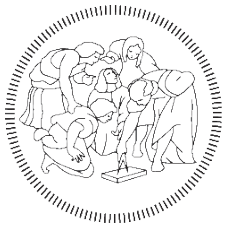

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Design Thinking Awareness and Adoption in Large Italian Organizations

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Executive Summary

The aim of this thesis is to provide a framework for the current degree of awareness and adoption of Design Thinking in large Italian firms.

For an Italian person, as I am, it is quite trivial to observe how Italy is normally lagging behind in many senses. Nonetheless, Design Thinking is a theme that is penetrating the Italian context, too. This is the reason why the research being the foundation of this thesis was commenced, with the purpose of studying how and for what reasons Design Thinking is currently being offered or sought for by Italian companies. This thesis attempts at describing the motives that are bringing Design Thinking to be one of the most appreciated problem-solving and innovation methodologies in the business context, by reviewing the theoretical foundations of Design Thinking both in the design and in the management discourse, and then by giving an overview of how a sample of Italian firms have absorbed or are absorbing this methodology.

The empirical research, presented in the second half of the document, will be upheld by a structured definition of what Design Thinking *is*, in terms of processes, tools or domains of application. It was also estimated a wrap up about the history and the development of the methodology in theoretical terms would be necessary, and also beneficial for the academic world, which is still struggling to find consensus around this fascinating but "wicked" matter. The overall discourse will start recalling the difference that exists between "tame" and "wicked" problems, and the awareness of the fact that the world's problems direction is rather the one of indeterminacy.

Literature Review

The first three Chapters of this study will be devoted to analyzing the literary contributions (*lato sensu*) that involved Design Thinking, starting from the years immediately after World War II (1948, to be more precise) to reach the 2010s.

The very first Chapter will actually provide an overview of the reasons why Design Thinking has become such a diffused and popular matter in the business world, beginning with the typology of problems that Design Thinking is naturally suitable to address – the so-called *wicked problems* – and the substantiation, in academic terms, of how this kind of problems deeply affects the business and management fields. The argument will deal in depth with the important contribution Rittel (1973) gave to the definition of *wicked problems*, to then proceed with the narration of how company strategy can be considered as a *wicked problem* (Camillus, 2008), and how organizations can unexpectedly change when Design is brought to them from the outside (Juninger, 2006). Throughout the first Chapter, the idea that the narration is concerned with how to bring together management and business will be reinforced, especially when comparing wicked problems to strategy, and when discussing, thanks to the academic efforts of Borja de Mozota (2006),

how Design is capable of generating value, and how this value can be measured via classically business tools as the *Balanced Scorecard*.

The second Chapter will initiate a historical recollection of how the term *Design Thinking* was born, and of the contributions (academic and non) that led to the formulation of this wording, nowadays so widely known and used. From 1948 to 2006, the reader will be guided through the very initial theorizations of the procedural habits of designers' in their work routine (Alexander, 1964), quite mechanistic and perfectible, that will be heavily influenced by the aforementioned work by Rittel (1973) and will assume a more creative and less linear imprint, until the official recognition of Design Thinking as a wording (Rowe, 1987).

It will then be illustrated how, during the 1990s, many aspects of Design Thinking were explored, concerning in particular the themes of *design expertise*, *learning* and *holism*. This very last aspect is probably the one that contributed the most to the diffusion of Design Thinking in the business realm: being Design Thinking itself a paradigm that is capable of developing a comprehensive overview of potentially any problem, it gave many business and management contexts the stimulus to tackle apparently intractable problems. Reaching the beginning of the 2000s, the interaction between Design and business became clearer, especially thanks to the work of Liedtka (Liedtka *et al.*, 2006), detailing the characteristics of the Design process, in particular explaining *who* designs, the ways a design process can be *guided*, and when a design can be said to be complete. The conclusion of Chapter 2 will be devoted to the illustration of a specific Design Thinking interpretation, defined *Creative Problem Solving*, upheld and diffused by the American Design consultancy firm IDEO, in particular through the words of its former CEO, Tim Brown (2009). This Design Thinking *stream*, with its inherent features, and in particular its focus on Design being human-centered will be discussed, given its centrality and influence it was able to exert on the business realm.

Chapter 3 will instead illustrate the latest trend involving Design Thinking and its interpretation across various industries: in chronological order, the three main Design Thinking *streams* that were born from the beginning of the 2010s on will be described. The first stream to appear in time, through the work of Roberto Verganti (2006, 2008, 2009), was *Innovation of Meaning*: according to the Italian scholar, the idea of the Design process and way of reasoning that is coming from a very localized Design cluster in Brianza (Northern Italy) is that creating an innovative artefact that people will find delightful is a matter of profoundly modifying the meaning that artefact previously possessed, and proposing that new meaning to the market in what would be defined, in the business jargon, as a *push* logic. This kind of transformation is brought on, according to Verganti, neglecting the human centricity that distinguished *Creative Problem Solving.*

After *Innovation of Meaning* came *Creative Confidence*, again proposed by IDEO, through the figure of David Kelley (2013): the founding idea of this Design Thinking interpretation is that people and professionals convince themselves they are not creative, given to the mainstream education systems structure and principles, and that keeping this conviction engenders many limitations, first of all to the capacity of those professionals of being spontaneous and risk-taking. Kelley thus proposes a series of real business case studies and practical tools to make professionals unleash all the innovation potential they buried within without realizing, so that their work morale is higher and positively affects the whole organization.

The Chapter and whole literature review ends with the explanation of *Sprint Execution*, the chronologically latest Design Thinking *stream* to emerge: theorized by Jake Knapp and two other colleagues of him (Knapp *et al*., 2016), it is a Google Ventures-born methodology that, in a very prescriptive and practical manner, explains how to carry out a *Design Sprint*, namely the generation and test of a working prototype of an innovative idea, in five full days only.

Research Methodology

The thesis follows a research methodology involving three main areas:

- Literature and desk research;
- Case study research;
- Survey research.

The literature and desk research, explained in the previous paragraph, mainly consisted of online-based searches conducted via specific keywords with respect to the matter of interest, on platforms as Scopus and Google Scholar. The second half of the thesis, which is instead devoted to the illustration of the empirical research, will present eight case studies of Italian large organizations (where, by "large", it is meant firms having more than 250 employees), placed in alphabetical order, in Chapter 5, to develop a first picture of how Design Thinking is penetrating the Italian business tissue, at least in firms having a relevant size. The case studies were developed by conducting direct interviews with representatives of the sampled firms first of all, to then re-elaborate and frame into a *research kit* developed by the "Design Thinking for Business" Observatory at Politecnico di Milano the extracted information.

Chapter 6 will instead explain the results of an online survey conducted on an enlarged sample with respect to Chapter 5, to develop a greater understanding of the diffusion of Design Thinking in the Italian context. The survey was composed by four macro-sections, aimed at discovering

the levels of Design Thinking awareness and adoption in the first place, and to then investigate which capabilities and project performances the respondents thought would benefit the most from Design Thinking adoption, in both a personal and a team perspective. The survey left in many cases the chance of leaving answers blank, and proposed only multiple choice or 100 percentage points distribution kind of questions.

Empirical Research

As already anticipated, Chapters 5, 6 and also 7 are devoted to the explanation of empirical results coming from the on-field research developed with Italian large organizations as sample of analysis. Chapter 5, the one dedicated to the illustration of the eight case studies coming from the same number of direct interviews, provides an idea, for each firm, of its general positioning, in terms of industry, number of employees and revenues (expressed in millions of euros), to then dive into the specific characteristics. These include four aspects mainly: what was defined as the *wide-spectrum goals* the sampled firms appear to be pursuing through the adoption of Design Thinking, the levels of Design Thinking awareness and adoption, the Design Thinking capabilities (segmented in skills, competences and attitudes) each firm seems to be willing to improve via Design Thinking itself, and the Design Thinking *stream* each firm could be placed into, basing on the collected information. What emerges from the analysis is that the firms belonging to the sample seem to be looking mainly for *customer experience development* as *wide-spectrum goal*, and that the Design Thinking capabilities that on average companies hold as the most improvable are *prototyping, user analysis, framing/reframing*, *criticism, empathy* and *embracing ambiguity*. Speaking of Design Thinking *streams*, Chapter 5 ranks *Creative Problem Solving* as by far the most recurrent one, followed by *Sprint Execution*, *Innovation of Meaning* (with a very reduced presence) and with *Creative Confidence* closing the ranking, without any noticeable occurrence. Chapter 6, with its more detailed analysis, partially challenges the aforementioned results, especially concerning the Design Thinking capabilities: those that on average are reported to be the most improvable are *business modeling, user analysis, creativity, brokering, empathy* and *optimistic mindset,* thus keeping only two of the previously mentioned six capabilities.

In terms of Design Thinking *streams,* the dominance of *Creative Problem Solving* appears maintained, and the second position in the ranking is still held by *Sprint Execution*. What changes, in this context, is that *Innovation of Meaning* is present in a much more significant proportion than in the previous kind of investigation, and *Creative Confidence* makes its appearance as well, even though with an average share of interest that does not reach 10%.

Summarizing, the overall results of the empirical research seem to suggest the Italian context, in

particular its large organizations, has a medium-to-low level of awareness with respect to Design Thinking, and that the creative paradigm is mainly interpreted as a methodology that can be helpful in its earlier chronological conjugation, i.e. the one involving the creative and methodologically innovative solving of existing problems. This is the reason why *Creative Problem Solving* as a *stream* records such a diffused presence in both the research samples: its instances feel closer to a still relatively business-oriented *milieu* as Italy looks like.

The capabilities that obtain the highest favor in terms of perceived improvability, overall, are *business modeling*, *creativity* and *user analysis,* reinforcing the assertion about the still quite strong business orientation of the Italian context. Another aspect that is really evident is that the perceived improvability of the Design Thinking-related capabilities is higher when projected on a *team* perspective, probably meaning that Design Thinking as a paradigm is more instinctively linked to team work, rather than to individual learning on the first place.

The image depicted through this study about the Design Thinking responsiveness of the Italian context is that of a very receptive and ready-to-be context, that is still more focused on the business benefits Design Thinking could bring to consider the organizational improvements the paradigm could engender. Italy looks like, in general terms, a fertile ground that might hold fruitful developments.

1.

The Remarkable and Unexpected Success of Design Thinking in Business

Design Thinking has – especially during the last decade – become a matter of tangible interest for the management and business world. Its creativity and concreteness at the same time transformed it into one of the preferred methodologies to address seemingly intractable problems, which business tools and processes failed to address for a number of different reasons. The world increased and increasing complexity placed Design Thinking in the position of being seen as an effective way to develop resilience and flexibility, due to its responsiveness and adaptability in the face of indeterminacy.

Another important motive for the success of Design Thinking is that, as the discipline it was born within, this thought process is holistic, namely proper for studying and effectively interpret the dynamics of complex systems, as organizations are known to be. Whenever facing complexity, Design Thinking tackles issues by first considering them in their entirety, including the broader context they derived from. This preliminary stepping back from the clamor of the problem arena allows Design Thinking to consider problems themselves from an innovative and unexpected point of view, reframing them in ways that make them solvable. Design Thinking finds its legitimacy in the idea that facing complexity requires making choices and assumptions, which is a procedure many businesspeople are not at ease with.

In practical and historical terms, Design Thinking rapidly expanded, and is extending its influence to a growing number of domains, including the long-refractory ones. This chapter is aimed at understanding the reasons why Design Thinking became such a hot trending topic in the Business world in particular. The analysis of the motivations behind this phenomenon will be substantiated through the acknowledgement of the nature of the problems Design Thinking is good at solving – "wicked" problems – to then proceed with an overview of the aspects of corporate life that were discovered to be inherently "wicked" as well: namely, strategy setting and value creation.

The last paragraph will then be devoted to the illustration of the serendipitous effects the application of Design Thinking can have on Design-refractory firms, if the methodology is given a chance to prove its value. Through real examples and cases, it will be shown how Design Thinking entered the business domain – and why it is there to stay.

1.1 The Difficult Interpretation of Design Thinking as a Unitary Theory

Design Thinking recently saw an incredible explosion in the business and management field. A number of articles, papers and studies were published on the reference journals and press in the management and organizational domain, such as the *Harvard Business Review*.

The business management magazine, founded in 1922 by the students of the Harvard Business

School, during its almost century-long history of narrating the cutting-edge business and management practices and innovations, sold more than 263,000 copies[1]. With the advent of the digital era, the HBR passed to digital, as well. Browsing on their website, one will discover they currently have 51,302 publications of various nature available in digital format. When the "Design Thinking" keywords are searched, the portal will return 6,323 related results, more than 12% of the overall number of publications available.

The HBR search engine also provides a classification of the results based on a series of tags: the three most popular ones, when entering "Design Thinking" as keywords, are, in decreasing order, "*Managing Organizations*" (2,810/6,323, covering 44.5%), "*Strategy*" (2,751/6,323, covering 43.5%) and "*Leadership & Managing People*" (1,889/6,323, covering 30% circa)[2].

Another important press material it might be useful to take into consideration is the *Design Management Review*, published by the Design Management Institute starting from 1990. As the institute it was founded by, the Design Management Review has always aimed at demonstrating the strategic role of design in business: it is thus worth mentioning.

Following the pattern applied to the *Harvard Business Review*, one discovers the overall number of media available in digital format is equal to 1,982. Restricting the research to articles only, this number drops to 1,464. When prompted with the "Design Thinking" keywords, the search engine returns 112 articles, corresponding to approximately 8% of the overall materials[3]. Almost the same proportion is maintained when considering all the kinds of digital content available on the website.

This very basic and somehow informal research already gives the idea of how Design Thinking has become important in terms of firms life, and in particular for two core aspects of its: business decision making and human resources policies. Of course, these results do not claim to be or become a scientific truth, but they might be interesting to shed light on the fact that, in the last 10 years, Design Thinking has been a hot topic both in the management and in the business-related design realms (Hassi *et al.*, 2011).

Pursuing this preliminary exploration on academic materials, one quickly realizes that many authors directly propose arguments about the reasons why Design Thinking can or potentially could be dramatically beneficial to "traditionally-minded" firms, about why Design Thinking grew so popular or even sort of guides of how to successfully introduce and integrate Design in an organization (Lockwood, 2009). Digging a little deeper, it is not hard to acknowledge that quite numerous are the scholars that spend their efforts in trying to better define what Design Thinking

1 https://en.wikipedia.org/wiki/Harvard_Business_Review.
2 https://hbr.org/search?search_type=search-all&term=design+thinking&sort=popularity_score.
3 http://www.dmi.org/?page=Content_Search

is, first of all, and in suggesting directions for future investigation about it.

One example of this are Çetinkaya, Johansson-Sköldberg and Woodilla (2013), who make an attempt to clarify the concept, distinguishing its academic development (defined *"designerly thinking"*) and the more practical development, that they locate in particular in the business realm, which goes under that name of Design Thinking we have all heard of. What the three authors argue is that Design Thinking, i.e. what they call the application of Design practices and competences beyond the Design context, lacks a robust research foundation, since *"managers reflect-in-action, but they seldom reflect on their reflection-in-action"*.

The three academics also provide a brief projection of how Design Thinking became a trending matter among management scholars: according to their research, this subject started to gain attention in the management realm during the 1980s. The attention by media, instead, came around 2004, and was followed by a peak of interest in 2009.

Çetinkaya *et al.* take into account a population of 168 academic items and plot them onto a chart (see Figure 1.1), discovering the aforementioned results.

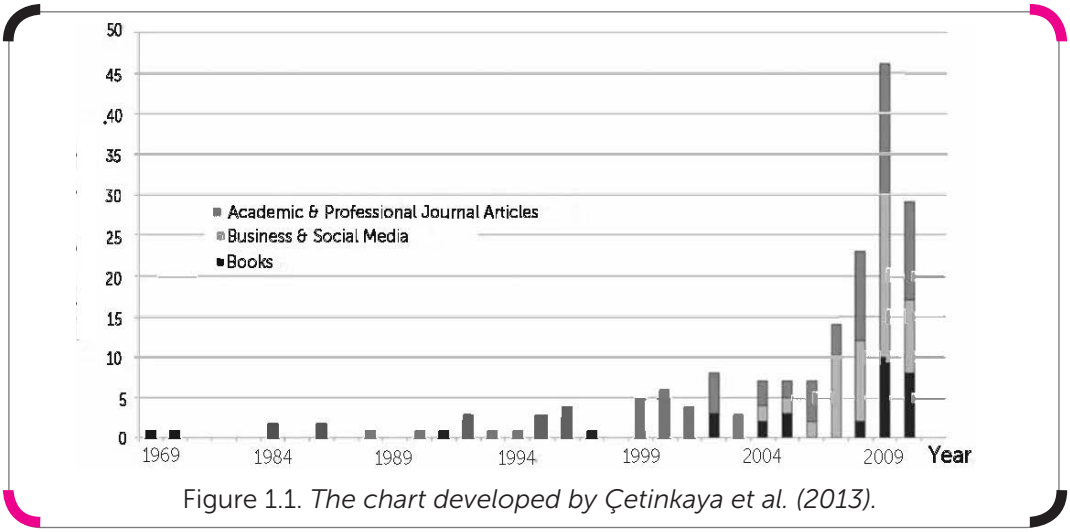

Figure 1.1. *The chart developed by Çetinkaya et al. (2013).*

According to Carlgren *et al*. (Carlgren *et al.*, 2016), what is lacking is actually not the scholarly and academic research, but a bridge that is able to connect what Design Thinking is in theory, and how it is then applied in the working world. Carlgren affirms that the real problem about Design Thinking and a thorough, univocal understanding of its is the fragmentation of the contributions about it. Contributions that appear to be fragmented both on the scholarly and on the practical side.

As far as the theoretical and academic side is concerned, Carlgren points out there is consensus on the fact that many scholars rely on practitioners' descriptions of Design Thinking as a starting

point (see also Liedtka, 2013). Being these descriptions seldom rigorous or detailed in the academic sense, confusion is served. *Voilà.*

Concerning the practical side, there is a first remark to make: as Carlgren recalls, there is a robust body of literature about how theories get implemented in organizations. The latest conclusion of these theories (Ansari *et al.*, 2010) is that the characteristic assumed by practices when implemented in social contexts (as organizations are) are strongly dependent on the features of the context itself. This academic conclusion seems to be confirmed by practice: more and more companies, besides declaring they adopt Design Thinking, claim they have created their own Design Thinking approach, or that they have inserted Design Thinking in *their own* framework. One example of this is SAP, company that states (SAP SE, 2016) Design Thinking is at the basis of its Digital Transformation efforts, and that they have adapted the methodology to a three-step process, in order to fit their and their customers' needs. Another example could be found in Dell, firm writing they have "*their approach to Design Thinking*" (Dell Inc., 2016).

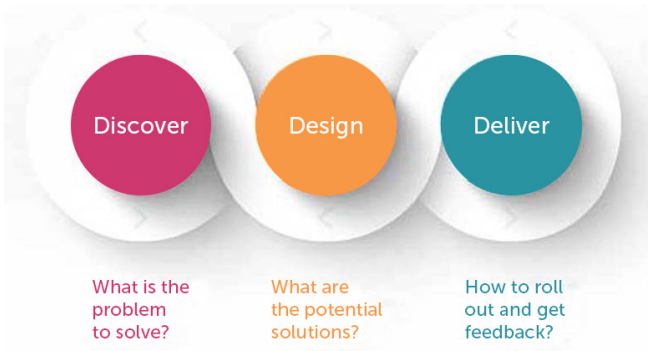

Figure 1.2: *The SAP Design Thinking process.*

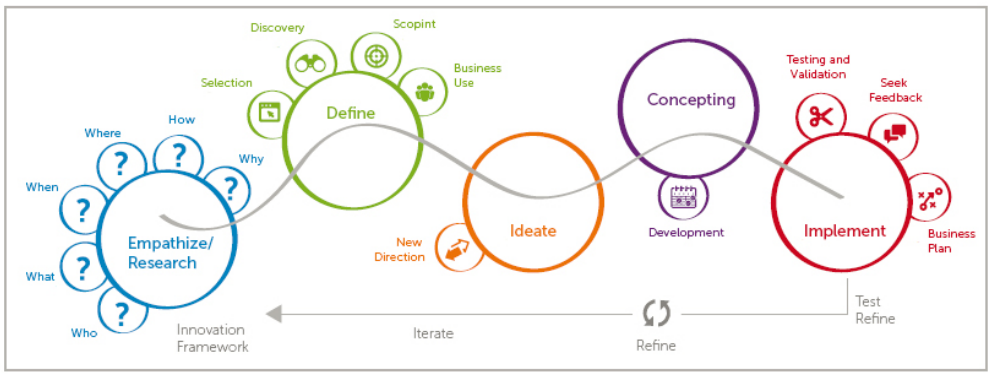

Figure 1.3: *The Dell Design Thinking process.*

Figures 1.2 and 1.3, besides witnessing a likely difference in the level of maturity towards Design Thinking of the two companies, well describe how different and customizable Design Thinking can be felt to be outside the academic context.

The fragmentation issue just discussed is probably made worse by the aura of popularity and of myth that started to surround institutions like IDEO or the d.school of Stanford University, whose work reflect the thoughts and words of relevant Design Thinking *gurus* as Tim Brown or David Kelley (e.g. Brown, 2009). The aforementioned aura of myth, depicting Design Thinking as a valid *panacea* for any kind of business problem, and having its *gurus* ascended to the role of superstars, made many scholars and practitioners protest against what they said to be a marketing strike, reviving a methodology that had already been in place for years. It is the case of Bruce Nussbaum, who, in 2011 (Nussbaum, 2011), accused Design Thinking to have become *"the latest management fad"* (on a similar position, Johansson-Sköldberg *et al.*, 2009).

This brief and intentionally puzzling *incipit* was aimed at picturing the mist that, about a decade after the powerful comeback of Design Thinking in the academic and business world discussions, still surrounds Design Thinking itself. It might be useful to take a step back, and understand better how Design and Design Thinking were able to enter the "harder" business and management domain.

1.2 Defining the Kind of Problems Design Thinking Solves

Given the confusion and the number of information that were intentionally introduced in the previous paragraph, it may be useful to focus on a specific (and, hopefully, common between Design and management) starting point. The argument was initiated under the light of the word "troubles": troubles in understanding what Design Thinking is, troubles in finding a common ground between scholars and practitioners and their points of view, troubles in determining whether or not Design Thinking can be truly helpful and appreciated in the business world. Therefore, the idea is to start exactly from *troubles*. Troubles that Designers and managers face, and their main characteristics. This paragraph will be devoted to the discussion of the adjective that brought Design and management problems close together: *wicked.*

In this regard, it is essential to refer to the fact that the terminology used in the title of this section is borrowed by Horst W. J. Rittel, who, in 1973, wrote an article (Rittel *et al.*, 1973) that was destined to become one of the milestones of the scholarly efforts to structure and make explicit the relationship that bounds the Design world and the Management world. Rittel, as professor of the Science of Design at Berkley, was an expert and researcher in the area of Design theories and methods. He also studied and was interested in policy making, field in which he suggested to use what he called the *"second generation design methods"* (see also Cross, 1993), whose aim would be to try to handle and hopefully solve "wicked" problems. Rittel defined "wicked" problems in

juxtaposition with what he called "tame" problems. Tame problems, in his view, are those science in general (and engineering in particular) have always dealt with. He uses the simple and powerful example of solving an equation to highlight the two fundamental attributes that distinguish "tame" from "wicked" problems:

- "Tame" problems are defined with extreme clarity: whenever you attempt to solve an equation, you know exactly what the problem is (i.e. defining the value of the unknown *x*);
- It can be unequivocally stated if a "tame" problem was solved or not: one equation has only one right result. If you do not get to that, it means you have not solved the equation.

These two very important properties (and also very useful or comforting, depending on the points of view) are falsified by "wicked" problems. Whenever dealing with wicked problems, the very first goal one meets is the problem setting and definition. According to Matthew E. May's research and teaching activities (May, 2012), one, when prompted to solve a problem (perhaps within a challenging time framework) normally has the temptation to immediately leap to the solution itself. This psychological mechanism substantially narrows down the spectrum of possibilities that would actually become good or even better solutions than the first one popping up in a person's mind. This is why May states that "*observation is an underrated skill, and one that is in great demand for those in pursuit of wicked problems*". Jumping to the first seemingly viable solution is a sort of defense strategy that the mind puts in place in order to come back to the application of the well-known problem-solving methodologies and categories (Conklin *et al.*, 1997). What then occurs is that the very first, superficial and self-evident layer of the problem is correctly addressed, while its deeper roots and causes are completely neglected. May speaks of two core issues anyone having to face a "wicked" problem will have to deal with: *acting* and *adding.*

This all to affirm how hard people, and especially engineering-like-minded people, find it to start solving a "wicked" problem: problem framing (and also reframing) is an approach that is not included in the traditional applied sciences algorithms and procedures, while it is something that the Design domain has known for quite some time (Cross, 2001). Rittel argues that the industrial age myth of endlessly perfectible efficiency is to blame, since it conveyed the idea that planning could be a perfectly suitable way to both make sense of problems and design solutions for them. In addition to this, Rittel (as many others) affirms that this kind of planning mentality is probably not that desirable, nor helpful, since practice has shown how little our bounded rationality is able to produce accurate forecasting or to pursue unitary aims, just to name a few.

The other problem characteristic that wicked problems falsify is the unicity and undefeatable

correctness of the solution tame problems normally have. Wicked problems, alike the problems designers are used to address, do not have a right or wrong solution: their solutions might be judged "good" or "bad", but it will never be an only one. A corollary aspect of the indeterminacy (in the algebraic sense) of wicked problems is the fact that the solutions put in place to solve them, however good or bad, will always have consequences and reflections on other aspects, and will likely generate new problems or challenges. A wicked problem, thus, will never end in itself.
To provide a unitary framework, Rittel defined 10 properties that characterize wicked problems:

- There is no definitive formulation of a wicked problem (see also Alexander, 1964)
  Whenever facing a tame problem, the appointed problem solver already owns a precise formulation of the problem. All he/she needs is to possess the methodological skills to proceed. When facing wicked problems, instead, the problem solver will have to develop sufficient knowledge about the so-called "*problem space*" and envision potential solutions before the problem itself is completely clear. As Rittel phrased it beautifully, "*the formulation of a wicked problem is the problem*".
- Wicked problems have no stopping rule
  As previously said, a tame problem also possesses in itself the criteria to establish when and if a solution has been found or not. This is not the case of wicked problems, whose process of solving is contemporary to the process of understanding the problem nature. Potentially, the more the problem solver understands the problem nature (which is an always perfectible process), the better the wicked problem can be tackled.
- Solutions to wicked problems are not true-or-false, but good-or-bad
  In the case of tame problems, there is one true, unique answer. When facing wicked problems, many solutions could potentially be adopted: what can be truly judged is the "degree of satisfaction" they generate, or the intensity of their closeness to the ideal, desired solution scenario.
- There is no immediate and no ultimate test of a solution to a wicked problem
  Once implemented, the solution provided for a wicked problem is quite problematic to take back, given that that solution will generate consequences and repercussions both on the medium and long term. For this reason, neither the exact consequences of a wicked problem's proposed solution can be fully evaluated until their consequences show up.
- Every solution to a wicked problem is a "one-shot" operation
  Here, Rittel argues that while in science one has the chance to carry out several experiments to test the solution, without having those experiments affecting the final result of

the undertaken course of action, with wicked problems even a pilot implementation will bear consequences that no one will be able to undo. This is why here Rittel's motto is *"every trial counts"*.

- **Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions**

  This issue is quite complicating the resolution of wicked problems, and requires in particular the application of judgement by the problem solver. A wicked problem could virtually have infinite solutions: since there is no way to prove one has tried them all, the criterion here should be to follow feasible and realistic ideas, around which there is a minimum consensus.

- **Every wicked problem is essentially unique (see also Romme, 2003)**

  This property can be understood in two different senses. The first one is that, as property 1 witnesses, wicked problems' context, conditions and nature are to be discovered along the path of problem solving. It is thus quite likely to discover, along the way, one or more element that will differentiate *that* specific wicked problem from others.

  The second interpretation relates to the principles of solutions: here, the meaning is that it is impossible to find problem solving methodologies that fit all members of a problem category, if ever a problem solver was able to identify one.

- **Every wicked problem can be considered to be a symptom of another problem**

  Due to the founding indeterminacy of wicked problems, it is quite likely that, attempting to solve one of those, the problem solver will find himself/herself facing a number of other problems that, at the beginning of the process, seemed totally unrelated from the starting one.

- **The choice of the explanation for a wicked problem discrepancy determines the nature of the problem's resolution**

  As already mentioned, the first issue one finds when facing wicked problems is problem framing and definition. As it is easily understandable, the problem definition, which follows logical rules and research but is to some extent arbitrary, will influence all the subsequent reasoning and deployed problem solving process. Kolko addresses this issue as a need of *judging* to keep only the relevant information needed to solve the problem (Kolko, 2010).

- **The planner has no right to be wrong**

  Unlike what happens in the scientific domain, in which a hypothesis is normally held as true until and if it gets falsified, with wicked problems the problem solver does not have that margin, since the impact it will have through his/her solution will directly affect the

context he/she is operating in.

Rittel's narration is somehow influenced by the topic dealt with in the article (the management and decision making processes in public policies), but it is the first structurally solid and quite prescriptive argument that places engineering-like disciplines (thus also management and a wide range of fields) on the side of "tame" problems mainly, while the general societal trend seems to be the one of going towards wicked problems (Xiang, 2013).

The matter of wicked problems, after this first academic contribution, acquires relevance and international resonance only a couple of decades later, in 1992, when Richard Buchanan raises the problem again. When speaking about wicked problems and how they relate to both design and science, Buchanan starts from a very concrete remark: the main design conferences worldwide, held in the recent past before the publication of his paper (Buchanan, 1992), were attended by a very diversified public, coming from both scientific domains and art-related ones. According to the author, this is due to the fact that design was imposing itself as an **integrative discipline** (Friedman, 2003) on the international scene. This is probably one of the key concepts and reasons why Design was also that successful in entering the business domain and providing it with an additional, more suited to the times point of view. Another important argument Buchanan brings to explain the growing curiosity about Design by not directly Design-related disciplines is the interest in understanding the "*conception and planning of the artificial*", where "artificial" means "created by human beings" (Simon, 1968). The author states that this concept is the only true common ground among all the different disciplines, since research and problem solving, in more abstract terms, have the conception and planning of the artificial as their ultimate goal. In this conception and creation of the artificial, Design as a discipline actually seems penalized: while the different scientific branches all have what Buchanan calls their *"subject matter"*, i.e. their specific area of investigation, in which they can invent, experiment and make sense, Design is a discipline that has a *"quasi-subject matter"*, i.e. indeterminate subject waiting to be made concrete. This to mean that Design can potentially be applied to any field (Friedman, 2003), thus it can acquire a universal scope. Nevertheless, in practical terms, what needs to happen for Design to be deployed is that a particular subject for action ought to be discovered or invented.

The turning point in Buchanan's reasoning comes when, as main example of quasi-subject matter, he brings company briefs, which have long been one of the preferred modality of communicating business and corporate problems. The author does so to highlight how company briefs, which are on average quite vague and to be reframed, actually provide just a problem and a set of issues that need to be considered in solving that problem. What then is needed is to bring that *in-*

determinate subject, as Buchanan phrases it, down on earth, making it specific and concrete. The best approach to make an indeterminate subject specific and concrete, according to Buchanan, is to refer to and adopt what he defines the *Doctrine of Placements*, typical of Design and Design Thinking.

The author argues that the mainstream educational training people receive is based on deductive thinking, whose starting point is made of categories (one of the most long-lasting and strongest pieces of the Aristotelian heritage). He puts categories, which have fixed meanings that are commonly accepted and shared in the framework of a theory or culture, in contrast with *placements*, that make the starting point of abductive thinking. Abductive thinking, differently from deductive thinking, implies the presence of two, quite different phases: an initial *divergent* moment, aimed at considering the widest possible problem space (Goel, 1992), in order to gain innovative points of view on the subject, followed by a *convergent* moment, in which all the previous divergency is organized, interpreted and decoded to lead to the creation of a truly innovative solution.

Deductive thinking is the line of thought that has traditionally been employed in science, engineering, business and all somehow science-related domains. Abductive thinking, instead, has long been associated to the artistic field. Buchanan argues that this is due to the fact that science-related investigations primarily have to do with *judgement*, i.e. the interpretation of what already exists, while Design, part of the artistic field at least in its start, primarily deals with *invention*, for which deductive thinking and interpretation are not enough. An invention-oriented frame of mind also requires an adequate starting point, which, as previously stated, Buchanan identifies this starting point in placements that, according to him, are conceptual constructions that constrain meaning and shape boundaries as categories do, but these meaning and boundaries are far less fixed and determinate than the one of categories. Placements are used to give an orientation to the stream of thought, but the meaning that they give to things and ideas can change according to the context of adoption. They are thus the most suitable tool in order to reason in a generative manner.

In 1992, Buchanan implicitly affirms that the best way to deal with corporate problems is abductive thinking (through the use of placements), a line of reasoning that is typical of Design and of any designer's mentality. His contribution will be followed by many others, highlighting how the typically Design-related tools and methods are actually the most appropriate to meet the challenges of a quickly evolving business world (Brown *et al.*, 2015).

1.3 Three Different Kinds of Reasoning

At this point, the picture displayed about the troubles designers and businesspeople have to face, and their inherent, habitual ways of solving them should be slightly clearer. The issues designers are used to face are, by nature, wicked. The growing complexity and macroeconomic conditions of the world markets make business problems become increasingly wicked, as well. The rising complexity needs to be handled somehow, and Design is a lifebuoy in this sense, being capable of acting as an integrator of a plethora of different disciplines. What is important to recall is that designers are not magically endowed with strange powers, allowing them to be the sole fighters of wicked problems: they are supported by the logical and thought processes they put in place when deploying their problem solving capabilities.

Abductive thinking was introduced as *the* way of tackling wicked issues: what should be explored more in detail are the logical underpinnings of this kind of reasoning, and its relationship with the other logical structures humanity developed over the centuries.

Abductive thinking is defined as the logical inference starting with an observation that seeks to find the simplest and most likely explanation to a given phenomenon. Abductive thinking was conceptually formalized by the American philosopher Charles Sanders Pierce, whose research was aimed at showing how abduction, given the fact that it usually starts from a hypothesis, just like induction, had been collapsed on induction itself for centuries. The logical shift that Sanders Pierce made an effort to promote was to acknowledge the fact that the basing reasoning hypothesis of abduction is not just a guess, made by chance, but the result of a divergent process that leads to consider the widest possible spectrum of options.

Abductive reasoning is now "certified" as the logical process that is at the basis of Design Thinking (Dorst, 2011) and Design Thinking-related methodologies. Let us see in detail what distinguishes it from the two other, commonly known ways of reasoning, deduction and induction.

1.3.1 Deductive Reasoning

Deductive reasoning is a logical reasoning process that is fundamentally top-down. Deductive reasoning follows a flow that goes from the general to the particular: the conclusion of the reasoning path is reached reductively, by showing how specific general rules that hold true for an entire domain of discourse are actually confirmed in a specific case or embodiment of it.

There are three main logical structures that form the building basis of deduction, of which the most famous is the Aristotelian syllogism. A syllogism is structured as follows:

- All men are mortal;
- Socrates is a man;
- Therefore, Socrates is mortal.

This argument shows how, in deduction, the reasoning flow starts from a general consideration about the entirety of a domain of discourse (all men on Earth), then focusing on a specific member of that discourse that, identified as member of the domain, is assigned the general property all the domain members possess.
Martin probably phrases this much more effectively saying that, according to deduction, if the general rule is that all crows are black and you see a brown bird, you can declare that bird is not a crow (Martin, 2009).

1.3.2 Inductive Reasoning

Inductive reasoning is a logical reasoning process that is fundamentally bottom-up. Induction, with respect to deduction, entails a higher degree of uncertainty, since its way of proceeding in the reasoning path is (sharply simplifying) passing from the particular to the general. The uncertainty that is generated by this type of path is mitigated by the credibility that the inductive argument possesses given the existing, established and proven theories. For example:

- All biological life forms we know of depend on liquid water to exist.
- Therefore, if we discover a new biological life form, it will *probably* depend on liquid water to exist.

In this case, the probability that the argument is true is upheld by the large scientific research material body witnessing how all living forms need water to exist. Another time, Martin provides a very effective example of induction: if one studies sales per square meter in a thousand stores, finding a pattern that suggests stores in small town generate higher sales per square meter, it could be inductively said small towns are a more valuable market.

1.3.3 Abductive Reasoning

Roger Martin defines abduction as *"the logic of what might be"*. Kolko pushes this definition beyond, stating that abduction is *"the argument to the best explanation"* (Kolko, 2010). As formerly hinted at, abduction, differently from the two other forms of reasoning, aims at generating new knowledge and insights. To do so, abduction introduces hypotheses that, according to the re-

search and information available to the designer who is facing a certain problem space, are the most suited to explain what phenomena are taking place in there. The fact to remark is that these hypotheses are not linked in any way to the problem space, nor to the phenomena that occur within it: they are freshly generated to explain things in an innovative and unexpected way.
Speaking in general terms, abduction produces arguments that are falsifiable, as induction does, even though it is for different reasons. In the case of abduction, the falsifiability is due to the context specificity of the hypotheses and assumptions that are made. Recalling the *Doctrine of Placements*, it is clear that a single concept, in the eyes of a Designer, can be interpreted in different ways according to the kind of problem space that concept is being plunged into. In the case of induction, instead, falsifiability comes from the impossibility to prove *a priori* the generalizations that are being made.
The highest contrast is between abduction and deduction, since the latter is totally self-sufficient and uncapable of generating new ideas.

1.4 The "Wickedness" Within Corporations

After attempting at clarifying what the main structures dominating problem solving in logical terms are, it is necessary to further develop the relationship between Design problems, whose characteristics were presented more in depth, and business problems, which were instead touched in comparative terms mainly and often hinted at. The end of the 1980s is a period of change and ferment in both domains: things are rapidly mutating, and scholars in particular do not sit and watch. In 1990, at the beginning of the same decade in which Buchanan will give the aforementioned rich contributions to the definition of wicked problems and their link with the business world, Michael Hammer, a professor at both MIT Computer Science Department and Sloan School of Management, writes an important article on the *Harvard Business Review* (Hammer, 1990). The article will become very important in the business world, since it is the first academic work concisely and precisely explaining what BPR (*Business Process Reengineering*) is, and why it has grown so popular in corporations. Besides remembering the undoubted importance of the definitions and statements Hammer makes in that article about BPR, it is worth remarking that he starts his argumentation process by a simple acknowledgement: the 1990s promise to be the "*age of the customer*", and firms appear utterly unprepared to manage that phenomenon. What Hammer observes is that firms are trying to face or, in the luckiest cases, anticipate change by simply automating the old, *as is* ways of doing business. Thing made even worse by recalling the fact that the deep changes the world markets were undergoing at the end of the 1980s had somehow been

foreseen by the work of Peter Drucker, who, in 1969, had titled his recently printed book "*The Age of Discontinuity*" (Drucker, 1969).

