<i>Not answered</i>	6-10 years	1000+ (Very Large)	Manufacturing	Netherlands
R177	<i>Consultant</i>	1-2 years	10-49 (Small)	Information and communication	Switzerland
R178	<i>Corporate Innovator</i>	6-10 years	50-249 (Medium)	Transportation and storage	Germany
R179	<i>CEO</i>	> 11 years	1000+ (Very Large)	Information and communication	Germany

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R180	<i>Not answered</i>	3-5 years	250-999 (Large)	<b>Other service activities</b>	United States of America
R181	<i>Vice President &amp; Director</i>	6-10 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Switzerland
R182	<i>Not answered</i>	3-5 years	50-249 (Medium)	<b>Other service activities</b>	Germany
R183	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Not answered</b>	Switzerland
R184	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Manufacturing</b>	Finland
R185	<i>Not answered</i>	3-5 years	10-49 (Small)	<b>Professional, scientific and technical activities</b>	Switzerland
R186	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Senegal
R187	<i>Not answered</i>	< 1 year	50-249 (Medium)	<b>Professional, scientific and technical activities</b>	South Africa
R188	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Manufacturing</b>	Sweden
R189	<i>Not answered</i>	3-5 years	10-49 (Small)	<b>Other service activities</b>	Switzerland
R190	<i>Not answered</i>	< 1 year	1-9 (Micro)	<b>Human health and social work activities</b>	Switzerland
R191	<i>Not answered</i>	1-2 years	50-249 (Medium)	<b>Information and communication</b>	Germany
R192	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Information and communication</b>	United States of America
R193	<i>Not answered</i>	6-10 years	250-999 (Large)	<b>Manufacturing</b>	Switzerland
R194	<i>Not answered</i>	1-2 years	1-9 (Micro)	<b>Other service activities</b>	Finland
R195	<i>Not answered</i>	3-5 years	1-9 (Micro)	<b>Electricity, gas, steam and air conditioning supply</b>	Germany
R196	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Human health and social work activities</b>	Switzerland
R197	<i>Founder</i>	3-5 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Germany

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R198	<i>International Development Manager</i>	3-5 years	1-9 (Micro)	Human health and social work activities	Germany
R199	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Manufacturing	Switzerland
R200	<i>Trainer &amp; Coach wow</i>	1-2 years	1000+ (Very Large)	'Wholesale and retail trade; repair of motor vehicles and motorcycles'	Germany
R201	<i>Not answered</i>	> 11 years	50-249 (Medium)	Other service activities	Switzerland
R202	<i>Product Manager</i>	1-2 years	1000+ (Very Large)	Professional, scientific and technical activities	Finland
R203	<i>Digital Project Portfolio Manager (former Business Innovation Manager)</i>	3-5 years	10-49 (Small)	Other service activities	United Kingdom of Great Britain and Northern Ireland
R204	<i>Owner &amp; Managing Partner</i>	3-5 years	1000+ (Very Large)	Information and communication	Germany
R205	<i>Researcher &amp; teacher</i>	1-2 years	1000+ (Very Large)	Financial and insurance activities	Switzerland
R206	<i>Chief Experience Officer</i>	< 1 year	1000+ (Very Large)	Information and communication	Austria
R207	<i>Not answered</i>	1-2 years	1000+ (Very Large)	Other service activities	United States of America
R208	<i>Not answered</i>	< 1 year	1000+ (Very Large)	Manufacturing	Germany
R209	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Information and communication	United States of America
R210	<i>Strategy Consultant</i>	1-2 years	50-249 (Medium)	Manufacturing	Portugal
R211	<i>Project Manager Sales Qualification</i>	3-5 years	10-49 (Small)	Human health and social work activities	United States of America
R212	<i>IT Fellow</i>	> 11 years	1000+ (Very Large)	Financial and insurance activities	Germany
R213	<i>Not answered</i>	1-2 years	1000+ (Very Large)	Professional, scientific and technical activities	Germany

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R214	<i>Cofounder, Head of Product</i>	< 1 year	50-249 (Medium)	<b>Other service activities</b>	Switzerland
R215	<i>Head of Global Platforms</i>	1-2 years	1-9 (Micro)	<b>Information and communication</b>	Switzerland
R216	<i>Software developer</i>	< 1 year	50-249 (Medium)	<b>Other service activities</b>	United States of America
R217	<i>CRM Manager</i>	1-2 years	50-249 (Medium)	<b>Professional, scientific and technical activities</b>	Germany
R218	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	United Kingdom of Great Britain and Northern Ireland
R219	<i>Partnerships Manager</i>	1-2 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Germany
R220	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Switzerland
R221	<i>Cdio</i>	1-2 years	1-9 (Micro)	<b>Transportation and storage</b>	Germany
R222	<i>Not answered</i>	3-5 years	10-49 (Small)	<b>Information and communication</b>	United States of America
R223	<i>Professor for Product Innovation</i>	> 11 years	10-49 (Small)	<b>Professional, scientific and technical activities</b>	South Africa
R224	<i>Not answered</i>	1-2 years	50-249 (Medium)	<b>Financial and insurance activities</b>	Germany
R225	<i>Not answered</i>	6-10 years	1-9 (Micro)	<b>Professional, scientific and technical activities</b>	China
R226	<i>Founder</i>	3-5 years	50-249 (Medium)	<b>Information and communication</b>	Germany
R227	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Switzerland
R228	<i>Assistant Professor</i>	> 11 years	1-9 (Micro)	<b>Financial and insurance activities</b>	Spain
R229	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Information and communication</b>	Germany
R230	<i>Project Manager</i>	6-10 years	1-9 (Micro)	<b>Financial and insurance activities</b>	Switzerland

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R231	<i>Not answered</i>	> 11 years	50-249 (Medium)	Accommodation and food service activities	Switzerland
R232	<i>Executive department</i>	3-5 years	1000+ (Very Large)	Information and communication	Germany
R233	<i>Not answered</i>	1-2 years	10-49 (Small)	Other service activities	Germany
R234	<i>Not answered</i>	3-5 years	1-9 (Micro)	Other service activities	Germany
R235	<i>Director</i>	3-5 years	250-999 (Large)	Manufacturing	Austria
R236	<i>Consultant</i>	3-5 years	1000+ (Very Large)	Information and communication	Germany
R237	<i>Not answered</i>	6-10 years	1-9 (Micro)	Other service activities	Argentina
R238	<i>Marketing Communications Manager</i>	< 1 year	1000+ (Very Large)	Manufacturing	Germany
R239	<i>Strategy Manager</i>	3-5 years	50-249 (Medium)	Professional, scientific and technical activities	Switzerland
R240	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Information and communication	Switzerland
R241	<i>Digital Portfolio Manager</i>	3-5 years	1-9 (Micro)	Financial and insurance activities	Switzerland
R242	<i>Director</i>	6-10 years	1000+ (Very Large)	'Wholesale and retail trade; repair of motor vehicles and motorcycles'	Brazil
R243	<i>Program Manager, Innovation &amp; Digital Agenda</i>	3-5 years	1000+ (Very Large)	Professional, scientific and technical activities	United States of America
R244	<i>Head Business Development, VRP</i>	3-5 years	10-49 (Small)	Financial and insurance activities	Switzerland
R245	<i>Consultant</i>	1-2 years	1000+ (Very Large)	Transportation and storage	Germany
R246	<i>Not answered</i>	< 1 year	1000+ (Very Large)	Information and communication	United States of America
R247	<i>Executive Education Director</i>	6-10 years	50-249 (Medium)	Manufacturing	Germany
R248	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Manufacturing	Germany