The signals were all there but the majority of firms failed to identify them. The solution suggested by Hammer is thus to adopt BPR, so that what we would define today customer and process orientation help firms come out of the *impasse.*

Beyond all the theory on BPR, to which Hammer contributed significantly, what is interesting to analyze is the definition that Hammer gives of his "recipe" for bringing firms out of their efficiency-at-all-costs loop: "*an all-or-nothing proposition with an uncertain result*". Whether he calls it BPR or XYZ, the author already appears to have grasped the main issue the business side needs to learn to cope with: uncertainty. Uncertainty, indeterminacy, flexibility, discontinuity: all concepts that are part of "wickedness", as it was defined and shaped by its main theorists, and that at the beginning of the 1990s also the business realm starts to point out as essential to tackle for success and, in some cases, survival.

At the end of his narration, Hammer closes with another relevant statement, that has become a *mantra* of the management field: the need for a vision for any kind of change to have at least one chance to follow through. Vision setting, vision stating, vision definition usually gain the first place in any creative methodology process, regardless the domain it was invented in. Having a vision means to have a long-term projection of what the firm should become like, according to the objectives of its leaders that are (hopefully) shared also by all the other members of the organization. Having a vision is not difficult *per se*: it can (before it is the final one, of course) be made of ideas, feelings, general ambitions, still blurred purposes. The hardest part is to find a balanced and comprehensive formulation of it. Organizations are in all respects living beings that are maybe not led by social rules, but certainly affected by them (Deserti *et al.*, 2013). These social rules imply the existence of discrepancies, disagreements, misunderstandings and clashes that make it hard to establish a deeply shared purpose, first of all, but also to determine whether a specific vision is making an organization truly evolve and renovate in its essence, beyond numbers and financial results. Briefly re-phrased, the two hardest things to do when setting the vision for an organization are vision formulation and vision results "evaluation". These two aspects are completely overlapping with properties 1) and 3) in Rittel's definition of wicked problems illustrated in the previous paragraph: the very first step to undertake is problem setting, which is also the toughest challenge (property 1)), and it is quite destabilizing to try to analytically point out whether a vision was the right one or not (property 3)). It is much more likely that the vision will be said to have brought the firm in a "good" or "bad" direction, rather than in "THE right" direction.

Coming back to what a vision is and is aimed at, it may be stated that vision is the starting point

for strategy definition, where, by strategy, it is intended the set of long-term impacting decisions that are to be made in order to pursue vision itself. Since, for what it was previously argued, vision possesses an intrinsic wickedness, that wickedness is quite likely to be transferred onto strategy. The fact that strategy might be viewed as a wicked problem is also the thesis of an article by John Camillus (Camillus, 2008), professor of Strategic Management at University of Pittsburgh School of Business. What he states is that, according to his understanding, many companies have shifted to planning processes that are far more elaborated than the traditional top-down, annual and budget-based approach. Moreover, Camillus argues that more and more company top managers, including CEOs, are reporting that the known planning modalities are failing to address issues that can be assimilated to wicked problems, and for which additional data gathering or forecast improvement cannot be enough.

To connect with what has been said so far, and to go back to considering the social sphere of any organization, notably its darkest side in terms of management effort magnitude, Camillus as well affirms that any wicked problem occurs in a social context, and that, more specifically, the social context of a strategy-related wicked problem is the stakeholders group: the more diverse their values and priorities, the tougher to set a commonly accepted direction to follow. The author also makes a list of five characteristics of strategy-related wicked problems, recalling the work of Rittel, but finds the beginning of his arguments in the social part of corporate life.

Of the same opinion as Camillus are Conklin and Weil, who affirmed that *"solving a wicked problem is a fundamentally social process"* (Conklin *et al.*, 1997). The interpretation of the word "social" by these two authors is a bit different from Camillus's, because they give two main connotations to it (while Camillus mainly focuses on just one of them):

- The first one is about the *intensity* of the social corporate life involved by wicked problems: as well recalled by Hammer (Hammer, 1990), the current and traditionally imposed organizational models and processes were invented in an information-poor context: from this, the necessity, desire or willingness to maximize the time spent collectively, in order to have the best possible information sharing. The issue with this praiseworthy intention is that its implementation can work in contexts where there is a certain stability, and thus meetings are scheduled with a reasonable frequency. When things get messy, the knowledge about the problem is not well-bounded anymore and information needs continuous updates, this kind of approach would require a potentially endless number of meeting and discussion sessions. The chaos brought on by wicked problems generate frustration in workers, who, as Conklin and Weil report (Conklin *et al.*, 1997), are growing more and

more irritated with the amount of time they are forced to spend communicating with others, and not focusing on their tasks. This connotation is absent from Camillus's argumentation, but is important to realize how deeply wicked problems can affect the life of an organization, and in particular produce those aforementioned discrepancies, disagreements, misunderstandings and clashes that prevent corporate objectives and goals from being fully shared.

- The second connotation of the word "social" involves *value*, in particular *stakeholders value*. As the two authors quite brutally write, "*none of the stakeholders can be safely ignored*". As previously said, an organization is certainly affected by its social rules, and those rules also imply the fact that each stakeholder is participating to the life of the firm because he/she is moved by a certain *interest.* What matters in this context is not the nature of the interest itself, but rather the fact that that specific interest exists. To be more precise, stakeholders take part in the life of a firm since they expect to obtain a certain *value* from that participation. This is the aspect that Camillus explains quite accurately as well.

The *value* perspective is something that resonates in the minds of science and engineering-oriented workers and people. Starting from the uber-famous Porter's *Value Chain*, corporate executives and business-involved people have long been talking about value, what it is, how to increase it or how to measure it. What has been less studied and spoken about, instead, is the value that the methodologies, tools and approaches coming from different domains than business (as Design, just to name one) can bring to business itself.

In this sense, the academic research carried out by Brigitte Borja de Mozota sheds light on this apparently neglected issue (Borja de Mozota, 2006). In the paper abstract, Borja de Mozota explicitly states that she wants to create "*a framework to bridge the gap between the world of designers and the world of managers*". The French scholar has done a lot of research on Design Management, and created a value model that, in her opinion, can help managers understand the contribution brought by Design in the activities of a firm. According to her research, Design has four ways to support management, in terms of value creation:

- Design as *differentiator*: here, Design is defined as a source of competitive advantage on the market. This advantage passes through an increase of brand equity, customer loyalty, price premium or customer orientation;
- Design as *integrator*: here, Design improves the new artefacts development process, and fosters the establishment of user-oriented innovation models;

- Design as *transformer*: here, Design helps creating and seizing new business opportunities, besides supporting the business in coping with change;
- Design as *good business*: this is the closest point to management that Design reaches in Borja de Mozota's model. Here, Design is said to be able to be a source of better margins, more brand value, better ROI and so on.

Borja de Mozota then takes into account what competitive advantage is, and how to measure it. Keeping as a key metric the EVA (*Economic Value Added*), which is one of the most popular in the business and management realm, the author states that any company needs to compete, within its own industry, on three main levers: technology, distribution and marketing, which tend to be similar from firm to firm. The idea, then, is to invent a combination of those resources that makes the company offer unique and, consequently, boosts its EVA. Of what Borja de Mozota defines *the four powers of Design* (i.e. the four bullet points just dealt with), two are the ones that are truly capable of delivering competitive advantage in the more "management-oriented" sense:

- Design as *differentiator*, in the sense that market advantage is achieved through a different/innovative/distinguishing offer of products and services;
- Design as *integrator*, in the sense that internal assets, processes and capabilities are shaped and organized in such a unique way that competitors find it extremely difficult to imitate.

It is one of the first times in which it is formally stated that Design helps management getting "competitive advantage", which is normally the ultimate objective of managers and business people.

Borja de Mozota does not stop there, and continues her argumentation process in a quite prescriptive way, by suggesting the use of a tool whose introduction aim was exactly to bring in the performance measurement processes typical of management a holistic and integrated approach, which is exactly the approach of Design: the Balanced Scorecard. The Balanced Scorecard was invented in 1992 by Kaplan and Norton, who proposed in an article (Kaplan *et al.*, 1992) to go beyond the more and more evident limits of the existing financial performances measurement approaches, too fragmented and focused on difficult-to-link aspects. It is not by chance that Borja de Mozota chooses exactly this tool (see Figure 1.4): her aim is to make a parallel between the figure of the designer, who thinks holistically, and one of the most famous systemic tools belonging to the management realm.

Summing up, the need to leverage more on Design in order to tackle the adverse market con-

ditions and changes that started in the United States in the 1980s (with the crisis of Fordism) has long been affirmed (one of the most cited first contributions on the matter is an article by Kotler and Rath, published in 1984 (Kotler *et al.*, 1984)), but the first scholarly contributions going deeper in the exploration of the growing importance of Design in management would come only in the following decade.

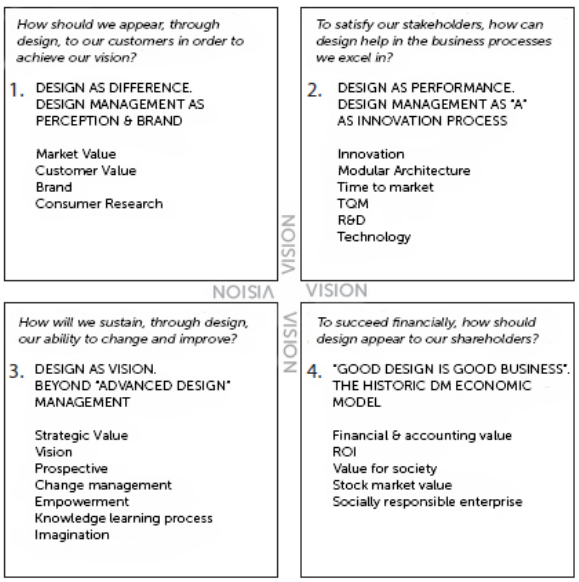

Figure 1.4: *Borja de Mozota's "four values of Design" summarized in the Balanced Scorecard format (Borja de Mozota, 2006).*

During the 1990s, the theories about the changes in the Design and management fields are brought to the next level by the formalization of the link between Design and seemingly intractable problems, for which Design itself is depicted as the most appropriate solution methodology, and by the concise statement of how the atavistic issues of the management realm are actually of the same nature of the ones daily tackled by designers.

Getting close to the 2000s, the picture elaborated so far is ulteriorly expanded, assimilating strategy to intractable problems, and discovering a new awareness about the social dimension, identified as the one bringing the highest quantity of wicked issues. Design is thus more and more directly linked to strategy, and to company results, whose probably main one is value creation. If Design acquires a strategic role, on one side, its potentialities are not fully understood by managers and business people yet, on the other one. For this reason, scholars keep on researching and publishing articles with the aim (and hope) to be able to bring these two worlds together. The strengths of Design in enhancing companies market life and interactions, together with the issues faced by designers within traditionally-minded firms, were already explored: what was missing was instead some narrative about how Design (and Design Thinking) do change the internal side

of firms, too.

1.5 How Organizations Unexpectedly Change Through Design

As it was presented in the previous paragraph, organizational change is a research domain that saw one of its main contributors in Michael Hammer, who set the basis for one of the most structured and well-known organizational change theories: BPR. As it is easy to realize, BPR, its refinements following Hammer's first publications and all the other theories that, to some extent, had to do with organizational change (O' Neill *et al.*, 1999) (many of them actually dealt more with organizational improvement, such as TQM), were anyway born in the engineering and management domain: for this reason, they lack the strongly human-addressed perspective that is typical of Design and Design Thinking. One might argue that is the reason why BPR implementation attempts (numbers are slightly lower for TQM and other improvement initiatives (Mosadehgrad, 2014), but not much lower) reach a far from honorable failure rate of 70% (O' Neill *et al.*, 1999). The relationship between engineering-minded organizational change initiatives failure and the degree of consideration of human interactions has not been robustly studied yet, even though there have been several hints at the fact that social factors play an important role when undergoing these changes.

What has been studied and, more importantly, proven through practical examples (what Design as a discipline learnt to call *case studies*, officially recognizing their importance (Yin, 1981), especially in learning terms) is instead the capacity of human-centered design to indirectly generate meaningful organizational change by putting users at the core of their work and efforts. In particular, authors as Buchanan or Juninger reflect and focus their attention on one Design branch, which significally embeds the human centricity paradigm: *Interaction Design*.

Interaction Design is defined by Cooper *et al.* as *"the practice of designing interactive digital products, environments, systems, and services"* (Cooper *et al.*, 2007). Interaction Design is a concept that was coined by Bill Moggridge, one of the co-founders of IDEO and pioneer of the human-centered approach, and Bill Verplank, another important American Design scholar who is now a professor at Stanford d.school. This Design branch was "informally" born in the mid-1970s, with the beginning of the development of computers, and was initially focusing on human-machine interfaces and ways of communicating. Once academic and field research brought scholars and practitioners to acknowledge that the kind of principles of the newly coined discipline could be applied to virtually *any* interaction – especially human-human ones, paving the way for new kinds of studies about social systems, including organizations – the focus and scope of

Interaction Design enlarged, leading to a reformulation of it. Through the scope widening and the inclusion of the social perspective, Interaction Design acquired a strong connotation of human centricity: a connotation that was already there, but that had previously been implicit. As Buchanan writes, Interaction Design is *"a strategic discipline [...] It is task-based and, therefore, human-centered"* (Boland *et al.*, 2004).

Juninger studies how Interaction Design, fueled by the human centricity paradigm, can produce a serendipitous effect on organizational hierarchy and structure by targeting new product development. What is truly original in Juninger's argument is that, having to deal with product development and its unexpected consequences, she starts wondering if an organization itself might be viewed as a product (Dunbar *et al.*, 2006). The author launches this provocative statement to argue that firms have progressively lost their capacity to look at the set of artefacts they create as an only system, writing that firms, on average, tend to consider single products as systems in themselves. According to the scholar, this is the typical symptom of the fact that firms are not human-centered, since they fail to consider that what users see (and thus what they interact with) is the set of the company touchpoints, that go far beyond a single product. For this reason, Juninger suggests, quoting Buchanan, that organizations should follow the principle of interaction design according to which the perspective to keep should be the one of the *"pathways of individual human experiences"*.

To demonstrate how human centricity can transform organizations in unexpected and unforeseen ways, the American scholar brings the example of the redesign of the Domestic Mail Manual (DMM) at the United States Postal Service (USPS) (Juninger, 2006), directed by the same Richard Buchanan already mentioned several times. This transformation project, developed in collaboration with the Carnegie Mellon University, Pittsburgh, was aimed at redesigning the DMM in a way that it could be far easier to understand for common people, who would be able to avoid having to speak with "expert decoders" of the manual itself.

Juninger describes the accumulation process that, along over 200 years of the USPS history, had brought the DMM to become a hugely voluminous manual whose thousands of rules no one was really able to remember, and whose interpretation (another very tricky task) was left to what the USPS defined the "DMM experts". DMM experts, being the only figures apparently capable of navigating the immense bureaucratic manual, had thus become central in the USPS organizational structure, because they were the sole executives who could effectively respond to customers' inquiries. The organization, Juniger argues, had become expert-centered, not human-centered at all.

The idea of the Design team guided by Richard Buchanan, then, was to elaborate 4 main profiles

of the users who might request access to the DMM, basing on their type of needs. For each of the 4 user groups, what was called a *brochure* was created, containing only the part of the DMM that was useful to that specific user group. Furthermore, all the language of the manual was reviewed, to make it much more easily understandable. Putting together the final 4 brochures, one would obtain the entire old manual, written in a much more comprehensible way, and with a less dull graphic style.

Besides making users much more confident in making inquiries, and empowering them to autonomously understand the content of the manual, which could already be considered a Design success, the USPS redesign project had the indirect effect of changing the company hierarchy: having provided users with a tool they could easily interpret by themselves, the previously called "DMM experts" were *de facto* brought back to being equal to the other USPS employees. In addition to this, also the other employees, who had previously being uncapable of decoding the DMM information, were empowered to do it, basically becoming, at least for this aspect, all equal again. The changed organizational setting is well displayed in the graph Juninger herself developed (see Figure 1.5).

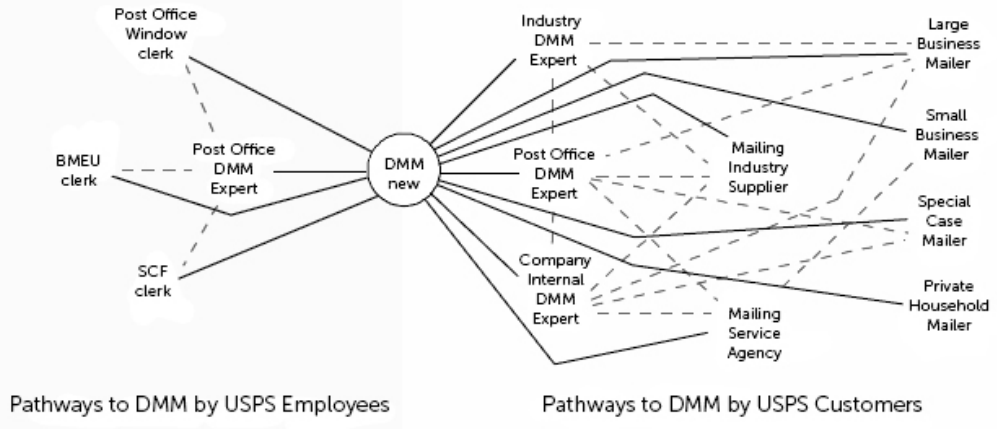

Figure 1.5: T*he USPS Organizational setting before (dashed lines) and after (continuous lines) the introduction of human-centered practices (Juninger, 2006).*

The graph shows how massively the role of experts changed, in the sense that it was significantly downsized, passing from being of absolute centrality (situation with dashed lines) to being practically re-equalled to the other employees, while empowered customers and workers were able to find their way in the previous maze of normative prescriptions.

Another example Juninger makes is related to a public service provider again: it is about the Australian Tax Office, and presents several similarities with the USPS case just dealt with (Juninger,

2005). The Australian governmental bureau turned to Design consultants in order to receive advice on how to become a more human-centered organization. The problem there, as in the case of the DMM, was that taxpayers (i.e. users) were treated as if they all belonged to a single, undifferentiated group. This caused the papers taxpayers have to fill in to be written in an undifferentiated, hard-to-grasp language that actually prevented those people from paying their taxes regularly. Through the work of Design consultants, the tax forms were redesigned to address an audience divided in four different groups (not only one anymore), and the organizational structure changed to meet the new ways of working that were proposed in the human-centered perspective. What happened, again, was that the already present employees were empowered to find solutions that were not imposed from above, and new kinds of professional figures (like "information designers") were brought to enrich the bureau population.

Putting aside for a moment the new product development process and its importance for firms (Kotler *et al.*, 1984), it could be argued without difficulty that, especially on the Design side of the narration, many words have been written about how bringing Design competences and professionals in companies that were devoid of them can prove beneficial for companies. This is in particular due, according to the main stream of thought (around which there is – one would dare to say – a unanimous agreement), to three main characteristics that designers and design-trained professionals own, and that usually business people do not:

- *Empathy*. The point of this paragraph was to show how human centricity, i.e. the capacity to put the user at the center of the overall company reasoning, is able to change both the perception users have of a company and the internal, social life and social rules linking the different executives. Empathy has been over the years defined in a variety of ways, e.g. as the capacity to understand other people's emotions, and treat them accordingly. One interesting contribution about empathy is the *Emotional Intelligence* book by Daniel Goleman, in which the author, a well-known psychologist, argues that what he defines "emotional intelligence", i.e. a set of skills of which empathy is one of the main, is far more accurate than IQ in measuring the real intelligence of a person. Ten years later the publishing of this book, the World Economic Forum placed emotional intelligence among the 10 must-have skills companies will look for in candidates by 2020[4]. Empathy is probably the main skill designers are trained to develop or are naturally prone to have, and what differentiates them from the other professional figures;
- *Visual Thinking*. Besides being trained to develop an emotional common ground with the

4 *Future of Jobs* Report, World Economic Forum (2016). http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf.

people they are designing for, designers also receive training and are normally good at visualization, commonly defined visual thinking as well. As Liedtka reports, visual thinking is quite different from mere drawing: it is about translating even complex situations or systems into a graphic, easy-to-grasp representation that can be understood by anyone (Liedtka *et al.*, 2010). Liedtka continues affirming that visual thinking is so precious because it allows to dissipate the fog that surrounds ideas and their explanation in the minds of listeners, thing that can become crucial during critical decision making processes;

- *Hands-on Mentality.* Another peculiar skill that differentiates designers from the majority of other professionals is their capacity to be really practice-oriented, and not to be scared of presenting an imperfect prototype to potential new users for tests. Prototyping is one of the key and most appreciated aspects of the Design background in the business and management realm: it can dramatically increase business performance by carrying out a series of prototyping iterations, which allow the firm to gain rapid feedback and to implement it before market launch (Dillard *et al.*, 2011).

Therefore, it might be argued that designers and Design Thinking, which is their inherent frame of mind and working process, have along the years been acknowledged as a growing and crucial part of the life of many firms around the globe.

To summarize, why has Design Thinking known the incredible explosion it had in the management realm? As it was illustrated within the chapter, this phenomenon is deeply rooted in the need for an alternative paradigm to the "efficiency only" one, which had dominated the stage from the Industrial Revolution to the years immediately following the end of World War II. This kind of alternative paradigm is looked for, at the time, since new psychological and cognitive dimensions of the work and organizational life are powerfully emerging, joint to studies whose aim is to acknowledge the existence of a social dimension that had long been ignored. At the same time, parallelly, the theorization of Design as a structured methodology and discipline commences, but Design is still mainly described as a linear flow of reasoning and actions that closely reminds the procedures of science.

It is until 1968, when Simon publishes his *The Sciences of the Artificial*, that there is actually no link at all between the world of management and the world of Design. In this milestone book, Simon, who was an American economist, psychologist and IT expert, puts Design and management on the same level, arguing that both these disciplines or fields entail the presence of the artificial, i.e. of what is created by human beings (Simon, 1968). The commonalities between Design and management that can be extracted by Simon's book go beyond this first acknowledgement: the

author points out how both disciplines have, in different ways, to deal with complex systems. The fact that this book, facing so deeply the arising complexity, is published in 1968 is probably not random: while the US are facing one of their deadliest conflicts (the Viet Nam war), the whole Western world is revolting against the *status quo* in a number of manners. The complexity that would need to be controlled, in that moment, is therefore mainly social, and the social, humanistic dimension, as previously affirmed, will be the *fil rouge* inevitably bringing together Design, Design Thinking and management (Johansson-Sköldberg *et al.*, 2009).

The narration about wicked problems that was explained in depth is definitely part of the pattern. Just five years after 1968, Rittel writes an article about how social issues are fundamentally indeterminate, impossible to solve once for all and constantly evolving, marking a difference with scientific problems, that are instead constrained and aimed at understanding reality, rather than at inventing. This famous article paves the way for future discussion about what wicked problems are and, especially, what are the best methods and skills to solve them. Before 1992, year in which Buchanan clearly puts on paper how wicked problems and Design are tightly linked, the business world, in particular in the US, sees during the 1980s the crisis of Fordism and the advent of Toyotism (Grover *et al.*, 1997). The continuous improvement logic (mainly made of incremental changes) pushed by Japanese companies is already a shock for the Western business world, still driven by the efficiency-at-all-costs paradigm already mentioned. The response to that shock consists of the elaboration of a series of change methodologies (BPR for the radical change side, TQM mainly for the incremental change side), whose implementation is not organic and often results in "no changes at all". Why does this happen? In the majority of cases, for a lack of vision, especially by top managers, since elaborating, or better, formulating a clear vision possesses similar features and implications to the formulation of a wicked problem. During the 1990s, not only this acknowledgement comes forward: strategy itself, i.e. the evaluation and decision making process put in place to achieve the company vision, is defined a wicked issue, hard to tackle through the consolidated business tools and management education. Meanwhile, Design Management officially sees the light as a discipline, and a number of scholars start writing about how Designers should be regarded as more than simple "embellishers" (Fraser, 2007), since they possess the capabilities, tools and mindset to mitigate the wickedness that penetrated the business realm. Wickedness is regarded as a serious issue by businessmen since, affecting vision setting and, by reflection, the whole strategy, it threatens value, which is the ultimate goal of the life of a firm. Not to mention the fact that the social life of a company is based on stakeholders (*lato sensu*) interactions. What are stakeholders looking for in a company, at the end of the day? Value creation, for business perpetration.

Given these evolutions, Design and management are brought close together. Also from the value perspective, there is investigation concerning how Design can impact, too. In particular, it is significant the contribution by Brigitte Borja de Mozota, explaining how Design creates business value, and how the recent business value measurement tools can be associated to that (Borja de Mozota, 2006). Design and Design Thinking do not stop to that: not only they are able to create value and quite precious for value creation, but also they contribute to change how organizations are shaped for the better.

Before 2009, when Design Thinking really comes under the spotlight thanks to Tim Brown, CEO of IDEO and author of *Change by Design* (Brown, 2009), Design and Design Thinking are looked for by an increasing number of managers and corporate executives since it seems to offer an alternative and much more effective recipe to problem solving, considering the deeply changed market conditions. IDEO and all the Design Thinking speculation coming after their worldwide recognition identifies Design Thinking as a way to successfully tackle innovation as well. After being bewitched by Design and its peculiarities, the business world is flooded by news, articles, videos, talks and podcasts about Design Thinking and starts asking itself: what is Design Thinking, then?

2.

Where It All Started: the Origins of Design Thinking

The previous chapter goal was to show how Design Thinking, for a number of different motives, became popular in the management and business domain, starting from a very embryonic link that was then developed and enriched throughout four decades. Let us not forget that "Design Thinking" is and was primarily addressed at describing "the way designers think and work" (Cross, 2011). Design Thinking, before being explicitly called this way after the publishing of Peter Rowe's reference book (Rowe, 1987), was indirectly hinted at by quite a large body of literature that, over the years, was published with the aim of describing the way designers work and think. Recalling Buchanan, it is not hard to understand why there was such an interest: since designers do not have a specific area of inquiry, but can potentially apply their methodologies and capabilities to any domain (Buchanan, 1992), it ought to be found out how they are able to work (and, more importantly, to be successful and effective) in such a diverse range of domains.

The chapter will deal with this topic by initially providing a historical overview of how the "Design Thinking" term evolved over time, starting from after World War II, and how it was gradually enriched, passing from simply being the thought process describing the work of Designers to being an integrative discipline, having in its holism and all-encompassing nature its main strengths. The narration proceeds with the description of one of the main paradigms of Design Thinking emerged with the new millennium, thanks to the contributions of IDEO Design consultancy firm and its professionals mainly. This paradigm, defined *Creative Problem Solving*, will be described in terms of the main skills, competences and project performances it appears to address given the narration written about it by its main definers. The description of *Creative Problem Solving*, that will be followed by that of the other three main "Design Thinking streams" that emerged from the beginning of the third millennium to present, is instrumental to carrying out the comparison between what these Design Thinking streams are, and how they are perceived, in particular in the context of large Italian organizations, which are the focus of this analysis.

In order to develop a clearer and easy-to-grasp picture of the main characteristics each "Design Thinking stream" (this definition will be recurrent from this chapter onwards), each stream, after being explained, will be devoted a paragraph to summarize its main features and distinguishing aspects. The kind of schematic representation that will be drawn in those paragraphs is also intended to simplify the comparison of the four Design Thinking streams that will be detailed during the following narration.

Finally, the chapter will close with a synthetic illustration of the most influential theories describing the process and tools respectively followed and adopted in Design Thinking.

2.1 The Beginnings

The initial historical period about Design Thinking the Chapter covers goes, as already hinted at, from right after World War II to the beginning of the 2000s. Over this significantly long interval of time, Design Thinking passed from being a methodology assimilated to scientific, ordered and linear thought processes to being held as the main paradigm to refer to when creative solutions to extremely complex and seemingly intractable problems need to be found. The narration will be divided in three parts: the first one going from 1948 to 1973, covering the so-called *first generation design methods*, to then proceed with the 1974-1992 period, where a more mature definition of Design Thinking emerges, finally arriving until 2006, with a last period of discovery of several aspects of Design Thinking that had remained untouched until that time.

2.1.1 1948 – 1973: "First Generation" Design Theories

The interest in how designers think and methodologically proceed begins immediately after World War II: Cross (1993) highlights how the very first seminal work dealing with the matter of Design Methods (of which Design Thinking might be viewed as the joining framework) was written in 1948 (*Zwicky*, 1948). Nevertheless, the author himself continues by writing that the very first structured contribution to the subject of how Designers act was given in the *Conference on Design Methods* convention, held in London in September 1962. What actually appears evident from the early contributions to the topic is a certain positivistic imprint, that is to say Design and its ways of working are depicted in quite a mechanistic way.

A paradigmatic example of this attitude, that Rittel would, a decade later, define as the "*first generation design methods*" (Rittel *et al.*, 1973), comes from the work of Alexander. The Austrian architect, now a well-known University of California professor, affirms quite assertively that "*the ultimate goal of Design is form"* (Alexander, 1964), which, seen in the light of the equation "Design = creation of new artefacts", is coherent with the later theories as well. The mechanistic aspect of Alexander's argument comes in when, after explaining how Design problems are all somehow made of the research of a fit between what he calls "form" and the context, he affirms that the final state of the design problem might be represented by a binary variable, where "0" stands for "fit", and "1" instead for "misfit". The desired condition, according to the author's and to one's intuition, is that these states are all set to "0". Alexander tries to mitigate the proximity of his theories with the scientific, engineering-oriented side by stating how these binary variables used to describe the final state of a problem are not restricted to quantitatively measurable parameters. His view of the topic, in any case, is permeated by an aura of mathematical rigor and essence that

will widely be criticized in the following decade. What the detractors of the the "*first generation design methods*" oppose more strongly is the linearity and simplification Design problems are described through and reduced to.

With the work of Rittel (1973) and the subsequent additions that were made on top of his statements, the perception about the mindset Designers had changed. Given the intractable formulation of wicked problems, that scientific methods and procedures were declared uncapable to reduce to intelligible terms, it became clear that Design methodologies and ways of thinking needed to find a new legitimacy and substantial literature to portray the shift that was happening.

2.1.2 1974 – 1992: A Modern Definition of Design Thinking

After Rittel's article (Rittel *et al.*, 1973), the Design field and academic research slowly starts moving towards what will later be called "abductive thinking" and its hypothesis-driven procedure. The first scholar to explicitly introduce this kind of argument (Design as a hypothesis-driven methodology) is Schön, a philosopher and former professor of Urban Planning at MIT. In an attempt to formulate a general and comprehensive description of how applied disciplines work and are shaped, Schön suggested that Design, as an applied discipline, is a learning-focused, hypothesis-driven approach (Schön, 1983). What is really important about the statement of the founding importance of hypotheses for Design becomes clear under the light of what was discussed in the previous chapter about abductive thinking. Abductive thinking is nowadays considered the typical process of thought characterizing Design, and also being one of its main strengths. Abduction relies on hypotheses with the aim of, on one hand, generating truly innovative contributions by seeing things in a different light and, on the other hand, making sense of the problem and tackle one aspect of its, to make it tractable.

Peter Rowe, who was expert in urban planning, tackled the issue from his own point of view, i.e. the architectural one. This should come with no surprise, since Design was born as part of Architecture, to then become an "independent" domain[5].

First of all, Rowe builds on Schön's work, facing the aspect that had not been touched by others in the philosopher's argument: the learning-oriented nature of Design. Rowe argues that one of the ways of thinking Design privileges is *Heuristic Reasoning*, described as *"a problem-solving process in which it is unknown beforehand whether a particular sequence of steps will yield a solution or not"* (Rowe, 1987). As the author points out, borrowing Rittel's terminology, Design problems are normally ill-defined: for this issue, the kind of problem-solving tactic to embrace is

5 It is worth remembering how the six designers that are now known as the "Maestri of Italian Design" (Gio Ponti, Bruno Munari, Ettore Sottsass, Vico Magistretti, Enzo Mari and Achille Castiglioni) all had architecture backgrounds.

one that is not able to establish whether a solution was provided or not until the end of the line of reasoning. The process just described well overlaps with a series of definitions thereafter given about Design Thinking, and about its prototyping and testing step in particular: concepts as the *maximization of learning* or the *fast learning iterations* that will be part of most subsequent theories, such as Lean and Agile as well, find their basis in what Rowe defined *Heuristic Reasoning*. The Design Thinking reasoning process described by Rowe contains another facets that links its author's theories to the embryonic statements previously made about the importance of hypotheses in Design. More specifically, the idea of the need Design has for hypotheses is translated into the notion of constraints (Rowe, 1987). Rowe recognized what Buchanan will subsequently address at as the *Doctrine of Placements* (Buchanan, 1992): the fact that, when solving an ill-defined problem, any designer is compelled to formulate context-specific assumptions, mainly based on his/her previous knowledge and experience, to be able to make sense of the problem itself and of the data retrieved from the context. Rowe admits how these hypotheses, constraints or assumptions (as one wishes to define them) are necessarily problem space-related, and, given the fact that designers usually leverage on their personal experience, entail a certain degree of subjectivity. The author actually identifies the existence of two types of constraints, in Design problems:

- *Problem-oriented constraints*, i.e. those constraints that provide the minimum information needed to solve a problem. This type of constraints comes from the defined part of wicked problems: let us remember that they are not completely undefined, but ill-defined.
- *Autonomous constraints*, i.e. the ones that the problem solver needs to set, to be able to proceed towards a solution. These are the context-specific assumptions just mentioned.

Autonomous constraints, in particular, according to Rowe (1987), can be "imported" into new problems dealt with through Heuristics, that are also the basis for abductive reasoning, the most suitable and closest reasoning method to the heuristic approach itself, already defined the privileged way Design Thinking uses to proceed. This is the very first, formal legitimation of abductive reasoning as the core thought process for Design Thinking, opening the way for further inquiry and speculation in the academic world. This speculation tends to converge with business and management from the end of the 1980s, mainly due to the increase of popularity and of perceived importance of new product development processes, in which designers are key professionals. Meanwhile, there is the blossoming of many Design initiatives that promote this new, synergic view of business and Design (e.g. the beginning, in 1990, of the publishing of the *Design Management Review*, now a reference magazine in the field of Design Management). After

highlighting the distinctive thoughts processes and problem-related features of Design Thinking, scholars and practitioners start to wonder about what skills and competences endow designers with this utterly different way of approaching issues and of working them out. In certain cases, the speculation is also oriented at understanding which would be the most suitable teaching tools and methods to shape those distinctive skills in students. This is for example the case of Nigel Cross, who writes that "*design ability is summarized as comprising resolving ill-defined problems, adopting solution-focussed cognitive strategies, employing abductive or appostional thinking and using non-verbal modelling media*" (Cross, 1990). The topics and themes already matter of discussion are all mentioned: first of all, the ill-defined problems, which Design is at the time already widely associated with; the learning-oriented mentality which is typical of Design, and that pushes the adoption of heuristics; the adoption of abductive thinking, with the aim of formulating out of the box, but context-rooted hypotheses; then, it is one of the first times that it is also explicitly mentioned how Designers, in the majority of cases, employ communication techniques and modalities that are far from the typical ones of the business world, and that involve graphics, drawings and visuals.

The educational aspect about Design and Design-related skills (addressed at by the author as the *nurture* part) is taken into consideration as well, given the statement of how the aforementioned skills are, in an very basic way, possessed by anyone. Therefore, what matters is to find a way to let those capabilities effectively emerge.

Following the fashion of the period, Cross begins his argument by reasoning about whether or not Design is important. The positive conclusion leads the author to consider how, in practice, Design manifests its importance, and the first example that is shown is about product development. Again, adhering to the trend of the period. What is immediately highlighted, by the way, is the newer aspect that is introduced, i.e. the visual thinking highly developed skills Designers own. The case of product development and innovation is particularly suited, since it allows to argue how well-trained Designers in particular possess the capacity to create drawings, sketches and also 3D mock-ups helping business and "harder" professionals to visualize the solutions they proposed. Obviously, this aspect has immediate and beneficial impacts on business performances: if a number of prototypes is built early with a moderate disbursement, it is possible to test some of their characteristics before the expensive production launch process is set. As Liedtka reminds, effective visualization prevents from the cognitive biases (Liedtka, 2015) that, in absence of a shared visualization of an idea, will form in the minds of the participants to a meeting (Liedtka *et al.*, 2010).

Cross enriches his argument through the explanation of a series of qualities that, according to

interviews previously conducted by the author, designers attribute themselves. The four, most recurrent answers are:

- Designers produce innovative and unexpected solutions;
- Designers are much more capable than other professionals of tolerating uncertainty;
- Designers are capable of applying imagination to practical problems;
- Designers use visual media to model problems.

What emerges from the self-awareness check performed by designers is substantially coherent with the narration brought on so far. The four statements overlap almost perfectly with the characteristics of Design and Design Thinking that were dealt with up to this point.
As seen in Chapter 1, Richard Buchanan is a figure that has deeply influenced Design theory, and also practice: for this reason, he comes back in the arena, building on what Cross tried to synthesize. Buchanan does not exclude at all the four perspectives on Design Thinking mentioned some lines ago: he simply decides to cut his argument from another angle. Wondering why there is this growing interest in Design and its thought processes at the beginning of the 1990s, Buchanan finds an answer that brings additional nourishment to the theories already in place: Design and Design Thinking are being sought for because they are viewed, perceived and, in some cases, experienced as integrators of knowledge from various domains (Buchanan, 1992). But they do not limit themselves to that: the knowledge that is harmonically joint by Design and Design Thinking is then used to go to the roots of those wicked problems that have widely been discussed. This point has a significant importance, because it creates the foundation for the majority of the subsequent arguments about Design Thinking. The cognitive way Design as a discipline has for working reaches a legitimacy that is defined in more abstract terms: not only Design Thinking is helpful when seen as a hands-on, practice-oriented mindset, but it also allows its adopters to make sense of information, however complex, and to create connections between the different pieces of it. Which, it was proven by scientific research, can be said to be the basis of true intelligence (Gläscher *et al.*, 2010).
The fact that Design Thinking is even more raised in prestige, passing from somehow being "the flexible discipline succeeding where others cannot" to, instead, being "the flexible and holistic discipline able to join all others together", gives an idea of the importance that Design and Design Thinking, by the first years of the 1990s, have acquired in both theoretical and practical terms.

2.1.3 1993 – 2006: Holism, Expertise and Learning in Design Thinking

In a sense, during the 1990s there is a progression towards the eradication of the idea of conflict that had always characterized the Design and Design versus business debates. Design is now recognized as a *science* that has gotten beyond the need of comparison of results against other sciences or disciplines. The beginning of the collapse of the idea of conflict between diverse domains of knowledge is accelerated by a simple acknowledgement that, again, will be one of the milestones of the subsequent literature. What is being hinted at is the awareness about the universal scope of Design (and, by extension, about the universal applicability of Design Thinking): unlike the other disciplines, especially the scientific ones, Design does not have a specific subject of investigation or application. It is a discipline that deals with the creation of the artificial, to recall Herbert Simon, where, by artificial, it is meant everything that is not conceived by nature, but by the human kind (Simon, 1968). This peculiarity is precious for Design, since it becomes clear how the connectivity power the discipline owns makes it suitable to address what other disciplines find intractable. And those disciplines find issues intractable, at least at the starting point, since they are epistemologically more limited in obtaining a pluralistic point of view. The capacity of exploration and problem reframing designers are trained to develop finds its basis in the scope universality of their professional domain. The plural and holistic mentality of Design is one of the main factors that makes Design so suitable for solving wicked problems.

An interesting aspect to make reference to is how the seeding of the ideas of plurality and holism has a practical reflection that will become a constant presence in the more recent theories mentioning Design Thinking: the plurality is not and must not be limited to the areas of inquiry that are summoned to participate to the solution of a certain problem, in a cognitive sense. It is recommended that this plurality can also be found in the problem-solving teams, in the sense of plurality of cultures, of backgrounds and of organizational functions of belonging.

This topic, approximately during the same time frame, is faced in the management realm as well. Drawing on the literature about organizational change and development, in particular with that discussing BPR, there are several hints at how multi-functional teams are beneficial for problem solving ability within teams, and for increasing the efficiency of the overall process.

One example is given by the work of Grover *et al.* (1997), who discuss the usefulness of going beyond the still strong and very rigid barriers of company silos, to have first of all an improved capacity of identifying the right objective and, secondly, to foster a common understanding and a tighter collaboration between professionals with diverse backgrounds (Grover *et al.*, 1997). What BPR spasmodically refers to as *process orientation* can, in a sense, be considered as the "scope centering" that Design has been said to achieve. For management, during the 1990s, to center the

scope means to shift the attention from hierarchy and internal mechanisms to the customer, and to the processes that bring value to that customer. A "scope centering" of this kind, according to the authors writing on BPR, is normally achieved when plurality enters the picture.

The studies on Design Thinking are pursued throughout the 1990s, with a particular attention to what visualization – in the forms of drawing and sketching - means to Design. In addition to this, it becomes clearer and clearer how the empirical analyses that are conducted to understand how designers proceed in their work compare designers and engineers, designers and scientists, designers and businesspeople. The common ground that the newly born Design Management tries to build between Design and Management is deeply explored in cognitive terms as well by this kind of research.

Purcell, for example, considers how drawing, sketching and making graphical representations in general (including analytical charts) is something that permeates many different disciplines, not only Design-oriented and artistic ones (Purcell, 1998). The author draws an interesting parallel between the function of sketches and drawings in Design, and that of charts in scientific disciplines. According to Purcell, sketches and drawings are supporting tools helping designers to follow a path of continuous and cyclical reinterpretation of information, which is paramount for achieving innovative solutions and reaching novel points of view. It could be stated, to summarize, that sketches and drawings help designers see what they could not when reasoning in abstract terms only. The same occurs in science: charts are normally use to visualize and detect aspects of the problems that would otherwise pass unnoticed.

Another aspect authors (including the just mentioned Purcell) spend many efforts on, organizing conferences and debates[6] about it as well, is the theme of expertise, and the analysis of how expertise itself influences the practices and cognitive strategies of Designers and students or professionals from different fields. The main observations that Cross makes in a summary article compare, in a first instance, the approach to problem solving showed by design students (defined "*novices*") and expert design professionals, to then extend this kind of comparison to other fields, such as engineering (Cross, 2004). What emerges from Cross's overview is that expertise, besides obviously being an acquired thing, gains a different connotation within the Design problem solving process, since experienced designers deploy their accumulated knowledge to elaborate conjectures, that they will use to define both the problem and the solution together. What happens in other fields, according to Cross and his research, is that many professionals, normally experienced ones, try to fully define the problem before solving it. For what has been explained

6 E.g. the Design Thinking Research Symposium on Expertise in Design, hostes by Creativity & Cognition Studios at University of Technology, Sydney, Australia, 17 – 19 November 2003.

hitherto, it is clear that this approach is not appropriate to the inherent nature of wicked problems. Moreover, it was observed how, actually both in design and engineering, spending a lot of time in defining the problem at the very beginning of the problem solving process would produce poor quality design solutions (Christiaans *et al.*, 1992) (Atman *et al.*, 1999).

To conclude the parable of the very first part of the Design Thinking journey before the 2009 consecration comes an article by Liedtka and Mintzberg, who tackle the description of the nature of Design in a practical, case study-based way, trying to understand points that were still not touched by Design literature: namely, the issues of who designs, how the Design process should be carried out in practice and the criteria to determine when and if a design can be considered "fixed" (Liedtka *et al.*, 2006).

The two management-related authors begin their argument discussing the difference between Design as a noun (meaning mainly "design artefact") and design as a verb (i.e. the act of designing), and have a brief *excursus* on how the design artefacts that are considered "good" normally bring with them emotional connotations. Passing to the act of designing, Liedtka and Minztberg, after analyzing four case studies, affirm that designing is a *continuum* of different ways of practicing it, and that the moving from one extreme to the other of this *continuum* entails acting on four parameters:

- Expertise;
- Insight;
- Engagement;
- Adaptability.

It appears evident that the theme of the expertise, so long discussed by Cross *et al.*, finds a resonance also in the management domain. In this context, expertise is interpreted as a factor of influence in the choice of who designs. In a very business and management-driven fashion, the various choices one has when deciding who will be in charge of designing is dealt with following a *trade-off* logic: the two extremes to consider, in this case, are the completely expert-driven designing, capable of generating visionary and radical changes (that are though often hard to successfully implement), and a totally user-driven designing process, in which the solutions will be less radical but probably better perceived by their final audience. The issue of who designs, thus, entails two of the four aspects aforementioned: expertise and insight.

As far as the question on how designing is performed is under scrutiny, the two authors become slightly more prescriptive in suggesting adaptability. What they envision, in particular in the man-

agement in business world, is a more widespread acceptance of uncertainty as a distinguish feature of any innovation challenge, and the creation of tactics and practices that allow managers to prevent their teams from making decisions too early, avoiding broad research and exploration. As Owen would recall, one of the characteristics of Design Thinking is the capacity and the willingness of postponing the decision moment as much as possible (Owen, 2007).

Concerning, finally, the problem of when a design process can be considered "done", at least for a certain period of time, Liedtka and Mintzberg note that it is vital to "*get the basics right so that the specifics can easily be changed*" (Liedtka *et al.*, 2006). What they mean is that any design needs a period of fixation, in which it remains the same, so that it can be evaluated and tested. The suggestion to make designs as modular as possible, then, is natural: in a cyclical view, there will always be an alternation of stable moments and of times of change and modifications. What is important in any artefact (including business models), so that it can be successful, is that it is *growable* enough in a way that does not change its core characteristics.

Following all these considerations, it is now really time for design!

2.2 2009: Design Thinking in the Limelight

As recalled by Çetinkaya *et al.* (2013) in Chapter 1, 2009 in the pivotal year for Design Thinking: both scholarly and field contributions peak in number, and the steady but not extremely remarkable growth in interest for the topic has a jump forward. This paragraph deals with the contributions given by IDEO and its members mainly, since they were the ones that more significantly contributed, especially in popularity terms, to the rise of that Design Thinking stream that is addressed at here as *Creative Problem Solving.* Before discussing what IDEO brought to support the cause, there will be a summarizing discussion, to establish the main features of Design Thinking as they emerged during the previous narration conducted until this point. The paragraph will be closed by a schematic description of the distinguishing features of the *Creative Problem Solving* stream.

2.2.1 Eight Summarizing Features of Design Thinking

The previous paragraph was devoted to the illustration of the main evolutions of Design Thinking, from its very early theorizations to the contributions that immediately preceded 2009, which could be in a sense addressed at as "the year 0 of Design Thinking". Of course, this premise does not have the arrogance to be taken as a completely exhaustive collection of the ideas and the authors that had to some extent to do with Design Thinking. The scope of this sort of detailed

introduction was to put the principal, basic elements characterizing Design Thinking forward, so that they could support and substantiate the following arguments and findings. These elements, in brief, are the subsequent eight points:

- Design Thinking, being identified as the way designers think and act, is a very suitable thought process and cognitive tool to tackle innovation problems, so that these problems can be solved in original and unexpected ways. As Follett writes, *"Design Thinking can be used to create everything"* (Follett, 2016).
- Design Thinking is one of the preferred modalities (not to say the only one) to solve wicked, ill-defined problems, since it is a problem solving approach relying on discovery in advance of issues and needs (Bennett *et al.*, 2013), on expanding the boundaries of both problem and solution and on igniting creativity and confidence in problem solvers (Tripp, 2013).
- Design Thinking is a cognitive model that is substantially different both from deduction and from induction: it is abductive, in the sense that it entails a divergent, broadening phase of unexpected ideas gathering, followed by a convergent phase in which the most promising ideas are selected and put in practice.
- Design Thinking is a visualization-intensive problem solving mode, which heavily exploits the potentialities of drawings, sketches and graphic representations to rapidly anticipate issues that would be undetectable in the abstract reasoning. Visualizing is the main sense-making modality in Design Thinking and one of its distinguishing features (Rylander, 2009).
- Design Thinking is universally scoped, which means it can virtually deal with any kind of problem in any domain, since it is a generative cognitive process that does not relate too tightly to any specific field.
- Design Thinking, being the thought process of Design as a discipline, inherits the capacity of Design to act as a knowledge integrator, i.e. of synthesizing concepts and contributions coming from different disciplines, transforming previously separate ideas into a unique and holistic proposal.
- Especially in its application, Design Thinking is, in a sense, related to the expertise of its applicants. Since it is quite vaguely defined and perceived as non-prescriptive by the majority of its adopters (Hassi *et al.*, 2011) , Design Thinking is often adapted by its employers, and novices might have trouble in getting it right the first times.
- Design Thinking is an engagement-driven cognitive process, both engaging the problem solver and the recipient of the problem solution. The engagement towards users, custom-

ers, or in any case target people has widely been discussed, especially with the emerging of Human-Centered Design (IDEO.org, 2015). Design Thinking engages problem solvers as well, since it demands them imagination and abstraction efforts at the same time, besides requiring a certain training in synthesizing information.

These eight elements will be somehow the *fil rouge* connecting the narration that is about to come. As explained Chapter 1, we saw how Çetinkaya *et al.* (2013) plotted the distribution of academic and non-academic publications, to discover that the publication trend had a sharp peak in 2009 (Çetinkaya *et al.*, 2013), the year in which two milestone books were printed: *Change by Design*, by Tim Brown, and the *Human-Centered Design Toolkit*, by IDEO[7].

2.2.2 The IDEO Egemony: Design Thinking as Creative Problem Solving

Today, IDEO is probably *the* Design Consultancy firm globally recognized, with more than 700 employees, 23 offices around the globe and a number of decorations coming from prominent innovation projects developed assisting worldwide known companies. Founded in 1991 by David Kelley, Bill Moggridge and Mike Nuttal, the company came from a past of ground-breaking innovation: back in 1980, when it was still called Hovey-Kelly Design, it designed the first computer mouse in history for Apple, which, thanks to the innovative design of the product, was priced at about 6% of the previous mice price. In 1999, eight years after the transition of the company to IDEO, there was the broadcasting, on the American television network ABC, of the redesign process of the shopping cart, which soon became very popular in academic innovation classes. What was hinted at as "the year 0 of Design Thinking" was the year in which the most eminent Design firm globally, through its own voice and that of its CEO, decided to provide the world, in particular the business one, a unitary framework about Design Thinking and its human-centered spirit. The two books acquired a very high relevance and recognition, putting in the shadows all the academic discussion by playing the card of unity, even though they are quite different in nature: the *Human-Centered Design Toolkit*, as its title will suggest, is a collection of tools, mindsets and really practical advice on how to apply human-centered design techniques to potentially any kind of project; the book by Brown, instead, has a much more narrative rhythm and copes with the "general themes" of Design Thinking.

The *Human-Centered Design Toolkit* begins with the explanation of what Brown defines *the three spaces of innovation* (Brown, 2009), i.e. the three main phases of the human-centered de-

7 Refer to https://www.ideo.com/post/design-kit for information about the Human-Centered Design Toolkit birth and development.

sign process, displayed in Figure 2.1.

The very first thing that captures one's attention is the curvy shape of the path line: it is in such fashion to remind the reader that any innovation or design-related process ought to rely on abductive thinking, alternating divergent and convergent moments in all the three steps.

Inspiration is the starting moment of the whole path: it is the exploratory phase, in which the tasks previously defined as *problem definition*, *trend research* and other discovery activities take place. The main problem, at this stage, is usually to start the whole thing: for this reason, IDEO provides the reader with an extensive set of interview and empathy-building tools (IDEO.org, 2015).

The following *Ideation* phase starts with a convergent moment, which is the several times aforementioned sensemaking time. The scope of ideation is to reach an innovative point of view on the issue thanks to problem reframing, to then diverge again in generating potential solutions. In this case as well, IDEO supports its readers with a number of different tools, the most famous of which are the "how might we...?" questions and the Business Model Canvas, for the more business side.

Implementation, eventually, is the prominently convergent phase during which the proposed solutions need to be skimmed of, to proceed with the prototyping and iterative testing advised by Design Thinking before the final market launch.

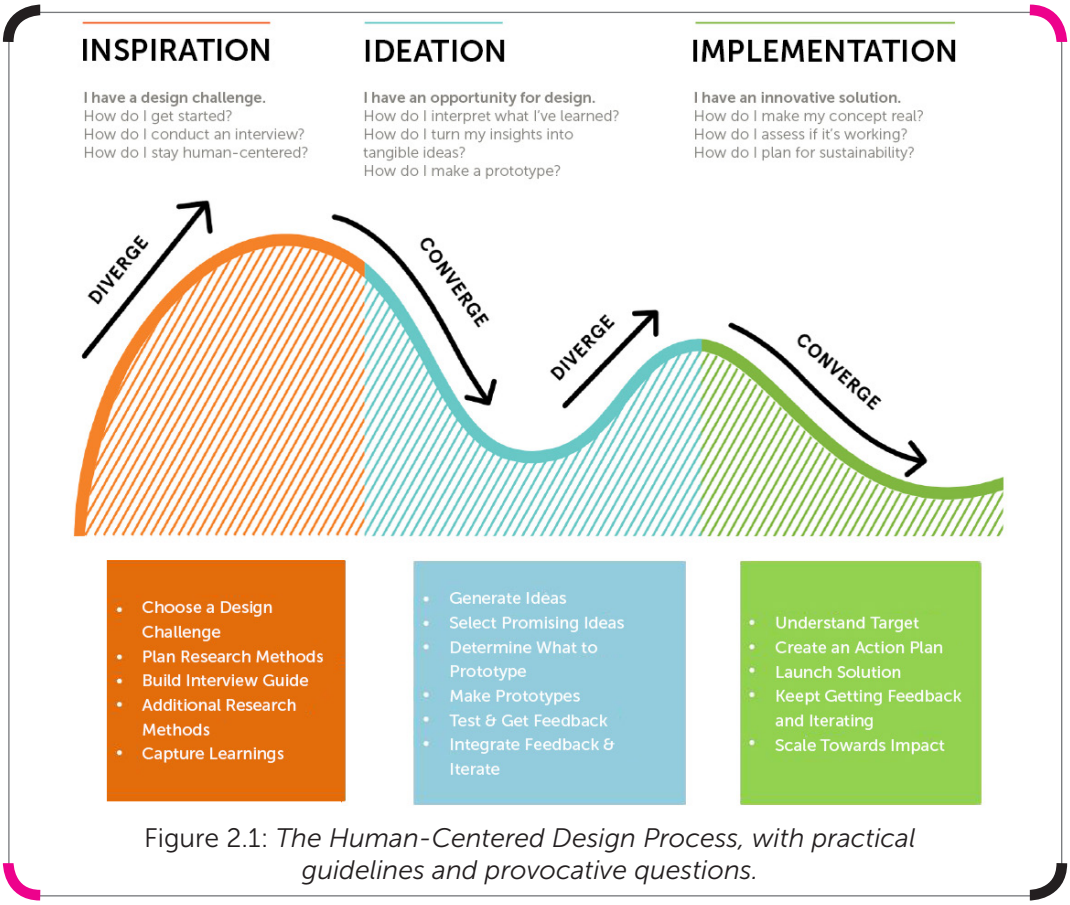

Figure 2.1: *The Human-Centered Design Process, with practical guidelines and provocative questions.*

The Human-Centered Design approach schematized so far is one of the six pillars that, according to Brown, build Design Thinking (Brown, 2009). They are:

- The overall balance of constraints, problem solving modalities and culture;
- The human-centeredness;
- The diffusion of an experimentation mentality;
- Prototyping, first of all as a tool of reflection;
- The importance of experiences and their careful design;
- Storytelling and communication.

A point Brown insists on is the fact that, being Design Thinking an exploratory process, it is essential to have a project brief that is balanced, i.e. that does not hold too many constraints nor too few, and that those constraints are conceived and looked at in terms of three dimensions: *desirability*, *feasibility* and *viability* (see Figure 2.2).

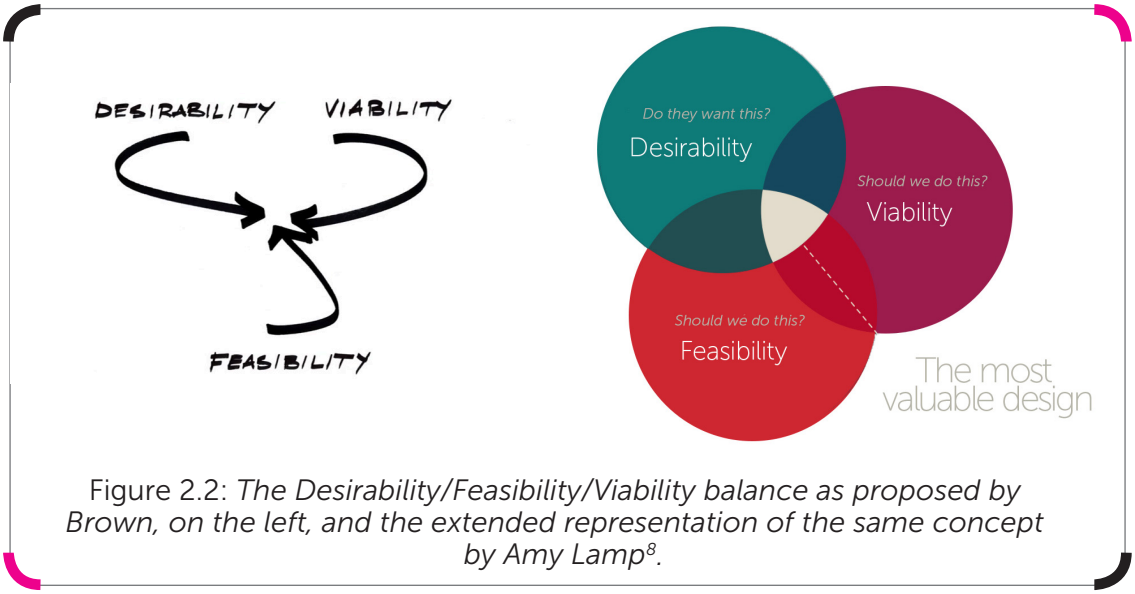

Figure 2.2: *The Desirability/Feasibility/Viability balance as proposed by Brown, on the left, and the extended representation of the same concept by Amy Lamp*[8].

Desirability is measured in terms of how much the designed solution appeals to the users it is destined to, i.e. the needs that it is able to address and to solve. Feasibility is instead more referred to the technology and implementation aspects of the design itself. Assessing feasibility means evaluating whether the current technological context already holds valuable tools to rely on and

8 Lamp, A., *The value of balancing desirability, feasibility, and viability.* Retrieved from https://crowdfavorite.com/the-value-of-balancing-desirability-feasibility-and-viability/

whether the envisioned design is sustainable for the company in terms of time and cost. Viability, finally, means considering whether the design that is being developed is aligned with the company values and goals, and whether the design itself is coherent with the client's budget.

As Çetinkaya *et al.* argue, for Brown the academic and the "on the field" approach to Design Thinking are substantially different (Çetinkaya *et al.*, 2013). The difference highlighted by Brown, by the way, is quite distant from the one pointed out by his academic colleagues: the CEO of IDEO states that the "field practitioners" of Design Thinking show a much higher degree of empathy in all their actions. This is due, according to the author, to the need of practitioners to develop artefacts aimed at improving lives, an not models and theories. This is likely to be one of the motives why Brown's narration does not adopt a structured, scholarly-oriented argument frame, nor it makes direct references to the Design Thinking literature produced in the academic world (Hassi *et al.*, 2011). While proceeding, Brown intertwines descriptions and comments about the Design process, its tools and case studies of practical application, mainly drawn from his own Design consultancy experience. For example, he refers to two tools that will be later mentioned, brainstorming and visual thinking. Concerning the former in particular, the author shows his list of "brainstorming rules" that will become widely popular and well-known: defer judgement, stay focused on the topic, encourage wild ideas, build on the ideas of others, one conversation at a time, be visual and go for quantity. Moreover, Brown also writes about how prototyping is useful as long as it is performed with a sense of measure: it does not make sense to produce a thousand prototypes; what matters is that one makes those that are really meaningful for iterations, and no more.

Besides the many ideas and practical examples that *Change by Design* contains, the book also holds two very important and closely related concepts, which will influence the future of economy according to other authors as well[9]: the servitization of economy, i.e. the growing importance of services in the overall economic life of developed countries in particular, and the related fast growing relevance of experience.

The large diffusion and increased importance attributed to services entails reflection about both the role of service providers and service users, which, in turn, calls for a thoughtful ideation of the basic elements of a service (the *touchpoints*), to deliver the best experience possible. According to Brown, a requirement to provide a truly enriching and pleasant experience is the presence of an *experience culture*, namely the awareness of the importance experience and its effective provision have on both value to firm and value to customer. This said, the three essential points to

9 See also Sawhney, M., Balasubramanian, S., Krishnan, V. (2004), *Creating Growth With Services*. Retrieved from: https://sloanreview.mit.edu/article/creating-growth-with-services/.

make an experience work according to Brown are:

- An active consumer's participation, which is also one of the main points of the global servitization trend;
- A well-trained workforce, skilled on what *experience culture* means;
- A thoughtful and impeccable execution of the service delivery on each touchpoint.

These are the main contributions provided by IDEO and its members in 2009. As already anticipated, these formalization of a field and practice-oriented view of the cognitive and methodological processes adopted by designers, in particular when doing innovation, had an immediate success. This was probably due to the fact that a very famous and successful Design consultancy firm was saying out loud that Design Thinking, if correctly introduced and practiced, could be the way of achieving a renewed success. All this accompanied by a unifying, even though not academically rigorous explanation of the founding principles of the way designers think and are trained to think. As Brown itself wrote in an article[10], design passed in about a decade from being *"a professional priesthood"* producing *"better looking widgets, not much else"* to being *"a more collaborative, human-centered approach that can be used to solve a broader range of challenges"*.

2.2.3 Distinguishing Traits of Creative Problem Solving

Creative Problem Solving was, in the previous paragraphs, described through the eyes of IDEO mainly, but it is worth remembering that this definition embraces also previous contributions: generally speaking, since the first rise in interest in Design Thinking by the business world, the first beacon that made Design shine through the darkness was its capacity of solving existing problems in creative and unthinkable – at least for businesspeople – ways. For this reason, the following list of key features will not be completely exhaustive, but it will rather respond to the arguments that were exposed in the current analysis.

The *Creative Problem Solving* stream possesses the following distinguishing features:

- It is profoundly *human-centered*. This is probably *the* central theme of the Design Thinking rhetoric by IDEO and its members. In the following years, Kelley will insist again on the importance of putting users at the center of any Design speculation (Kelley *et al.*, 2013). In 2009, anyway, discovering the centrality of the final user, or customer, and orienting the

10 Brown, T. (2013), The Next Big Thing in Design Is.... Retrieved from: https://designthinking.ideo.com/?p=1165.

company actions to his/her deep satisfaction still appeared as a creative way to address the typical business problems.

- Being inherently human-centered, *Creative Problem Solving* praises *empathy.* Any designer, of any experience and extraction, should be able to put himself/herself in the final user's shoes and to develop a common ground of dialog with him/her. This is the queen way, for Brown and all IDEO, to develop meaningful insights.
- It is *experience-based.* Probably descending from the human-centeredness, this property refers to the acknowledgement that business is not just about manufacturing, on one side, hidden from everyone else, and then finished products on shelves, without a contact point. Brown (2009) makes a trend that the business world was already sensing explicit, by asserting that any user lives a purchase as an integrated path of emotions, rational impulses and senses stimulation.
- It forces anyone to *embrace ambiguity*. A relevant percentage of x 1 was devoted to the description of wicked problems and their traits. To face this kind of issues, *Creative Problem Solving* is necessary because it contains in itself the idea that there will be the need for framing, reframing and working a lot to develop an idea that makes sense.
- It is addressed at generating *market fit*. One of the most recurring problems business people have is that they do not understand why their offer is not appreciated by the market, nor they know how they might improve the situation. *Creative Problem Solving* comes to rescue through the means of human-centricity, which dramatically rises the quality of the fit between users' needs and companies offer.
- It aims at developing *creative ideas*. One last but not secondary aspect is that *Creative Problem Solving* is the very first bulwark developed to engrave in stone that thinking out of the box can be positive in any domain. Businesspeople in particular need to escape their procedure-oriented mentality, in order to survive the latest market disruptions and turbulences.

Creative Problem Solving places a milestone in the Design Thinking history, since it recalls many different domains – the business one in particular, but not only that – that a different way of dealing with things is not necessarily a sign of oddness or irrationality, but can become the vital spirit many lose along their path.

2.3 Design Thinking in Action

Collecting together the totality of the ideas explained and discussed hitherto, it is possible to discern how the contributions presented up to this point substantially flow into the description of Design Thinking in eight points delivered at the beginning of the previous paragraph. What changes – significantly, at times – is the point of view that is chosen to deal with this or that aspect of the methodology coming from the Design realm. The rise of Design Thinking in 2009, through the paramount contributions of IDEO (whose academic rigor might be put under discussion, but whose success was undoubtedly very widespread), contributed in institutionalizing Design Thinking itself as a, or *the*, *creative problem solving* approach really capable of unleashing the innovation potential of firms. Furthermore, the more recent written material on the methodology helped to formulate more clearly two aspects in particular: the *experiential* nature of the fields of application of Design Thinking, with the subsequent necessity to work on the already mentioned *engagement*; the theme of the *expertise* of those in charge of applying Design Thinking at its best, who are compelled to develop their skills and capabilities so that the final user can really feel part of what the firm has got to offer. The bi-directional engagement and exchange that was said to be at the basis of a fruitful application of Design Thinking is confirmed as well.

What really feels missing, then, is how Design Thinking works in practice. The entire narration carried out so far showed diverse opinions and voices, which defined under different lights what Design Thinking *is* and which premises it relies on. The ways the methodology spread and developed across different fields were dealt with, too. The missing card of the puzzle, thus, is a formal conceptualization of the Design Thinking process, besides the enabling factors and the other features just discussed.

As Carlgren *et al.* recall, the most famous and credited models describing the Design Thinking process are fundamentally two (Carlgren *et al.*, 2016):

- The "*Three Gears of Design*", born in 2006, by Heather Fraser, adjunct professor at the Rotman School of Management.
- The iterative, 5-stepped process proposed by d.school at Stanford University in 2010.

In addition to this, even though It is not a proper model, it is worth mentioning one description that Tim Brown gave about Design Thinking, and that influenced the majority of discourses about this cognitive process in the subsequent management speculation in particular: Design Thinking as a way to balance feasibility , viability and desirability.

2.3.1 The Three Gears of Design

Fraser begins her argument by acknowledging how much design could be beneficial for companies that are gasping under the pressure of a changed and more and more rapidly changing business context. The scholar defines Design as *"a catalyst for growth"*, affirming that Design gains its highest possible value when applied to strategy and business modeling, since it is really able to build competitive advantage (Fraser, 2007). To be effective in gaining competitive advantage through Design, Fraser suggests to adopt a non-linear, iterative process made of what she calls "gears", displayed in Figure 2.3.

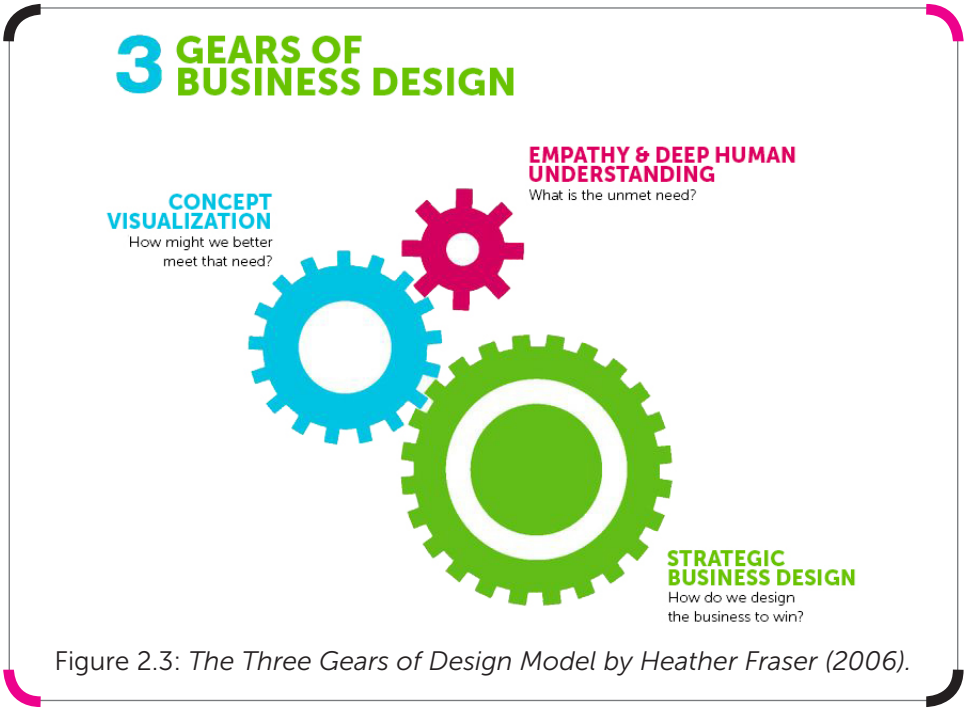

Figure 2.3: *The Three Gears of Design Model by Heather Fraser (2006).*

Before getting started and launching oneself into the exploration of the gears, the advice given is to obtain a clear picture of how the business is currently shaped, and how the value that is being extracted from the market comes in a certain proportion. The main risk pointed out for this preliminary phase is that, especially considering more business-minded executives, the team in charge of bringing change is influenced by the current situation, in the sense that they are reluctant to change the *status quo*.

Once this preliminary step is tackled (hopefully, with an optimistic and change-positive feeling), the ideal gear to start from for the Design process (and, by extension, the Design Thinking application) is, according to the author, the Empathy one: given the well-known and universally

recognized importance of customer centricity[11], the idea that is put forward is to enlarge the user analysis to those aspects of his/her life that are not normally considered in marketing activities, but that might bring positive externalities to the company business. Among the tools to produce this shift, Fraser mentions ethnography, one of the preferred modalities through which Design Thinking becomes a really powerful tool (Anusas *et al.*, 2008). The final output of this gear should be the discovery of unmet users' needs, which can be included in the planning process since its very early phases.

The "second" gear (remembering the process is supposed to be iterative and, by consequence, non-linear) would ideally be the concept visualization one. Here, the work team should proceed to the visualization of the concept, as the name of the gear suggests, through the ideation of possible solutions, and the subsequent prototyping of those concepts, to make them real and minimally tangible.

The "third" gear, finally, would be the one about designing the business in a strategic sense, i.e. integrating the results and findings of the two previous gears into the overall company strategy. A relevant suggestion by the author, here, is to attempt to prototype even the business model that will derive from the re-elaboration of strategy, to assess whether that new business setup is fruitful or not.

The whole process entails, as already mentioned, numerous iterations and a continuous assessment of user value, in order to be truly successful. What was only hinted at by Fraser, in this context, is the integration of the business model that was obtained through this Design Thinking process with the "old" strategic setting the company owned. Nevertheless, it is reasonable to hypothesize that the issues that would emerge would be akin to those described by the voluminous literature about change management (e.g. Kotter, 2007).

2.3.2 The d.school Design Thinking process

The d.school at Stanford University, officially going under the name of "Hasso Plattner Institute of Design at Stanford", from the name of its founder and most important funder (who is also one of the co-founders of SAP), formalized in 2010[12] its own definition of the Design Thinking process (represented in Figure 2.4), published in what they call a "Design Thinking bootleg" that is freely accessible by anyone on the website of the school. In addition to this, in the introduction page

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11 As argued in Kolko, J. (2015), *Design Thinking Comes of Age*, Harvard Business Review, September 2015 Issue, General Electrics, one of the most long-lasting and solid companies of the contemporary world, working in many "hard" industries, has a *Chief Experience Officer*. This might be accounted for as a sign of the growing shift to customer centricity, in contrast with product centricity.

12 Hasso Plattner Institute of Design at Stanford University (2010), *Design Thinking Bootleg*. Retrieved from: https://static1.squarespace.com/static/57c6b79629687fde090a0fdd/t/58890239db29d6cc6c3338f7/1485374014340/METHODCARDS-v3-slim.pdf.

of the "bootleg" it is written that this tool ought to be *"an active toolkit to support your design thinking practice"*, and seven "d.mindsets" (i.e. prescriptions on how to tackle the Design Thinking process in the best way) are briefly illustrated. This reminds us of how much the members of the d.school wish their approach to be as universal and largely adopted as possible.
The Design Thinking process proposed by the d.school is made of 5 steps:

- Empathize;
- Define;
- Ideate;
- Prototype;
- Test.

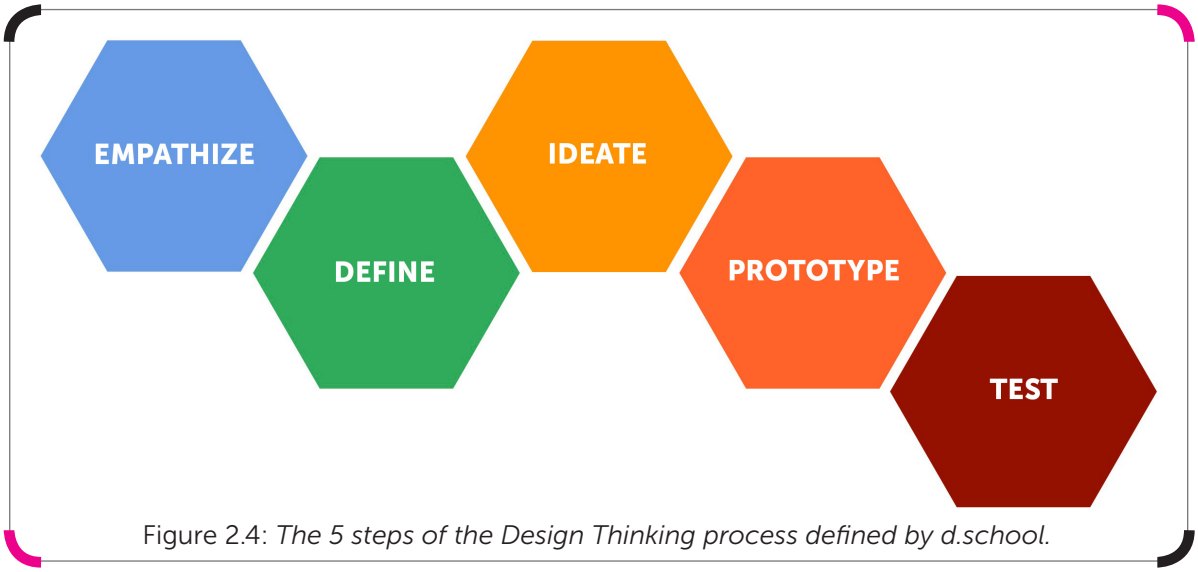

Figure 2.4: *The 5 steps of the Design Thinking process defined by d.school.*

The E*mpathize* phase, the first one, is that involving empathy and user observation more closely. Relying on the pillar of human-centered design, it is made clear that empathy is better developed when three actions are pursued: *observe*, i.e. view users in their context, *engage*, i.e. interacting with the users one is observing, and *immerse*, i.e. experiencing what the users one is observing are experiencing. These three actions should be put in place in order to avoid the categorization and information filtering anyone's mind is normally subject to, due to his/her background and culture, and to truly grasp what the users' needs are. If performed correctly, the *Empathize* phase is able to unveil those latent needs the user is not even aware of himself/herself (Sanders, 2002). The preferred and normally advised tools to adopt in this phase are interviews, observation (in the ethnographic sense) and generative sessions.

Following the *Empathize* phase is the *Define* one: once the finding coming from the previous step of the Design Thinking process are collected, there is the need to make sense of them, to make them usable. The main goal of this phase is to identify what the d.school defines as *"an actionable problem statement"*: one needs to reach a unique and unprecedented point of view on the matter that is being investigated, to establish an innovative direction to walk towards. One of the most famous tools suggested for this phase is made of the famous "how might we...?" questions, that are helpful in organizing and orienting your knowledge to an application perspective.

The *Ideate* phase, coming right after the *Define* one, consists of the exploration of possible solutions to the problem statement set through the "how might we...?" questions of the previous process step. In this phase as well, it is important to try to explore the widest number of alternatives in the coherence space of the envisioned problem statement, to then converge towards those looking more promising and breakthrough. Within *Ideate*, a number of different brainstorming techniques and exercises come into play.

Prototype is the fourth phase of the Design Thinking process proposed by d.school. As the authors recall, a prototype can take many different shapes: what it matters is that it becomes an embodiment of the promising ideas that had remained abstract until that moment. With the *Prototype* step emerges an idea that is tightly bound to the ideas underlying the entire Design Thinking theory: iteration. Rapidly iterating a prototype by capturing users' feedback and reactions adheres to the David Kelley's *"fail faster, succeed sooner"* motto.

The *Prototype* results and findings are then refined through the *Test* phase, again an inherently iterative one. Another important assumption behind the relevance given to feedback loops and cycles is the need for continuous learning about the users one is designing for: our world and markets rapidly change because *people* rapidly change. Especially in terms of tastes.

As it is easy to realize, the two processes illustrated until this point, by themselves, do not offer much more than a mindset (which, one could argue, is already quite a lot). They need to be "filled" by tools and mediums to unleash all their potential.

2.3.3 The Tools of Design Thinking

Hitherto, the main characteristics and features of Design Thinking emerged from literature have been explained, and the two, main reference models depicting the Design Thinking process have been discussed. After enumerating the eight main features of Design Thinking outlined by a three decade-long speculation about this matter and expanding and reformulating them under the light of IDEO-related ideas and frameworks, the "Three Gears of Design" and d.school process descriptions of Design Thinking were shown. It is to note that Fraser's model has a far more

explicit business imprint with respect to the d.school-developed, IDEO-supported model. It is not by chance that the former appeared for the first time on the *Journal of Business Strategy*, while the latter was born within the Institute of Design belonging to Stanford University, which is teaching Design to students coming from many other disciplines (especially engineering[13]), thus keeping an eminently Design-oriented approach. What might be interesting in coupling these two models by presenting them close is to view the relationship between Design and business that was more than one time investigated during this narration.

As anticipated in the previous paragraph, the mere explanation of the models, regardless its degree of detail, cannot hold true and exist without a consistent, solid base of tools and mediums that enable the methodology deployment. Liedtka and Ogilvie provide a very concise but comprehensive description of the tools employed by Design Thinking, which, according to the two scholars, can be summarized in the following ten (Liedtka *et al.*, 2010):

- Visualization;
- Journey Mapping;
- Value Chain Analysis;
- Mind Mapping;
- Rapid Concept Development;
- Assumption Testing;
- Prototyping;
- Customer Co-Creation;
- Learning Launches;
- Storytelling.