Code	Job Description	Design Thinking Experience ( <i>in years</i> )	Firm Size	Industry Sector	Country
R249	<i>Sales Manager</i>	6-10 years	250-999 (Large)	Human health and social work activities	Finland
R250	<i>COO &amp; Head of Digital Innovation</i>	< 1 year	10-49 (Small)	Information and communication	Germany
R251	<i>Head of Department</i>	> 11 years	10-49 (Small)	Professional, scientific and technical activities	Singapore
R252	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Not answered	Switzerland
R253	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Other service activities	Switzerland
R254	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Transportation and storage	Germany
R255	<i>Head of Department</i>	3-5 years	10-49 (Small)	Other service activities	Finland
R256	<i>Not answered</i>	1-2 years	1000+ (Very Large)	Manufacturing	Pakistan
R257	<i>Project Manager</i>	> 11 years	Not answered	Not answered	
R258	<i>Not answered</i>	3-5 years	10-49 (Small)	Human health and social work activities	Kenya
R259	<i>Not answered</i>	1-2 years	1000+ (Very Large)	Financial and insurance activities	Germany
R260	<i>Not answered</i>	> 11 years	1-9 (Micro)	Professional, scientific and technical activities	Germany
R261	<i>Strategic Designer</i>	3-5 years	1000+ (Very Large)	Manufacturing	Germany
R262	<i>Market Researcher</i>	1-2 years	1000+ (Very Large)	Electricity, gas, steam and air conditioning supply	Germany
R263	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Financial and insurance activities	Germany
R264	<i>Manager</i>	1-2 years	10-49 (Small)	Information and communication	Germany
R265	<i>Not answered</i>	1-2 years	1000+ (Very Large)	Information and communication	Japan
R266	<i>Manager</i>	3-5 years	250-999 (Large)	Financial and insurance activities	Austria
R267	<i>Director of Business Development</i>	3-5 years	10-49 (Small)	Transportation and storage	Palau

Code	Job Description	Design Thinking Experience ( <i>in years</i> )	Firm Size	Industry Sector	Country
R268	<i>General Manager</i>	3-5 years	1000+ (Very Large)	<b>Manufacturing</b>	United States of America
R269	<i>CEO</i>	3-5 years	10-49 (Small)	<b>Professional, scientific and technical activities</b>	Switzerland
R270	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Other service activities</b>	Switzerland
R271	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Transportation and storage</b>	Switzerland
R272	<i>Master student</i>	1-2 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Germany
R273	<i>Not answered</i>	1-2 years	50-249 (Medium)	<b>'Public administrative and defence; compulsory social security'</b>	Italy
R274	<i>Passenger Experience Designer</i>	3-5 years	10-49 (Small)	<b>Human health and social work activities</b>	Germany
R275	<i>Corporate Development Advisor</i>	6-10 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Germany
R276	<i>Not answered</i>	1-2 years	1-9 (Micro)	<b>Human health and social work activities</b>	Switzerland
R277	<i>Not answered</i>	1-2 years	250-999 (Large)	<b>Agriculture, forestry and fishing</b>	Germany
R278	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Switzerland
R279	<i>Junior Business Consultant</i>	3-5 years	250-999 (Large)	<b>Transportation and storage</b>	New Zealand
R280	<i>Head of Department</i>	1-2 years	50-249 (Medium)	<b>Information and communication</b>	Germany
R281	<i>Not answered</i>	< 1 year	1-9 (Micro)	<b>Professional, scientific and technical activities</b>	Germany
R282	<i>Innovation Manager</i>	3-5 years	250-999 (Large)	<b>Information and communication</b>	Switzerland
R283	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>'Public administrative and defence; compulsory social security'</b>	Canada
R284	<i>Not answered</i>	6-10 years	1-9 (Micro)	<b>Human health and social work activities</b>	France
R285	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Transportation and storage</b>	Germany



Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R286	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Germany
R287	<i>Not answered</i>	< 1 year	1-9 (Micro)	<b>Professional, scientific and technical activities</b>	Australia
R288	<i>Not answered</i>	> 11 years	1000+ (Very Large)	<b>Not answered</b>	Switzerland
R289	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Switzerland
R290	<i>Consultant</i>	3-5 years	1000+ (Very Large)	<b>Manufacturing</b>	Germany
R291	<i>Not answered</i>	< 1 year	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Switzerland
R292	<i>Teamlead</i>	3-5 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Switzerland
R293	<i>Innovation Coach</i>	1-2 years	1000+ (Very Large)	<b>Information and communication</b>	Switzerland
R294	<i>Lead Consultant Market Research &amp; Analytics</i>	< 1 year	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	United States of America
R295	<i>Experience Manager</i>	1-2 years	1000+ (Very Large)	<b>Manufacturing</b>	Germany
R296	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Manufacturing</b>	Germany
R297	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Information and communication</b>	Iran (Islamic Republic of)
R298	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Other service activities</b>	Chile
R299	<i>VIL CEO</i>	3-5 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Germany
R300	<i>Not answered</i>	3-5 years	250-999 (Large)	<b>Information and communication</b>	Germany
R301	<i>Not answered</i>	< 1 year	1-9 (Micro)	<b>Financial and insurance activities</b>	Germany
R302	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Other service activities</b>	Switzerland
R303	<i>Not answered</i>	1-2 years	250-999 (Large)	<b>Manufacturing</b>	Japan

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R304	CEO	3-5 years	1000+ (Very Large)	Financial and insurance activities	Switzerland
R305	Requirements Engineer	3-5 years	1-9 (Micro)	Information and communication	Germany
R306	Not answered	1-2 years	250-999 (Large)	'Wholesale and retail trade; repair of motor vehicles and motorcycles'	Germany
R307	Not answered	3-5 years	1000+ (Very Large)	Financial and insurance activities	Germany
R308	Not answered	< 1 year	1000+ (Very Large)	Information and communication	Switzerland
R309	Not answered	< 1 year	1-9 (Micro)	Arts, entertainment and recreation	United Arab Emirates
R310	Not answered	6-10 years	1000+ (Very Large)	Financial and insurance activities	Germany
R311	Product Portfolio Manager	1-2 years	250-999 (Large)	Financial and insurance activities	South Africa
R312	Not answered	3-5 years	50-249 (Medium)	Manufacturing	Belgium
R313	Not answered	3-5 years	1000+ (Very Large)	Financial and insurance activities	Switzerland
R314	Head of Department	3-5 years	1-9 (Micro)	Human health and social work activities	Australia
R315	Not answered	6-10 years	1000+ (Very Large)	Professional, scientific and technical activities	Germany
R316	Not answered	< 1 year	1000+ (Very Large)	Manufacturing	Sweden
R317	Not answered	3-5 years	50-249 (Medium)	Information and communication	Switzerland
R318	R&D Informatics	3-5 years	50-249 (Medium)	Professional, scientific and technical activities	Germany
R319	Manager Digital Solutions	< 1 year	1000+ (Very Large)	Financial and insurance activities	France
R320	Product Designer	3-5 years	1000+ (Very Large)	Financial and insurance activities	Switzerland
R321	PhD Candidate	1-2 years	50-249 (Medium)	Information and communication	Republic of Korea

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R322	Consultant	6-10 years	1000+ (Very Large)	Manufacturing	Switzerland
R322	Experience Management Specialist	3-5 years	1000+ (Very Large)	Manufacturing	Germany
R323	Not answered	< 1 year	1000+ (Very Large)	Manufacturing	Germany
R324	Not answered	< 1 year	1-9 (Micro)	Other service activities	Switzerland
R325	UX Coach	1-2 years	1000+ (Very Large)	Manufacturing	Germany
R326	Not answered	3-5 years	1000+ (Very Large)	Electricity, gas, steam and air conditioning supply	Austria
R327	Not answered	3-5 years	50-249 (Medium)	Electricity, gas, steam and air conditioning supply	Germany
R328	Not answered	< 1 year	250-999 (Large)	Other service activities	Denmark
R329	Head of Innovation and Sustainability	1-2 years	1000+ (Very Large)	Information and communication	Switzerland
R330	Country Leader	6-10 years	1000+ (Very Large)	Information and communication	Norway
R331	Teacher and Research	> 11 years	1000+ (Very Large)	Professional, scientific and technical activities	Germany
R332	Not answered	6-10 years	1000+ (Very Large)	Accommodation and food service activities	Germany
R333	Not answered	6-10 years	1000+ (Very Large)	Manufacturing	Switzerland
R334	Not answered	1-2 years	1000+ (Very Large)	'Wholesale and retail trade; repair of motor vehicles and motorcycles'	Germany
R335	Not answered	6-10 years	1-9 (Micro)	Other service activities	Germany
R336	Innovation Manager	> 11 years	1000+ (Very Large)	Not answered	United States of America
R337	Not answered	3-5 years	1000+ (Very Large)	Financial and insurance activities	Italy
R338	Creative Leader	< 1 year	10-49 (Small)	Information and communication	Germany