Visualization in particular was already hinted at and mentioned along the way: drawings, sketches or mock-ups are just some of the ways designers are capable of using to make sense of complex information and share work-in-progress easily with others (Burns *et al.*, 2006). For this reason, Liedtka and Ogilvie define visualization as the *"mother of all design tools"*, since it is a pervasive and thought-unifying practice that permeates the whole Design Thinking process. The general suggestions that are provided whenever approaching drawing and sketching is to be as natural as possible and to neglect aesthetics: what really counts is that ideas are correctly conveyed and communicated, to make projects and ideas themselves travel and develop faster.

Another very important and diffused tool that was not really mentioned so far is *Journey Map-*

13 See http://facts.stanford.edu/academics/graduate-profile.

ping. The idea of outlining the path that a user goes through in the fruition of a product or service comes from the recognition of emotional factors as important players in the determination of the success or failure of a given artefact (Norman, 2007). Journey Mapping, typically deployed via customer journeys, i.e. visual representations of the interactions between the user and all the company touchpoints. Customer Journeys are normally multi-layered diagrams that, besides displaying how the user gets in contact with the firm through its offering, provide a synthetic but exhaustive picture of the emotional highs and lows of the user himself/herself. The aim is to spot the lows, referred at as *pain points*, to correct the factors that generate unease, and at the same time to understand which are the main strengths of the company offering in term of both tangible and emotional value, to stress those.

Value Chain Analysis is something business people and engineering-minded people are already quite familiar with (it needs to be acknowledged that both Liedtka and Ogilvie are Design-oriented scholars coming from the management field). From Porter's Value chain on, businesspeople have had time to train in pointing out where the value-to-customer and value-to-firm are come from, and how to enhance them. The authors hold this important managerial tool as one of the main ones of Design Thinking as well, and the reason is quite simple: as explained in Chapter 1, value is a concept that is precious to any designer or managers, since both figures work and think to create artefacts others will experience.

Mind Mapping, name coined by the British psychologist Tony Buzan at the end of the 1960s, refers to the representation and organization, via lines, circles and other symbols, of set of data, in order to have them all displayed together. This, in turn, allows to make sense and to synthesize the data, by making connections between different areas of the map. Mind maps assume a certain relevance in relationship with abductive thinking, which was stated to be the most suitable process for Design Thinking: *divergence*, when translated in terms of data, means *magnitude.* Magnitude, to be able to achieve the necessary convergence after diverging, needs simplification. Visualization comes to help in this case as well.

Rapid Concept Development, to pursue, arises at the beginning of the *Ideation* phase in the Human-Centered Design process: after establishing which is the problem that ought to be tackled, it is time for getting creative and generate as many contributions as possible again. The rapidity included in the concept is a way to stimulate creativity itself: within a restricted time frame, people tend to either be unproductive, or much more productive than normal. Of course, one bets on the second option.

Assumption Testing is a tool that should underlie any kind of innovation project: the artefacts proposed in the frame of a new business initiative are based on hypotheses, which, as it is logical to

believe, are somehow tested to prove their degree of likelihood. According to Liedtka and Ogilvie, there are two main ways to test hypotheses: either using existing data, retrieved from past measurements, or through field experimentation. As managers, they argue that the majority of businesspeople tend to prefer the first option, even though it often results into deceptive outcomes. Following the iterative philosophy of the whole Design Thinking approach, this tool could virtually be adopted at any stage of the process itself, since it allows to continuously assess the coherence and the effectiveness of the developed ideas as the innovation path is walked along.

Rapid Prototyping consists of a series of quick loops in which the concept is made real in a various range of ways. The idea, here, is to adopt this tool as an attempt to minimize investment costs for new products that, being new, have an uncertain outcome on the market. Making some more efforts before the official launch is usually a practice that pays off (Borbás *et al.*, 2013).

Customer Co-creation, as Prahalad *et al.* write, is becoming (and probably has become, in many industries) the standard for both value creation and value extraction on the market (Prahalad *et al.*, 2004). As the two authors write, the sharply increased availability of knowledge and information made customers, or better, users much more aware of their bargaining power, besides allowing them to communicate with each other and to break the fearful *information asymmetries* economists have long studied. Customer Co-creation becomes necessary, with these premises, for two reasons: the first is that, very simply, including users in the process of creating an artefact they will use or experience should dramatically reduce the risk of producing something people will loathe; the second one, descending from the first, is the enhanced value that can be offered through a participative process.

Learning Launches refer to the prototyping and fast iteration dimensions of Design Thinking in general: it is about making relatively inexpensive trials on the market, with the aim of minimizing possible future shocks and mistakes. Here, it is not prototypes that are involved anymore: finished products come into play, and the monetary reaction of the users is something that needs to be evaluated as well.

Finally, *Storytelling* is a technique that permeates Design, before than Design Thinking, due in particular to the distinct both visual and emotional character Design possesses as a discipline. As Maydoney *et al.* argue, storytelling in the corporate and business world is primarily used to build brand recognition and relevance (Maydoney *et al.*, 2003). Moreover, storytelling is said to be, by the authors, a very effective way to "*move people along a relationship – and trust-building path*", which is a very important concept for all the previous narration contained in this chapter. The trust required to build a relationship with the users, to put them at ease to the extent to which they will be glad to share their true opinion is unlocked through the presence of three elements,

in a story: *content, execution* and *interaction*. *Content*, as it is rapidly acknowledged, concerns the elements composing the story and making it familiar to the audience in terms of setting, types of characters or feelings. *Execution* has to do with the two-sided involvement of the teller andof the listener: the teller has the duty of making his/her tale convincing also in the way it is told, while the listener needs to keep up his/her fantasy to recreate the atmosphere of the story. These two elements, eventually, have to be linked through *interaction*, to be able to say the telling was of good quality. As Liedtka recalls, the building of a common ground between a company and a user that happens through storytelling (when the latter is effective, of course) has the merit of boosting empathy. Which is what Design Thinking is nurtured by.

The list of tools just explained was taken as a reference for its general nature and capacity to be as comprehensive as possible. In the very broad and blurred Design and Design Thinking galaxy, many different interpretation of the tools and processes were provided – and many, as it will be soon clear, still need to be discussed. The years 2010s hold relevant contribution, that will be dis cussed in the next chapter, and that will expand the view of Design Thinking as *Creative Problem Solving* into three ulterior interpretations.

3.

Recent Evolutions in the Design Thinking Methodology

Hitherto, the detailed arguments underwent all along Chapters 1 and 2 unveiled the birth and early developments of Design Thinking as a methodology that first found legitimacy as truly independent from sciences and inherently artistic disciplines, to then begin walking on the path of popularity in the business realm as well.

Chapter 3 will be aimed at discovering the most recent trends regarding Design Thinking and its interpretations. In particular, three main paradigms will be illustrated: *Innovation of Meaning*, corresponding to the consideration of the reasons *why* a given artefact is or is not appreciated given its deep signification, the values it stands for; *Creative Confidence*, namely the capacity to believe creativity is far more present in people than one might thinking, and that unleashing that creativity does not require titanic efforts; *Design Sprint,* finally, conjugating for the first time the ideas of *creativity* and *efficiency* through a very plain, straight-forward and prescriptive narration. Each *novel paradigm* description will contain a paragraph depicting the main traits of the paradigms itself, including considerations about skills, competences and attitudes that will be further explored in the following Chapters.

3.1 Design Thinking in the 2010s: Three Novel Paradigms

The thing one has probably learnt, by reading so far, is that Design Thinking never remains – nor remained – identical to itself. The efforts to enucleate its main features, means and proceedings are not vain, either: they simply change very quickly and in quite broad directions.

Hitherto, Design Thinking acquired, after its initial description as an ingredient capable of igniting creativity, innovation and proactivity in corporate life and not only (Baum-Combs *et al.*, 2012), a series of features and connotations that, thanks to the work of many scholars and practitioners as well, grew richer and richer, even though still blurred at its boundaries (Hassi *et al.*, 2011). The main reasons why Design Thinking became a hot trending topic in the management realm were discussed: an attempt was made to summarize the voluminous and non-homogeneous body of literature concerning this fascinating subject. From the review of this body of literature, it became clearer that Design Thinking possesses eight inherent characteristics, that were substantiated and nurtured by the description of processes, tools and formulations that identified Design Thinking as a *Creative Problem Solving* methodology mainly. *Creative Problem Solving* is in particular leveraged on, as an approach, to exploit the iterative and generative kind of thinking it provides (Lumsdaine, 1994), which finds in Design Thinking a precious ally. What emerges in parallel to the explosion of Design Thinking - that takes place in 2009 - is a research, which receives far less resonance, being developed in the academic realm, about different interpretations of the word

"design" and, by extension, of what Design Thinking is and can do as well. Of course, decision making is and remains a strategic area of application of Design and Design Thinking, given their capacity to approach the process in an utterly different way. What starts to being investigated is the relationship linking Design with the so-called *sensemaking*. Sensemaking is a word that is not new to the management realm, discussed from at least the beginning of the 1990s (Choo, 1996). Sensemaking is described by Choo (1996) as the effort of people within organizations to continuously understand, day by day, what is going on around them. The author proposes a framework that relies on the comparison between past and present events, to make sense of what is taking place inside a firm. This kind of view is enriched by the contribution Kurtz and Snowden provide (Kurtz *et al.*, 2003), which is aimed at turning the authors' considerable effort into a model that firms can adopt to craft their strategies. In the management realm, which seems surprisingly early with respect to the Design one to grasp this concept, sensemaking appears tightly linked to strategy in most articles and publications, and in particular it is defined as a preliminary activity in regard to strategy definition.

The Oxford Dictionary of English provides the following definition[1] of sensemaking: *the action or process of making sense of or giving meaning to something, especially new developments and experiences.* This definition, delivered by what could be said a neutral institution with respect to both management and Design, introduces an element that is essential for the subsequent literature on sensemaking emerged starting from the first years of the 2000s: *meaning.*

In those years, the concept of meaning is relatively new to Design: coming from a tradition in which *the artificial* (to recall the famous contribution by Simon (Simon, 1968)) was the main object of interest of Design as a discipline, the focus was put first of all on the aesthetic attributes of artefacts, to then pass to the joint consideration of form and function. This paradigm remains stable for several years, because the consumerist society born after the end of World War II - at least in the Western world - requires *quantity* and *novelty* before considering the emotional, deeper implications that push people to the purchase of a certain good. Consumerism neglects reflection for the sake of progress and unlimited growth: within such a mindset, it is hard to go beyond what a product merely *is*. Considerations and theories about the emotional appeal of artefacts, which in a sense drive the reflection about the meaning those artefacts have for people, are quite recent as well (Norman, 2007). In his book, Norman addresses the theme of the meaning of things in the very first part: he associates the meaning people attribute to things to the memories and life emotions they are able to recall in the perceiver's mind. Another interesting aspect the author draws upon is the concept of the *personality* of products, that he defines as an

1 See https://en.oxforddictionaries.com/definition/sense-making.

attribute changing with the mutation of product manifestations and *"settings appropriate to use and target audience"*. The meaning theme, in this contribution, is dealt with in a way that feels in the middle between Design and psychology. The latter domain had faced the subject since two decades before, with the work of Csikszentmihalyi *et al.* (1981). The American psychologist, back in the 1980s, conducted an on-the-field research to better understand the relationship people have with the things that surround them, in particular in the domestic environment. His findings are - as it is quite obvious to imagine – heavily infused with psychological remarks and connotations, beginning with the consideration of how to define a person in the ontological and cognitive sense. The word that emerges - and that Norman borrows in his book - is *self*. Norman literally states that *"your choices of products [...] are often powerful statements of self"* (Norman, 2007), where the *self* is the perception one person has of himself/herself. The self, thus, appears tightly linked to the meaning one attributes to artefacts in general: artefacts are used as manifestations, embodiments of how a person perceives himself/herself. By reflection, it could be affirmed that artefacts are the extensions a person uses to communicate and explicit his/her self to the world around. One very important characteristic of the self is pointed out by Norman: it is culturally specific. The scholar makes reference to typical differences between Western and Eastern cultures to substantiate his argument. By saying the self is culturally specific, Norman implies the self is context-specific, since a culture is always endowed with a *locus* of belonging.

For the reasoning that is being explained, the meaning, which is the embodiment of people's self through artefacts, should be context-specific as well. It is exactly what Verganti affirms (Öberg *et al.,* 2013), writing that the context dependency is hardly considered a positive feature for managers, since it prevents from applying any kind of optimization or efficiency building policy. This context dependency and lack of possibility of any optimization reminds the wicked problems seen in the first chapter: their nature excluded any possible efficiency making action in the strict sense of the word – the engineering/management/business sense – due to the impossibility to determine one, unique final solution. The optimal solution. Furthermore, wicked problems, due to their ill-defined formulation, compel any designer to make some assumptions in order to make the problem tractable. These assumptions, as already explained, entail a certain degree of subjectivity, coming from the designer's previous experience and knowledge mainly, and vary depending on the context they are made within (Rowe, 1987). Given that it was clarified how Design Thinking is a very suitable thought process to deploy in order to solve the growingly bigger number of wicked problems people are exposed to in various fields, it is not much challenging to comprehend how Design Thinking was the chosen paradigm to address the meaning theme, too. Meaning theme that, as just recalled, was not often tackled, with the exception of

certain authors[2]. Verganti is probably the one who devoted the greater efforts in trying to define the importance of meaning, with respect to both Design and management. The perspective he took was the one of innovation, in particular the one of design-driven innovation. The *Creative Problem Solving* stream of Design Thinking that was so far discussed dealt with innovation too, in particular in its management-oriented manifestations (e.g. Brown, 2009), as it is simple to realize. The context *Creative Problem Solving* rose within was a *milieu* of thirst for new ideas and quicker ways to get better ones. The consciousness that emerges after Verganti's contribution about the *why* behind was somehow hidden, not in the front page. The focus was at times reverted: while the innovation first *vague* suggested traditionally-minded firms to exit their rigid procedures to go outside and embrace the user's opinion, the meaning literature commences from quite different premises, i.e. the fact that innovation, especially when it is radical, is not born from user's listening. Another theme that marks the distance between the *Creative Problem Solving* narration and the meaning literature is the explicit and repeated reference to the parallel between meaning innovation and technological innovation, which effectively grounds the Design themes dealt with so far in the management realm.

The meaning discourse was not the only one to emerge after the first, powerful shock that had been given by the 2009 Design Thinking popularity wave: over the years, IDEO and its people (the main actors involved in the popularity growth of the Design thought process) evolved, and not much later than 2009 their focus as a firm and as a methodological reference shifted a little bit: they did not deal with management and business-oriented consultancy and "framegiving" mainly anymore, but devoted themselves to help others seize and make the most of the creativity they have inside. This effort, which is currently being strongly targeted and upheld on the academic side by the d.school at Stanford University, was synthesized by Tom and David Kelley in a book (Kelley, 2013) that is now a reference text for all those consultants who want to sow the seeds of creativity in their customer's organization. The main innovation looked at here concerns the shift of positioning of the design consultancy firms themselves: many pass from being "the knowledge keepers" to being "the empowerers". Their role becomes to make client firms discover the creativity they already possess, embodied by their workers, and to suggest effective methods to unleash that creativity. This kind of Design Thinking development, named *Creative Confidence* after Kelley's book (Kelley, 2013), provides a new track to the discourse around Design Thinking itself that appears quite promising in terms of future developments.

Nonetheless, let us not forget that the argument being brought forward here intertwines Design and management: it was just written that Verganti's arguments strongly grounded the innova-

2 E.g. the aforementioned Norman, Öberg and Verganti.

tion-related Design speculation in the management realm. Another significant contribution to what would be looked at as "efficiency making", especially considering its place of origin, comes from Jake Knapp (Knapp *et al.*, 2016). The former Design Partner at Google Ventures[3], in collaboration with two former colleagues, wrote a book called "Design Sprint", which is about providing a ready-to-use practical framework to carry out exactly a Design Sprint, namely a Design or business challenge (or both) to be tackled in five full and contiguous days of work. The theme of this book, which still pertains the Design domain – it is written by three designers, it gives very prescriptive suggestions on how to tackle a Design challenge, it contains the explanation of Design methods – looks very "Silicon Valley" style, since it pushes to the extreme the idea of creativity, and puts forward the concept of *productivity* in Design – a very managerial subject indeed. Summarizing, what these three authors propose is that Design Thinking and its methodologies, besides being particularly handy in finding unexpected and creative solutions to existing problems, re-thinking the meaning artefacts have for people and creating disruptive novelty through this meaning and igniting the quiescent creativity bottled in every person, might be very suitable to generate powerful solutions in a very condensed time frame, that normal organizational and planning processes would find impossible to meet. This fourth stream of thought, that could be defined *sprint execution*, is thus addressed at dramatically increasing the problem solving process productivity by joining people together, with no distractions, in the same space. What *sprint execution* adds to the other three streams is the notion of *focus*, since Knapp's approach introduces a very restrictive constraint in terms of time. The idea that gets falsified, here, is that innovation and problem solving, to produce effective outcomes, both require a medium-to-significant amount of time.

Design Thinking was told as a tale of complexity, confusion and plurality: while the confusion was – hopefully – partially dissipated by the previously exposed arguments, it is hard to ignore the plurality that persists around the Design Thinking discourse, which will be explained in the following paragraphs.

From this point on, the three Design Thinking "variations" that were previously named as chronologically following C*reative Problem Solving* will be addressed at as "Design Thinking *streams*", to convey the idea that they are different interpretations of the same starting thought process. These three streams are named *Innovation of Meaning, Creative Confidence* and *Sprint Execution*. Each stream will be analyzed in detail in a dedicated paragraph, whose closing part will be devoted to summarizing the distinguishing traits of each, as it occurred in Chapter 2 with *Creative Problem Solving.* These detailing lists and recaps will be functional to the empirical and comparative anal-

3 https://www.linkedin.com/in/jake-knapp

yses that will be conducted from Chapter 5 onwards.

3.2 Innovation of Meaning

As mentioned in the previous paragraph, the *Innovation of Meaning* theme was investigated by Verganti mainly. What it is worth recalling, in particular, is that literature – especially the scholarly one – had already been discussing the concept of meaning, in various fields. What Verganti's arguments really challenge is the view of meaning as a predominantly *static* concept. One might argue this is quite normal: when a new concept needs a definition, the related academic community first has to establish what that concept *is*, its inherent characteristics, and the reasons why it became relevant, all of a sudden. Verganti rather treats meaning as a *dynamic* concept, since he discusses how to change it, and the effects that these changes produce in market, and thus business terms. The novelty in Verganti's argument is that of being deeply interdisciplinary, and of establishing a powerful connection between the management and the Design worlds.

3.2.1 The Beginnings and First Conceptual Developments

The speculation about what was defined *Innovation of Meaning* finds its origins in the one that concerns design-driven innovation, namely the innovation process that commences not from the listening of users directly, but from the *sensing* - a verb that Verganti will often use (e.g. Verganti, 2008) - of a wider context than the one of the firm market, to gather fresh and disruptive insights that will nurture the entire creative process (by *creative*, here, it is meant "the process of creation"). One of the first widely known and acknowledged contributions about design-driven innovation came from Verganti, who, on the *Harvard Business Review,* published an article (Verganti, 2006) describing the peculiarities and strengths of the Lombardy (Northern Italy) productive ecosystem, characterized by a strong networking tendency and by remarkable growth rates in profits.

To describe how design-driven innovation works and why it is so successful, Verganti brings the example of a product: Model 9093 kettle by Alessi (shown in Figure 3.1). This peculiarly shaped kettle, with the outlet in the shape of a bird that melodically whistles when water boils, instead of emitting the habitual hissing, was created – Verganti reports (Verganti, 2006) - starting from an envisioning step, aimed at understanding what trends the "*free-floating community*" of professionals surrounding Alessi saw as emerging. The process of design-driven innovation, as described by Verganti, is composed of three phases:

- *Absorb.* As anticipated, the absorption of new stimuli, knowledge and trends does not come from the direct contact with final users, but through the interaction with an informed network of related fields and professions that can provide meaningful, different ideas to the inquirer.
- *Interpret.* Once innovative and different ideas are insourced, they need both to be made sense of by the inquirer and by the public that will receive them without having been asked: for this reason, Verganti recalls that Alessi, with its Model 9093 kettle, prepared the market launch through a series of art initiatives and design exhibitions to raise awareness about the product itself and its characteristics.
- *Address*. The "ground preparation" that took place in the previous step is now substantiated and upheld by those who participated to the preparatory campaign. The preparatory campaign is somehow repeated, but in an enlarged, more inclusive version, to address an even wider public than the previous time.

Figure 3.1: *the Model 9093 Kettle by Alessi.*

The deployment of this process generates an unexpected success of the artefacts: one might think not listening to the users *at the beginning* could be a weakness, but it all depends on the vision a company has. Design-driven innovation is not about being pulled by market requests: it's about making meaning proposals to people (Verganti, 2009). The idea of human-centered design that was upheld so far (IDEO.org, 2015) is thus reverted, to leave place to a different kind of perspective that appears to be bringing significantly good results (Verganti, 2006).

There are several examples of firms that are very successful even though they are not user-centered (Verganti, 2008): one could mention Apple, whose iPod development is a textbook example of disruptive innovation or "blue ocean strategy", and Bang & Olufsen, the Danish high-end consumer electronics manufacturer, whose Beosound 4000 stereo, launched during the 1970s, turned the commonly known radios and music players into elegant pieces of furniture (Verganti, 2008).

3.2.2 A Connection Binding Technology, Design and Strategy

One thing that can be remarked, by looking at examples of successful applications of the design-driven innovation approach, is that the majority of companies that are mentioned have to do, to a certain, variable extent, with technology. Technology is certainly not the enabler of design-oriented changes, but it is an element that, especially in the management literature about change, has often been praised as *the* solution to corporate problems. For example, in a paper about BPR (O' Neill *et al.*, 1999), the *Business Process Reengineering* methodology written about in Chapter 1, two words that appeared in the recent narration previously done are reported in connection: technology, and radical (adjective referred to change, in that context). It is exactly about the parallel between the similarity lying in the relationship between technology and radical innovation and design and radical innovation that Verganti builds a voluminous argument (Verganti, 2009), in an attempt to demonstrate how the models that relate technology and radical change in the management field can provide a framework of study for the poorly tackled relationship between design and radical change.

In his book, Verganti makes it explicit that the whole body of material he is presenting needs to be read under a management light, and was written with the purpose of being a management discourse. From the managerial perspective, a dimension that immediately comes to mind when the "radical" adjective is under analysis is strategy. It was already shown how the strategy of a firm is one of the common elements that, according to several scholars (e.g. Camillus, 2008), brings design and management closer together. Verganti affirms, building a sort of triangulation, that strategy, technology and design are bounded by an only entity: meaning.

The Italian scholar schematizes this significant relationship as displayed in Figure 3.2. The chart directly relates meaning, on the horizontal axis, with technology, on the vertical one. On both axes, the two discriminating dimensions considered are the incremental or radical nature of change. What emerges from the chart is the existence of three main kinds of innovation strategies:

- *Market Pull (User-Centered).* This value is found at the crossing of incremental change of both meaning and technology: Verganti places in these categories all those changes that, since they are explicitly required by the user, represent an improvement, but cannot drive a radical change. Here, the limits of the user-centered methodologies are highlighted again by the scholar.
- *Technology Push.* Here, the change of meaning remains incremental but the change in technology is radical. It is possible to affirm, in this case, that a *push* strategy is put in place, since the breakthrough in technology necessarily needs to come from within a firm to

then be launched (*pushed)* on the market. Whenever technology is disruptively innovated, one can speak of a "technology push" strategy.

- *Design-driven*. Meaning changes radically when design takes the lead. A radical change in the meaning of an artefact is able to completely shift its market perception, and consequently boost – in the successful cases, of course – business performances.

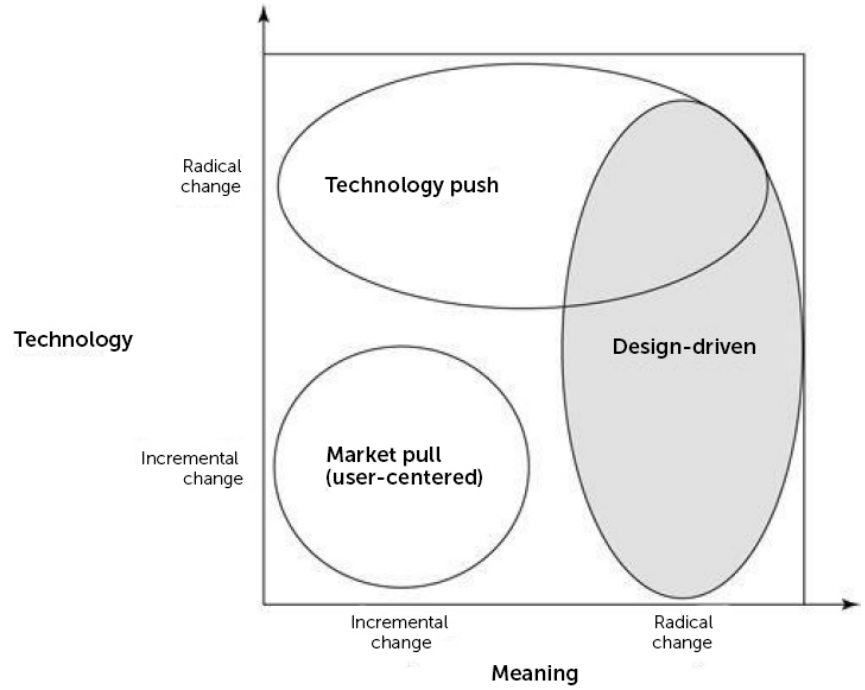

Figure 3.2: *The framework proposed by Verganti to explain the relationship linking technology, meaning and strategy.*

At the intersection of the technology push and design-driven strategy, Verganti places what he defines *technology epiphanies* (Verganti, 2009), whose definition comes from the acknowledgement of the fact that a radically new technology often brings with itself, in a latent way, a new meaning.

The main reason Verganti brings to motivate the importance of design-driven innovation with respect to user-centered one, especially in business terms, is that the focus on the user, who typically has a lower visibility on market and market trends with respect to a company, might restrict the innovation potential introduced via change projects and initiatives. The Italian scholar seems to follow the kind of reasoning introduced in Chapter 1: wanting to ground its theory in management in particular, he writes about strategy and then *value.* According to him, the deployment of a design-driven innovation strategy, with all the implications just discussed, can generate value in four ways (Verganti, 2009):

- *Profits.* If the design-driven innovation proposed is well greeted by the market, it will logically have a positive impact on the revenues of the company itself.
- *Corporate Assets.* Again, when successful especially, design-driven innovation can contribute to the creation of brand equity that one of its first contributors defines *"the marketing effects uniquely attributable to the brand"* (Kelley, 1993). The other important corporate asset design-driven innovation is capable of influencing, according to Verganti, is knowledge.
- *Investments.* Verganti affirms that the most relevant investment a company needs if it wants to deploy design-driven innovation is the one on *relationships*, to cultivate that *"free-floating community"* that holds such valuables and innovative insights. The advantage in terms of value is clear, for Verganti: besides generating higher profits and building assets, it also reduced the needs of pecuniary disbursements.
- *Shareholder Value.*

As highlighted in Chapter 1, strategy and value are extremely interrelated: value, in particular, can hardly be created, delivered and captured without a strategy. The business model of a company is actually the picture, the description of how a company relates to the value it aims at creating (Battistella *et al.*, 2012). For this reason, it appears sensible to assert that strategy, a dimension that is repeatedly addressed at by the *Innovation of Meaning* stream, is tightly linked to business modeling as well. Business modeling, in first instance, means to create a model of "*four basic and interlocking elements that, taken together, create and deliver value*" (Christensen *et al.*, 2008). A business model, which can be summarized by the currently famous *Business Model Canvas* (Osterwalder *et al.*, 2011), is built of four, fundamental blocks, that the Business Model Canvas expands to nine:

- *Customer Value Proposition*, namely the value the company offers its customers via the problem solution it has invented.
- *Profit Formula*, i.e. the definition of the balance between revenues, costs and "payback parameters".
- *Key Resources*, i.e. all those assets – no matter their type – that are essential to the company value creation and delivery process.
- *Key Processes*, namely the combination of activities and tasks the whole business relies on to exist.

Comparing these four dimensions with the four ways design-driven innovation enhances value according to Verganti (2009), one notices the similarity of content: both concern profits and costs, company assets of any kind – knowledge, relationships, human resources, financial – and entail the way the company works. It could thus be stated that, to successfully deploy the *Innovation of Meaning* Verganti sponsors, one should act on his/her business modeling capabilities, whose development requires a business modeling process that, at least in Verganti's contribution, has a very strong relational and collective connotation. The importance of the relational assets and of the collective contribution that produces breakthrough innovation are stressed (Verganti, 2009) both in terms of increasing the value of current partnerships and collaboration, and of looking for new allies, especially those key figures Verganti (2009) defines *interpreters*. Interaction with interpreters is crucial, because it stimulates the enabling of design-driven research projects (Verganti, 2009): namely, interpreters are key people and professional who are capable of providing insights and stimuli potentially able to drive a firm to a new strategy.
A new strategy means first of all to *"create a new and valuable position"* (Porter, 1996), which might entail the entry in a new business or market, with the subsequent addressing of new customers, or a disruptive change in how the company activities are organized, generate value and drive customers' brand perception.

3.2.3 Distinguishing Traits of Innovation of Meaning

If one had to summarize the elements that distinguish the *Innovation of Meaning* stream from the other three Design Thinking main formalizations, these would be - for what was explained so far - the following:

- It fundamentally has to do with *radical* innovation: the idea that Verganti expresses is that human-centered design, that was presented as one of the features of the *Creative Problem Solving* stream, is only suitable for incremental changes (Norman *et al.*, 2014), since end users are trapped into their difficulty in expressing latent needs or desires. One way to discover these undisclosed feelings and ideas can be empathizing (Sanders, 2002); the approach of *Innovation of Meaning* implies the making of proposals.
- Being radical, it compels reasoning about *strategy.* Changing what artefacts – regardless their kind – means equals reconsidering the company positioning, the brand perception and awareness it holds, the company assets and their organization, to understand how the company can create value in an utterly different way. *Value* is a very important component of the picture, too.

- The strategic nature of *Innovation of Meaning* calls for thoughtful reflection about the *business modeling* dimension and related capabilities. It is sensible to imagine that innovation cycles are not exclusively made of disruptions (Norman *et al.*, 2014), but *Innovation of Meaning* is interested in the disruptive part. Capitalizing the disruptions means maximizing value creation and appropriation in totally new contexts and asset settings, which is what business modeling, as a capability, should make sense of.
- *Business modeling* in *Innovation of Meaning* heavily involves *relational* aspects. Relationships outside the firm are sought for developing cultural insights that are wider, more meaningful and diverse than those an internal research or Design department only could obtain. Relationships are capitalized upon via a continuous networking with the so-called *interpreters* (Verganti, 2009), in order to best make sense of what novelties the future might hold.
- *Innovation of Meaning*, to be successful, requires a certain degree of criticism and *brokering*, i.e. the capacity to be inspired by different fields, regardless their nature and distance from the one of analysis, and in linking solutions adopted in different settings. Meaning changes involve and require a certain degree of flexibility and "thought suppleness", since breakthrough innovation demand very wide and cross-field investigation about what the new and potentially beneficial trends might be.

These five, summarizing characteristics contain the very condensed essence of *Innovation of Meaning*.

Chronologically, the *Innovation of Meaning* paradigm was the first one to appear, right after the *Creative Problem Solving* one. A few years later, anyways, it was IDEO people's turn again to give a new interpretation of the Design Thinking methodology, through the stream that will be defined *Creative Confidence*.

3.3 Creative Confidence

IDEO was for many years – and certainly remains nowadays – one of the most influential Design consultancy firms in the whole world. For this reason, it had the opportunity to work in many important and diverse projects[4], which probably made an idea germinate in IDEO people's minds: why do companies find it so hard, on average, to approach our methodologies and to then "walk on their own" once the consultancy ends?

4 For some examples, see https://www.ideo.com/work.

The Kelley brothers attempted at giving an answer to this question. David, in particular, was IDEO former CEO and is one of the reference people of d.school at Stanford University. They both developed a sensitivity about the reasons behind people and workers fearing creativity – thanks to their life and work experiences. They thus decided to describe in a book how to make it through possibly one of the hardest parts of innovation – the *sustaining* of it and its replication by previously innovation-refractory contexts.

3.3.1 Creativity and Creative Confidence

The "*Creative Confidence"* expression is not very hard to grasp, and means exactly what it appears to mean: self-assurance in one's creative capabilities. Creativity is the third ranked quality that, according to the World Economic Forum [5], firms will look in candidates by 2020, which is quite a close date.

Creativity can briefly be defined as "*the production of novel and useful ideas – the ability to form new concept using existing knowledge"* (Thompson, 2014). For many, creativity is something mysterious that happens randomly as a magic spell (Boden, 1994), which is not at all the advice of Kelley (2013). David Kelley and his brother strongly believe in the fact that creativity lies in everyone: it appears to be weakened and shut down by traditional schooling, so the real difficulty is to make people acquire "*self-efficacy"* (definition borrowed by the psychologist and Stanford professor Albert Bandura), namely the capacity to become resilient, to tolerate failure and to be more daring, eradicating the idea that "creativity is not for them". Creative Confidence is a force that prevents people from remaining stuck at the planning stage, and makes them proceed to action without fear, unleashing their creative potential (Kelley, 2013).

Why then do people – corporate executives in particular – find it so tough to have or to develop *Creative Confidence*? Thompson (2014) provides a useful example, asserting that, in creativity, quantity usually equals quality, but, according to the scholar, this equation does not hold valid at all if plunged into the business world, or, at least, it does not in the majority of business-related situations. For Boden (1994), who instead considers the creativity matter from a psychological point of view, the problem is definitely related with the fact that we all rush to assign a certain *value* to creative ideas – and this value brings a *judgement* with itself, that is something limiting creativity (Brown, 2009) – instead of discovering their origin, in terms of contexts and of thought processes of the "creator".

The importance of "deferring judgement" (originally, one of the "brainstorming rules" IDEO put on paper) is strongly stated again in the "Creative Confidence" book (Kelley, 2013), where the two

5 *Future of Jobs* Report, World Economic Forum (2016). http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf.

Kelley brothers assert that, in order to foster creativity in a group, it is essential to "*consider the social ecology of your team*". Constructive criticism is part of the picture: the authors write it is very important not to cut the creative flow, wherever it might lead.

The milestone book by the Kelleys, who so deeply contributed to shaping IDEO and its history, appears as a collection of both inspiring stories and previously illustrated tools, methodologies or practical tips for implementing a fruitful Design Thinking process (e.g. IDEO.org, 2015; Hasso Plattner Institute of Design at Stanford University, 2010).

One of the most important stories of the book - and one of David Kelley's battle horses in talks and speeches[6] - is about Doug Dietz, a GE professional who had designed a very precise and well-working MRI machine that was very scary for children as well. The tale of how Dietz adopted a human-centered approach to solve the issue and of how the statistics on children needing to be sedated before the MRI improved dramatically give an idea of the importance human-centered design still has, even though the "birth" of *Creative Problem Solving* dates back to some years behind. Creative Confidence, thus, relies on human-centeredness and sometimes takes it for granted (there will be no more explicit mentioning of it in the whole book). There is also a recall to the types of constraints Design problems present, which had been introduced by Brown (2009): *feasibility, desirability* and *viability*. Finally, the theme of wicked problems is inherited, too: Kelley (2013) writes that "*people who have creative confidence [...] are better able to find solutions to seemingly intractable problems*".

Besides reinforcing the previous ideas and models, the two IDEO leading professionals take some steps forward: one interesting example of this is the enumeration of eight strategies to unleash creativity:

- *Choose Creativity*: being creative is first of all a voluntary act, nothing divinely imposed (Boden, 1994).
- *Think Like a Traveler*: looking at things with different eyes or "lenses" is also a good beginning to the creativity path.
- *Engage Relaxed Attention*: Insights come whenever you least expect them. This common sense statement is particularly true for creativity, since it is based on the reinterpretation of existing knowledge to form new one (Thompson, 2014).
- *Empathize With Your End User*: as it was already made clear, understanding first-hand the needs of the people you design for is a powerful way to look at things from unexpected perspectives.

6 See, for example, https://www.ted.com/talks/david_kelley_how_to_build_your_creative_confidence.

- *Do Observations in the Field*: the perfect complement for empathy, the action leap that Kelley (2013) strongly sponsors.
- *Ask Questions, Starting with "Why?"*: the entire previous paragraph was devoted to *Innovation of Meaning*, a matter in which the "why" question is simply the one. The idea, here, beyond the parallel with the other Design Thinking stream, is to go to the heart of the problem to solve it more effectively.
- *Reframe Challenges*: this concept was widely discussed as well. Reframing stands for wearing a different pair of shoes and walking down the same road: that road will appear changed – in ways that could prove significantly helpful.
- *Build a Creative Support Network*: creativity can be really hard work. Having a group of people to collaborate and share thoughts with can be a good way to keep things going.

The imprint of the "IDEO mentality" is quite evident in the list: besides the recurrence of human-centered design-related methods, tools and prescriptions, aspects that are underlined more than once are for example the *voluntariness* of all one does, which, according to Kelley (2013), is a distinguishing trait of all design-trained or design-minded people; or, the importance, explicitly stated, of networking and network making, not as a tool for generating value, as it happens in *Innovation of Meaning*, but rather as a support net.

3.3.2 A Five-Step Process to Describe Creative Confidence

As already said, the Kelley brothers intertwine, in their narration, many stories with prescriptive arguments and step-by-step approaches or processes like the one that was just described. Another interesting contribution in this sense comes from Mauro Porcini, currently Chief Design Officer at PepsiCo and formerly occupying - as first professional ever in the company history – the same role at 3M[7].

As Kelley (2013) reports, Porcini proposed a five-step framework to describe the creative confidence path of firms:

- *Pure Denial*: the company starts with the "we are not creative" refrain, terrified at the idea of embracing creativity for the fear of not being able to.
- *Hidden Rejection*: the company reaches this step when there is at least one executive trying to evangelize colleagues, who in turn appear fine with the creativity leap in progress but are not really committed to implement it. The envisioned solution, here, is to have

7 https://www.linkedin.com/in/mauroporcini/.

skeptical employees experiencing creativity and its benefits first-hand.

- *Leap of Faith*: this third step takes place when actual company resources are devoted to a real project or initiative involving a high degree of creativity and consumer-driven mentality. This is the sign, according to Porcini, that the company has taken a real step forward.
- *Quest for Confidence*: after the first, important practical step, the company has developed an awareness about the advantages of creativity as engine of innovation, but needs to find its own way of deploying creativity at its best, developing methodologies and codifying the best practices.
- *Holistic Awareness and Integration*: this is the phase in which the creative, customer-driven and innovative mindset becomes part of the company culture and DNA, spreading and institutionalizing creative confidence at the organizational level.

This five-step process, looking quite similar to the "*Five Steps of Grief*" theory (Kübler-Ross, 1972) in abstract terms, is quite effective in conveying how hard it is, especially in the workplace, to demolish the preconception that binds creativity to the notion of an ***élite-only*** kind of capacity and mind predisposition. This is also the reason why the comparison with Kübler-Ross's theory does not seem completely inappropriate: learning to unleash creativity means embracing something powerful and frightening.

The *Creative Confidence* narration by the Kelleys (2013) ends with a quick list of strategies and tips that might enable a faster embracement of creative confidence itself by the reader: these suggestions include practices like being more experience-oriented, i.e. develop a more hands-on mentality regarding basically any aspect of life; develop a supportive network around oneself, in order to be surrounded by positive inputs and stimuli; embrace continuous learning, which is the basis for curiosity that, in turn, will generate the seeds for a potentially creative approach to things. On the corporate/company side of the closing part of the argument, there is the comeback of the idea that top management – or, more in general, company "high spheres" – commitment is the key and booster of the diffusion of a creativity-oriented approach. The same idea of the relevance of the top management role is highlighted, in different terms but in the same sense, in a wide part of management literature (e.g. Hall *et al.*, 1993).

3.3.3 Distinguishing Traits of Creative Confidence

The salient peculiarities of the *Creative Confidence* stream just illustrated are, for what was explained, several:

- The first thing that probably strikes the reader, in comparing Verganti's and Kelley's books, is that their *language* is profoundly different, and it is declaredly so. As already mentioned, Verganti (2008) made it clear his intention was to write from a managerial perspective. In Creative Confidence, Kelley (2013) states that *"language is the crystallization of thought"* and that *"to change attitudes and behaviors, it helps to first change the vernacular"*. The book by Kelley brothers is located to the opposite with respect to Verganti's: they share the same richness in stories and real-life examples, but the Kelley brothers look at things from a more psychological and design-like angle.
- *Creativity* is the word everything revolves around. In no one of the other three Design Thinking streams such a strong, single capability-driven narration can be found. Kelley brothers strongly assert creativity is rooted in everyone (Kelley, 2013), and that it is exactly the missing brick in the majority of problem solving deficiencies people have.
- In *Creative Confidence,* unlike a significant part of management literature in particular, there is a stronger focus on *attitudes* rather than on *skills*. The Kelley brothers' book is a collection of examples on how thinking one person is not creative derives from a series of attitudes that person has, and the others around him/her have. Furthermore, many words in the book are spent in describing how it is possible to approach challenges and even life problems with a new, different attitude. The general impression the readers have, after reading Creative Confidence, is that the authors suggest to never lose *optimism* and capacity to *tolerate failure* – there are even paragraphs bearing these words as titles, in the book. The two mentioned things look more like attitudes than skills.
- The whole *Creative Confidence* discourse is deeply *action-oriented*. It calls for people to take a stand in favor of a more hands-on, practice-driven problem solving modality that entails the capacities of being able and flexible enough to *iteratively prototype* and *visualize* as much as possible.
- *Creative Confidence* – as the greater part of the previous narration by IDEO – finds its roots in the human-centered paradigm: as an approach, it continuously urges to measure one's ideas with what final users think and feel, and it repeatedly encourages to develop empathy and gain knowledge from the field. It could be said that, to *Creative Confidence*, it is crucial to obtain *cultural insights*.
- Even though the managerial/entrepreneurial side of the matter is seldom explicitly mentioned, most of the stories the Kelley brothers tell concern organizational life. This indirect way of presenting the topic allows the authors to draw attention to the "softer" sides of organizational life, that creativity encouraging specifically tackles: first of all, it improves the

organizational climate, making work life and the work place a more relaxed, cheerful and responsive to change; secondly, it makes workers willing to put their ideas and intuitions forward with less fear of judgement, fostering their *entrepreneurial attitude*; finally, a relaxed and more communicative working environment makes it simpler to have employees working for the same, *aligned vision*.

In sum, *Creative Confidence* is the Design Thinking stream that focuses the most on several soft aspects of corporate life, and that remains more grounded on the human-centered design paradigm.

3.4 Sprint Execution

The fourth and last Design Thinking stream that will be discussed is *Sprint Execution*. In spite of the fact that the three previously explained ones already build up quite a rich picture on their own, *Sprint Execution* is worth mentioning for the kind of light it sheds on innovation processes in general. The Design Sprint book by Knapp *et al.* (2016) blends notions that are typical of the Design domain - like sketching or building storyboards – with others that are closer to management – such as tight schedules, productivity and individual work – in a unique way. The amount of effort that is produced to scientifically codify a *process* makes *Sprint Execution* a suitable way to reframe the earlier contributions and to imagine some possible directions for the future.

3.4.1 The Origins and Premises of Sprint Execution

The latest Design Thinking stream to chronologically appear was the *Sprint Execution*, which followed the publication of the homonymous book by Knapp *et al.* (2016). The *Sprint Execution* and related contributions represent an even more peculiar interpretation of – or, better, point of view on – Design Thinking than *Creative Confidence*. The Design Sprint book is a collection of tips, guidelines and practical examples on how to tackle a design or business challenge in only five days. It was born mainly from the work of Jake Knapp, a former Google Designer and Google Ventures Design Partner[8]. Knapp, supported in the narration by two fellow designers and colleagues, explains in detail and provides very prescriptive guidelines about what he defines "*Google Venture's unique five-day process for answering crucial questions through prototyping and testing ideas with customers*" (Knapp *et al.*, 2016). Before plunging the reader into the explanation of how to carry out a Sprint, Knapp makes some important premises that, if not respected, would

8 https://www.linkedin.com/in/jake-knapp/.

severely undermine the results of the Sprint itself. These premises are:

- Dedicating five, full days in a row to the Sprint, without any distraction or other task that could break the necessary concentration;
- Selecting an appropriate space to brainstorm, work both in team and alone and unleash creativity;
- Composing the right team, in terms of attitudes and work personalities. In particular, Knapp *et al.* report that, after a conspicuous number of sprints, they reached the conclusion the most successful ones were those involving a team of around seven people, in which three figures were present: the decider, in charge of the final decisions and of making the process proceed; the troublemaker, i.e. that person always trying to muddy the waters and practicing constructive criticism; the facilitator, a mediating figure to juxtapose to the troublemaker. Knapp *et al.*'s (2016) statements, coming from empirical experience, are supported by academic research an literature, affirming that the optimal number of members for any team ranges from five to twelve, with seven almost at the mean of this interval (Steelcase WorkSpace Futures, 2010).

These three premises should then be applied to a very condensed and well-structured weekly schedule that covers five full days, as already said: from Monday to Friday. It will now be explained what the authors suggest to do in each day of the Design Sprint.

3.4.2 The Sprint Execution Process: From Monday to Friday

Figure 3.3 is not exactly the representation of the temporal subdivision of the Design Sprint provided by Knapp et al. (2016), but it is interesting to look at since it displays very neatly which are the aims of each day, from Monday to Friday. It is immediately clear that the process under scrutiny has to do with Design Thinking: the journey initiates with a research step, to make sense of what the problem is, to then proceed with divergence and decisions followed by pro-totyping and user tests. What is obviously striking in Design Sprint is the extremely reduced time window in which all these activities take place. The general feeling of how a Design Sprint is supposed to work was unveiled: the ways this practically happens will be described in the next paragraphs.

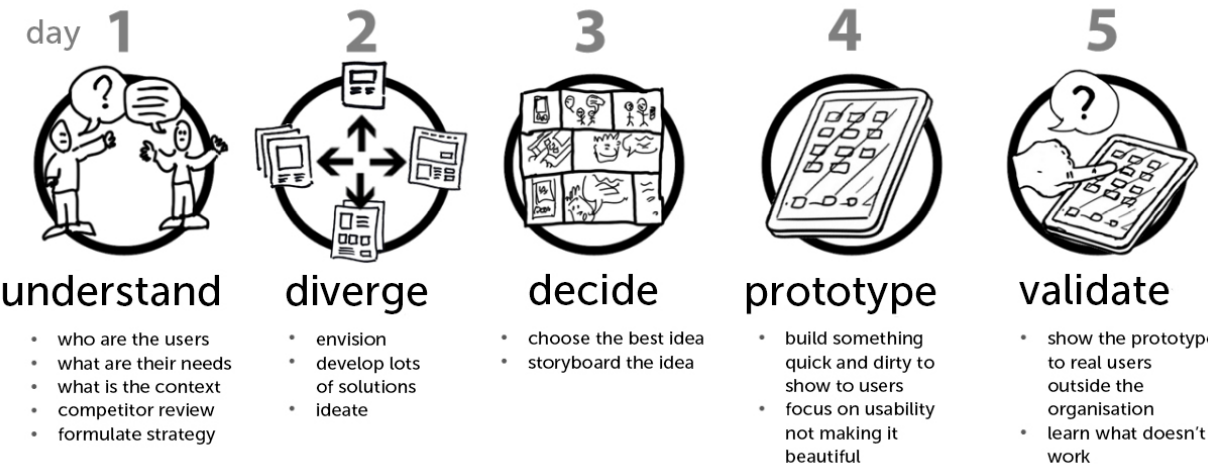

Figure 3.3: *The objectives of the five days of the Design Sprint*[9] .

3.4.2.1 Monday

The very first day of the Sprint, the authors suggest, should be aimed at defining a target, namely a specific challenge or problem that will be the topic of the Sprint itself. This should be done by, first of all, setting a long-term goal, a sort of declaration of intent to pursue a shared goal, whose pursuit will not end with the closing of the Sprint on Friday. The declaration of intent, Knapp writes, is better drafted by "*rephrasing assumptions and obstacles into questions*" (Knapp *et al.*, 2016).

The following step is then to draw a map, simply and schematically representing the *to be* situation one is working for: starting from listing the actors, on the left, the then write the aim, on the right, and linking the two sides with what should happen in between. This map will be the basis to select the real challenge at the end of the day.

Monday proceeds with interviews to experts, i.e. other professionals that might have influential ideas on the matter that is being tackled. Knapp *et al.* (2016) suggest to individually write down "How Might We...?" questions during the interviews: these questions, after the end of expert interviews, will be clustered, made sense of and selected, to understand which is the most promising direction to walk towards. The very distinguishing trait of the first day of the Sprint, as described by its "creators", is the importance attributed to the *individual* activities and idea recollection, which is normally absent from other Design Thinking-related narrations and arguments (e.g. IDEO.org, 2015). Another important and differentiating aspect that will be recur throughout the Sprint is the fact that the Decider is a single person who, at the end, is the sole responsible for making final decisions. Decision making is not compulsorily collective anymore.

9 Retrieved from https://medium.com/project-management-learnings/design-sprints-at-google-85ff62fed5f8.

3.4.2.2 Tuesday

The final aim of Tuesday is to envision possible solutions to the chosen target. Tuesday morning should be devoted to inspiration, which takes place through two activities: *remix* and *improve*. These activities simply stand for having brief, collective presentations of the ideas emerged on the previous day, to then proceed with real solutions envisioning, via the support of sketching. The benefits of visualization were already described in Chapter 2 (Liedtka *et al.*, 2010) are substantiated and put in practice here, via a four-step process that can be seen in Figure 3.4.

In about one hour and a half, sprinters should gather the relevant info they think could be used for the final solution, to then doodle rough ideas, that will be extremely fast reinterpreted with the *Crazy 8s*, to then proceed with the final sketching part.

The pile of solutions generated will be "put to rest" until the start of the morning of the subsequent day.

An important notice Knapp *et al.* leave before closing Tuesday is to remind to start looking for the customers/users that will participate to the Friday's testing sessions.

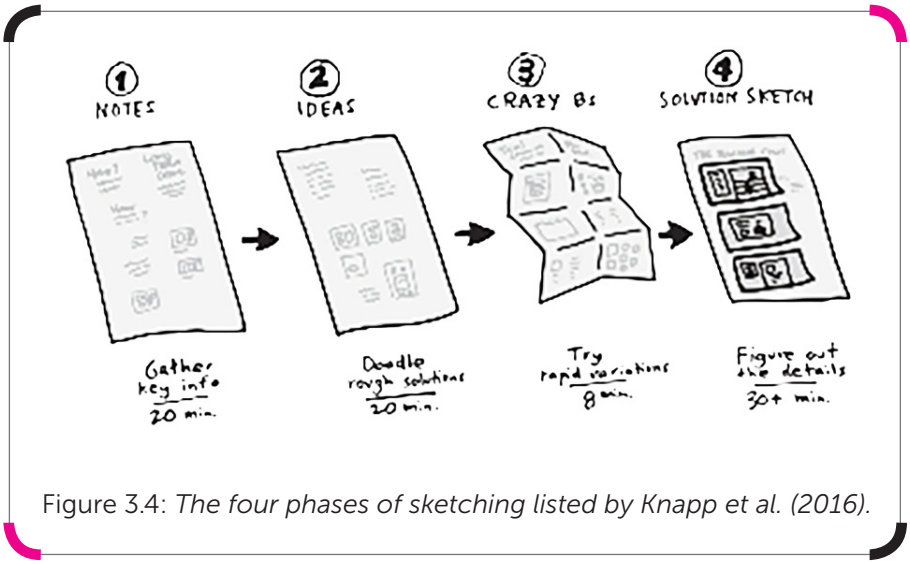

Figure 3.4: *The four phases of sketching listed by Knapp et al. (2016).*

3.4.2.3 Wednesday

Wednesday, besides for the fact that it is exactly the middle day of the week, is particularly important in a Design Sprint because it is the day in which the team, through the final intervention of its decider, establishes which solution is the one to go for. The decision comes after a round of *speed critique* – a fast presentation and discussion moment in which ideas are presented to the whole team and shortly debated. The authors leave here another notice: it might happen that the team in uncapable of choosing between two or more solution or of combining them in only one, due to their appeal and potential: in this case, the sprinters should follow a *rumble*, i.e. the parallel

development of both - or more - ideas, that will then be prototyped and tested together, to verify which one records the best response.

When the morning ends and the afternoon commences, it is time to join together the winning sketches, to form the storyboard, i.e. the visual schematization of how the solution should be experienced. The ideal situation is a storyboard that contains from 10 to 15 "scenes", and that can thus be explained in not more than 15 minutes.

3.4.2.4 Thursday

As Knapp *et al.* (2016) beautifully phrase it, "*Thursday is about illusion*". According to the three authors, the penultimate day of the Design Sprint should follow a "fake it" approach: the aim of the day is to end the working session with a low-fidelity but functional-to-the-scope prototype. As it can be seen in Figure 3.5, Thursday should be employed to build a *façade* that makes the prototype real enough to test, but in a much faster way than what would happen in a normal product development process.

The prototyping process is described as split in four steps:

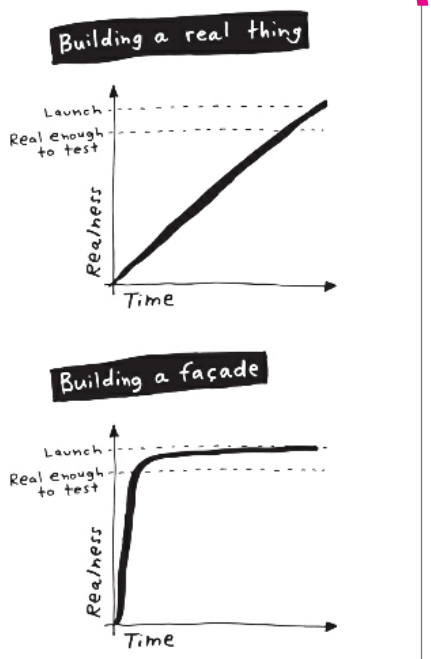

Figure 3.5: *Building a façade allows the prototype to be realistic in far less time.*

- *Pick the right tools*: building your prototype needs to be a quick process: therefore, it would be best to rely on easy-to-use and known tools.
- *Divide and conquer*: dividing tasks whenever possible is a faster way to proceed.
- *Stitch it together*: the output of the different tasks will have to be put together consistently with the envisioned outcome.
- *Do a trial run:* a couple of hours before the end of the work session, it would be cautious to test the prototype, to verify if its performances are the expected ones.

After double-checking everything is in its proper place, Thursday session can be called off.

3.4.2.5 Friday

Friday is *the* day, the day in which all the efforts of the intense, previous four days go out into the world and get real feedback and use. The morning will be occupied by interviews to the customers/users selected *in background* during the week, starting no later than Tuesday. Again, for speed and practicality, it is suggested to have only one interviewer. Knapp *et al.* (2016) suggest to conduct five interviews, since previous studies appear to validate the idea that the majority of the prototype issues are observed within the first five interviews. After a series of tips and practical advice on how to optimally conduct interviews, there comes the learning part, which begins with the team members taking notes while their interviewer mate is doing his/her job. Then, all the notes will have to be transferred on a whiteboard or, in any case, on a surface that allows to visualize all the insights at once. The subsequent re-elaboration should lead to a prototype refinement, and then to its finalization.

3.4.3 Distinguishing Traits of Sprint Execution

The peculiarities this Design Thinking stream presents, for how they were illustrated, might push the reader to think of the *Lean Startup* approach (Dillard *et al.*, 2011), especially when it speaks about MVP (*Minimum Viable Product*). With reference to the other 3 Design Thinking streams, *Sprint execution* presents the following distinguishing traits:

- Similarly to *Innovation of Meaning*, *sprint execution* entails a minimum interaction with the final user. It is the Sprint team that selects the challenge to tackle, after setting the Sprint long-term vision, and users are involved only on Friday afternoon, in the proportion of just five interviews. In addition to this, one of the first activities suggested for the whole Sprint is expert involvement, totally at the opposite of *naïve public* inclusion in the process.
- *Sprint execution* looks like a massive, very detailed and well-thought prototyping process. Throughout the book, it is implicitly highlighted how sprinters need to be flexible and not too attached to their ideas, Every step, process, activity or task is presented under a "prototyping light": there is no perfect, only *intelligible* and *effective*. If one had to summarize the whole book in one or two skills a sprinter should possess before starting, they would be *prototyping* and *testing*.
- *Sprint execution* is probably the Design Thinking approach in which it is more constantly underlined the importance of criticism – provided it is constructive and not destructive -in a creative process. Being able to overcome fear of judgement and social pressures to conform is the right way to accelerate the whole Sprint process (Knapp *et al.*, 2016) via

sincere feedback.

- *Sprint execution* strongly supports the necessity and power of *individual* reflection. As confirmed by psychological studies (Finkel *et al.*, 2011), working together with other people is not necessarily a driver of concentration, motivation or better ideas. This is exactly what Knapp *et al.* (2016) believe: especially in the very first, ideation phases, it is better to have sprinters thinking autonomously to then review and critique the generated ideas chorally.
- *Sprint execution* places a very strong accent on learning, even more than what the other Design Thinking streams do. This is first a reflection of the importance *sprint execution* attributes to critique, because it becomes one of the main tools for learning in condensed time frames, and to the condensed time frame itself: having to deliver a working prototype of a solution that is appreciated by users, it is fundamental to maximize learning as much as possible.
- *Sprint execution* is really oriented to dramatically improve the efficiency of any development process, regarding any kind of artefact. Creative sessions are compressed and massively accelerated to produce a subsequent shrinking of the development times, that the whole management world knows as among the heaviest to carry in a project.

As Knapp *et al.* (2016) ironically write, *sprint execution* looks like something for "*process geeks*". What is certain is that more and more companies got closer to this kind of methodology, and are seizing the advantages of such a diverse way of working from the managerial routine.
Hitherto, the four main Design Thinking streams were described in their main traits, to then make the skills, competences and project performances affected by them emerge in the concluding part of each dedicated paragraph. The following narration will transpose onto an empirical ground the theoretical considerations that have been made up to this point, in order to comprehend whether or not Italian firms are aware of what Design Thinking is, and which approach or approaches they are more oriented towards.

3.5 Design Thinking Streams Recap and Comparison

So far, the four main Design Thinking streams emerged until present were discussed in detail, explaining their origins and their inherent characteristics. This point of the current study represents the closure of the literature discussion and illustration, to proceed with the empirical investigation and analysis of results. It might be appropriate to outline a common framework that is capable of

bridging the gap between literary discussion and on-the-field research. Briefly anticipating what is going to be discussed in Chapter 4, the overall empirical analysis will be directed at defining variables in four macro-areas:

- *Design Thinking Awareness;*
- *Design Thinking Adoption;*
- *Design Thinking Capabilities;*
- *Project Performances.*

The first two macro-areas of the list will be defined in an additional way with respect to what has been shown until this point. What concerns *Design Thinking Capabilities* and *Project Performances* will be dealt with recalling ideas and variables that were already explained, but not schematized in an only framework. The meaning of each variable will be illustrated more in depth in Chapter 4. Starting from *Design Thinking Capabilities*, the variables adopted in the empirical research are divided in three groups: *skills, competences* and *attitudes*, which contain six variables each, as follows:

- *Skills*, the group of reference for:
    - *User Analysis*;
    - *Cultural Insights*;
    - *Visualization*;
    - *Prototyping*;
    - *Testing*;
    - *Business Modeling*.
- *Competences,* gathering the following variables:
    - *Framing/Reframing*;
    - *Collective Leadership*;
    - *Creativity*;
    - *Criticism*;
    - *Brokering*;
    - *Storytelling*.
- *Attitudes*, the category containing:
    - *Optimistic Mindset*;
    - *Tolerating Failure*;

    - *Embracing Ambiguity*;
    - *Troublemaking*;
    - *Pragmatism*;
    - *Empathy*.

The *Project Performances* section requires less schematization, since the twelve variables it takes into account were actually developed in function of the four aforementioned Design Thinking streams. Each Design Thinking stream itself is attributed three variables, as in the list that follows:

- *Creative Problem Solving* reunites
    - *Fit between innovation and market needs*;
    - *Generation of creative ideas*;
    - *Team alignment around effective prototypes*.
- *Sprint Execution* refers to
    - *Efficiency of the development process*;
    - *Acceleration of the creative sessions*;
    - *Learning from market tests.*
- *Innovation of Meaning* gathers
    - *Radicalness of the new strategy*;
    - *Revitalization of the brand awareness*;
    - *Addressing new markets.*
- *Creative Confidence,* finally, grouping
    - *Alignment between vision and organizational behavior*;
    - *Organizational climate*;
    - *Entrepreneurial attitude*.

The next paragraphs, closing the Chapter, will be dedicated to illustrating which *skills, competences* and *attitudes* refer to which streams*,* basing naturally on what was already presented in the paragraphs discussing the distinguishing traits of each Design Thinking stream. As it will be clarified in Chapter 4, speaking about Design Thinking streams naturally implies dealing with capabilities and performances that all belong to the Design Thinking world in general: the subdivisions that will be illustrated in the following paragraphs only have the aim of identifying which are the *main* skills, competences and attitudes each Design Thinking stream entails. The same idea applies to the already mentioned paragraphs about the distinguishing traits of the different

streams: the only discrepancy lies in the fact that, in this occasion, the narration will mainly be schematic, rather than textual.

3.5.1 Skills

In the case of skills, the already illustrated distribution of the main variables over the four streams seems to privilege *cultural insights, visualization* and *prototyping* overall. Table 3.1 shows how, on average, each Design Thinking stream entails two main skills – with the exception of *Creative Confidence*. Concerning *Creative Problem Solving*, the two core skills it seems to address, given its literature description, are *user analysis*, given to its core human-centric nature, and *visualization*, which, thanks to this stream, becomes a well-known and appreciated tool to adopt within the problem solving process.

Sprint Execution, instead, mainly targets *prototyping* and *testing*, as the narration about the *Design Sprint* book (Knapp *et al.*, 2016) could easily suggest. *Innovation of Meaning* inherently addresses *cultural insights*, given the centrality the new trends sensing activity has in the stream. Moreover, there is also a relevant part of *business modeling*, since, as already mentioned, innovating the meaning of an artefact also means changing the value extraction modalities around it.

	User Analysis	Cultural Insights	Visualization	Prototyping	Testing	Business Modeling
CPS	✓		✓			
SE				✓	✓	
IM		✓				✓
CC		✓	✓	✓		

Table 3.1: *Summary of the main skills entailed by the four Design Thinking streams.*

Finally, *Creative Confidence* has to do principally with *cultural insights*, since interpersonal understanding and creativity come into place, *visualization*, a very effective way to grow confidence in one's own ideas, thanks to the increased capacity of conveying them, and *prototyping*, since there is a strong tendency and incentive to autonomously create and make decisions.

3.5.2 Competences

	Framing/ Reframing	Collective Leadership	Creativity	Criticism	Brokering	Storytelling
CPS	✓		✓			✓
SE				✓	✓	
IM		✓		✓	✓	
CC	✓		✓			

Table 3.2: *Summary of the main competences entailed by the four Design Thinking streams.*

Table 3.2 displays how, in this context, the average number of competences attributed to each stream grows to 2.5. Beginning with *Creative Problem Solving*, it can be seen how it is assigned three competences: *framing/reframing*, for the push it gives to the generation of innovative points of view on problems, *creativity*, which is necessarily an important element for finding unexpected solutions, and *storytelling,* the ideal means to convey a shift of mindset in traditionally-minded contexts.

Sprint Execution is, by explicit admission of its theorists, much focused on *criticism*, which is said to make the development process much faster and efficient, and *brokering*, given that developing artefacts in a very condensed time frame requires a certain elasticity and capacity to make connections between even apparently unrelated ideas.

Innovation of Meaning, instead, has to do with *collective leadership*, and with leadership in general, *criticism*, given that such an innovation requires to fully possess a critical mindset, and *brokering*, since it was said how the richness of companies like Alessi lies in the number of ideas and inspirations it can draw from its ecosystem.

Creative Confidence is attributed *framing/reframing*, since it requires adopters to deeply change the way they see and approach problems *lato sensu*, and *creativity*, whose rediscovery in people is the core of this stream.

3.5.3 Attitudes

Speaking of attitudes, it can be seen in Table 3.3 how, in this case, the average number of variables per stream grows again, reaching 2.75. *Creative Problem Solving* is attributed three: *tolerating failure*, one of the main things that, together with *embracing ambiguity*, business-oriented professionals need to learn, *embracing ambiguity* itself and *empathy.*

Sprint Execution entails two attitudes: *troublemaking*, since it requires to always be positively critical of the others' ideas, and *pragmatism*, needed to adapt to the speed a sprint needs. *Innovation of Meaning* is, as *Creative Problem Solving*, about *tolerating failure* and *embracing ambiguity*, but with the addition of *troublemaking*, which is necessary to reach truly innovative meanings. *Creative Confidence,* finally, requests an *optimistic failure*, certainly *tolerating failure* and a very good dose of *empathy* as well.

	Optimistic Mindset	Tolerating Failure	Embracing Ambiguity	Trouble-making	Pragmatism	Empathy
CPS		✓	✓			✓
SE				✓	✓	
IM		✓	✓	✓		
CC	✓	✓				✓

Table 3.3: *Summary of the main attitudes entailed by the four Design Thinking streams.*

4.

Research Methodology

After an extensive discussion of what Design Thinking is, how it was defined, how it developed over more than seventy years and why it is interesting and relevant to study it, especially in its unfolding in the business context, it seems suitable to take a further step forward and analyze real cases of concrete application of Design Thinking, in order to understand which features it assumes or maintains, with respect to the more theoretical narration. Chapter 4 will be devoted to the explanation of the overall research methodology that was adopted to conduct the study in question, explaining the premises that inspired the research, the research objectives that were established, and the research process that was adopted. In particular, the research process paragraph will explain how the overall research was conducted through two different means: direct interviews to companies, guided by a research framework that will be illustrated as well, and a survey, submitted to an enlarged sample with respect to that selected for the direct interviews, investigating in particular the awareness and adoption levels of Design Thinking.
The Chapter will also include a closing section to explain the terminology that was already adopted - or will be adopted - that might be found misleading by the reader. The use of this kind of lexicon smooths the narration and makes it faster and more engaging, but was not adopted just for the sake of style: it was intended to provide - in some cases - insights into research aspects that will not be fully disclosed (e.g. in Chapter 6, the one dedicated to the illustration of the survey findings) or, in others, terminology reinterpretations pursuing that *reframing* activity that was already mentioned several times.

4.1 Research Objectives

The Research Objectives paragraph, before delving into the exploration of the detailed goals of the study, ought to be introduced by the aforementioned research premises, which somehow bring back what was already stated at the very beginning of Chapter 1.
Design Thinking has become a hot trending topic, especially in the last decade. What made it so popular, as already said, was the aura of magic and success the American Design consultancy firm IDEO was able to surround this creative paradigm with. This sort of glorification of Design Thinking happened through some very well-conceived *storytelling* was criticized by many (e.g. Nussbaum, 2011), but had beyond everything else the merit to draw an unprecedented attention onto the matter. Since then, many different contexts and countries, more refractory to innovation and changes than the United States, started reacting to this kind of paradigm and wondering which benefits it could bring. Italy was among these countries, and being the country of Politecnico di Milano, the university in which this research was born, it was chosen in order to clarify how this

historically traditionally-minded and resistant to change *milieu* received Design Thinking, if it did at all.

As in the case of Paragraph 4.2, the one dedicated to the discussion of the Research Process, the Research objectives will be illustrated in a general fashion, to then be specified for what concerns the case study research, namely that carried out via direct interviews, and the survey research.

4.1.1 General Scope

The general scope of the research conducted by the aforementioned "Design Thinking for Business" Observatory in Politecnico di Milano, Italy, was to provide a so-called *pre-competitive multi-client* picture of the Italian business context concerning Design Thinking, the awareness about it and the different typologies of adoption of the paradigm. The overall research implied the subdivision of the investigation sample in sub-categories of firms, to be able to form a clearer picture of the ongoing situation and develop an overall model. The research hereby under discussion actually represents a portion of the "Design Thinking for Business" Observatory research, more specifically the portion referring to those companies that were positioned in the so-called *Demand* segment, whose meaning and features will be illustrated, together with those of the other sample sub-categories, in the next Paragraphs.

4.1.2 Literature & Desk Research

The main scope of literature and desk research was to nurture and deeply substantiate the reasoning made in Chapters 1, 2 and 3. This research, that one might define "theoretical", had the goal of providing an exhaustive but concise illustration of what Design Thinking is, how it evolved over time and was interpreted in several different fashions.

The first three, literature Chapters are supposed to be the preparatory ground for the subsequent narration, that concerning the actual on-the-field investigation in the Italian context, limited to large organizations (where, by "large", it was established to consider firms having more than 250 employees). More in detail, Chapter 1 should be the one explaining why Design Thinking became so popular in the business world in general, beginning with the origins of this matter. Chapter 2, instead, was aimed at discussing what Design Thinking *is*, and how the concept evolved over a time span of approximately seventy years. Finally, the goal of Chapter 3 was to illustrate how Design Thinking is not and was not an univocal concept: it was actually subject to many different interpretations, of which the four, prevailing ones are explained.

4.1.3 Case Study Research

The overall case study research conducted by the "Design Thinking for Business" Observatory was directed at 62 companies, of which circa 95% were Italian and the remaining 5% foreign. In order to model the patterns that would be detected in the sample, the "Design Thinking for Business" Observatory choice was to divide the sample in five sub-categories or segments:

- *Strategic Consultants*, i.e. the companies (the majority of them worldwide known) that are operating in the consultancy industry for high-level business issues;
- *Technology Developers*, namely the firms that create proprietary technology they then sell to a number of other companies or individuals;
- *Digital Agencies,* i.e. those companies that had been born as graphic design or web design studios, just to make a couple of examples, and "converted" to providing Design Thinking -enriched services after Design Thinking itself boomed;
- *Design Studios*, namely those companies that were already working with or applying Design Thinking before it reached international fame;
- *Demand*, i.e. the set of companies that are typically far from the Design Thinking-related themes and methods, but became interested in them for a number of different reasons.

Looking at the five sub-categories listed above, one might wonder whether the fifth is named "Demand" because the other four build up an "offer" of some sort. This is to a certain extent true, and the very basic idea behind this categorization: distinguishing those companies that, in many different fashions, *provide* Design Thinking as part of their portfolio, thus having already developed an idea of what Design Thinking itself is and how it can be employed, from those that instead mainly *seek for* Design Thinking and have no clear ideas about it yet.

Of these five segments, part of quite a broad analysis, the current study focuses its attention on the very last one, *Demand*, for a very simple reason: given that Design Thinking was shown to be a controversial matter under many aspects in the initial three literature Chapters, it would probably engender a severe confusion in non-mature contexts as Italy was estimated to be. The results that will be discussed in the next three Chapters will partially confirm this, but also yield a series of unexpected findings that will help composing a much more complex situation than the one appearing from the surface.

All this being said, the objective of the current study becomes clearer: to elaborate a display of the current situation of Italian large organizations, belonging to the Demand category, in terms of their Design Thinking *awareness* and *adoption,* as the following paragraph will further substanti-

ate.

4.1.4 Survey Research

The overall survey research conducted by the "Design Thinking for Business" Observatory of Politecnico di Milano came, in a chronological sense, after the case study research: for this motive, it was immediately partitioned and targeted to two different aims, one of which is actually that of the current study:

- Understanding the ways and strategies "Design Thinking providing" companies (those standing in the first four categories of the *Offer* side of the sample) put in place in order to sell Design Thinking-enriched artefacts that their clients perceive as helpful and effective;
- Obtaining insights about the *awareness* and *adoption* levels and characteristics in the Italian companies belonging to the *Demand* sub-category that, as already mentioned, is the focus of the current study.

Once acknowledged the fact that the study hereby under discussion pursued the second objective listed above, that same objective can further be expanded, since the idea moving this study was also that large Italian organizations possess average-to-low levels of both Design Thinking *awareness* and *adoption,* and this is likely to cause a tendency to resort to "older" or "closer to business" Design Thinking streams (such as *Creative Problem Solving*), seeking to improve specific capabilities that widely vary from case to case.
This thesis will be deeply discussed and compared with empirical evidence during the course of Chapters 5 and 6.

4.2 Research Process

The process followed for the research varied considerably along the three research paths already mentioned: literature and desk research, case study research and the survey research. As it occurred for the research objectives, the argument describing the process that the research followed will be split into two parts. As already hinted at 4.1.2, the whole research sample was segmented in five main groups, of which only one (*Demand*) will be the object of the current study. The segmentation was preliminary to any other research activity, and naturally guided the research process that is going to be described.

4.2.1 Literature & Desk Research

Literature and desk research was focused on three main activities, concerning the overall study under scrutiny: obtaining literature papers that were relevant for the arguments upheld in Chapters 1, 2 and 3; searching for information about the companies sampled in Chapter 5, so that their description would be richer and clearer; looking for articles, posts or other kind of material that, with the appropriate sources, could prove useful in sustaining the overall narration.

The first activity was carried out exclusively online, by resorting to well-known and well-endowed platforms like Google Scholar and Scopus (the two mainly consulted). The complete list of the consulted platforms is the following:

- Google Scholar;
- Scopus;
- ResearchGate;
- ScienceDirect;
- Harvard Business Review.

These extremely powerful and copious sources of information and material were searched through in two main ways: either browsing by the author's name, or, more often, by entering keywords related to the momentary subject of interest.

The secondary information about the sampled companies was, by general rule, extracted from their websites and the disclosed data in their financial reports, clearly found on their websites. In those cases in which the company website presented evident lacks or dealt with the matter of interest in a superficial way, the information was sought for on different sources, such as Wikipedia or the press review highlighted in the company website.

Finally, articles and other forms of support information was simply looked for via a search engine research, by again inserting keywords related to the subject of investigation.

4.2.2 Case Study Research

After the segmentation of the sample, the aim of the current study was to understand the peculiarities of the *Demand* part of the segment. As already mentioned, the research modality adopted to develop all the eight case studies presented in Chapter 5 was direct interviews, and these direct interviews were guided by a *research kit* developed within the Design Thinking for Business" Observatory. The *research kit* is composed of five main sections:

- A *company profile* section, introducing general data about the company, like the evolution of the number of its employees or the one of the revenues in the last three years, its main facts and the generalities of the interviewees;
- A *general information* part, following the first, very general framing, containing information about the history of the company in brief, its organizational structure, and then its strategy and business model;
- A *Design Thinking program* section, explaining if, within the company, exist any initiatives aimed at diffusing Design Thinking and, if so, what kind of initiatives are made and supported in this sense;
- An *Offering* part, where possible offerings involving the presence of Design Thinking are described in their general characteristics first of all, to then be substantiated through the description of the process followed by these offerings, a typical brief and - again, where possible - a real case of deployment of the offering/s in question;
- A *Design Thinking Management* closing section, where the details of how Design Thinking arrived in the company, was greeted, communicated, diffused and which obstacles or facilitations it encountered are discussed in a qualitative fashion.

The material collected during interviews, whose conversations were recorded for the sake of the interpretation work, was then rearranged and written to find a fit with the five sections of the *research kit*, to then proceed with the submission of the filled in *research kit* itself to the interviewees, requesting their validation or correcting suggestions.
The results about the *Design Thinking capabilities,* matter whose definition will be provided in detail in the next paragraph, speaking of the way the survey research was structured, were in this context inferred indirectly by re-elaborating the information shared by the interviewees. In Chapter 5, the narration modality of each case study will show how there were no direct questions about which skills, competences or attitudes were thought to be the most improvable via Design Thinking, nor about the level of awareness of Design Thinking present within the company.

4.2.3 Survey Research

The survey research was set up in a different way with respect to case study research. Besides the trivial discrepancies that lie between an interview and an online survey, there is an element that is important to recall: the online survey developed for the research was inherently aimed at defining, in more quantitative terms compared to case studies, the degrees of *awareness* and *adoption* of Design Thinking in Italian organizations. Furthermore, the online survey, that was submitted to

300 different respondents, attempted at comprehending which *skills, competences* and *attitudes* were estimated to be crucial to improve through Design Thinking.
The survey was built as the collection of four macro-sections, detailed in the following paragraphs:

- *Design Thinking Awareness;*
- *Design Thinking Adoption;*
- *Design Thinking Capabilities;*
- *Project Performances.*

In each macro-section, respondents were required to select an only value on a Likert 5 scale, or to distribute 100 percentage points over either a Likert 5 scale of variables and values, or over a series of variables. The minimum granularity allowed for percentage point answers was 5%, and respondents were granted the right to leave some of the fields blank: it was thought interesting to measure the rates of abstention as well. The possibility of blank answer, as one might imagine, did not apply to the questions where an only value or variable needed to be picked.
In the *awareness* and *adoption* sections, the questions were targeted to generate an understanding on three different levels:

- A *personal* level, concerning just the individual respondent, his/her perceptions and ideas;
- A *function* level, to discover if and how Design Thinking plays a role in whole company divisions;
- A *whole company* level, to try to outline, even in a rough manner, how an entire firms seems to be feeling about Design Thinking.

Passing to the *capabilities* and *project performances* sections, the levels of analysis became two in the capabilities sections, where respondents were asked to distribute 100 percentage points over both the expected personal and team improvements, to then shift to one only, a general "expected improvements", in the *project performances part.*
A final distinguishing feature that joins together the three last macro-sections (thus excluding the *awareness* one) is the fact that, in order to facilitate the understanding of the proposed answer items, respondents were asked to consider innovation and transformation projects that they either joined in the last two years or that they imagine they would join, depending on the specific section. Details about each of them come in the subsequent paragraphs.