Code	Job Description	Design Thinking Experience ( <i>in years</i> )	Firm Size	Industry Sector	Country
R339	<i>Not answered</i>	> 11 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Kenya
R340	<i>Not answered</i>	3-5 years	50-249 (Medium)	<b>Manufacturing</b>	Switzerland
R341	<i>Not answered</i>	6-10 years	250-999 (Large)	<b>Transportation and storage</b>	Germany
R342	<i>Professor of Industrial Design</i>	3-5 years	1-9 (Micro)	<b>Professional, scientific and technical activities</b>	Switzerland
R343	<i>Not answered</i>	1-2 years	50-249 (Medium)	<b>Agriculture, forestry and fishing</b>	Germany
R344	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Kenya
R345	<i>Managing Partner</i>	3-5 years	10-49 (Small)	<b>Manufacturing</b>	Germany
R346	<i>Not answered</i>	< 1 year	1-9 (Micro)	<b>Agriculture, forestry and fishing</b>	Norway
R347	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Switzerland
R348	<i>Academy</i>	6-10 years	1000+ (Very Large)	<b>Human health and social work activities</b>	Colombia
R349	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Switzerland
R350	<i>Not answered</i>	> 11 years	1-9 (Micro)	<b>Information and communication</b>	Switzerland
R351	<i>Not answered</i>	6-10 years	10-49 (Small)	<b>Financial and insurance activities</b>	Switzerland
R352	<i>Chief Investment Officer</i>	< 1 year	1000+ (Very Large)	<b>Manufacturing</b>	Germany
R353	<i>Not answered</i>	6-10 years	1-9 (Micro)	<b>Information and communication</b>	Germany
R354	<i>Not answered</i>	> 11 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Italy
R355	<i>Manager</i>	< 1 year	250-999 (Large)	<b>Arts, entertainment and recreation</b>	Switzerland
R356	<i>Not answered</i>	> 11 years	1000+ (Very Large)	<b>Manufacturing</b>	Switzerland
R357	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	United States of America

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R358	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Switzerland
R359	<i>Not answered</i>	1-2 years	50-249 (Medium)	<b>Manufacturing</b>	Switzerland
R360	<i>Not answered</i>	3-5 years	50-249 (Medium)	<b>Information and communication</b>	Switzerland
R361	<i>Not answered</i>	3-5 years	1-9 (Micro)	<b>Information and communication</b>	Germany
R362	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Information and communication</b>	Germany
R363	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Information and communication</b>	Japan
R364	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Other service activities</b>	Switzerland
R365	<i>Managing Director</i>	3-5 years	1-9 (Micro)	<b>Financial and insurance activities</b>	Switzerland
R366	<i>Manager</i>	3-5 years	1000+ (Very Large)	<b>Human health and social work activities</b>	Japan
R367	<i>Innovation Campus</i>	> 11 years	50-249 (Medium)	<b>Arts, entertainment and recreation</b>	Kenya
R368	<i>CEO</i>	6-10 years	250-999 (Large)	<b>Information and communication</b>	Switzerland
R369	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Germany
R370	<i>Manager</i>	< 1 year	1-9 (Micro)	<b>Information and communication</b>	Republic of Korea
R371	<i>CTO</i>	1-2 years	250-999 (Large)	<b>'Wholesale and retail trade; repair of motor vehicles and motorcycles'</b>	Germany
R372	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Manufacturing</b>	Germany
R373	<i>Not answered</i>	> 11 years	1000+ (Very Large)	<b>Human health and social work activities</b>	United States of America
R374	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Manufacturing</b>	Germany
R375	<i>Innovation Manager</i>	3-5 years	1000+ (Very Large)	<b>Construction</b>	Liechtenstein

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R376	<i>Design Thinker</i>	< 1 year	1000+ (Very Large)	<b>Financial and insurance activities</b>	United Kingdom of Great Britain and Northern Ireland
R377	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Manufacturing</b>	Germany
R378	<i>Design Thinking Program Manager</i>	1-2 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Germany
R379	<i>Capability Lead Data Protection</i>	3-5 years	50-249 (Medium)	<b>Information and communication</b>	Germany
R380	<i>Management</i>	> 11 years	1000+ (Very Large)	<b>Human health and social work activities</b>	United States of America
R381	<i>Manager</i>	3-5 years	1000+ (Very Large)	<b>Manufacturing</b>	Germany
R382	<i>Not answered</i>	3-5 years	10-49 (Small)	<b>Other service activities</b>	Switzerland
R383	<i>Not answered</i>	3-5 years	50-249 (Medium)	<b>Other service activities</b>	Germany
R384	<i>Manager, IT Innovation - Methods Incubation</i>	3-5 years	250-999 (Large)	<b>Professional, scientific and technical activities</b>	Italy
R385	<i>Not answered</i>	< 1 year	1000+ (Very Large)	<b>Transportation and storage</b>	Germany
R386	<i>Manager</i>	< 1 year	50-249 (Medium)	<b>Information and communication</b>	Germany
R387	<i>Service Designer</i>	1-2 years	1000+ (Very Large)	<b>'Public administrative and defence; compulsory social security'</b>	Germany
R388	<i>Not answered</i>	3-5 years	50-249 (Medium)	<b>Information and communication</b>	Germany
R389	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Manufacturing</b>	France
R390	<i>Not answered</i>	< 1 year	10-49 (Small)	<b>Real estate activities</b>	Germany
R391	<i>Leader Journalist Department</i>	< 1 year	1000+ (Very Large)	<b>Human health and social work activities</b>	Germany
R392	<i>Progress Leader</i>	3-5 years	1000+ (Very Large)	<b>Manufacturing</b>	Finland

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R393	<i>Not answered</i>	< 1 year	10-49 (Small)	Professional, scientific and technical activities	Germany
R394	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Financial and insurance activities	France
R395	<i>Sales Director</i>	< 1 year	250-999 (Large)	Information and communication	Switzerland
R396	<i>Not answered</i>	< 1 year	50-249 (Medium)	Electricity, gas, steam and air conditioning supply	Germany
R397	<i>Customer Experience Manager</i>	3-5 years	50-249 (Medium)	Real estate activities	Germany
R398	<i>Not answered</i>	1-2 years	50-249 (Medium)	Human health and social work activities	Germany
R399	<i>Digital Business Development</i>	6-10 years	250-999 (Large)	Professional, scientific and technical activities	Poland
R400	<i>Senior Business Consultant</i>	< 1 year	1000+ (Very Large)	Professional, scientific and technical activities	India
R401	<i>Not answered</i>	1-2 years	1-9 (Micro)	Information and communication	Brazil
R402	<i>Not answered</i>	< 1 year	1-9 (Micro)	'Water supply; sewerage, waste management and remediation activities'	India
R403	<i>IT Designer</i>	1-2 years	1000+ (Very Large)	Other service activities	Nigeria
R404	<i>Not answered</i>	< 1 year	50-249 (Medium)	Professional, scientific and technical activities	United Kingdom of Great Britain and Northern Ireland
R405	<i>Not answered</i>	Not answered	Not answered	Manufacturing	Germany
R406	<i>Not answered</i>	> 11 years	1000+ (Very Large)	Information and communication	United States of America
R407	<i>Not answered</i>	< 1 year	1000+ (Very Large)	Human health and social work activities	United States of America
R408	<i>Not answered</i>	1-2 years	50-249 (Medium)	Information and communication	Mexico
R409	<i>Principle Network Engineer</i>	1-2 years	1000+ (Very Large)	Transportation and storage	Germany