4.2.3.1 Design Thinking Awareness

The first section was aimed at understanding which is the actual knowledge respondents and, by extension, their firms possess about Design Thinking, at three different levels: personal level, function level and company level. As already mentioned, to measure the degree of knowledge possessed by the firms about Design Thinking, a Likert 5 scale was adopted, whose chosen items were the following:

- P*oor*, meaning that Design Thinking as an approach is unknown by the company;
- *Fair*, which stands for a partial knowledge about Design Thinking;
- *Good*, meaning Design Thinking as a paradigm is well-known within the company;
- *Very Good*, for those firms who believe their level of knowledge about Design Thinking is very good;
- *Excellent*, standing for a perfect and complete knowledge of the Design Thinking paradigm.

Respondents were asked to behave differently according to the analysis level: concerning their personal awareness, they were required to select only one of the five given options of the Likert scale; when prompted on function and company awareness, instead, they were asked to distribute 100 percentage points on all the five intensities, for both awareness levels.

4.2.3.2 Design Thinking Adoption

In this section, adoption was measured across three different levels, the personal, function and company ones, as in the case of awareness. In this case, differently from the previous questions, respondents were asked to provide a single percentage for each level. At a personal level, the aim of the question was understanding the quota of innovation or transformation projects involving Design Thinking the individual respondent had taken part in in the last two years. Passing at function and company level, the question wanted to discover the quota of innovation or transformation projects adopting Design Thinking their function or their company developed in the last two years.

4.2.3.3 Design Thinking Capabilities

The capabilities macro-section of the survey is articulated in three parts, each one covering one kind of capability: *skills, competences* and *attitudes,* that will be defined as *third, fourth* and *fifth*

sections of the survey since, if one looked at sections and not at macro-sections, that would be their ordinal number of appearance.

- *Skills*: in the third section of the survey, respondents were requested to define the skills they thought they would improve through innovation or transformation projects adopting Design Thinking. Respondents were in this case requested to assess the "expected improvability" at two levels: personal level and team level. As in the case of awareness, the answers required to distribute 100 percentage points over the six different skills at personal and team level. The six skills involved were:

    - *User Analysis*, namely the capacity to gather and cluster insights obtained from users or clients;
    - *Cultural Insights*, i.e. the capacity to spot and sense emerging cultural trends;
    - *Visualization,* namely the capacity of communicating ideas and thoughts through sketches, images and drawings;
    - *Prototyping*, i.e. the capacity to transform ideas, even not fully developed ones, in tangible and working artefacts;
    - *Testing*, namely the skills that allows one to organize the learning extracted from market tests;
    - *Business Modeling,* i.e. the capacity to identify customers, partners and suppliers so that value creation and appropriation are both maximized.

- *Competences*: in the fourth section of the survey, respondents were requested to assess which competences they thought they would improve through innovation or transformation projects adopting Design Thinking. As it occurred with skills, there were two levels of inquiry: personal and team level, both concerning the expected improvements to gain over the set of provided competences, and implying to distribute 100 percentage points to the overall sets of provided competences themselves. The six competences involved were:

    - *Framing/Reframing*, i.e. the capability to iteratively define and redefine the problem, in order to better understand the faced challenge and envision unexpected, more effective solutions to it;
    - *Collective Leadership*, namely the capability of mobilizing resources of any type -

human, cultural or technological - to pursue a chorally shared vision;
    - *Creativity*, the capacity to think out of the box and propose original ideas;
    - *Criticism,* namely the capability of asking the right questions and of providing effective feedback, so that the overall problem solving reasoning goes more in depth;
    - *Brokering*, i.e. the capacity to combine solutions from different contexts and to take inspiration from different fields;
    - *Storytelling*, namely the capacity to express ideas and proposals through the narration of convincing stories.

- *Attitudes:* the fifth section of the survey was structured exactly as the third and the fourth ones. In this case, the 100 percentage points to distribute over both the personal and team level of inquiry had to be assigned to the six, following variables:

    - *Optimistic Mindset*, i.e. thinking optimistically towards innovation results;
    - *Tolerating Failure,* namely being able to accept failures and prone to learn from them;
    - *Embracing Ambiguity*, i.e. accepting to work on solutions that are not completely defined, and that probably will not be until the very end of the innovation process;
    - *Troublemaking*, namely the attitude to continuously change and challenge the solutions proposed by others;
    - *Pragmatism,* i.e. being capable of quickly identifying solutions to problems, even though these solutions might be simplified;
    - *Empathy*, the attitude of looking at problems from the standpoint of other people.

4.2.3.4 Project Performances

In the last macro-section of the survey, respondents were proposed twelve different variables over which they ought to distribute 100 percentage points. These variables, representing project performances the respondents thought would be improved through the adoption of Design Thinking in future innovation or transformation projects, were actually, three by three, adhering to the four Design Thinking streams described in Chapters 2 and 3. The twelve project performances in question will be listed according to the following order of Design Thinking streams: *Creative Problem Solving*, *Sprint Execution, Innovation of Meaning* and *Creative Confidence.* The considered performances were:

- Fit between innovation and market needs, the alignment of innovative artefacts features and market requests;
- Generation of creative ideas, proposing many innovative ideas at the beginning of a project;
- Team alignment around effective prototypes, i.e. sharing the vision about the expected results from the development of a prototype;
- Efficiency of the development process, namely the reduction of project costs;
- Acceleration of the creative sessions, meaning the reduction of time spent in the early phases of the project;
- Learning from market tests, i.e. understanding and correctly interpreting users' reactions to innovative products;
- Radicalness of the new strategy, namely the identification of totally new business directions to be pursued;
- Revitalization of the brand awareness, i.e. refreshing the company brand and reputation;
- Addressing new markets, meaning to expand to new and previously untouched business areas;
- Alignment between vision and organizational behavior, namely obtaining a convergence between the company overall strategy and the organizational behaviors;
- Organizational climate, very intuitively, the atmosphere within the company in normal organizational life;
- Entrepreneurial attitude, i.e. being autonomous in decision making and proactive when it is about proposing new ideas and decisions.

4.3 Glossary

The closing paragraph of this Chapter describing the overall research methodology adopted focuses, on general terms, on the lexicon employed throughout the current study, explaining in particular wordings that mights seem controversial or not easily intelligible.

One of the first to be encountered - and one of the most recurring ones - is the "traditionally-minded" phrasing, that reappears several times in the shape of variations (e.g. "business-oriented") meaning exactly the same thing. The idea behind the employment of such a wording does not imply any judgement of value at all: it is just there to be able to easily and quickly juxtapose those companies, contexts or practices that are already tending to a more flexible, resilient and failure-tolerating "Design Thinking-like" standard, against those situations where more busi-

ness-inherent ways of thinking and working are instead dominant.

Another very popular wording, that is really present in the current study, is that of "Design Thinking streams". One might argue the word "paradigm" would be more correct to define the four Design Thinking interpretations engendered in Design Thinking itself: *Creative Problem Solving, Sprint Execution, Innovation of Meaning* and *Creative Confidence*. The choice of assigning the rank of paradigm to Design Thinking only responds to the idea of the logical structure of the current research, and to a necessary distinction between Design Thinking itself and its interpretations.

As far as the logical structure is concerned, it was estimated best to attribute Design Thinking as a whole a higher position for a substantial motive: besides being the paradigm, framework from which all the other streams were born, it is also their container, somehow. Furthermore, having Design Thinking as a general container for the plethora of different Design Thinking manifestations is a means of keeping these manifestations united under the same scheme, to make sense of them. Not to mention the fact that it is significantly possible that new Design Thinking manifestations or interpretations will emerge in the future: adopting the just mentioned logical structures helps maintaining the boundaries of the whole Design Thinking world at least outlined.

The necessary distinction to make between Design Thinking as a general framework and its specific interpretations has to do with the structure given to the argument currently under discussion. In Chapter 1, Design Thinking as a whole paradigm was dealt with, tracing its history and the reasons why it became a topic of interest for the business world. Chapter 2, instead, presented in a detailed way the inherent characteristics of each Design Thinking manifestation currently known: it seemed thus appropriate to trace a terminology distinction between Design Thinking as a whole, and single parts of it.

Nevertheless, the majority of ambiguities are recorded in the second part of this thesis, the one illustrating the empirical research and its findings. Three, in particular, are worth explaining.

A very recurring term that will be encountered in the subsequent narration is "answer item": this wording refers to a single intensity of the Likert 5 scale, in the case of the *Design Thinking Awareness* macro-section, or to single capabilities or project performances, concerning the rest of the survey. This type of phrasing is taken from the financial and accounting jargon, and seemed appropriate in making a language parallel between the Design and the business world.

Secondly, the already mentioned skills, competences and attitudes in particular will often be addressed at via three different terms: "variables", "parameters" and "labels". All these three terms simply stand for the fact that those skills, competences and attitudes (as well as other investigation variables) are the ones whose behavior and patterns are studied, and that can be found on the horizontal axes of the charts displayed in Chapters 5 and 6.

The final remark that ought to be made concerning the lexicon adopted in the analysis is about the "share of interest" phrasing. Chapter 6 in particular will manifest a high occurrence of this term, given that it is the Chapter devoted to survey findings explanation. What is meant by "share of interest" is the percentage attributed to each "answer item" (namely skills, competences, attitudes or project performances): since, as explained within this Chapter, respondents were in the majority of cases requested to distribute 100 points over a set of variables, it seemed sensible to speak of "share", as in business contexts, because that word would identify and give the idea of a part within a collection of parts.

5.

Pioneering Adopters of Design Thinking in Italy

In the previous chapter, the research methodology that will be adopted from this point onwards was described, both concerning the Case Study research and the Survey research (which will instead be dealt with in Chapter 6). The explained methodological framework will be filled, in this Chapter, through an inquiry in the world of those firms that were said to belong to the "Demand" segment of investigation. Chapter 5 contains the detailed discussion of eight case studies, whose content all derives from direct interviews. For each case study, a brief introduction of the company will be given, in order to rapidly contextualize it. Contextualization will be followed by a discussion of the so-called *wide-spectrum goals* of the investigated firms, namely what their very general aims could be said to be with respect to their adoption of Design Thinking. The displaying of *wide-spectrum goals* will precede the description of how each company appears to be performing in terms of awareness, ranking on a scale going from "poor" to "excellent", passing through three other levels, and adoption, which is instead accounted for in percentages. Both awareness and adoption will be estimated, given the collective material, in terms of personal, function and company dimensions. Afterwards, referring to the skills/competences/attitudes scheme illustrated in Chapter 4, each company will be briefly classified basing on which skills, competences or attitudes they appear to be looking to obtain via Design Thinking. Each case study will finally include a synthetic explanation of the reasons why each firm should be classified as following one of the four Design Thinking streams previously shown. This detailed classification will then be synthesized in the closing paragraphs of the Chapter, through tables and analyses of the levels of Design Thinking awareness and adoption, together with those of which are the most requested skills, competences and attitudes, with explanations of the possible reasons why as well. The very last paragraph will contain a simple schematization of the results of investigation concerning the Design Thinking streams, with arguments that will be continued in Chapter 6, and compared with the findings coming from Survey Research.

5.1 Sample Characteristics and Motives of Selection

The empirical research that supports this thesis was conducted in the form of direct interviews to firms, which were carried out relying on a "Case Study Research Kit" that helped direct the interviews themselves and synthesize the collected information afterwards.

The interviews that are going to be presented concern eight Italian firms, that were accounted for as "large" organizations, namely having between more than 250 employees. The firms in question all come from industries that are traditionally – especially in the Italian context – far from what were the initial Design Thinking receptive sectors, such as Design or Strategic Consultancy.

In Chapter 4, it was explained how this sample of firms was part of a broader research, and how the overall firm sample of that research was divided into categories. The one that will be taken into account from now on is the so-called "Demand" one, whose population belongs to different industries. Table 5.1 summarizes the industries accounted for in the "Demand" segment, with the related frequencies of appearance in decreasing order.

Industry	Number of Cases	Percentage on Total
Banking	3	37.5%
Retail	2	25%
Manufacturing	1	12.5%
TelCo	1	12.5%
Mail	1	12.5%

Table 5.1: *The industry of reference of the selected case studies, in decreasing number of appearences.*

These industries were selected since they were perceived – in the Italian scenario in particular – as the least likely to be prone to the adoption or consideration of Design Thinking as a methodology to adopt during the day-to-day working activities and processes. The Banking industry especially is esteemed to be one of the most conservative[1] overall, seeking and needing major shifts in the perspective of digital tools and channels. The retail world was held as interesting as well given the rising attention that that industry itself is devoting to digital transformation and customer experience orientation (Gupta *et al.*, 2015) in the recent years. The retail world that was considered was taken into account *lato sensu*, since the two firms that compose that category are very different one from the other: one of them could be said to overlap between retail and manufacturing.

The Manufacturing, Telecommunication and Mailing industries were taken into consideration as industries whose most established logics – that are indeed beginning to change – lean more on the productivity-efficiency-cost effectiveness side of the discourse, rather than on the creative and zig-zag patterns of Design Thinking. Of course, exceptions and breakthroughs are starting to be recorded in these domains as well, with TelCo companies involved in a growing care for customer experience quality[2] – not only for tariffs anymore – and the Mailing industry finding a textbook example of human-centered transformation in the American national mail company.

1 See https://www.pwc.com/gx/en/banking-capital-markets/banking-2020/assets/pwc-retail-banking-2020-evolution-or-revolution.pdf for the magnitude of changes that are envisioned for the retail banking sector by 2020.

2 See for example http://www.ttec.com/sites/default/files/white-paper-telecom-industry-tunes-customer-experience_0.pdf.

The ones just listed are the main, general reasons for the selection of the specific sample that will be under scrutiny in the rest of the chapter. This chapter will describe the journey towards Design Thinking that the eight analyzed Italian large firms have undertaken, the main goals of this long and tortuous journey and, in particular, the capabilities, skills and company performances that these company declare they wish to improve or acquire through Design Thinking. The narration will start by a brief overview of the companies main features, also in numerical terms.

5.1.1 The Selected Companies: an Overview

As already mentioned, the selected companies are eight, coming from five distinct industries. They all belong to what could be said to be the "Demand" world, in terms of Design Thinking search and fruition. These companies are, divided by industry of reference, the following:

- Banking
    - Banca Nazionale del Lavoro – Gruppo BNP Paribas;
    - Intesa Sanpaolo S.p.A.;
    - UniCredit S.p.A.
- Retail
    - Ducati Motor Holding S.p.A.;
    - Leroy Merlin (with a focus on its Italian branch, headquartered in Rozzano, Milano, Italy).
- Manufacturing
    - Tetra Pak (with a focus on its Italian branch, headquartered in Modena, Italy).
- TelCo
    - Wind Tre S.p.A..
- Mail
    - Poste Italiane S.p.A..

The first thing that it is easy to acknowledge is the heterogeneity of such a diversified – even though not exactly crowded – sample. First of all, the age range is very diverse: it spans from more than one hundred years, with firms founded at the beginning of the XX Century, like Banca Nazionale del Lavoro – born under the then Italian monarchy to sustain a struggling labor market[3] - to very young ones, like Wind Tre. Nonetheless, it needs to be recognized that the companies of more recent establishment all come from the merger or incorporation of previously existing large

3 https://it.wikipedia.org/wiki/Banca_Nazionale_del_Lavoro.

organizations: they were not built and populated overnight, as Table 5.2 might seem to suggest. The same table reports figures concerning the sampled companies revenues as well.
Also in terms of this dimension, one can immediately grasp a certain variability, with the bigger banking firms accounting for more than thirty times the revenues of smaller retail actors as Ducati, the first Italian motorbike manufacturer.

Industry	Company Name	Foundation Year	2016 Employees # (thousands)	2016 Revenues (million €)
Banking	Banca Nazionale del Lavoro	1913	13,295	2,761
	Intesa Sanpaolo S.p.A.	2007	33,341	7,607
	UniCredit S.p.A.	1998	91,945	19,615
Retail	Ducati	1926	1,558	631
	Leroy Merlin	1923	6,532	1,370
Manufacturing	Tetra Pak	1951	24,100	11,400
TelCo	Wind Tre	2016	9,342	6,491
Mail	Poste Italiane	1862	141,246	8,219

Table 5.2: *The overview of the firms composing the analysis sample, in terms of age, number of employees and revenues.*

All this heterogeneity can be motivated through the similarity of motives that brings these sampled companies close to Design Thinking. It is stimulating to try to think of these reasons – due the diversity of the sampled companies, there might be many – but they mainly have to do with the trends that were discussed at the beginning of this Chapter and in Chapter 1: the grown complexity of the business world, joint with a rise of the stake of customer expectations, challenges more traditionally-minded business contexts to rearrange their setting, so that the upcoming challenges can effectively be met. The foremost and more general goals underlying the quest for Design Thinking in such diverse kinds of organizations will be discussed in the next paragraph.

5.1.2 The Motives for Adopting Design Thinking

There has been no detailed narration about each specific firm of the sample yet. The aim of these introductory pages is actually to provide a framework of intelligibility for the case studies discussion, which, for obvious reasons of time and space, will not be able to cover the entirety of contents that were generated through the direct interviews. After the collection of these data

and information and their subsequent re-elaboration – or, one could say, reframing, as Design Thinking teaches - three main wide-spectrum goals emerged, for those organizations embracing Design Thinking as a shift from quite a different history of theirs. These three goals are:

- **Digitization & Digital Transformation**. It is probably the most recurrent theme that characterized the field research on what was identified to be the "Demand" side. The majority of those firms that were defined "traditionally-minded" – just meaning they have a stronger business imprint, no judgement of value involved – see Design Thinking as an excellent candidate for upholding the Digital Transformation they would like to deploy. Transformation is already a hard matter for organizations: it was shown that Design Thinking, in one of its many manifestations, can make the difference, even in an unexpected way, in fostering organizational change (Juninger, 2006). Moreover, the digitization of typically "analogical" companies can be consuming and demanding both in terms of time and resources: for its iterative way of proceeding and for the cutting of development times it can engender (Knapp *et al.*, 2016), Design Thinking is often the chosen methodology to implement Digital Transformation.
- **Customer Experience Development.** The digitization of the life of firms is often accompanied by the awareness of how customer experience can make the balance tilt towards success or failure[4]. The newly generated awareness comes with the unease of realizing that the company one should be transforming does not have the right tools to develop a *satisficing* (Simon, 1968) customer experience without spending unreasonable amounts of time on the issue. The human-centeredness that is inherent in Design Thinking facilitates the process of moving the company focus from its internal dimension to the customers it serves in time frames that meet the quick development of nowadays' markets. Furthermore, the measurement – and subsequent adjustments – of customer experience requires tools that are typically found in the Design field and research.
- **Supply Chain Improvements.** Firms, beyond their degree of digitization, Design orientation or human-centeredness, are still revolving around one main target: making profits in a constant way over a desired interval of time – virtually, in a perpetual way. Since it was acknowledged that holistically considering the business mechanisms involving the whole Supply Chain is particularly beneficial for any firm working in that Supply Chain (Poluha, 2016), it is also simple to comprehend how companies, at the end of the day, still look for ways of improving their performances. Such a goal is looked at in a Supply Chain per-

4 https://www.biznessapps.com/blog/customer-experience-key-success/.

spective mainly by those actors that are inherently "traditional-oriented", but not only. The expected and more often recorded Supply Chain improvements involve shorter development and information sharing cycles and organizational hierarchy flexibilization.

Since these wide-spectrum goals are not mutually exclusive, it frequently occurs that a same company pursues more than one of them at the same time – regardless the related final outcomes. Table 5.3 provides a summary of which objectives are pursued by the companies belonging to the analysis sample.

Industry	Company Name	Digitization & Digital Transformation	CX Development	SC Improvements
Banking	UniCredit S.p.A.		✓	
	Banca Nazionale del Lavoro	✓	✓	
	Intesa Sanpaolo S.p.A.		✓	✓
Retail	Leroy Merlin		✓	✓
	Ducati		✓	✓
Manufacturing	Tetra Pak		✓	✓
TelCo	Wind Tre		✓	
Mail	Poste Italiane	✓	✓	

Table 5.3: *Summary of the wide-spectrum goals sought four by the sampled companies.*

The first idea that even an inattentive look would grasp is the prevalence of Customer Experience Development – in terms of frequency – over the other two wide-spectrum goals. Looking more in depth, three rapid takeaways can be extracted, before proceeding with the more detailed narration of each case study:

- Digitization is especially sought for by the *"oldest"* and *biggest* companies of the sample. Both Poste Italiane and Banca Nazionale del Lavoro, having more than one century of history behind themselves, are by far the most "aged" firms under scrutiny. Furthermore, they are – probably not coincidentally – the biggest companies of the sample as well, each accounting for more than 100,000 employees. Digitally transforming such giants – that

were both previously linked to the Italian State, with all the related bureaucratical issues[5] - appears as an overwhelming challenge. In order to face it, Design Thinking is preferred since it is perceived as an organizational-silos breaking and disruptive methodology, due to its simplicity and forwardness.

- All the banking and financially involved institutions look for Customer Experience Development. The banking sector, as already mentioned, is undergoing major changes, due in particular to the disruptions brought on by innovation in digital and information technologies. Digitization also makes customers or users more well-informed and thus more demanding in terms of what has already been defined "Customer Experience". This issue is especially crucial for the banking sector, in which banking institutions risk to become irrelevant to their users unless they pursue differentiation in their offering[6, 7]. Customer Experience then becomes a powerful leverage to work on.
- More physically-driven and "harder" companies tend to prioritize the work on Supply Chain improvements, because they hold efficiency making and productivity as still important targets to hit. To them, Supply Chain levers create a greater competitive advantage than in other industries: thus, this wide-spectrum goal is normally taken into consideration.

This preliminary clustering of the sampled companies in wide-spectrum goals is functional to the detailed description of theirs, and to the orientation of the subsequent narration, that will touch more specific aspects of each wide-spectrum goal such as capabilities or relationship with the four Design Thinking streams described in the previous chapters.

5.2 Case Study Description

Hitherto, it has been argued that the Italian large organizations sampled for the current analysis were, in very broad terms, recurring to Design Thinking - or beginning to do so – in relationship with three different general aims: the Digitization and Digital Transformation of the company, a development of Customer Experience and the improvement of Supply Chain performances. The reality is naturally more complicated, and brings a number of different shades that are worth discussing more extensively. Therefore, each company will be introduced, commencing by a short description and contextualization. It will then be made clear what are the specific objectives con-

5 For a detailed explanation of bureaucracy, its way of working and its dysfunctions in an organizational perspective, see Bartezzaghi *et al.*, 2010, pp. 32 – 34.

6 https://www.cnbc.com/2017/06/26/ex-barclays-chief-says-banking-could-face-its-own-kodak-moment-urges-banks-to-embrace-fintech-solutions.html.

7 https://www.myfeelback.com/en/blog/banking-sector-customer-experience.

tained in the three-branched classification of goals provided in the previous paragraph. Finally, each firm will be related to the Design Thinking streams it appears to be looking for, according to the collected information. The companies will be listed in the same order presented in Tables 5.2 and 5.3.

5.2.1 Banca Nazionale del Lavoro (BNL)

Banca Nazionale del Lavoro, one of the main Italian banking realities, was taken into account given the striking contrast of its historical background of massive, bureaucracy-driven bank and its latest efforts in terms of Digital Transformation mainly, which recorded an acceleration since when the company was acquired by the French group BNP Paribas in 2006.

Figure 5.2: *The BNL logo.*

Banca Nazionale del Lavoro was born in 1913 to support the then struggling Italian labor market and, after its initial development, after World War II it began an internationalization path and became the first Italian banking institution in terms of market share. It then went through troubled times, that brought to its privatization and subsequent stock listing.

The company tried to leverage on the Digital world to enhance their customer experience as well: this attempt was embodied by the launch of HelloBank!, the online banking service started in 2013 whose success was mild in comparison with the company expectations. Nevertheless, digitization still remains a crucial issue for the Italian bank, as the next paragraph will explain.

5.2.1.1 The Wide-Spectrum Goals of BNL

The company introduction was already clear on what the very first priority of the Italian institute is: the Digitization and Digital Transformation, whose necessity derives from the acknowledgement of the growing gap between the technological set of BNL itself and that of its holding group (BNP Paribas) and of its competitors. Design Thinking is sought for, in this perspective, as a simplification agent, able to easily and quickly visualize both the *as is* and *to be* settings, so that change is more deeply understood and upheld by everyone. Given the strong focus the company places on Digitization, it should come as no surprise that the Design Thinking application started from BNL IT department.

Since technological transformation plays such a central role in BNL innovation policy, the Digitization tension reflects itself on a growing attention the Italian banking institution pays to Customer Experience Development, which is the other wide-spectrum goal the company seems to

pursue. Even though Hello Bank! was not an incredible success, it is an attempt that witnesses the company will to become more customer-oriented.

5.2.1.2 Design Thinking Awareness and Adoption

The awareness about Design Thinking in BNL appears to be confined to the IT Department, in which there is a small group of professionals that are highly skilled on the matter and are trying to pass that knowledge onto the rest of their colleagues. "Personal" awareness can thus vary from "very good" to "poor", and the same striking difference applies to the contrast between function and company awareness: the whole company Design Thinking awareness could still be said to be tending to "poor", while functions like the IT one reach levels above average.

The general adoption of Design Thinking follows a similar pattern, with function adoption that is likely to outperform both personal adoption – many workers are starting to use Design Thinking because they have recently been told to – and company one.

5.2.1.3 The Skills, Competences and Attitudes to Improve Through Design Thinking

The part of BNL that is currently more heavily working with Design Thinking, i.e. its IT department, testifies the main capabilities they wish to improve and diffuse through the creative paradigm are *business modeling* and *visualization*. The BNL Design Thinking "evangelists[8]" recall that one of the main struggles they had was to visualize what had to be done basing on high-level objectives and envision new ways of doing business starting from that. Even the most basic visualization of ideas was a process that employees found hectic. Design Thinking was thus implemented with the aim of growing BNL personnel's *business modeling* and *visualization* capabilities, in addition to being devoted to address organizational "softer" aspects, such as working well with multi-disciplinary teams, improving the organizational climate and risk taking capacity and the alignment of the local objectives with the group overall vision as well. Quoting directly one of these BNL evangelists, "*What I saw is that multidisciplinary teams don't always help the diffusion of creative methods as Design Thinking. On the contrary, mixed teams can be a reason of rigidity in the first place.*": this provides an idea of the broadth of the challenge these professionals had to start tackling.

The BNL evangelists felt, within their company, the need to develop several competences to support the change process: the most evident ones are *reframing*, to address issues in a more flexible and open way, *creativity*, which is likely to be lacking in a traditionally-minded banking context, and *criticism*, to develop the habit of thinking of alternative solutions.

The path of change started within BNL, in particular in the minds of those who started it, seems

8 See https://robertkatai.com/evangelism-marketing/ for the origins of the term.

to require three attitudes: *tolerating failure*, *embracing ambiguity* and *empathy*, for that customer-centricity that is starting to be understood by BNL executives at all levels.

5.2.1.4 The Design Thinking Stream BNL might be placed into

Basing on BNL executives' narration, there is no significant reference to efficiency making or to speed up any specific process, which would exclude the *Sprint Execution* stream. The willingness of the company "evangelists" to inject in their traditionally-minded colleagues a wave of entrepreneurial confidence and creativity might seem to suggest the presence of *Creative Confidence*, though the activities carried out in this direction appear embryonic and *in fieri*.

The most likely paradigm BNL is currently contained in is the *Creative Problem Solving* one. The Italian bank was given a Digital Transformation objective, which appeared overwhelmingly complicated to achieve, to be tackled in the following five years. Facing a seemingly intractable problems, the IT executives already skilled on the matter turned to Design Thinking, in order to find an innovative framework capable of unlocking the company latent innovation potential and of bringing different problem solving methodologies with respect to the existing ones.

5.2.2 Ducati Motor Holding S.p.A.

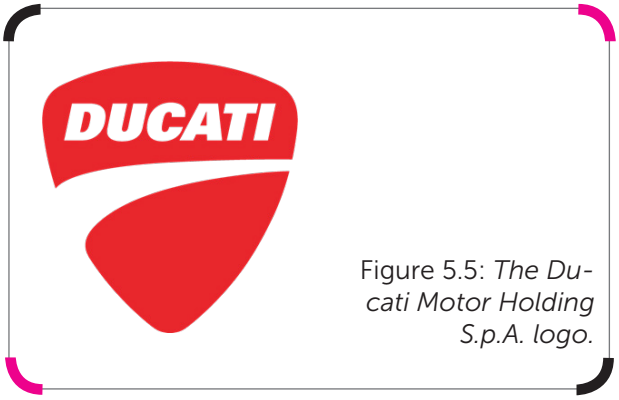

Figure 5.5: *The Ducati Motor Holding S.p.A. logo.*

Ducati Motor Holding S.p.A., part of the Volkswagen AG industrial group as subsidiary of the German brand Audi, is a company born in 1926 as a radio manufacturer that expanded to the motorbike field after World War II[9]. It is a company that had alternate fortunes, in particular after the Ducati family sold it to third parties in 1964. Ducati embodies the *Made in Italy* manufacturing, through its distinguishing red-colored motorbikes with unique lines, and is capable of polarizing its audience and customers: its *Desmo Owners Club*, the community of Ducati owners worldwide, is very active and populated. This is not surprising, given the mission of the company, that is *"building emotions"*. This kind of mission is pursued by Ducati by working on the experience customers have in the points of sale, and by innovating that experience through new digital means.

The company recently began to significantly invest on initiatives aimed at growing Customer Engagement, through the implementation of in-store technological solutions mainly. It is worth

9 http://www.ducatiusa.com/history/index.do.

recalling that Ducati is the smallest company of the sample, accounting for about 1,500 employees, and the most mechanically-driven.

5.2.2.1 The Wide-Spectrum Goals of Ducati Motor Holding S.p.A.

Being a relatively small firm compared to giants like BNL or Poste Italiane, Ducati has so far been less touched by the Design Thinking wave with respect to other realities. Nonetheless, through professionals already skilled on the theme or having acquired knowledge about it in previous positions, Design Thinking reached Ducati and penetrated it first of all in a Supply Chain improvement perspective. The firm is implementing Design Thinking methodologies in order to smoothen interactions and information exchanges with its suppliers, with a focus on determining the exact requirements of both parties. The relationship improvement process that is currently being carried out also regards the important theme of *acceleration*: Ducati would like to make information exchanges and interactions processes faster and more effective.
Ducati is also eager to improve its retail Customer Experience: for this reason, Design Thinking – with some struggles – is being applied also to the relationships with the franchisees and IT suppliers, in the perspective of providing user an immersive store experience, powered by Augmented Reality and other stimulating visual tools.

5.2.2.2 Design Thinking Awareness and Adoption

In Ducati, Design Thinking awareness and adoption both seem to be "poor" or, in the best cases, "fair" speaking at company level. If one instead turns to the IT department, that is said to be the one that started the Design Thinking diffusion in the company, there one witnesses a very confined but "good" awareness. Adoption, even in the more "progressive" functions, from which the interviewee declared that "*a methodology truly works when it is applied at company level, not by just some functions*", is probably still around 20%, due to the resistance of the Supply Chain actors mainly. Personal awareness is likely to be most "poor" in 90% of people within the company, since the majority of employees appear to be mentally linked to more mechanically-oriented ways of working, which is understandable, given the industry Ducati belongs to.

5.2.2.3 The Skills, Competences and Attitudes to Improve Through Design Thinking

Ducati appears to be trying to strengthen its brand perception and value: this can be witnessed by the success of the aforementioned Ducati owners club, or by the Customer Engagement initiatives that are being developed in its retail stores. Consequently, it is likely to presume Ducati is pushing for Design Thinking to increase its internal *business modeling* capabilities, so that the

proposed actions and projects all go in the direction of reinforcing brand value.

Another important theme for the company is the process acceleration, in particular with suppliers. In this regard, the critical capabilities Ducati would need to improve are certainly the *prototyping* and *testing* ones. The peculiarity of the Ducati case is that they are making extensive attempts of developing a "Design Thinking framework" at Supply Chain level, not only in the individual firm.

The competences that are likely to be involved, given the previous discourse, are the *storytelling*, which is particularly useful in brand value and image reinforcing and alignment, *criticism*, to obtain a higher quality feedback from and to partners, by not settling to the first understanding of requests, and *reframing*.

Finally, a company that would like its manufacturing spirit to become more flexible will probably want to improve attitudes like *embracing ambiguity*, to have people more at ease with the uncertainty entailed by Design Thinking, and *optimistic mindset*, to sustain the ambiguity embracing in the long term.

5.2.2.4 The Design Thinking Stream Ducati Motor Holding S.p.A. might be placed into

Ducati reports to be adopting Design Thinking to primarily speed up the interaction processes that link the company to its suppliers or franchisees. In this framework, Design Thinking is seen as particularly useful in facilitating the mutual understanding for what concerns requirements setting in each transaction. Furthermore, it was highlighted how the prototyping and testing skills are still not really developed, but certainly looked for. These elements would bring to locate Ducati in the realm of *Sprint Execution*, given its inherently efficiency-making of considering Design Thinking.

5.2.3 Intesa Sanpaolo S.p.A.

Figure 5.3: *The Intesa Sanpaolo logo.*

Intesa Sanpaolo, born from the merger of Sanpaolo IMI and Banca Intesa – previously two relevant Italian banking institutions – that took place in 2007. Since then, Intesa Sanpaolo, that is headquartered in Turin, Italy, has always made moves that could guarantee solidity to the institution: it is worth recalling how Intesa Sanpaolo is one of the Italian banks that scored the better results in the European Central Bank's *stress tests* in 2016[10, 11]. The bank has since then continued moving on the path of strengthening its position, and has begun incorporating the Service Design

10 http://www.corriere.it/economia/16_luglio_29/stress-test-banche-reggono-l-esame-ma-l-italia-soffrire-piu-2e7de20c-55c8-11e6-af7a-c71c10cda3a8.shtml?refresh_ce-cp..

11 http://www.eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing/2016/results.

logic and methods both internally and through the acquisition of 20% of the shares of Experientia[12], occurred in 2017. In addition to all this, Intesa Sanpaolo is one of the first banks in Europe in terms of capitalization (it reaches 48.3 billion euros of stock value), and has a customer base of circa 12.5 million people, with 4,800 branches worldwide. Intesa Sanpaolo is also a bank that is strongly *locally oriented*, and supports a number of cultural and artistic events in Italy.

5.2.3.1 The Wide-Spectrum Goals of Intesa Sanpaolo S.p.A.

Intesa Sanpaolo was one of the few companies of the sample to be classified as seeking for Supply Chain improvements. It was also stated that the three wide-spectrum goals would be contextualized and better framed to each specific situation. In this case, what was meant is that Intesa Sanpaolo is currently using Design Thinking, under the shape of Service Design, in order to first of all diffuse Design Thinking within the firm, by employing it as an innovative, breakthrough methodology capable of reshaping organizational processes and ways of working. One famous example of this is the Human Resources Training process innovation, which even won a Compasso d'Oro[13], the prestigious Italian Design award.

More recently, the Design Thinking efforts were directed to improving the users' customer experience, which was refined by the re-setting the layout of several branches in Milan mainly[14]. This goal is currently brought on side by side with the improvement of organizational issues.

5.2.3.2 Design Thinking Awareness and Adoption

Intesa Sanpaolo follows a scheme that is not so different from what was explained about BNL about Design Thinking adoption, in the sense that there is one function adopting it with an at least 90% rate, and in charge of diffusing that adoption to the rest of the company. Again, awareness reaches "very good", at times "excellent" levels within the *Experience Design Lab*, while in the rest of functions and in the company in general the level could probably be said to be "fair" at best. The difference of both Design Thinking awareness adoption between the Design Thinking "evangelists" and the rest of the employees is particularly evident in Intesa Sanpaolo, since the *Experience Design Lab* is quite active in organizing theme events.

5.2.3.3 The Skills, Competences and Attitudes to Improve Through Design Thinking

One thing the *Experience Design Lab* of Intesa Sanpaolo is struggling with is spreading awareness

12 http://www.glistatigenerali.com/banche/service-design-experientia-isp/.

13 http://www.adidesignindex.com/it/ricerca-per-l-impresa/2011/led-learning-experience-design-in-intesa-sanpaolo.

14 See for example http://www.autogrill.com/it/comunicati-stampa/autogrill-e-intesa-sanpaolo-con-puro-gusto-la-pausa-di-ristoro-si-condivide-banca.

about the value that user research and its corollary activities, that are often seen as preliminary to a project, have for any project. The interviewee reported how "*when you tell people to design in a user-centered way, they often feel like they know it all, since the terms is now used by everyone*". The capabilities that the *Experience Design Lab* members would thus primarily like to grow in colleagues would certainly be *user analysis* and *cultural insights gaining*, which are probably very far from the mentality of an average banking employee. Developing these two skills would allow the company to be able to redesign internal processes and ways of working in a much more human-centered – and thus effective and appreciated – way.

The improving of the skills just mentioned would be functional to the growth of competences as *reframing* – as in the case of BNL, we are talking of the "hard" side of banking - *collective leadership,* in order to align the results of the single units (perhaps those that are innovating) to the overall goals of the company, and *brokering*, whose importance is testified by the acquisition of part of the shares of Experientia, firm having visibility on a number of different sectors.

Finally, concerning the attitudes, the two main ones that could be signaled in Intesa Sanpaolo case are *troublemaking*, to challenge the "indisputability logic" that often rules where hierarchy is strong, and *empathy*, so that the suggested changes are really meaningful to their receivers.

5.2.3.4 The Design Thinking Stream Intesa Sanpaolo S.p.A. might be placed into

The attention and effort Intesa Sanpaolo "Design-driven employees" devote to spreading Design Thinking and the related methodologies is certainly worth praising, and would make the reader presume the Italian bank could be classified as going for *Creative Confidence.* Going through the information collected through the interview, one realizes that *Creative Confidence* is probably among the targets of the company *Experience Design Lab* for the future, but the present is still made of awareness raising and of adopting Design Thinking as a creative methodologies to find unexpected, novel solutions to organizational problems and not only. This likely brings Intesa Sanpaolo S,p.A. in the field of *Creative Problem Solving*.

5.2.4 Leroy Merlin

Leroy Merlin is an almost century-long living company that is normally associated with households, in the sense of a distributor and retail seller of household materials and objects. Leroy Merlin was born in 1923 in northern France, as a reseller of used military equipment, and made of innovation an important element of its DNA. After opening the first self-service shop in 1968, it expanded internationally to reach 13 different countries worldwide.

Despite still being faithful to its mission of building the ideal household for the largest possible

public[15], Leroy Merlin is undergoing a transformation whose aim is to transform the company into an expert of product and service complete solutions that improve the home environment. Thus, Leroy Merlin is developing a wider and wider range of services that are complementary to its products, besides redesigning the whole shopping experience in an *omnichannel* perspective. For these goals, Design Thinking must be playing a role.

Figure 5.4: *The Leroy Merlin logo.*

5.2.4.1 The Wide-Spectrum Goals of Leroy Merlin

In spite of the striking differences in terms of industries and size, Leroy Merlin could be classified in a position that is quite similar to the one of Intesa Sanpaolo S.p.A. The reasoning explained about the perspective Supply Chain improvements can be looked at from holds true for Leroy Merlin as well: the French-based company internally deployed a series of human-centered projects and initiatives, aimed at increasing the participation and workplace comfort for all the employees. These kinds of initiatives also concerned suppliers, in certain occasions, which is another supporting motive for asserting that, for Leroy Merlin, Supply Chain improvements are not negligible. Differently from Intesa Sanpaolo, for Leroy Merlin the Supply Chain improvements and Customer Experience development dimensions run at a similar pace, and were not begun at a much dissimilar time. Customer Experience plays a crucial role, too, since the company is committed to achieve an omni-channel purchase experience: namely, a seamless flow of interactions that leads to the end of a transaction through the totality of Leroy Merlin channels.