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R410	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Information and communication</b>	United Kingdom of Great Britain and Northern Ireland
R411	<i>Not answered</i>	< 1 year	50-249 (Medium)	<b>Professional, scientific and technical activities</b>	Germany
R412	<i>Not answered</i>	< 1 year	1000+ (Very Large)	<b>Construction</b>	United States of America
R413	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Electricity, gas, steam and air conditioning supply</b>	Australia
R414	<i>Not answered</i>	> 11 years	1000+ (Very Large)	<b>'Public administrative and defence; compulsory social security'</b>	Singapore
R415	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Manufacturing</b>	Germany
R416	<i>Not answered</i>	1-2 years	250-999 (Large)	<b>Manufacturing</b>	Germany
R417	<i>Senior Manager</i>	3-5 years	1000+ (Very Large)	<b>Manufacturing</b>	Germany
R418	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>'Wholesale and retail trade; repair of motor vehicles and motorcycles'</b>	Germany
R419	<i>Not answered</i>	< 1 year	1000+ (Very Large)	<b>Financial and insurance activities</b>	Germany
R420	<i>Internal Organizational Consultant (Agility)</i>	< 1 year	10-49 (Small)	<b>Human health and social work activities</b>	Germany
R421	<i>Not answered</i>	1-2 years	10-49 (Small)	<b>Agriculture, forestry and fishing</b>	Saint Kitts and Nevis
R422	<i>Not answered</i>	6-10 years	10-49 (Small)	<b>Arts, entertainment and recreation</b>	United States of America
R423	<i>Project Assistant</i>	1-2 years	10-49 (Small)	<b>Other service activities</b>	Switzerland
R424	<i>Not answered</i>	< 1 year	10-49 (Small)	<b>Human health and social work activities</b>	Germany



Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R425	<i>Not answered</i>	< 1 year	1-9 (Micro)	'Water supply; sewerage, waste management and remediation activities'	Germany
R426	<i>Not answered</i>	3-5 years	50-249 (Medium)	Financial and insurance activities	India
R427	<i>Not answered</i>	3-5 years	1-9 (Micro)	Information and communication	United States of America
R428	<i>Not answered</i>	1-2 years	250-999 (Large)	'Wholesale and retail trade; repair of motor vehicles and motorcycles'	Germany
R429	<i>Product Manager</i>	< 1 year	1000+ (Very Large)	Information and communication	France
R430	<i>Not answered</i>	1-2 years	250-999 (Large)	Not answered	Germany
R431	<i>Not answered</i>	1-2 years	1000+ (Very Large)	Information and communication	Germany
R432	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Administrative and support service activities	Peru
R433	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Financial and insurance activities	Switzerland
R434	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Professional, scientific and technical activities	Germany
R435	<i>Senior Innovation Architect</i>	> 11 years	1-9 (Micro)	Information and communication	Germany
R436	<i>Innovation Manager</i>	< 1 year	1-9 (Micro)	Other service activities	Germany
R437	<i>Not answered</i>	< 1 year	1000+ (Very Large)	Professional, scientific and technical activities	India
R438	<i>Designer</i>	1-2 years	50-249 (Medium)	Information and communication	Germany
R439	<i>CEO</i>	< 1 year	250-999 (Large)	Financial and insurance activities	Germany
R440	<i>Not answered</i>	1-2 years	10-49 (Small)	Other service activities	Germany
R441	<i>Not answered</i>	1-2 years	250-999 (Large)	Manufacturing	Netherlands
R442	<i>Not answered</i>	< 1 year	1-9 (Micro)	Other service activities	Spain

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R443	CEO	< 1 year	1000+ (Very Large)	Information and communication	Germany
R444	Not answered	> 11 years	50-249 (Medium)	Information and communication	Spain
R445	Not answered	1-2 years	50-249 (Medium)	Professional, scientific and technical activities	Germany
R446	Not answered	6-10 years	250-999 (Large)	Arts, entertainment and recreation	Switzerland
R447	Operational Manager	3-5 years	1000+ (Very Large)	Financial and insurance activities	Germany
R448	Partner	3-5 years	Not answered	Professional, scientific and technical activities	Colombia
R449	Not answered	6-10 years	1-9 (Micro)	Other service activities	Switzerland
R450	Manager	6-10 years	50-249 (Medium)	Information and communication	Japan
R451	Not answered	3-5 years	Not answered	'Wholesale and retail trade; repair of motor vehicles and motorcycles'	Argentina
R452	Not answered	1-2 years	1000+ (Very Large)	Financial and insurance activities	Switzerland
R453	Managing Director	6-10 years	1000+ (Very Large)	Financial and insurance activities	France
R454	Not answered	< 1 year	1000+ (Very Large)	Human health and social work activities	Germany
R455	Not answered	1-2 years	1000+ (Very Large)	Financial and insurance activities	Switzerland
R456	Not answered	1-2 years	1000+ (Very Large)	Human health and social work activities	Switzerland
R457	Not answered	6-10 years	1-9 (Micro)	Other service activities	Spain
R458	Strategic Initiatives Manager	6-10 years	1-9 (Micro)	Other service activities	Argentina
R459	Not answered	1-2 years	1-9 (Micro)	Other service activities	Venezuela (Bolivarian Republic of)
R460	Not answered	6-10 years	1000+ (Very Large)	Manufacturing	Switzerland

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R461	<i>Not answered</i>	< 1 year	1000+ (Very Large)	<b>Other service activities</b>	Spain
R462	<i>Not answered</i>	3-5 years	10-49 (Small)	<b>Mining and quarrying</b>	Saint Lucia
R463	<i>Director Digital Innovation</i>	< 1 year	1000+ (Very Large)	<b>Information and communication</b>	Germany
R464	<i>Not answered</i>	6-10 years	1-9 (Micro)	<b>Other service activities</b>	Spain
R465	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Ecuador
R466	<i>Not answered</i>	1-2 years	50-249 (Medium)	<b>Professional, scientific and technical activities</b>	Paraguay
R467	<i>Not answered</i>	3-5 years	50-249 (Medium)	<b>Professional, scientific and technical activities</b>	Ecuador
R468	<i>Not answered</i>	< 1 year	1-9 (Micro)	<b>Professional, scientific and technical activities</b>	Colombia
R469	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Manufacturing</b>	United Kingdom of Great Britain and Northern Ireland
R470	<i>Not answered</i>	> 11 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Argentina
R471	<i>Not answered</i>	> 11 years	250-999 (Large)	<b>Professional, scientific and technical activities</b>	Chile
R472	<i>Business Development Manager Digital</i>	> 11 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Venezuela (Bolivarian Republic of)
R473	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Mexico
R474	<i>Academic</i>	6-10 years	1000+ (Very Large)	<b>Not answered</b>	Germany
R475	<i>Not answered</i>	6-10 years	10-49 (Small)	<b>Information and communication</b>	
R476	<i>Library Director. Professor</i>	1-2 years	1000+ (Very Large)	<b>Administrative and support service activities</b>	Germany
R477	<i>Principal Key Expert Design Thinking</i>	< 1 year	10-49 (Small)	<b>Information and communication</b>	Germany

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R478	<i>Not answered</i>	3-5 years	Not answered	'Water supply; sewerage, waste management and remediation activities'	Germany
R479	<i>Agile Transformation Catalyst</i>	6-10 years	10-49 (Small)	Other service activities	Germany
R480	<i>Not answered</i>	1-2 years	1000+ (Very Large)	Professional, scientific and technical activities	Brazil
R481	<i>Not answered</i>	6-10 years	250-999 (Large)	'Public administrative and defence; compulsory social security'	Uruguay
R482	<i>Not answered</i>	1-2 years	1000+ (Very Large)	'Public administrative and defence; compulsory social security'	Germany
R483	<i>Not answered</i>	1-2 years	10-49 (Small)	Not answered	Germany
R484	<i>Not answered</i>	6-10 years	50-249 (Medium)	Arts, entertainment and recreation	Germany
R485	<i>Consultant</i>	> 11 years	1-9 (Micro)	Professional, scientific and technical activities	Australia
R486	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Financial and insurance activities	Germany
R487	<i>Not answered</i>	6-10 years	50-249 (Medium)	Professional, scientific and technical activities	Netherlands
R488	<i>Not answered</i>	3-5 years	1000+ (Very Large)	Information and communication	Germany
R489	<i>Director</i>	1-2 years	1000+ (Very Large)	Other service activities	Germany
R490	<i>Managing Director</i>	1-2 years	1-9 (Micro)	Information and communication	Germany
R491	<i>Not answered</i>	1-2 years	50-249 (Medium)	Professional, scientific and technical activities	Paraguay
R492	<i>Not answered</i>	3-5 years	250-999 (Large)	Agriculture, forestry and fishing	Germany
R493	<i>Not answered</i>	< 1 year	10-49 (Small)	Professional, scientific and technical activities	Switzerland
R494	<i>Not answered</i>	< 1 year	1-9 (Micro)	Manufacturing	Germany
R495	<i>Senior Business Process Architect</i>	< 1 year	1-9 (Micro)	Other service activities	Switzerland

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R496	<i>Not answered</i>	3-5 years	250-999 (Large)	<b>Human health and social work activities</b>	United Arab Emirates
R497	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Electricity, gas, steam and air conditioning supply</b>	Germany
R498	<i>Not answered</i>	< 1 year	1-9 (Micro)	<b>Arts, entertainment and recreation</b>	Spain
R499	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Switzerland
R500	<i>International Customer Experience Manager</i>	3-5 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Germany
R501	<i>Producer and bass player</i>	6-10 years	10-49 (Small)	<b>Information and communication</b>	Switzerland
R502	<i>Not answered</i>	3-5 years	50-249 (Medium)	<b>Professional, scientific and technical activities</b>	Switzerland
R503	<i>Project Manager</i>	3-5 years	1000+ (Very Large)	<b>Electricity, gas, steam and air conditioning supply</b>	Germany
R504	<i>Not answered</i>	3-5 years	Not answered	<b>Transportation and storage</b>	Germany
R505	<i>Not answered</i>	1-2 years	50-249 (Medium)	<b>Professional, scientific and technical activities</b>	Spain
R506	<i>Collaboration &amp; Transformation Manager</i>	3-5 years	1-9 (Micro)	<b>Other service activities</b>	Germany
R507	<i>Not answered</i>	1-2 years	10-49 (Small)	<b>Information and communication</b>	Germany
R508	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Manufacturing</b>	Sweden
R509	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Germany
R510	<i>Executive Partner</i>	3-5 years	1000+ (Very Large)	<b>Information and communication</b>	Germany
R511	<i>Specialist Smart Systems</i>	3-5 years	1000+ (Very Large)	<b>Human health and social work activities</b>	Switzerland
R512	<i>Not answered</i>	3-5 years	250-999 (Large)	<b>Real estate activities</b>	United States of America

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R513	<i>Not answered</i>	< 1 year	250-999 (Large)	<b>Financial and insurance activities</b>	Switzerland
R514	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Switzerland
R515	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Germany
R516	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Switzerland
R517	<i>Consulting Manager</i>	6-10 years	50-249 (Medium)	<b>Information and communication</b>	Germany
R518	<i>Head of Unnovaton</i>	< 1 year	1000+ (Very Large)	<b>Manufacturing</b>	Sweden
R519	<i>Not answered</i>	< 1 year	250-999 (Large)	<b>Information and communication</b>	Germany
R520	<i>UX Designer</i>	3-5 years	250-999 (Large)	<b>'Wholesale and retail trade; repair of motor vehicles and motorcycles'</b>	Germany
R521	<i>Product Owner</i>	3-5 years	50-249 (Medium)	<b>Real estate activities</b>	Germany
R522	<i>Not answered</i>	< 1 year	1-9 (Micro)	<b>Arts, entertainment and recreation</b>	Germany
R523	<i>Not answered</i>	< 1 year	250-999 (Large)	<b>Transportation and storage</b>	Germany
R524	<i>Manager</i>	3-5 years	1000+ (Very Large)	<b>Manufacturing</b>	Sweden
R525	<i>Not answered</i>	3-5 years	10-49 (Small)	<b>Financial and insurance activities</b>	Germany
R526	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Manufacturing</b>	Switzerland
R527	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Manufacturing</b>	Germany
R528	<i>Not answered</i>	1-2 years	50-249 (Medium)	<b>Information and communication</b>	Switzerland
R529	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Electricity, gas, steam and air conditioning supply</b>	Switzerland
R530	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Information and communication</b>	Finland
R531	<i>Not answered</i>	3-5 years	10-49 (Small)	<b>Professional, scientific and technical activities</b>	Switzerland

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R532	<i>Venture Architect / Product Manager</i>	1-2 years	1000+ (Very Large)	<b>Manufacturing</b>	Germany
R533	<i>Not answered</i>	< 1 year	1000+ (Very Large)	<b>Financial and insurance activities</b>	Switzerland
R534	<i>Not answered</i>	3-5 years	50-249 (Medium)	<b>Information and communication</b>	Germany
R535	<i>ATZ</i>	> 11 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Colombia
R536	<i>Consulter</i>	3-5 years	1000+ (Very Large)	<b>Information and communication</b>	Iran (Islamic Republic of)
R537	<i>Not answered</i>	> 11 years	1000+ (Very Large)	<b>Manufacturing</b>	Sweden
R538	<i>Not answered</i>	< 1 year	1-9 (Micro)	<b>Manufacturing</b>	Finland
R539	<i>DT Coach</i>	3-5 years	250-999 (Large)	<b>Human health and social work activities</b>	France
R540	<i>Assistant Professor and Design Thinking Head</i>	3-5 years	10-49 (Small)	<b>Professional, scientific and technical activities</b>	Germany
R541	<i>Director Innovation Lab Hub US</i>	3-5 years	1000+ (Very Large)	<b>Other service activities</b>	India
R542	<i>IT leader</i>	3-5 years	1000+ (Very Large)	<b>Human health and social work activities</b>	Switzerland
R543	<i>Manager</i>	> 11 years	10-49 (Small)	<b>Other service activities</b>	Switzerland
R544	<i>Consultant</i>	1-2 years	1000+ (Very Large)	<b>Human health and social work activities</b>	Germany
R545	<i>International Product Manager</i>	1-2 years	1000+ (Very Large)	<b>Manufacturing</b>	Germany
R546	<i>Partner</i>	> 11 years	1000+ (Very Large)	<b>Human health and social work activities</b>	Switzerland
R547	<i>Coach</i>	3-5 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Switzerland
R548	<i>Digital Enterprise Switzerland</i>	1-2 years	50-249 (Medium)	<b>Human health and social work activities</b>	Canada
R549	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Not answered</b>	Germany

Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R550	Global Head Platform Strategy	< 1 year	10-49 (Small)	Other service activities	Germany
R551	Not answered	1-2 years	250-999 (Large)	Not answered	Germany
R552	Ux Designer	1-2 years	1000+ (Very Large)	Professional, scientific and technical activities	Brazil
R553	Not answered	< 1 year	250-999 (Large)	Information and communication	Germany
R554	Communication Design / Service Design / UX UI	3-5 years	1000+ (Very Large)	Manufacturing	Switzerland
R555	Not answered	3-5 years	1000+ (Very Large)	'Public administrative and defence; compulsory social security'	Germany
R556	Not answered	3-5 years	1-9 (Micro)	Other service activities	Spain
R557	Innovation Garage Lead	6-10 years	1000+ (Very Large)	Information and communication	Not answered
R558	Not answered	6-10 years	1-9 (Micro)	Information and communication	Germany
R559	Not answered	3-5 years	1000+ (Very Large)	Information and communication	Argentina
R560	Not answered	3-5 years	50-249 (Medium)	Human health and social work activities	Switzerland
R561	Not answered	6-10 years	1000+ (Very Large)	Financial and insurance activities	Mexico
R562	Not answered	< 1 year	1000+ (Very Large)	Other service activities	France
R563	Business Manager	6-10 years	1000+ (Very Large)	Information and communication	Switzerland
R564	Not answered	3-5 years	1000+ (Very Large)	Information and communication	Japan
R565	Not answered	6-10 years	10-49 (Small)	Information and communication	Germany
R566	Not answered	< 1 year	1000+ (Very Large)	Other service activities	Germany
R567	Not answered	3-5 years	1000+ (Very Large)	Professional, scientific and technical activities	United States of America