5.2.4.2 Design Thinking Awareness and Adoption

Leroy Merlin professionals made it very clear that they have just certain professionals skilled about Design Thinking within the company, and that they often rely on the help of external consultants for bigger projects and deeper needs. This might be explained by the interviewees' conviction that "*we interpret all the methodologies we use in function of the objectives we have in mind*": completely institutionalizing Design Thinking might mean to denaturate it.

The awareness about Design Thinking could thus be said to be "very good" in the Marketing side of the company, while it is slowly spreading to the rest of the functions, where it could be said to rank from "poor" to "fair". In the same fashion, adoption seems limited to very specific division in rates trespassing 75%, while the company in general might be considered to be adopting it at

15 https://www.leroymerlin.com/en/mission-0.

20-25%.

5.2.4.3 The Skills, Competences and Attitudes to Improve Through Design Thinking

Both in terms of Supply Chain improvements and Customer Experience Development, Leroy Merlin relied on the "typical tools" of Design Thinking, in particular customer journey mapping, prototyping and visualization in general. This generates a composite range of skills to grow, which could be resumed in the following four: *user analysis*, *visualization*, *prototyping* and *testing*. Leroy Merlin professionals in charge of adopting Design Thinking conducted extensive user research both internally and externally, and had to learn how to correctly visualize the massive amounts of information so that it could be effectively communicated to the "harder" units of the firm. The innovation activities also involved a relevant amount of prototyping time, with the collaboration of suppliers, that required subsequent testing, as well.

The kind of innovation process described in the previous paragraphs is still under development: it is thus reasonable to assume the four skills listed some lines ago are the prioritized to acquire for Leroy Merlin.

In terms of competences, Leroy Merlin appears to want to improve *creativity*, first of all, since its executives in charge of innovation are promoting a substantial innovation of meaning, and then *collective leadership*, since all the types of innovation that are being promoted are chorally discussed and tested, to generate the largest possible consensus.

As far as attitudes are concerned, instead, Leroy Merlin seems to wish to grow *empathy*, like the majority of firms belonging to the sample, *troublemaking*, given that several attempts of questioning the achieved results are witnessed, and *pragmatism*, due to the focus on rapidly proceed to prototyping and testing sessions to generate the largest possible number of insights.

5.2.4.4 The Design Thinking Stream Leroy Merlin might be placed into

Leroy Merlin is a challenging counter to place on the chessboard. It is actually a good candidate for both the *Creative Problem Solving* and *Innovation of Meaning* streams. The organization falls under the hat of *Creative Problem Solving* especially when considering the Supply Chain improvement part: it deployed a series of creative an different-from-usual methods and tools to solve issues that had previously not been tackled. If one then turns the attention to what has been done so far in the firm in terms of servitization and shift to a product-service system logic, an *Innovation of Meaning* seems to be underlying the whole process: the passing from a "DYI (Do-It-Yourself)" to a "DIFM (Do-It-For-Me)" system, in which the user is not left alone deciding which solutions to pick and then setting it up by himself, herself, but accompanying the customer and

reassuring him/her all along the installation of a new solution.

For these motives, Leroy Merlin will be – with a special license – granted the permission to lie in both streams at the same time.

5.2.5 Poste Italiane S.p.A.

Figure 5.8: *The Poste Italiane S.p.A. logo.*

Poste Italiane is the Italian domestic mail operator, founded in 1862, one year after the establishment of the Italian Kingdom[16]. It had a very quick development under the Fascist regime, with a number of new post offices built and improvements on the network. Over its more than century-long history, Poste Italiane diversified its offering, expanding to the Logistics, Financial Services and Insurance businesses. It recently got listed in the Milan Stock Exchange[17], and brought forward a Digital Transformation process that is deeply impacting the overall company strategy.

Poste Italiane is considered, in the collective imaginary, as a motionless, immutable giant State firm that is uncapable of adequately responding to citizens' needs and of changing in any sense. With almost 150,000 employees, 133,000 post offices and circa 33,000 postmen, the company, by the words of the interviewees, "*made its physical presence its greatest asset of all*". Through a single interview, it is already possible to realize how hard Poste Italiane is committed to transformation. Furthermore, it is worth recalling that the company relied on the help of Frog Design[18] to support the still ongoing Digital Transformation process.

5.2.5.1 The Wide-Spectrum Goals of Poste Italiane S.p.A.

As already mentioned, Poste Italiane has started, about two years ago, a profound Digital Transformation process that is bringing inside the company new ways of working, and a renovelled spirit of dynamism that brought to the dramatic decrease of IT solution development, just to name one. Digitization is thus classifiable as an absolute priority for Poste Italiane, since its organizational vertexes explicitly say this issue is crucial for the overall firm strategy.

Another aspect Poste Italiane is being particularly careful about, and which derives from the focus on Digitization, is Customer Experience Development. This issue is tackled by the company in a two-folded way: focusing on the development of more modern, responsive and user-friendly

16 https://www.posteitaliane.it/en/about-us.html.

17 See the Borsa Italiana press release of the event for details and figures at http://www.borsaitaliana.it/borsaitaliana/ufficio-stampa/comunicati-stampa/2015/42posteitaliane.en_pdf.htm.

18 For further information about Frog Design, see https://www.frogdesign.com/about.

mobile applications, on one hand, and pushing for a renewal of the "retail experience" provided within physical post offices.

5.2.5.2 Design Thinking Awareness and Adoption

Design Thinking awareness could be said to have "very good" personal and function values for what concerns the Digital Marketing division, the one that started the Digital Transformation process the company is undergoing, while the other functions are likely to be at "fair" levels in most cases. Company awareness appears to be "fair" as well, meaning the company in general has an idea of what Design Thinking is and should be used for, but that does not expand further. Adoption is instead constrained to the projects and initiatives of the aforementioned Digital Marketing division mainly, reaching rates of 50% there, while the rest of the company is apparently lagging behind, with rates that might be estimated around 10%.

5.2.5.3 The Skills, Competences and Attitudes to Improve Through Design Thinking

Poste Italiane needed to start a radical transformation, first of all in the internal mainstream mindset. Through Design Thinking, the firm worked to improve the attitude of its employees, especially concerning *failure toleration* and *ambiguity embracing*. This mindset shift is still ongoing, and Poste Italiane declares it wishes to build skills and capabilities on it: given the nature of the transformation it is dealing with, the company will need *business modeling*, to keep selecting the right partners to positively build on the path it underwent, *prototyping*, to make the development of digital artefacts faster and leaner, *problem reframing*, to exit the standard waterfall project mechanisms, and *brokering*, to be able to insource possible innovations from different fields.
These skills and capabilities are said to be both partially achieved and still being looked for by the firm.

5.2.5.4 The Design Thinking Stream Poste Italiane S.p.A. might be placed into

The remarkable efforts spent by Poste Italiane in its transformation process appears like an extensive attempt of solving existing problems in an utterly new fashion. The company was already concerned with Customer Experience issues or internal needs for faster processes even before the Digitization process was started from the top. Poste Italiane resorted to a leading Design Studio as Frog Design to insource new ways of working and thinking. The whole Poste Italiane effort could then be read through the lenses of *Creative Problem Solving*.

5.2.6 Tetra Pak

Figure 5.6: *The Tetra Pak logo.*

Tetra Pak is probably the world most popular packaging company. Founded in Lund, Sweden in 1951, it works to make food secure and available, anywhere in the world[19]. Tetra Pak is, since 1993, when it acquired DeLaval, formally part of the Tetra Laval Group, headquartered in Switzerland[20].The company packages and processes food in order to ensure its maximum quality and durability, and is equally focused on R&D and social responsibility. Tetra Pak is a company that has always heavily invested on R&D, an the strength of this company function deeply influences the company culture. In Italy, Tetra Pak has its headquarters in Modena, and those headquarters strongly reflect the innovative core the engineering-based company possesses. The company was inserted in the "Manufacturing" domain for the commonalities it has, especially in its ways of working, with the manufacturing world. It is a highly mechanized firm, whose R&D department is reported to be quite traditional-minded and engineering-oriented. Why should a company like Tetra Pak want to adopt Design Thinking?

5.2.6.1 The Wide-Spectrum Goals of Tetra Pak

Tetra Pak is a company that, given the success of its products, has for many years neglected to listen to the rest of its Supply Chain (B2B customers, in particular) in search of possible suggestions or insights. This trend was reverted, and Tetra Pak is now using Design Thinking during workshops it organizes with customers, when they are looking for a solution that does not exist yet or have a very specific issue to target. These activities are performed in an "Ideation Room", whose layout[21] is the same for all the company branches in Europe. In this matter, Tetra Pak works both on the Supply Chain improvement and Customer Experience Development sides.

Speaking of Customer Experience, Tetra Pak has another peculiar way of tracking it as far as the B2C segment is concerned: the "Customer Innovation Center"[22], i.e. a mini-apartment equipped with a control and recording room that is really similar to that of a music recording studio. Users are invited to this room to try the functionalities of usually new products, in a fashion that reminds a focus group.

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19 https://www.tetrapak.com/us/about/vision-and-mission.

20 https://en.wikipedia.org/wiki/Tetra_Laval.

21 For images depicting the Modena branch Ideation Room, see http://www.archilovers.com/projects/215259/tetra-pak-ideation-room.html.

22 See https://www.dairyreporter.com/Article/2013/12/16/Consumer-packaging-feedback-key-to-cracking-new-markets-Tetra-Pak.

For what was said so far, it can be stated that, for Tetra Pak, Supply Chain Improvement and Customer Experience Development are two tightly intertwined goals.

5.2.6.2 Design Thinking Awareness and Adoption

Tetra Pak is quite a peculiar case in the sample, given that it aligns with patterns recorded in most of other cases, but then, despite being a manufacturing firm, also has elements of differentiation. The commonalities with the other cases primarily relate to the fact that Design Thinking awareness and adoption both started to be diffused by a very small core of "evangelists" who are currently employed in the Marketing function. There, both the personal and function awareness could be said to be "very good", and adoption could reach rates up to 80% on both levels as well. Concerning the company, awareness has probably risen to "fair", especially after an interface redesign project (hinted at in the following paragraph), which was very long and capillary, Company adoption probably lies at rates between 30 and 35%.

5.2.6.3 The Skills, Competences and Attitudes to Improve Through Design Thinking

One important project underwent by Tetra Pak on the IT side mainly was the standardization of machine user interfaces. This massive project, which required five years to be accomplished, involved a significant amount of *user analysis* and insight generation the majority of the company staff was completely new to. In addition to this, the project development was made even harder by the engineering-driven attitude of most IT employees, who struggled in thinking out of the box and seeing the problem from a different perspective than the coding one. According to the interviewee, being a B2B company also played a role in this struggle, since "*Design Thinking is an approach conceived to look at final users*".

For these considerations and the ones made previously, one could affirm that Tetra Pak is resorting to Design Thinking for improving four main skills and competences: *user analysis, visualization*, *problem reframing* and *creativity*.

A useful way to sustain the development of such skills and competences inside an engineering-minded organization could be to grow the attitudes to *pragmatism*, namely the capacity to accept to be concrete and go for quick and feasible solutions first, even though simplified, and *empathy*, to really wear the shoes of the innovation users.

5.2.6.4 The Design Thinking Stream Tetra Pak might be placed into

Tetra Pak has hitherto been displayed as a manufacturing-like, engineering-minded organization that, thanks to certain high-profile professionals concerning Design and Design Thinking, is mak-

ing its way towards a more creative and flexible innovation dimension. The actions deployed to achieve the target just explained were aimed at pushing workers to develop novel and unexpected ways of solving problems the company already knows, but whose answer is starting to prove less satisfying for customers. It thus seems sensible to establish that Tetra Pak can converge into the *Creative Problem Solving* paradigm.

5.2.7 UniCredit S.p.A.

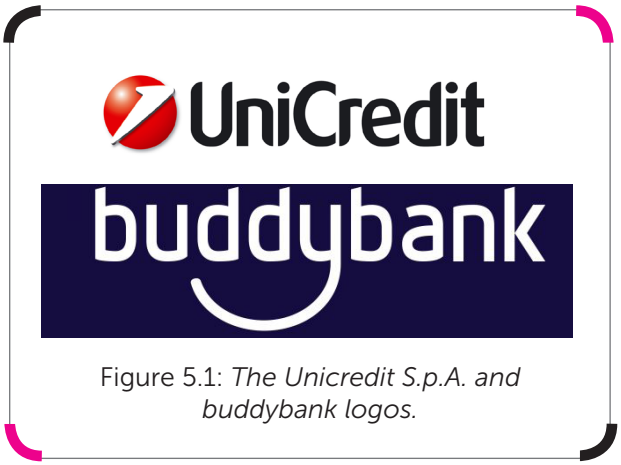

Figure 5.1: *The Unicredit S.p.A. and buddybank logos.*

UniCredit S.p.A. is the second largest Italian Banking group, right behind Intesa Sanpaolo[23] – another one of the cases belonging to the analysis sample. This important banking institution, listed in the Milan Stock Exchange (FTSE MIB) is active in 18 countries, with the largest market shares recorded mainly in Italy, Austria, Germany and Middle-Eastern Europe. Its overall number of clients overcomes 25 millions.

UniCredit is being considered due to a startup-like initiative that was born inside it three years ago (2015), and made a fresh start on the market at the end of January 2018. This initiative is autonomously branded, and the brand is named "buddybank".

In brief, buddybank is an iPhone-only conversational bank that, besides being completely paperless, offers a 24/7 messaging concierge services for banking and private life needs. With such an ambitious profile and an online-only presence, it will probably need to capitalize much of its efforts on Customer Experience care. To use the words of its CEO Angelo D'Alessandro, buddybank should be "*a bank taking off its suit*". This is the reason why buddybank, besides declaring to be "iPhone-only", also holds proximity, simplicity and transparency as its main values..

5.2.7.1 The Wide-Spectrum Goal of UniCredit S.p.A.

buddybank declare they started from the Human-Centered Design paradigm in order to conceive their concierge service platform. buddybank mission is said to be "*delighting customers offering them a real immersive experience, transforming a banking application into something amazing, something they can use every day*". A heavy accent is thus placed upon Customer Experience Development, and on the importance of keeping the customer's delight high over time. Design Thinking within buddybank thus becomes a very precious mindset to gain insights on what cus-

23 https://it.wikipedia.org/wiki/UniCredit.

tomers love and what their expectations are, to be able to amaze them more and more.

5.2.7.2 Design Thinking Awareness and Adoption

Adopting the ranking scale explained in Chapter 4, one could say the awareness about Design Thinking in buddybank is "good" (3 out of 5, average), since both the individual awareness and the company one – it is superfluous to distinguish "function" and "company" awareness, because the company itself is very small and has no hierarchy – appear to be oriented at human centricity and not much more, but nonetheless denote a non-beginner approach to Design Thinking. The same could be said about adoption: the similarity of ranking between adoption itself and awareness is likely to be given by the inexistence of a complex organizational structure.

5.2.7.3 The Skills, Competences and Attitudes to Improve Through Design Thinking

For buddybank, it is paramount to continuously be up-to-date with their customers' feelings and impressions. For this reason, besides being committed to building and maintaining a satisfying customer experience, the company also attributes a great importance to the improvement of *prototyping* and *testing* skills by the whole team, which is hierarchically flat and multi-disciplinary in terms of backgrounds. buddybank team define their company as a *"never-ending gym"*, where the need of learning from users' feedback is constant and crucial to the firm survival and success. Concerning the competences UniCredit would be interested in ameliorating, one could list *criticism*, given the importance, for such a challenging project, of trying to constantly refresh the point of view, and *brokering*, namely the capacity to take inspiration from similar problems or solutions found in different fields.

The extreme closeness to the user buddybank wishes to achieve cannot avoid to pass through an *empatic* attitude, accompanied by the capacity of maintaining *troublemaking* – i.e. always challenging the achieved results and *status quo* – as a beacon of success.

5.2.7.4 The Design Thinking Stream UniCredit S.p.A. might be placed into

Given all the emphasis they place on Human-Centered Design, the first temptation one might have would be to classify buddybank (and, by extension, UniCredit S.p.A.) as a company falling into the *Creative Problem Solving* stream. A closer look to the firm actually reveals that *Creative Problem Solving* and the related paradigms are important *means* buddybank leverages on to reach a *goal*: a continuous loop of update and feedback cycles, so that their demanding clientele's expectations are met and the offering is frequently freshen up. These characteristics make buddybank more likely go under the label of *Sprint Execution*.

5.2.8 Wind Tre S.p.A.

Figure 5.7: *The Wind Tre logo.*

Wind Tre S.p.A. is the youngest of the companies belonging to the analysis sample. It is so due to its foundation mode, i.e. a 50-50 merger between H3G S.p.A., commonly known as "3", and Wind Telecomunicazioni S.p.A., becoming the largest telecommunication operator in Italy in terms of market share in the mobile market, with 31.% market share[24]. The company's mission is to become the most innovative digital TelCo, with the best broadband network in Italy. To do so, Wind Tre has set up an agreement with OpenFiber, a company charged of implementing a diffused optic fiber network in the entire Italian territory and selling transmission capacity to communication operators[25].

Since the merger, the company has devoted its efforts to the increase of its digitization level, looking in particular at the B2C customers side. In order to move in this direction, Wind Tre has been innovating its methodological heritage, by including in particular the Lean and Agile paradigms. In this context, Design Thinking is being uphold by professionals skilled on the topic to show its benefits to high-level managers in particular.

5.2.8.1 The Wide-Spectrum Goals of Wind Tre S.p.A.

As anticipated, the use of Design Thinking in Wind Tre remains limited to some specific "spot projects", whose implicit aim is to prove the high benefits of the methodology, to then suggest a wider adoption of it. The projects Design Thinking has been used within mainly concern the Customer Experience Development topic. One example of this is the development of a new mobile self-care application, that was prototyped following the Google's Design Sprint method. The embryonic use Wind Tre makes of Design Thinking is not apparently linkable to any other wide-spectrum goal.

5.2.8.2 Design Thinking Awareness and Adoption

Design Thinking awareness within Wind Tre is, like in many other cases, "very good" at personal level only in those professionals highly skilled on the topic, that in the case of the TelCo company are present in the Digital division. The function awareness in in general "poor", with a "fair" peak

24 http://www.windtre.it/en/company/our-history.
25 https://openfiber.it/en/fiber-optic/about-us.

in the Digital division itself, and the company one is probably still "poor", since the "evangelists" explicitly declared they are proposing Design Thinking as problem solving methodology in certain "spot projects", those having a high visibility, to raise awareness about the matter.
Following this line of thought, adoption is very limited – equaling 5 to 10% rates – at company level, and is quite constrained at function and personal levels too, reaching estimated rates of no more than 20%.

5.2.8.3 The Skills, Competences and Attitudes to Improve Through Design Thinking

The world of Design is relatively new to Wind Tre: as the company declared, the now internal UX unit was insourced during the last few years. The Design professionals of the company found themselves struggling with a very hard technology-oriented company, still in a "waterfall mindset"[26]. For this reason, the professionals in question gave priority to the awareness-raising of the rest of the company on the importance of *user research and analysis*, *visualization* and *prototyping* capabilities, the ones Wind Tre seems to wish to improve through Design Thinking. Furthermore, Wind Tre professionals explicitly stated that "*Design Thinking is great, but we need more Design Doing, because that is what generates the business results we need to convince tech managers to follow us".*
Design Thinking for Wind also appears apt to further develop competences like *reframing*, to stimulate the generative of innovative points of view on problems, *collective leadership*, to keep the innovative and creative wave results aligned with the overall company strategy – especially after such a complex merger - and *criticism*, not to stop to the first solution that is proposed simply because it is more comforting.
Attitudes that a company that wishes to speed up any innovation process would certainly want to improve are *pragmatism* and *empathy.*

5.2.8.4 The Design Thinking Stream Wind Tre S.p.A. might be placed into

Apart from Design Thinking, Wind Tre made very clear that they are pushing greatly on the quickening of their technological innovation processes, in particular. Design Thinking has so far been employed in the same perspective, which the methodology enriched thanks to its inherent human-centricity and agility. The strong orientation to rapidity of development and orientation to the final result – with no strong focus on user research – makes the balance tilt towards *Sprint Execution*.

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26 The reference is to the "waterfall" project management methodology, in contrast with the more recent, iterative modalities introduced by Design Thinking among other paradigms.

5.3 Sample Positioning on Design Thinking Awareness and Adoption

After an in-depth narration of the dynamics affecting the sampled firms, it seems advisable to synthesize the notable magnitude of information that was explained in the previous paragraph. A brief, general introduction for each firm was provided; a description of the wide-spectrum goal that are being pursued by the sampled companies was given, in order to provide a direction for the following speculation; each firm was assigned specific skills, competences and attitudes that it appears to be interested in developing, and the Design Thinking stream it seems closer to.

This very structured – and probably boring to read, at times – schematization was constructed to be able to decompose the Design Thinking diffusion in Italian large organizations phenomenon into smaller manifestations of its that could make it simpler to make comparisons with the findings of the survey presented in Chapter 6.

The current paragraph is aimed at summarizing what was previously written about the sampled companies' Design Thinking awareness and adoption levels and rates. The synthesis is carried out through summarizing tables, showing, for each sampled company, the awareness and adoption rates at personal, function and company levels. The cases recording discrepancies between the rates of one function and the other were subject to the mean determination, to have a general picture.

In terms of Personal Awareness, Table 5.4 shows how, on average, that "poor" is the value that dominates the ranking, with 50% of occurrence, followed by "fair" (with 37.5%) and only one case of "good" (12.5%). Function awareness, instead, due to the constant presence of highly skilled divisions in terms of Design Thinking, does not have any "poor", but only "fair" and "good" equally distributed – 50% of cases each.

Company awareness, due to the isolation the "Design Thinking aware" functions are often subject to, falls back into the "poor" realm (50% of occurrence), followed by the "fair" (37.5%) and "good" one (12.5%). Summarizing, personal awareness is still perceived as low, and this could be due to the fact that practically all the sampled companies have "evangelists" that diffuse awareness about Design Thinking: Design Thinking is "pushed" onto employees, and not a spontaneously generated frame of mind.

Company awareness could be said to be inherently poor because the sampled firms belong to the "Demand" research segment, which – at least in Italy – is just getting started with Design Thinking. Furthermore, Company Awareness is an average consideration over the entirety of the firms: even though one or two functions might have advanced sensibility to Design Thinking, the others might still be unaware or just partially aware of it.

Awareness & Adoption/ Firms	UniCredit	BNL	Intesa Sanpaolo	Leroy Merlin	Ducati	Tetra Pak	Wind Tre	Poste Italiane
Personal Awareness	Good	Poor	Fair	Fair	Poor	Fair	Poor	Poor
Function Awareness	Good	Fair	Good	Good	Fair	Good	Fair	Fair
Company Awareness	Good	Poor	Fair	Fair	Poor	Fair	Poor	Poor
Personal Adoption	55%	5%	10%	30%	5%	20%	5%	10%
Function Adoption	40%	15%	30%	25%	10%	30%	10%	15%
Company Adoption	40%	5%	15%	15%	5%	25%	5%	5%

Table 5.4: *Summary of the awareness and adoption levels about Design Thinking of the sampled companies.*

Function awareness, due to the "evangelists" presence in most cases, was the toughest to model, since it is clear that the sampled companies are "trying to start somewhere", concentrating Design Thinking skilled employees in those functions where the creative mindset and paradigm is critical for business goals and success, to then expand that "hard core" to the rest of the company. As a result, the average result is located between "fair" and "good", since one function might have excellent Design thinking skills, while the others could be on the exact opposite side.

Adoption is instead 17% on average at personal level, 22% at function level and 15% at company level, which gives back an 18% overall average. This apparently low percentage is explained – as in the case of awareness – by the difficulty "evangelists" have to penetrate the other company environments external to their functions, and the subsequently low average personal adoption, if considering a company in its wholeness. If making a parallel, 18% is lower than the threshold between "poor" and "fair" in terms of awareness: this could be said to mean adoption could be fair-to-be, lacking on average only 2% to reach that level.

5.4 Sample Positioning on Skills, Competences and Attitudes

As explained in Chapter 4, there should also be a juxtaposition of different real cases or answers to questions in terms of the skills, competences and attitudes that firms seem to want to develop through the adoption of Design Thinking. This allows to capture a part of the awareness about Design Thinking, and its expected added values in the Italian context.

Each dimension is addressed in terms of relative frequency of appearance – expressed in per-

centages, to facilitate understanding, and the pattern is schematized via a summarizing table, making a recap about which companies look for what skills, competences or attitudes, and a bar chart, to highlight which are the most recurrent skills, competences and attitudes.

Starting from skills, Table 5.5 shows quite clearly that there is a certain heterogeneity of interest: even within the same industry, the skills sought for by different companies do not follow the same pattern at all. Concerning "internal heterogeneity", it might be interesting to remark how the companies belonging to the Retail and TelCo areas are those apparently looking for the higher number of different skills.

Skills/Firms	UniCred-it	BNL	Intesa Sanpaolo	Leroy Merlin	Ducati	Tetra Pak	Wind Tre	Poste Italiane
User Analysis			✓	✓		✓	✓	
Cultural Insights			✓					
Visualization		✓		✓		✓	✓	
Prototyping	✓			✓	✓		✓	✓
Testing	✓				✓			
Business Modeling		✓			✓			✓

Table 5.5: *Summary of the skills sought for by the sampled companies.*

Prototyping looks like the most requested skills, appearing in 62.5% of the overall cases (see Figure 5.1), followed by User Analysis, manifesting itself in 50% of the cases, in *ex aequo* with Visualization. The apparently least considered skill is instead Cultural Insights, which records a presence in 12.5% of the cases.

The relevance attributed to prototyping might be explained by the dominance of waterfall kind of processes that were recorded in the sampled companies before Design Thinking became a viable idea of innovating. Waterfall logic implies of course the development of prototypes, but substantially limits their modifications to incremental or minor changes, unlike the iterative process upheld starting with Lean Startup and Agile (Dillard *et al.*, 2011).

Moreover, the second place gained by User Analysis is a symptom of what Hammer pointed at as the *"age of the customer"* (Hammer, 1990), in which a process-oriented organizational setting (Bartezzaghi *et al.*, 2010) and customer centricity, even before human centricity, were still regard-

ed as desirable in theory, but almost unattainable in practice, making firms unprepared to face the upcoming challenges.

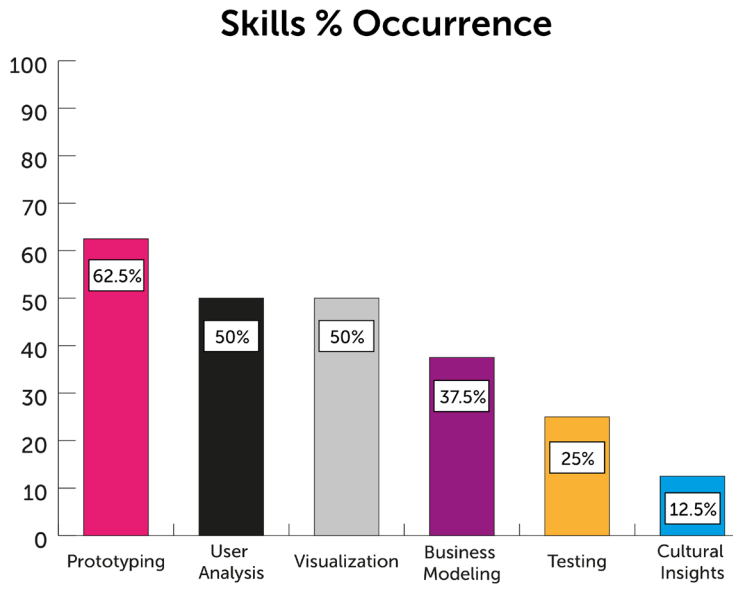

Figure 5.9: *The percentage of appearance of each skills the sampled companies wish to improve, in decreasing order.*

As far as competences are concerned, Table 5.6 shows that the dominance is instead owned by *reframing*, involved in 75% of the cases (see Figure 5.2): *reframing* is one of the main peculiarities of Design Thinking, bringing a fresh take on existing problems by considering them from an unprecedented perspective (Bennett *et al.*, 2013).

Competences/ Firms	UniCredit	BNL	Intesa Sanpaolo	Leroy Merlin	Ducati	Tetra Pak	Wind Tre	Poste Italiane
Framing/ Reframing		✓	✓		✓	✓	✓	✓
Collective Leadership			✓	✓			✓	
Creativity		✓		✓		✓		
Criticism	✓	✓			✓		✓	
Brokering	✓		✓					✓
Storytelling					✓			

Table 5.6: *Summary of the competences sought four by the sampled companies.*

Reframing is followed by *criticism*, which is another competence many executives are not that

used to practice, due to hierarchical rigidity and governance methods. *Criticism* implies questioning the ideas put in place not just for the sake of doing it, but for pushing forward possible alternative interpretations that were not being taken into account. It might be seen as tightly related to *reframing*, for this reason.

Collective leadership, finally, ranks third with 37.5% of occurrence: the ability of aligning around a shared vision – ideally that of the entire company – is held as fundamental, especially when there are changes undergoing[27].

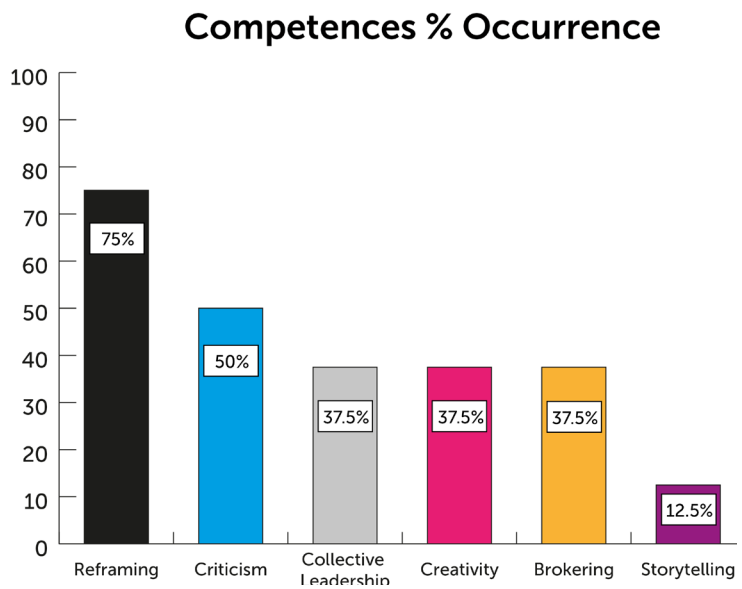

Figure 5.10: *The percentage of appearance of each competence sought four by the sampled companies, in decreasing order.*

The attitude side of the matter – synthesized in Table 5.7 - records a remarkable prevalence of empathy, sought for in 87.5% of the cases – in practice, by seven firms out of the eight sampled ones. This trend is quite easily explained by looking at the disruption brought by the human centricity paradigm emerged through the contributions of IDEO and IDEO-related designers and workers (see IDEO.org, 2015). As also explained by Liedtka (2015), empathy is one of the essential elements that underlie the current understanding of Design Thinking, besides being quite a revolutionary approach for inside-focused firms with a traditional mentality.

Empathy is also a helpful attitude to practice in order to improve in terms of *embracing ambiguity*, which ranks second, in terms of importance, according to the results provided by the sample.

The two attitudes, besides being tightly linked in intuitive terms – ambiguity is partially provoked by not understanding the market, empathy is a forward way to dissipate this misunderstanding

27 https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Operations/Our%20Insights/The%20lean%20management%20enterprise/The%20aligned%20organization.ashx.

– are the exact juxtaposition to the firms' attitude to the market that remained mainstream until

Attitudes/Firms	UniCred-it	BNL	Intesa Sanpaolo	Leroy Merlin	Ducati	Tetra Pak	Wind Tre	Poste Italiane
Optimistic Mindset					✓			
Tolerating Failure		✓				✓		✓
Embracing Ambiguity		✓			✓	✓		✓
Troublemaking	✓		✓	✓				
Pragmatism				✓			✓	
Empathy	✓	✓	✓	✓		✓	✓	✓

Table 5.7: *Summary of the attitudes sought four by the sampled companies.*

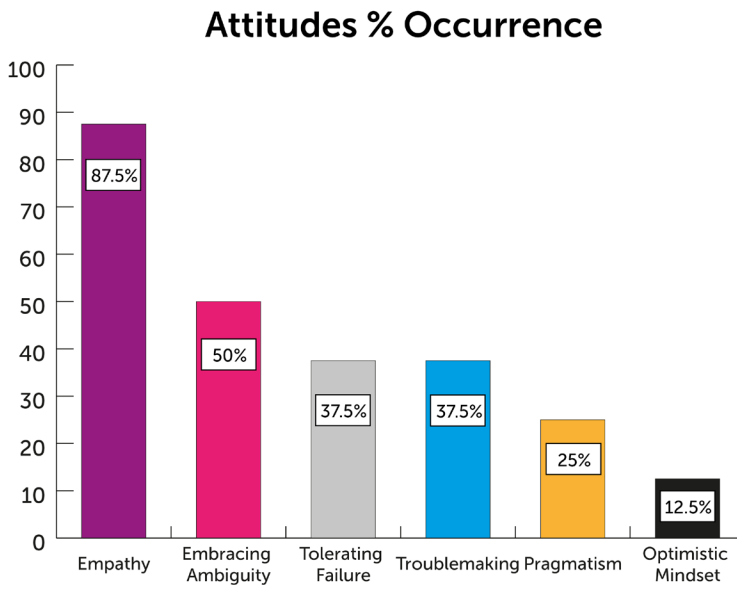

Figure 5.11: *The percentage of appearance of each attitude sought four by the sampled companies, in decreasing order.*

about fifteen years ago. Within the chapter, companies of the banking industries were referred to as "traditionally-minded", and were said to be the ones struggling more with uncertainty tackling. The disruptive power of Design Thinking is probably this appreciated due to this motive.

The reasoning is maintained quite uniform if one looks at the third ranked attitude – *tolerating failure*. It is again an attitude that is reported to be lacking in the majority of the sampled firms, due to the setting of decision-making processes, which prevent project members from making late changes in case of problems or simple second thoughts.

Given what was reported so far, it appears that the sampled firms are making efforts in trying to

stablish a novel, more flexible working culture, thus placing them in the "early", not advanced stage in the Design Thinking adoption and development process.
Finally, it might be interesting to note than, differently from the cases of skills and competences, the attitude table records a greater uniformity: equal "combinations" are selected by more than two firms at a time, and it is normally firms belonging to different industries.

5.5 Sample Positioning on Design Thinking Streams

Relying on which skills, competences and attitudes were said to be of interest by the sampled companies, companies themselves were associated to the Design Thinking stream they appear more likely to be falling in. As specified in Chapter 4, the objective of this thesis is understanding how Design Thinking is being greeted, understood and put in practice in the Italian context, particularly speaking of large organizations. In detail, given the four Design Thinking streams introduced in Chapter 2, the goal of this research was to determine which Design Thinking streams are being captured with the greater intensity. Each company description paragraph was provided with a section devoted to this kind of classification.
According to the information collected through the direct interviews and summarized in Table 5.8, there is an evident frequency gap separating *Creative Problem Solving*, the by far most popular and recurrent paradigm, from the other three, in particular *Creative Confidence* – which seems to be completely absent from the interests of the sample. In five cases out of eight (62.5% of the total), *Creative Problem Solving* looks like the closest stream to associate a firm with. This is easily explained by the selection modality of the firms that were interviewed during the research: the aforementioned results relate to companies inserted in the so-called "Demand" segment, namely companies that have recently begun to adopt Design Thinking, or are even still considering the possibility to do so.
– that new problems can be solved by slightly modify the existing problem solving methodologies (Conklin *et al.*, 1997). This said, it might also be worth remembering how *Creative Problem Solving* was the very first paradigm to appear and spread in chronological order, thing that justifies he fact that Design Thinking novices resort to this paradigm to at least begin profound innovation. For the same reason, it seems sensible to conclude that *Creative Confidence* is missing since even IDEO – probably *the* firm in the world Design panorama, quoted numerous times within this same research – began to use it as a consultancy approach in the very last years.

Streams/ Firms	UniCred-it	BNL	Intesa Sanpaolo	Leroy Merlin	Ducati	Tetra Pak	Wind Tre	Poste Italiane
Creative Problem Solving		✓	✓	✓		✓		✓
Innovation of Meaning				✓				
Creative Confidence								
Sprint Execution	✓				✓		✓	

Table 5.8: *Summary of the Design Thinking streams the sampled companies could be classified within.*

The other Design Thinking paradigm that is quite strongly referred at is *Sprint Execution*, again for an understandable motive: firms freshly discovering creative methods of innovation or having just gotten started with them particularly appreciate the acceleration of development processes in general. Moreover, *Sprint Execution* is the Design Thinking streams that capitalizes more on *rapid prototyping* as main way to achieve relevant business results. As already stated – especially in the description of the Poste Italiane case - *rapid prototyping* means a good degree of novelty for the majority of traditionally-minded firms, boosting the speed of the prototyping task itself, besides introducing an equally useful and rapid *testing* framework that allows firms to immediately verify the bounty of their proposals. This efficiency making perspective can be interpreted and applied to a variety of aspects of the organizational life: in the case of Ducati, for example, the acceleration is appreciated with reference to all the *interface processes* the company holds with its suppliers and partners. *Prototyping* becomes an important part of the picture in tight connection with *testing*, and the capacity of the latter of generating meaningful feedback.

To further synthesize the findings of this Chapter, one might argue that the Italian context – or, at least, the chosen portion of – certainly has a basic awareness of what Design Thinking could be helpful for, more than of what Design Thinking *is*. This awareness, defined *basic* meaning it still appears to be in its early stages, is reflected by the choices the sampled firms make when seeking for Design Thinking: Design Thinking is in many situations the methodology companies resort to when other ones seem to have permanently exhausted their innovative power, in a market context that mercilessly advances leaving numerous organizations behind.

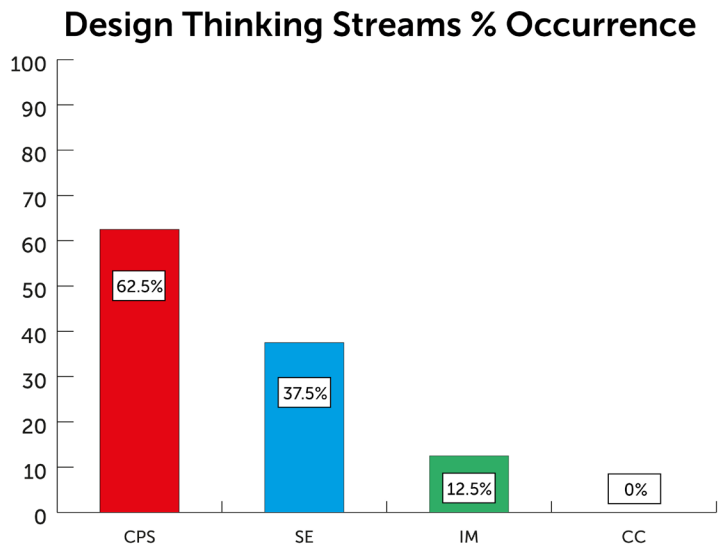

Figure 5.12: *The absolute frequency of appearance of each Design Thinking stream within the sample, in decreasing order.*

The *naïf* kind of approaching Design Thinking is due to the novelty it represents, thus the preference for "early" or efficiency-oriented streams looks logically justifiable when considering the category all the sample members belong to: the "Demand" one. Most of these firms need to develop a more human-centered, empathetic approach to restore satisfying performances; certain ones are more affected by internal, organizational issues, which Design Thinking forces to cope with (the difficulty of working in multi-disciplinary teams, for example, as in the BNL case); there is then a general tendency to value the importance of maturing a greater degree of flexibility – which encompasses the capacity of taking risks and tolerating the idea that they might lead to a failure.