Code	Job Description	Design Thinking Experience (in years)	Firm Size	Industry Sector	Country
R568	<i>Strategy Advisor, Entrepreneur in residence</i>	1-2 years	1-9 (Micro)	<b>Other service activities</b>	Netherlands
R569	<i>Not answered</i>	3-5 years	Not answered	<b>Professional, scientific and technical activities</b>	Spain
R570	<i>Not answered</i>	3-5 years	1000+ (Very Large)	<b>Information and communication</b>	Sweden
R571	<i>Not answered</i>	6-10 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Finland
R572	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Finland
R573	<i>Senior Designer</i>	6-10 years	1000+ (Very Large)	<b>Human health and social work activities</b>	Switzerland
R574	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Professional, scientific and technical activities</b>	Germany
R575	<i>Service Designer</i>	6-10 years	1-9 (Micro)	<b>Human health and social work activities</b>	Germany
R576	<i>Not answered</i>	> 11 years	1000+ (Very Large)	<b>Financial and insurance activities</b>	Finland
R577	<i>Digital Transformation Manager</i>	3-5 years	250-999 (Large)	<b>Other service activities</b>	Switzerland
R578	<i>Not answered</i>	1-2 years	1000+ (Very Large)	<b>Other service activities</b>	Germany
R579	<i>Design Strategist</i>	< 1 year	1000+ (Very Large)	<b>Not answered</b>	Germany
R580	<i>Strategy &amp; Innovation Manager</i>	> 11 years	1-9 (Micro)	<b>Other service activities</b>	Germany

## Appendix 02 - Certification institution overview

Certification Institution	Website
+Acumen	<a href="https://www.acumenacademy.org/course/design-kit-human-centered-design">https://www.acumenacademy.org/course/design-kit-human-centered-design</a>
Berner University of Applied Sciences	<a href="https://www.bfh.ch/de/weiterbildung/kurse/design-thinking-meets-21st-century-skills">https://www.bfh.ch/de/weiterbildung/kurse/design-thinking-meets-21st-century-skills</a>
Blekinge Tekniska Högskola	<a href="https://www.bth.se">https://www.bth.se</a>
Certificate of Advanced Studies - Innovation	<a href="https://www.bfh.ch/de/weiterbildung/cas/innovations-changemanager-design-thinking">https://www.bfh.ch/de/weiterbildung/cas/innovations-changemanager-design-thinking</a>
Comfyapp	<a href="https://www.comfyapp.com">https://www.comfyapp.com</a>
Creaholic SA	<a href="https://creaholic.com/media/creaholic-und-swisscom-innovationshaus">https://creaholic.com/media/creaholic-und-swisscom-innovationshaus</a>
d-school at the University of Cape Town	<a href="https://www.gsb.uct.ac.za">https://www.gsb.uct.ac.za</a>
d.school Stanford University	<a href="https://dschool.stanford.edu">https://dschool.stanford.edu</a>
Darden University	<a href="https://www.darden.virginia.edu/online/design-thinking-innovation">https://www.darden.virginia.edu/online/design-thinking-innovation</a>
Dark Horse Innovation	<a href="https://www.thedarkhorse.de/design-thinking-workshop">https://www.thedarkhorse.de/design-thinking-workshop</a>
Delft University of Technology	<a href="https://ocw.tudelft.nl/courses/design-successful-business-model/subjects/module-2-design-thinking">https://ocw.tudelft.nl/courses/design-successful-business-model/subjects/module-2-design-thinking</a>
Echos Innovation School Sao Paulo Brazil	<a href="https://schoolofdesignthinking.echos.cc">https://schoolofdesignthinking.echos.cc</a>
Emeritus Institute of Management	<a href="https://emeritus.org/online-certificate-courses/innovation-design-thinking">https://emeritus.org/online-certificate-courses/innovation-design-thinking</a>
HPI Academy	<a href="https://hpi-academy.de/en/index.html">https://hpi-academy.de/en/index.html</a>
HPI School of Design Thinking	<a href="https://hpi.de/en/school-of-design-thinking.html">https://hpi.de/en/school-of-design-thinking.html</a>
HPI Design Thinking Research Program	<a href="https://hpi.de/en/dtrp/program/overview.html">https://hpi.de/en/dtrp/program/overview.html</a>
IBM	<a href="https://www.ibm.com/design/thinking">https://www.ibm.com/design/thinking</a>
Integrated Consulting Group	<a href="https://www.integratedconsulting.eu/design-thinking">https://www.integratedconsulting.eu/design-thinking</a>
IDEO U	<a href="https://www.ideo.com">https://www.ideo.com</a>
Inno Architects Academy	<a href="https://www.innoarchitects.ch/de/academy/einzelmodule/design-thinking">https://www.innoarchitects.ch/de/academy/einzelmodule/design-thinking</a>

Certification Institution	Website
SAP	<a href="https://training.sap.com">https://training.sap.com</a>
Strategyzer	<a href="https://www.strategyzer.com">https://www.strategyzer.com</a>
Stanford - Behavior Design (Fogg)	<a href="https://www.bjfogg.com/stanford">https://www.bjfogg.com/stanford</a>
Stanford - Continuing Studies	<a href="https://continuingstudies.stanford.edu/stanford-design-courses">https://continuingstudies.stanford.edu/stanford-design-courses</a>
Udemy	<a href="https://www.udemy.com/courses/design/design-thinking">https://www.udemy.com/courses/design/design-thinking</a>
University of St. Gallen	<a href="http://www.dthsg.com">http://www.dthsg.com</a>
ZHAW School of Management and Law - Service Design & Innovation	<a href="https://www.zhaw.ch/de/sml/weiterbildung/detail/kurs/cas-service-design-innovation">https://www.zhaw.ch/de/sml/weiterbildung/detail/kurs/cas-service-design-innovation</a>

## Appendix 03 - External consulting firms

External Consulting Firms	Website
<b>ArtBizTech</b>	<a href="https://www.artbiztech.org/en">https://www.artbiztech.org/en</a>
<b>Artøp</b>	<a href="https://www.artop.de/akademie/seminare/ux-thinking">https://www.artop.de/akademie/seminare/ux-thinking</a>
<b>Bogaziçi University Center for Life Sciences and Technologies</b>	<a href="https://lifesci.boun.edu.tr/en/seminar-design-thinking">https://lifesci.boun.edu.tr/en/seminar-design-thinking</a>
<b>Boston Consulting Group - Digital Ventures</b>	<a href="https://careers.bcgdv.com">https://careers.bcgdv.com</a>
<b>Butterfly Works</b>	<a href="https://www.butterflyworks.org">https://www.butterflyworks.org</a>
<b>Co:dify</b>	<a href="https://codify.in">https://codify.in</a>
<b>Coursera</b>	<a href="https://www.coursera.org/courses?query=design%20thinking">https://www.coursera.org/courses?query=design%20thinking</a>
<b>d.school Malaysia</b>	<a href="https://www.dschooimaysia.com">https://www.dschooimaysia.com</a>
<b>Dark Horse Innovation</b>	<a href="https://www.thedarkhorse.de/design-thinking-workshop">https://www.thedarkhorse.de/design-thinking-workshop</a>
<b>Deloitte</b>	<a href="https://www2.deloitte.com/de/de/pages/innovation/contents/design-thinking-community.html">https://www2.deloitte.com/de/de/pages/innovation/contents/design-thinking-community.html</a>
<b>Design Thinking Coach Academy</b>	<a href="https://designthinkingcoach.de">https://designthinkingcoach.de</a>
<b>Detecon Consulting</b>	<a href="https://www.detecon.com/de/wissen/design-thinking">https://www.detecon.com/de/wissen/design-thinking</a>
<b>Ernst &amp; Young - Etventure</b>	<a href="https://www.etventure.de/design-thinking">https://www.etventure.de/design-thinking</a>
<b>ExperiencePoint</b>	<a href="https://www.experiencepoint.com">https://www.experiencepoint.com</a>
<b>Fjord - Design and Innovation from Accenture Interactive</b>	<a href="https://www.fjordnet.com/conversations/time-to-re-think-design-thinking">https://www.fjordnet.com/conversations/time-to-re-think-design-thinking</a>
<b>HPI Academy</b>	<a href="https://hpi-academy.de/en/index.html">https://hpi-academy.de/en/index.html</a>
<b>IDEO U</b>	<a href="https://www.ideo.com/?gclid=CjwKCAjw5Kv7BRBSEiwAXGDElaxgjr4H9d0tXLzKcHy5NF4m5dWvWTchJk1jf2yVDAwW-J63BSBgAwRoCz9MQAvD_BwE">https://www.ideo.com/?gclid=CjwKCAjw5Kv7BRBSEiwAXGDElaxgjr4H9d0tXLzKcHy5NF4m5dWvWTchJk1jf2yVDAwW-J63BSBgAwRoCz9MQAvD_BwE</a>
<b>Integrated Consulting Group</b>	<a href="https://www.integratedconsulting.eu/insights/design-thinking">https://www.integratedconsulting.eu/insights/design-thinking</a>

External Consulting Firms	Website
<b>IT Management Partner</b>	<a href="https://www.itmp-sg.com/?gclid=EAlalQobChMIq9K_5byk6wIVDs53Ch0YFQsGEAAAYASAAEgK_kPD_BwE">https://www.itmp-sg.com/?gclid=EAlalQobChMIq9K_5byk6wIVDs53Ch0YFQsGEAAAYASAAEgK_kPD_BwE</a>
<b>Luma Institute</b>	<a href="https://www.luma-institute.com">https://www.luma-institute.com</a>
<b>Maschinenraum</b>	<a href="https://www.maschinenraum.io/user-centricity-design-thinking-at-german-mittelstand">https://www.maschinenraum.io/user-centricity-design-thinking-at-german-mittelstand</a>
<b>Mayo Clinic</b>	<a href="https://www.mayo.edu">https://www.mayo.edu</a>
<b>Pitchnext</b>	<a href="https://pitchnext.com">https://pitchnext.com</a>
<b>Prosper X</b>	<a href="https://www.prosper-x.de">https://www.prosper-x.de</a>
<b>SAP</b>	<a href="https://experience.sap.com/skillup/introduction-to-design-thinking">https://experience.sap.com/skillup/introduction-to-design-thinking</a>
<b>Solve Next</b>	<a href="https://solvenext.com">https://solvenext.com</a>
<b>Transferencias.design</b>	<a href="https://transferencias.design">https://transferencias.design</a>
<b>Valsplat</b>	<a href="https://valsplat.nl">https://valsplat.nl</a>
<b>Udemy</b>	<a href="https://www.udemy.com/topic/design-thinking/?utm_source=adwords&amp;utm_medium=udemyads&amp;utm_campaign=Brand-ed-Topic_la.EN_cc">https://www.udemy.com/topic/design-thinking/?utm_source=adwords&amp;utm_medium=udemyads&amp;utm_campaign=Brand-ed-Topic_la.EN_cc</a>
<b>University of St. Gallen</b>	<a href="https://www.es.unisg.ch/en/programme/creating-innovation-culture-design-thinking?gclid=CjwKCAjw5Kv7BRBSEiwAXGDEIW-PM1gijj5W1EB-jSkLE-DSEnMo35P1B0Ljb79gbpe8DwZkWNXugsRoCEmkQAvD_BwE">https://www.es.unisg.ch/en/programme/creating-innovation-culture-design-thinking?gclid=CjwKCAjw5Kv7BRBSEiwAXGDEIW-PM1gijj5W1EB-jSkLE-DSEnMo35P1B0Ljb79gbpe8DwZkWNXugsRoCEmkQAvD_BwE</a>

## Appendix 04 - Where the respondents learned about Design Thinking

How did you personally learn Design Thinking	Website
+Acumen	<a href="https://www.acumenacademy.org/course/design-kit-human-centered-design">https://www.acumenacademy.org/course/design-kit-human-centered-design</a>
Aalborg University	<a href="https://www.en.aau.dk/education/">https://www.en.aau.dk/education/</a>
Aalto University	<a href="https://www.aaltoe.com/programs/design-thinking-for-business-innovation">https://www.aaltoe.com/programs/design-thinking-for-business-innovation</a>
Anhalt University of Applied Sciences	<a href="https://www.hs-anhalt.de/startseite.html">https://www.hs-anhalt.de/startseite.html</a>
Aston University	<a href="https://www.aston.ac.uk">https://www.aston.ac.uk</a>
Bern University	<a href="https://www.unibe.ch">https://www.unibe.ch</a>
Brainbirds	<a href="https://www.brainbirds.com/de/product-finder/design-thinking">https://www.brainbirds.com/de/product-finder/design-thinking</a>
Certificate of Advanced Studies - Innovation	<a href="https://www.bfh.ch/de/weiterbildung/cas/innovations-changemanager-design-thinking">https://www.bfh.ch/de/weiterbildung/cas/innovations-changemanager-design-thinking</a>
Cornell University	<a href="https://www.ecornell.com/certificates/technology/design-thinking">https://www.ecornell.com/certificates/technology/design-thinking</a>
Coursera	<a href="https://de.coursera.org/courses?query=design%20thinking">https://de.coursera.org/courses?query=design%20thinking</a>
d-school at the University of Cape Town	<a href="https://www.gsb.uct.ac.za">https://www.gsb.uct.ac.za</a>
d.school Stanford University	<a href="https://dschool.stanford.edu">https://dschool.stanford.edu</a>
Echos Innovation Lab	<a href="https://echos.cc/">https://echos.cc/</a>
Emeritus Institute of Management	<a href="https://emeritus.org/online-certificate-courses/innovation-design-thinking">https://emeritus.org/online-certificate-courses/innovation-design-thinking</a>
ESAD Matosinhos	<a href="https://esad.pt/en/cursos/pos-graduacao/design-thinking">https://esad.pt/en/cursos/pos-graduacao/design-thinking</a>
ESPOL - European School of Political and Social Sciences	<a href="https://espol-lille.eu/en">https://espol-lille.eu/en</a>
ESSEC Business School	<a href="https://www.essec.edu/en">https://www.essec.edu/en</a>
Fachhochschule Potsdam	<a href="https://www.fh-potsdam.de">https://www.fh-potsdam.de</a>

How did you personally learn Design Thinking	Website
<b>Gerstbach Business Analyse GmbH</b>	<a href="https://gerstbach.at/design-thinking">https://gerstbach.at/design-thinking</a>
<b>Goh Keng Swee Command and Staff College</b>	<a href="https://www.mindef.gov.sg/oms/safti/gkscsc">https://www.mindef.gov.sg/oms/safti/gkscsc</a>
<b>Harvard University</b>	<a href="https://www.extension.harvard.edu/professional-development/programs/design-thinking-workshop">https://www.extension.harvard.edu/professional-development/programs/design-thinking-workshop</a>
<b>HPI - Hasso Plattner Institute</b>	<a href="https://hpi.de">https://hpi.de</a>
<b>Hochschule der Medien</b>	<a href="https://www.hdm-stuttgart.de/index_html">https://www.hdm-stuttgart.de/index_html</a>
<b>HPI Academy</b>	<a href="https://hpi-academy.de/en/index.html">https://hpi-academy.de/en/index.html</a>
<b>HPI School of Design Thinking</b>	<a href="https://hpi.de/en/school-of-design-thinking/hpi-d-school.html">https://hpi.de/en/school-of-design-thinking/hpi-d-school.html</a>
<b>Hochschule Luzern</b>	<a href="https://www.hslu.ch/de-ch/technik-architektur/weiterbildung/technik/cas-design-thinking">https://www.hslu.ch/de-ch/technik-architektur/weiterbildung/technik/cas-design-thinking</a>
<b>Humboldt University</b>	<a href="https://bwb.hu-berlin.de/index.php?main=lehrgang&amp;subnavi=detailansicht&amp;lgid=3057">https://bwb.hu-berlin.de/index.php?main=lehrgang&amp;subnavi=detailansicht&amp;lgid=3057</a>
<b>HyperWerk</b>	<a href="https://www.fhnw.ch/de/die-fhnw/hochschulen/hgk/institute/institut-hyperwerk">https://www.fhnw.ch/de/die-fhnw/hochschulen/hgk/institute/institut-hyperwerk</a>
<b>IBM</b>	<a href="https://www.ibm.com/design/thinking">https://www.ibm.com/design/thinking</a>
<b>IDEO U</b>	<a href="https://www.ideo.com/?gclid=CjwKCAjw5Kv7BRBSEiwAXGDEIb3_jt0Nx3VkVpy_c7I2AdH--cuYg3uM-g0iqj6PgDiTN-vT_k04k0BoCZRIQAvD_BwE">https://www.ideo.com/?gclid=CjwKCAjw5Kv7BRBSEiwAXGDEIb3_jt0Nx3VkVpy_c7I2AdH--cuYg3uM-g0iqj6PgDiTN-vT_k04k0BoCZRIQAvD_BwE</a>
<b>Inno Architects Academy</b>	<a href="https://www.innoarchitects.ch/de/academy/einzelmodule/design-thinking">https://www.innoarchitects.ch/de/academy/einzelmodule/design-thinking</a>
<b>Instituto Tecnológico de Estudios Superiores de Monterrey</b>	<a href="https://tec.mx/es">https://tec.mx/es</a>
<b>Kent State University</b>	<a href="https://www.kent.edu/globaleducation/art-ed-design-thinking">https://www.kent.edu/globaleducation/art-ed-design-thinking</a>
<b>Motorola University</b>	<a href="http://www.intrarts.com/Motorola/sigma.shtml">http://www.intrarts.com/Motorola/sigma.shtml</a>
<b>NPTEL - National Programme on Technology Enhanced Learning</b>	<a href="https://nptel.ac.in">https://nptel.ac.in</a>
<b>Open HPI</b>	<a href="https://open.hpi.de/courses/designthinkinginorganisations2020">https://open.hpi.de/courses/designthinkinginorganisations2020</a>
<b>OpenLab</b>	<a href="https://openlabsthlm.se/professional-courses">https://openlabsthlm.se/professional-courses</a>

How did you personally learn Design Thinking	Website
<b>OST - Ostschweizer Fachhochschule</b>	<a href="https://www.ost.ch/de">https://www.ost.ch/de</a>
<b>Pädagogische Hochschule Freiburg</b>	<a href="https://www.ph-freiburg.de">https://www.ph-freiburg.de</a>
<b>PH Ludwigsburg - University of Education</b>	<a href="https://bildungsmanagement.ph-ludwigsburg.de/bima-design-thinking+M52087573ab0.html">https://bildungsmanagement.ph-ludwigsburg.de/bima-design-thinking+M52087573ab0.html</a>
<b>Politecnico Milano - School of Management</b>	<a href="https://www.som.polimi.it/en/research/research-lines/design-thinking-for-business">https://www.som.polimi.it/en/research/research-lines/design-thinking-for-business</a>
<b>Pontificia Universidad Javeriana</b>	<a href="https://www.javeriana.edu.co/inicio">https://www.javeriana.edu.co/inicio</a>
<b>Porto Design Factory</b>	<a href="https://me310porto.com">https://me310porto.com</a>
<b>RIT - Rochester Institute of Technology</b>	<a href="https://www.rit.edu/ritonline/ritx/design-thinking">https://www.rit.edu/ritonline/ritx/design-thinking</a>
<b>RMIT University</b>	<a href="https://www.rmit.edu.au/study-with-us/levels-of-study/short-courses/design-thinking-for-innovation">https://www.rmit.edu.au/study-with-us/levels-of-study/short-courses/design-thinking-for-innovation</a>
<b>SAP</b>	<a href="https://training.sap.com">https://training.sap.com</a>
<b>Singapore Polytechnic</b>	<a href="https://www.sp.edu.sg/pace/courses/course-type/short-modular/open-for-roi/design-thinking-101">https://www.sp.edu.sg/pace/courses/course-type/short-modular/open-for-roi/design-thinking-101</a>
<b>Staatliche Akademie der Bildenden Künste Stuttgart</b>	<a href="https://www.abk-stuttgart.de/index.html">https://www.abk-stuttgart.de/index.html</a>
<b>SUGAR Network</b>	<a href="https://sugar-network.org">https://sugar-network.org</a>
<b>Swinburne University of Technology - Design Factory</b>	<a href="https://www.swinburne.edu.au/research/strengths-achievements/strategic-initiatives/design-factory">https://www.swinburne.edu.au/research/strengths-achievements/strategic-initiatives/design-factory</a>
<b>Technical University of Munich</b>	<a href="http://designthinking.winfobase.de">http://designthinking.winfobase.de</a>
<b>The New School - Parsons School of Design</b>	<a href="https://www.newschool.edu/parsons">https://www.newschool.edu/parsons</a>
<b>Udemy</b>	<a href="https://www.udemy.com/courses/design/design-thinking">https://www.udemy.com/courses/design/design-thinking</a>
<b>Umeå Institute of Design</b>	<a href="http://www.dh.umu.se/en">http://www.dh.umu.se/en</a>
<b>Universidade de Aveiro</b>	<a href="https://www.ua.pt/pt/noticias/0/55261">https://www.ua.pt/pt/noticias/0/55261</a>
<b>Università degli Studi di Modena e Reggio Emilia</b>	<a href="http://www.international.unimore.it">http://www.international.unimore.it</a>
<b>Universitatea Alexandru Ioan Cuza din Iasi</b>	<a href="https://www.uaic.ro/en">https://www.uaic.ro/en</a>



How did you personally learn Design Thinking	Website
<b>University of Applied Sciences Utrecht</b>	<a href="https://www.internationalhu.com">https://www.internationalhu.com</a>
<b>University of Cambridge</b>	<a href="https://www.ice.cam.ac.uk/course/introduction-design-thinking-and-design-process">https://www.ice.cam.ac.uk/course/introduction-design-thinking-and-design-process</a>
<b>University of Cincinnati</b>	<a href="https://www.uc.edu/campus-life/careereducation/courses/uc-forward/certificates/design-thinking.html">https://www.uc.edu/campus-life/careereducation/courses/uc-forward/certificates/design-thinking.html</a>
<b>University of St. Gallen</b>	<a href="https://www.unisg.ch/">https://www.unisg.ch/</a>
<b>University of Toronto</b>	<a href="http://blogs.studentlife.utoronto.ca/innovationhub/the-design-thinking-experience-program">http://blogs.studentlife.utoronto.ca/innovationhub/the-design-thinking-experience-program</a>
<b>University of Toronto - Rotman School</b>	<a href="https://www.rotman.utoronto.ca/ProfessionalDevelopment/Executive-Programs/Programs-Individuals/Design-Thinking">https://www.rotman.utoronto.ca/ProfessionalDevelopment/Executive-Programs/Programs-Individuals/Design-Thinking</a>
<b>University of Virginia - Darden School of Business</b>	<a href="https://www.darden.virginia.edu/online/design-thinking-innovation">https://www.darden.virginia.edu/online/design-thinking-innovation</a>
<b>Uppsala Universitet - Human-Computer Interaction</b>	<a href="https://www.uu.se/en/admissions/master/selma/program/?pKod=SMD2M">https://www.uu.se/en/admissions/master/selma/program/?pKod=SMD2M</a>
<b>Verrocchio - Institute for Innovation Competence</b>	<a href="https://www.verrocchio-institute.com">https://www.verrocchio-institute.com</a>
<b>Wayne State University</b>	<a href="https://wayne.edu">https://wayne.edu</a>
<b>Westfälische Wilhelms-Universität Münster - ERCIS</b>	<a href="https://www.ercis.org">https://www.ercis.org</a>
<b>Willem de Kooning Academy - Design Research</b>	<a href="https://www.wdka.nl/programmes/master-design">https://www.wdka.nl/programmes/master-design</a>
<b>ZHAW School of Management and Law - Service Design &amp; Innovation</b>	<a href="https://www.zhaw.ch/de/engineering/institute-zentren/ine/smart-city-leitfaden/werkzeug-ideengenerierung/design-thinking">https://www.zhaw.ch/de/engineering/institute-zentren/ine/smart-city-leitfaden/werkzeug-ideengenerierung/design-thinking</a>

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