With all these considerations in mind, *Creative Problem Solving* and *Sprint Execution* seem the two most sought for Design Thinking streams: the simplicity and non-prescriptiveness with which they are described make them suitable candidates for the task. They are also regarded as capable of ensuring the diffusion of those skills, competences and attitudes – *prototyping* and *user analysis*, *reframing* and *criticism*, *empathy* and *embracing ambiguity* respectively, just to name a couple for each – that firms living in the "Demand" environment are more in need of.

6.

A Survey Investigation of Design Thinking Awareness, Adoption and Capabilities

The previous Chapter was devoted to a very punctual and specific analysis of eight large Italian firms, where, by "large", it is meant firms having more than 250 employees, as already explained. This detailed and punctual investigation gave back results that are likely to be responding to the characteristics of the sampled context – the Italian one – but needing greater substantiation, in particular in numerical terms. For this reason, this Chapter will be devoted to the discussion of the findings coming from the Survey that was described in Chapter 4. As anticipated, the Survey conducted by the "Design Thinking for Business" Observatory at Politecnico di Milano targeted the Design Thinking awareness, adoption and capabilities in relationship with the Italian market. To be as comprehensive as possible, the survey was forwarded to an audience of about 300 firms, involving the whole investigation sample of the "Design Thinking for Business" Observatory, thus including firms not pertaining the "large" dimension as well. For this reason, the results hereafter illustrated will only refer to those respondents who work in a firm accounting for at least 250 workers. The number of answers that remain valid for the analysis hereby displayed are thus 33, and are provided by 27 different firms. Furthermore, 2 respondents only stopped at the initial questions, leaving the rest of the survey blank. This required the elimination of those answers, due to their utter lack of significance. It is also very important to add that, in the majority of questions, respondents were given the possibility to leave some fields blank, and this tendency will be illustrated in the following paragraphs, too.

An important distinction about the selected answer regards the distinction made between "large" firms (those accounting for between 250 and 9,999 employees) and "very large" ones (with, instead, a population greater that 9,999). As the initial paragraph of this Chapter will show, those companies trespassing the "large" threshold were all considered, but the analysis of the results will recall this quantitative distinction more than once.

The Chapter will initiate by providing an overview of the survey sample main characteristics, not explicitly naming any company, but giving a picture of the industry distribution of the 27 companies whose answers will be discussed afterwards. Secondly, there will be an illustration of how Design Thinking awareness is distributed across the sample. The discussion about perceived Design Thinking adoption will immediately follow, to then be accompanied by the description of the skills, competences and attitudes that the sample estimates as most important to improve in order to embrace Design Thinking and its creative mindset, as it happened in Chapter 5. The closing paragraph will finally be devoted to the placement of the different answers in the four Design Thinking streams categorizations. One important aspect to recall is the continuous alternation of individual and collective (team) considerations, as explained in detail in Chapter 4.

The punctual responses and positioning of the respondent firms will not be disclosed for confi-

dentiality reasons. Furthermore, the interest of the survey was more focused on understanding how different industries relate to Design Thinking in the Italian context, beyond specific firm names or brands.

6.1 Survey Sample Characteristics

As already anticipated, the companies belonging at least to the "large" category that responded to the survey are 27.

Even though the companies whose answers were of interest for the current analysis are 27, the analyzed responses are actually 31, because certain firms within the sample provided multiple answers, through the voice of more than one of their employees. Besides being more numerous than those described in detail in Chapter 5, the respondent firms all fall into the "Demand" segment that was hinted at several times up to this point. The industries composing this sample slightly differ from the ones seen in the direct interview analysis. They cover the following sectors, listed in decreasing order of population number:

- Manufacturing (6);
- Energy & Utilities (5);
- TelCo (5);
- Finance & Insurance (4);
- Education (2);
- Fashion (2);
- Information and Communication (IT) (2);
- Logistics (1).

The prevalence of the Manufacturing industry is easily explained by a reasoning that is analogous to the one made in Chapter 5: since the firms that get categorized as "Manufacturing" ones are those that are likely to be the farthest from the Design Thinking galaxy, they assume a particular interest in the current study, since they might hide within themselves potential surprises worth investigating.

The Energy & Utilities sector is fairly well represented, too, mainly due to the growing attention the firms belonging to it are paying to customer experience[1]. The same scheme, differently con-

1 https://www.mckinsey.com/industries/electric-power-and-natural-gas/how-we-help-clients/the-power-of-customer-experience-in-energy-retailing.

jugated to adjust to the specific industry dynamics, applies to TelCo companies.

Another aspect worth mentioning is the presence of two industries, the Education and Fashion ones, that were not represented at all in the previous analyses, whose presence testifies the diversification attempt that the "Design Thinking for Business" Observatory made to seek to develop unexpected points of view on the matter of investigation. Furthermore, fashion companies are supposed to be creative by nature, thus it is challenging to understand how a creative industry might – or might not – apply a creative paradigm. Education is then a domain one would seldom consider analyzing, given that it follows specific dynamics that are not exactly overlapping market logics.

Returning to quantitative arguments, it might be useful to note that the companies ranking as "large" are 19 out of 33, equaling almost 58% of the sample, while the "very large" ones are the remaining 14, which covers the spare 42% of the answers.

Before proceeding to the result analysis, a final remark concerns the company functions represented in the sample. They are, in decreasing absolute frequency of appearance, the following:

- R&D (8);
- Marketing (6);
- IT (5);
- Business Development (4);
- Human Resources (2);
- Sales (2);
- Legal Services (2);
- Institutional Affairs (2);
- Customer Experience (1);
- Strategy (1);

The most recurring functions are those that are generally in charge of innovation and innovation promotion and diffusion. This very broad remark is of course not surprising but becomes slightly more interesting when considering the percentage occurrence of the specific functions composing that area (details in Figure 6.1): R&D quantitatively outperforms the rest of the functions, with 25% of occurrence, followed by Marketing, ranking just below 20%, IT, with 15%, and Business Development, amounting to 12%. The "innovation area", thus, accounts for 72% of the overall answers. The dominance of R&D might be a symptom of the shift of mindset that is taking place even within traditionally-minded companies: R&D passes from being a purely engineering

function to host also creative resources. Marketing function is the second winner since, in many cases – as Wind Tre or Leroy Merlin – the Digital division of the company is embedded in that macro-area.

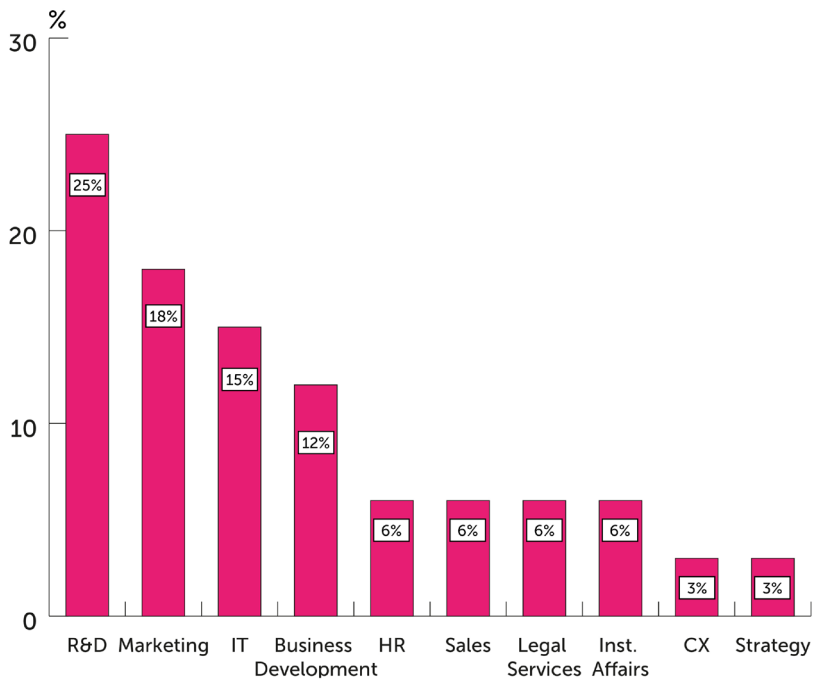

Figure 6.1: *The company functions represented in the survey, with percentage occurrence.*

Another aspect worth underlining before proceeding with the analysis of results is the presence of one answer reporting a "Customer Experience" function: this could be seen as a symptom of the fact that not only CX is being taken more and more seriously in several industries, but also that this trend is starting to be translated into practical and tangible terms.

6.2 Design Thinking Awareness

Recalling the scale adopted – which is described in Chapter 4 - to measure both Design Thinking Awareness and Adoption, there is the need to acknowledge that the survey, in its very first section, had the objective of discovering which is the perceived Design Thinking awareness at personal, functional and company level. The same three-folded question scheme was identically replicated for the investigation about Adoption, which will be described in Paragraph 6.3.

6.2.1 Personal Awareness

Given that it is quite hard to assess one's own personal level of knowledge or awareness about a topic out of the blue, the respondents were given a choice based on a Likert 5 scale, displayed in Figure 6.2 together with the sample average responses.

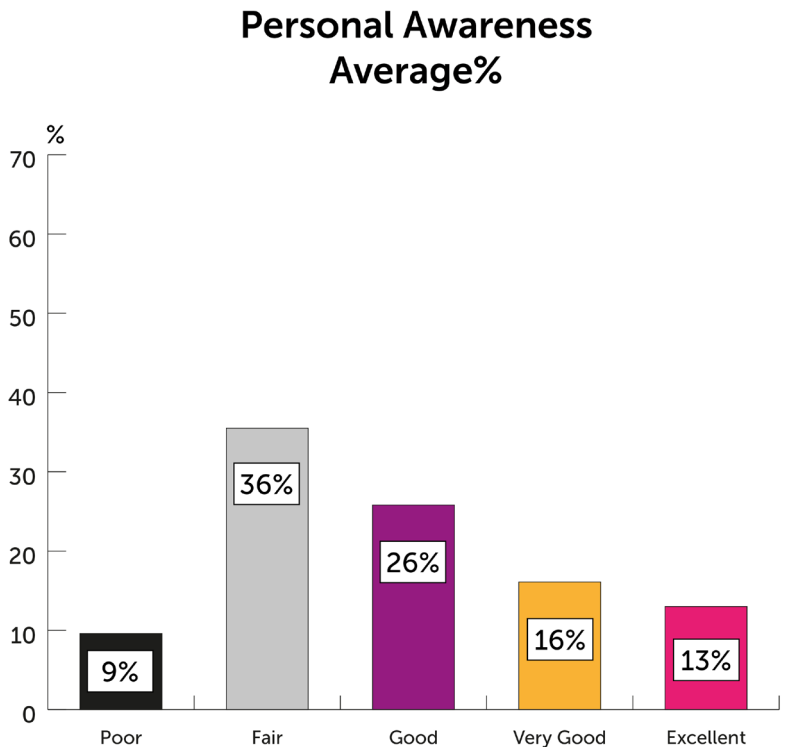

Figure 6.2: *Design Thinking personal awareness, with average percentage occurrence.*

What emerges from this – in a way – preliminary question is that more than one third of the sample scored a "fair" level, at which Design Thinking is declared to be partially known. This answering pattern might hide two aspects: on one side, the word "fair" might look reassuring to those who are not really sure about how well they know Design Thinking, pushing them to go for the "safest" response; on the other side, such a dominance of the "fair" category - it outperforms by ten percentage points the rest of the categories – could align with the trend recorded in Chapter 5 as well, namely the fact that Design Thinking is rapidly being discovered by a growing number of realities. This hypothesis may be confirmed by realizing that the "poor" category – the one you would expect people from firms fairly unaware of Design Thinking would crowd upon – is actually that recording the lowest value: 9.6%. Furthermore, the "excellent" category totalizes more than 13%, following the "very good" one at above 16% and the "good" one, which trespasses the one fourth threshold with 25.8%.

All this said, it is as well reasonable to argue that the aforementioned results could likely be biased, due to the fact that the responses just reported, being focused on individuals, might come from professionals who are all more or less skilled about the matter of analysis. This investigation was broad-scoped, and seeking for an exploratory journey through the understanding of Design Thinking in an Italian context. What this attempt returns, in first instance, is the idea that Design Thinking is fairly well-known at personal level, with more than 50% (54.9%, to be precise) of the sample positioned in the right part of the chart – the one tending to excellence.

6.2.2 Function Awareness

As it will happen for company awareness, respondents were asked to distribute a total of 100 percentage points over the five categories introduced in Paragraph 6.2.1, to assess the level of Design Thinking awareness within their functions. The minimum granularity allowed for answers was 5% (the already mentioned Likert 5 scale), which was not exactly replicated in Figure 6.3 – nor in the rest of Figures of this Chapter - for reasons of intelligibility and space, passing to a 10% level of detail on the vertical axes.

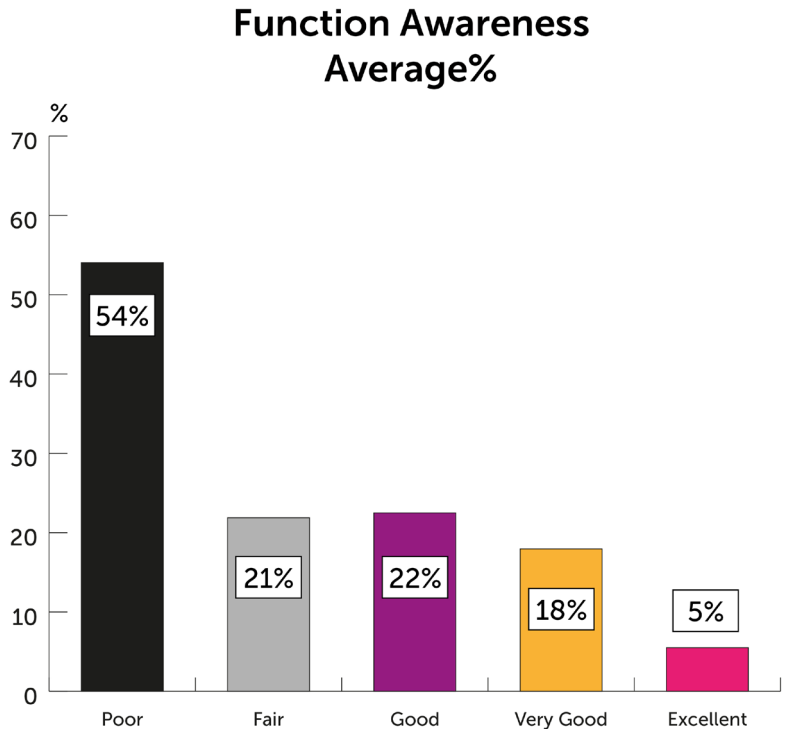

Figure 6.3: *Design Thinking function awareness, with average percentage occurrence.*

Coming from the sight of Figure 6.2, the first striking characteristic of Figure 6.3 is the far higher

average percentage assigned to the "poor" variable by the sample, which touches a peak of 54%. A significant drop also affects the "fair" label, which falls just above 20% from a 35% quota. A remarkable trait concerning function awareness is the levelling that exists between the "fair", "good" and "very good" variables, probably meaning that, if a function has some kind of Design Thinking awareness, it might be hard to tell which degree of intensity it possesses among the three. Finally, the "excellent" parameters receives an average score of 5%, meaning that many respondents assigned this variable a 0% share of interest. This datum does not actually come as a total surprise, since it was discussed in Chapter 5 how Design Thinking aware resources are, in companies that are relatively new to Design Thinking itself, concentrated within a single function, which necessarily becomes the center of "Design Thinking excellence", while the other ones lag a bit behind. Another aspect that is notable about the chart displayed in Figure 6.3 is the fact that the "poor" variable records an average percentage share of interest that is more than double with respect to those of the other investigation parameters. Such a difference on average data stands for a significant gap of occurrence of high shares of interests between the "poor" label and the rest of variables. The same kind of gap, even amplified, exists between the *middle range variables* ("fair", "good" and "very good") and the positive extreme, namely "excellent", which is more than three times lower the former.

Studying the levelling happening in Figure 6.3, what the chart generally seems to suggest is that there are, apparently, three main possible scenarios in Italian large organizations, when it comes to Design Thinking function awareness: they might not know it at all, know it and master it in an average way, or really well, without other intermediate intensities.

6.2.3 Company Awareness

Company awareness displays an even more extreme general trend than function awareness. In practice, the majority of the considerations made in the function awareness paragraph still hold valid, but in an amplified way, especially for what concerns the extremes, i.e. the "poor" and "excellent" variables. This result could be foreseen reasoning about the visibility issue that any employee of a company, in particular considering the firm size taken into account (size > 250 employees, without an upper boundary), might have: answering the question about "company" awareness would likely cause the respondents to resort to a rough estimation. It could be argued that this aspect is an additional bias to the survey findings: it is thus worth recalling that this survey was conducted in an exploratory manner, and that awareness tracking is somehow more linked to perception than to scientific evidence.

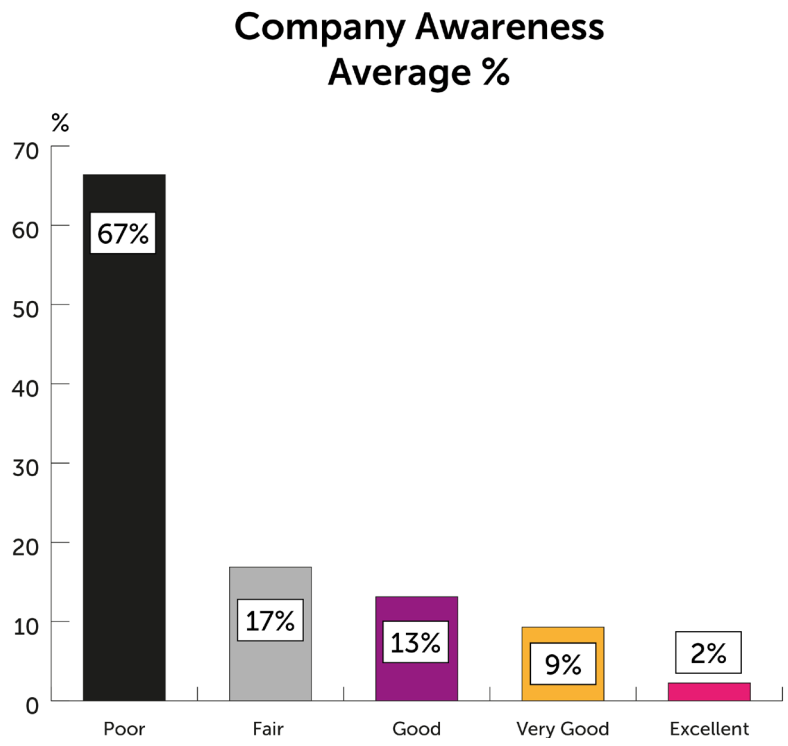

Figure 6.4: *Design Thinking company awareness, with average percentage occurrence.*

Going back to the extracted results and figures, displayed in Figure 6.4, it is more than clear how "excellent" Design Thinking awareness is left almost no place at a company level: it only appears in an average 2% share of interest, since only 5 respondents out of 31 gave an answer that was above zero (and all of them expressed a 5% share of interest). The proportion with respect to *middle range variables*, as anticipated, is maintained and even amplified, since "excellent" is now almost 9 times lower than "fair", just to mention one. Speaking of the so-called *middle range variables*, it is possible to acknowledge how, passing from "fair" to "very good", there is not much levelling anymore, but rather a constant decrease: while the "fair" parameter records a 17% average, the "very good" one remains below the 10% threshold, at nearly half the share of interest of the former.

The "poor" label, i.e. the other extreme, now performs an *exploit* that brings it close to an average of 70%: this seems to depict a merciless opinion the respondents have about their companies, when speaking of Design Thinking awareness: it is very scarcely known, at times – many times, probably - unknown. What looks changed with respect to company awareness is that the already defined *middle range variables* come in different proportion, probably standing for the fact that company awareness is a more nuanced subject.

6.3 Design Thinking Adoption

Unlike the Design Thinking awareness case, adoption will be dealt with in a more aggregated way, for a substantial reason: the visibility issue already mentioned several times in Paragraph 6.2. It was realized that asking respondents to provide an estimate about awareness on a topic like Design Thinking was a challenging request, especially considering the whole company dimension. Extending such a complicated question, conjugated in five different intensities (from "poor" to "excellent") would have probably made results about adoption unlikely and truly flawed. For this motive, it was decided to demand which was the percentage of innovation projects adopting Design Thinking to some extent that were developed at a personal, function and company level in the last 2 years. The results are displayed in an only chart (Figure 6.5), to better synthesize and facilitate results drawing.

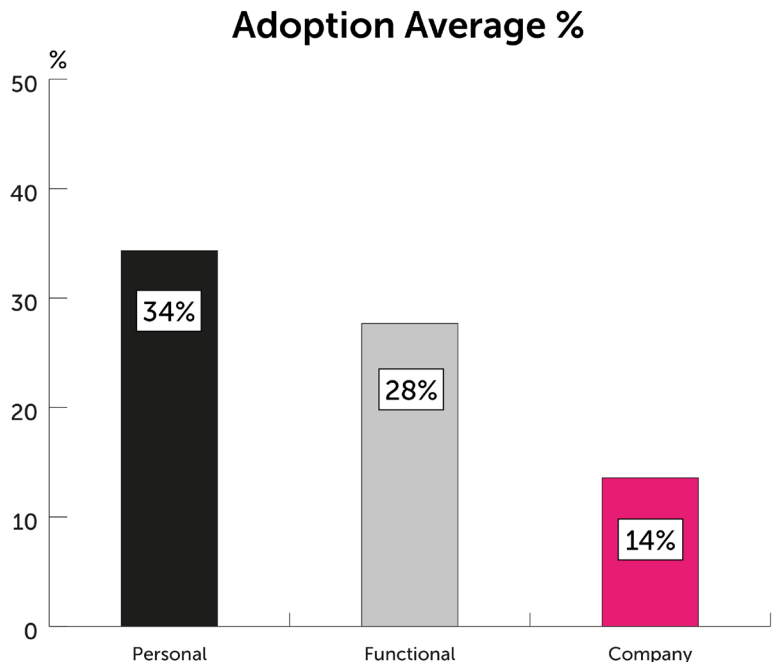

Figure 6.5: *Design Thinking personal, function and company adoption, with average percentage occurrence.*

Figure 6.5 visually illustrates how posing more direct and somehow guided questions helps obtaining less polarized results. The result patterns emerging from these results appear far less extreme than those shown previously: for example, personal adoption scores a 34% share of interest on average, followed at a short distance by functional adoption – at 28% - and slightly more

detached from company adoption, which stops at 14% on average.
Function adoption, reaching the 30% threshold, is apparently not that different than personal one like it had seemed in the awareness section. This specific scheme might be affected by the fact that individual projects hardly exist, and that many projects individual professionals get involved in are carried out at a functional or cross-functional level. From there the similarity in results, which would otherwise seem to contradict the previous narration. The distance that instead exists between the company perspective and the other two is likely to be provoked by both the visibility issue already discussed, for which an individual respondent might not be aware of Design Thinking-adopting projects carried out at an overall company level, and also by a phenomenon that manifested itself in the witnesses reported in Chapter 5, reporting how company-wide projects adopting Design Thinking are normally rare and rather challenging.

6.4 Skills, Competences and Attitudes

This paragraph synthesizes and brings together the third, fourth and fifth section of the survey whose results are hereby being explained in detail. Following the scheme already adopted in Chapter 5, the discussion about Design Thinking awareness and adoption is followed by that about which skills, competences and attitudes would particularly be improved through the adoption of Design Thinking itself, in the eyes of the interviewed companies. The three dimensions of the capability theme, that were dealt with in an aggregated and mostly qualitative way – at least before the closing paragraph – in Chapter 5 will here be illustrated in a separate fashion, and each kind of capability will distinguish the expected personal and team improvements, to acquire a higher significance and detect possible discrepancies between the two points of view.

6.4.1 Skills

As already mentioned, the three areas of capability will be dealt with distinguishing the personal level and the team level. This distinction becomes functional to the pointing out of commonalities or differences that will be thoroughly investigated.

6.4.1.1 Personal Skills

Figure 6.6 shows the relevance of the expected improvements, at personal level, of the six skills that build the dimensions of the horizontal axis, which are exactly the same considered in Chapter 5. What is immediately clear to the reader is the levelling that occurs among the different skills, which are all distributed between the 20 and 30% average, with a moderated dominance

of *business modeling* and *user analysis* over the rest of variables. If one had to draw a list with the decreasing share of interest, this list would be guided by *business modeling*, followed by *user analysis*, which would then be sought after at short distance by *cultural insights* and *visualization* (achieving an *ex aequo*), to conclude with *prototyping* and *testing*.

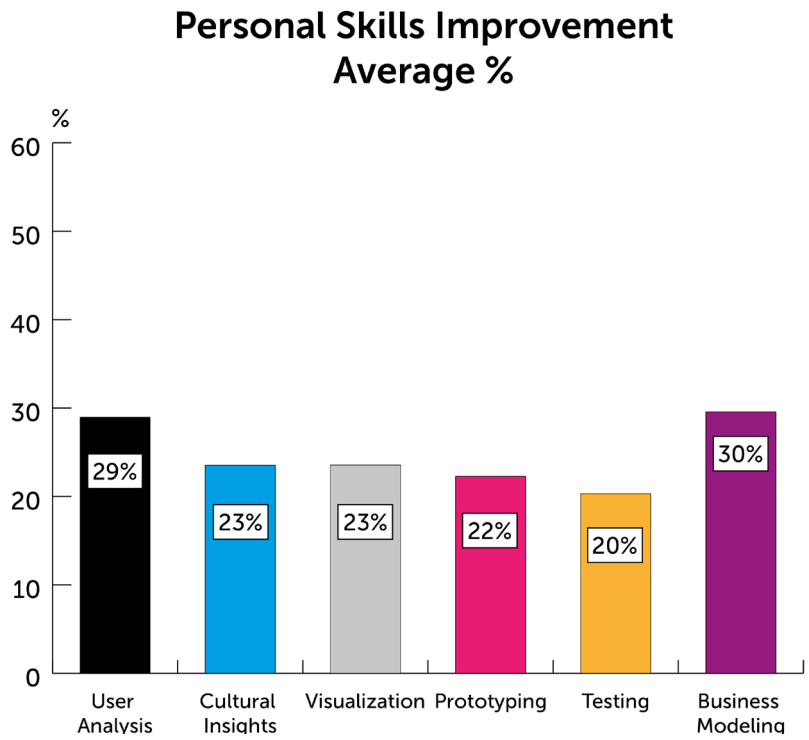

Figure 6.6: *Personal skills expected improvement, with percentage occurrence.*

The rating provided by the survey whose results are being analyzed appears quite different from what emerged in Chapter 5, where *prototyping* led the chart, and where *business modeling* was only fourth. In this context, *business modeling* could have prevailed due to the fact that the survey was not forwarded to Design Thinking-related professionals only, which might lead to a higher evaluation of *business modeling* itself, since it is the business context it is being dealt with. *User analysis* might come second for a not very dissimilar reason, since one of the most popular traits of Design Thinking is that of being human-centered (see Brown, 2009 and IDEO.org, 2015). It is also relevant to recall that it is the personal level that is being spoken about: *business modeling* is probably felt to be a capacity that is mainly applied in group situations, but that should be first of all individually possessed. *User analysis*, instead, probably looks to many professionals' eyes as having to do with user research and related activities, which are seen as individual at least in the first place. Referring to the personal level/perspective would also explain why *prototyping*

and *testing* rank low: even though they should be possessed at a personal level first to then be applied in team context, the view that is likely to be dominant is that, given that both skills, when performed as activities, are performed in team mainly, they might not be so relevant in the personal dimension.

The relatively poor performance of *visualization* with respect to Chapter 5 might be partially explained by the aforementioned personal dimension, but also by the fact that *visualization* underlies any other Design Thinking-related capability (Liedtka *et al.*, 2010), and may thus be taken for granted in some cases.

Finally, a closing note concerns *user analysis* and *cultural insights*, which rank second and third respectively for average percentage share of interest. These two skills are deeply involved whenever considering the human-centered paradigm, which, it was explained, mainly has to do with the *Creative Problem Solving* stream that was found largely dominant in Chapter 5. The relationship between the four Design Thinking streams will be dealt with in the subsequent paragraphs, taking these results into account as well.

6.4.1.2 Team Skills

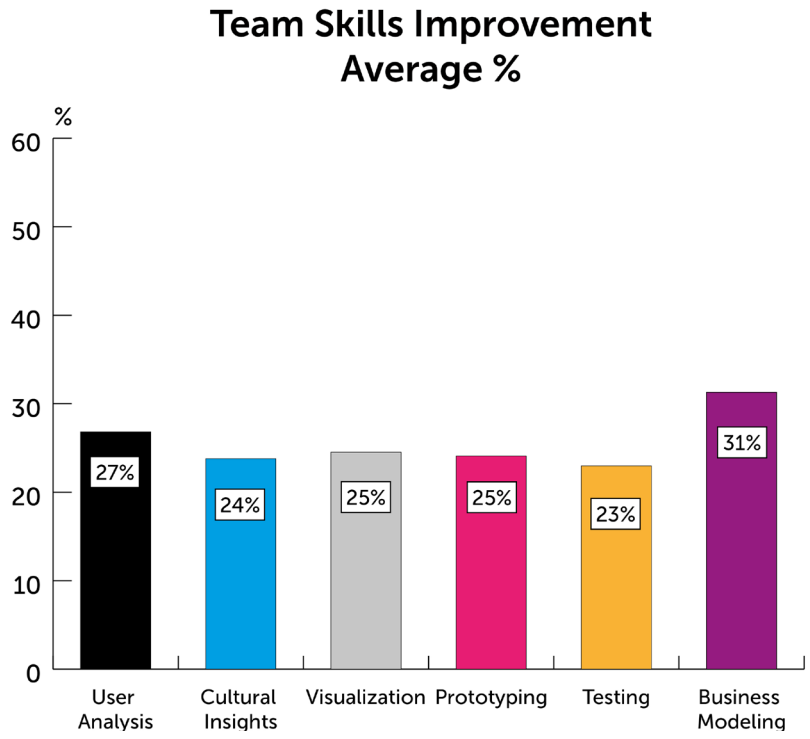

Figure 6.7: *Team skills expected improvement, with average percentage occurrence.*

The situation involving expected skill improvement at team level has of course several commonalities with the personal level. Looking at Figure 6.7, it is simple to acknowledge how the average percentages assigned to each skill are inherently similar to the situation illustrated in the previous paragraph, still having *business modeling* and *user analysis* as first rated variables, and with very light changes in the proportions between the rest of the sampled parameters.

As just mentioned, *business modeling* and *user analysis* still lead the ranking, with percentage variations that are in the order of 2 percentage points maximum. What can be observed with respect to the previous situation is an even more accentuated balance within the whole sample of considered skills: while in the personal perspective *prototyping* and *testing* in particular were left a bit behind, at a team level it seems that all the variables are held as nearly equally important. This finding would also confirm the reasoning made about *prototyping* and *testing*, according to which these two parameters are granted a higher relevance in a team view, since, as activities, they are quite rarely deployed in an individual manner.

6.4.2 Competences

As in the case of skills, competences are illustrated at both personal and team level of investigations, showing differences that appear irrelevant at first sight, but might be worth deepening.

6.4.2.1 Personal Competences

Concerning personal competences expected improvements through Design Thinking, one immediately spots how this level of analysis is affected by a certain uniformity, with a reduced relative distance between the different variables under scrutiny.

Even though it might not be that obvious to spot it at first sight, *creativity* is the competence that reaches the highest average percentage in terms of share of interest, which does not seem puzzling at all, given the comprehensive role creativity (being a very broad term as well) plays when dealing with Design Thinking. Creativity was the founding matter of a book such as *Creative Confidence* (Kelley, 2013), which was widely illustrated in Chapter 3 and that gave a series of decisive contribution to the entire Design Thinking discourse. *Creativity* is then followed by *brokering*, which was actually the second least popular competence in Chapter 5. *Brokering* stands for the capacity of bridging solutions from different contexts and developing inspiration from different fields, and the fact of having it as second most important personal competence might entail the idea that *brokering* itself looks connected to a reflective activity, typical of the individual work. As recalled some Chapters ago, making connections between apparently unrelated ideas and concepts is the basis of intelligence, and what makes knowledge (starting from an individual basis)

move forward (Gläscher *et al.,* 2010).

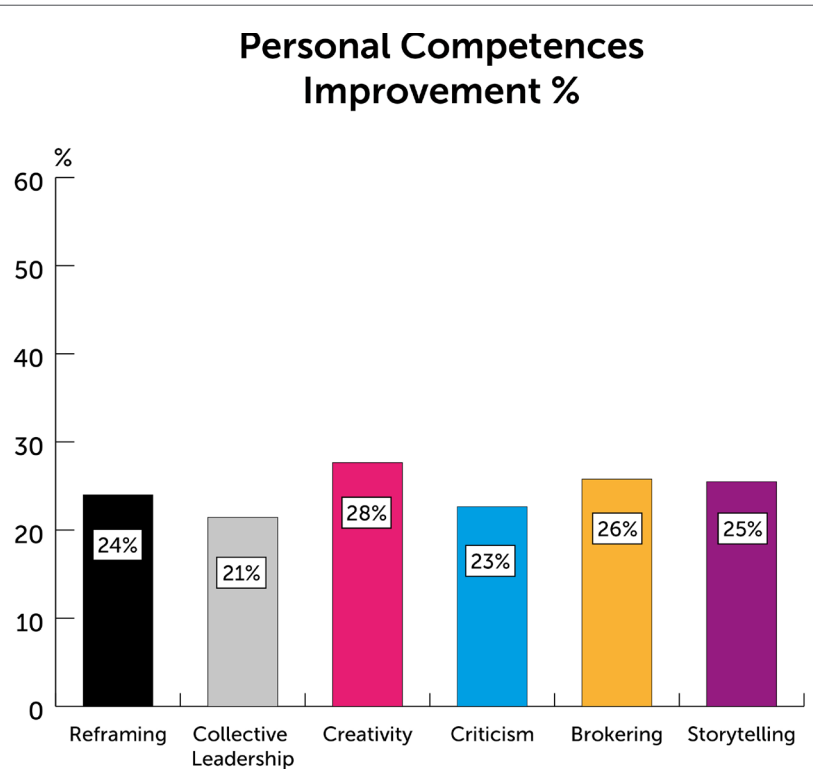

Figure 6.8: *Personal competences expected improvement, with average percentage occurrence.*

After *brokering* comes *storytelling*, the very last competence in Chapter 5 ranking, which, with a 25% share of interest, seems to remind of how the need for an improvement of the individual capacity to create and tell captivating stories is among the strongest that are felt when resorting to Design Thinking. This need appears to be especially felt in the business world, where concepts such as brand awareness or organizational alignment, for whose pursuit *storytelling* is particularly suitable, find high resonance (Maydoney *et al*., 2003).

6.4.2.2 Team Competences

At a first sight, the team competences chart looks almost identical to the personal competences one. The kind of uniform distribution of scores across the six sampled competences is somehow reproduced in this context, with slight variations in average percentages, in particular concerning *creativity* and *reframing*.

Figure 6.9 shows how *creativity*, even at a team level, is still felt as the competence that would benefit the most from a greater adoption of Design Thinking. The second place, in this team perspective, is instead held by *reframing*, with 28% average share of interest. *Reframing*, consisting

of the capacity to iteratively define and redefine the problem to be able to identify unexpected and effective solutions to a given challenge, is in a sense naturally given a higher prominence in the team perspective due to its own definition: as already stated, problems in firms are normally worked out through team work, for which developing an innovative point of view is a tough challenge, as also recalled by Knapp *et al.* (2016).

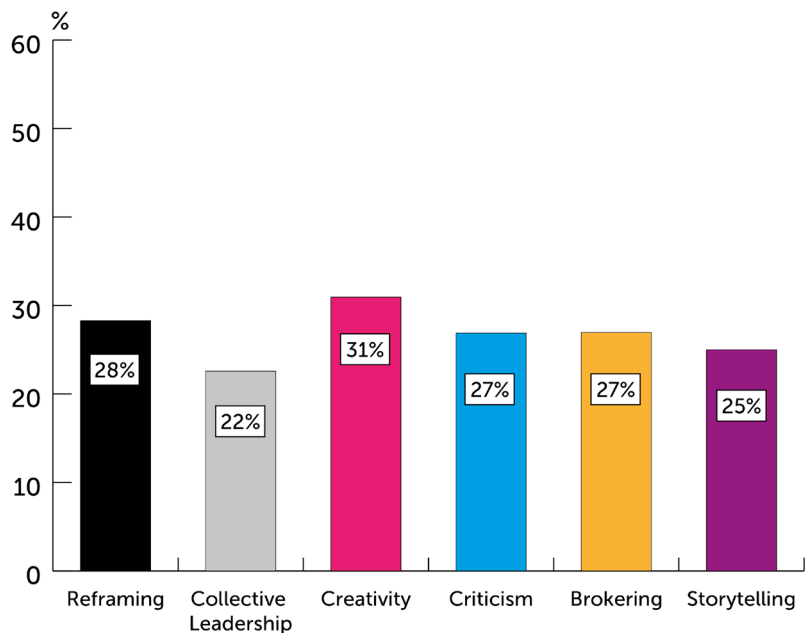

Figure 6.9: *Team competences expected improvement, with average percentage occurrence.*

In this team perspective, *storytelling* is overcome by *brokering*, as in Figure 6.8, but also by *criticism*, for whose importance in this context one should again make reference to the contribution to Design Thinking provided by Knapp *et al.* (2016): (constructive) criticism should be at the basis of any fast development process, which, thanks to *criticism* itself, finds both efficiency and effective, a mirage for the business context in many circumstances.

The competence that instead, in a team perspective, seems to be held as the least improvable through Design Thinking is *collective leadership*, namely the capacity to mobilize resources of different kinds to pursue a shared vision within an organization: this positioning might be due to the distance perceived between Design Thinking and organizational alignment, coming from the limited maturity of the Italian context. Where Design Thinking is less known, it is primarily associated with creativity and human-centricity, while the *implications* Design Thinking on the orga-

nizational life and *milieu* typically come afterwards, when Design Thinking itself is a more settled reality in the firm life.

6.4.3 Attitudes

As it happened for the other two categories of capabilities, the Attitudes section will be divided in a personal perspective part and in a team perspective one. The quite relevant degree of similarity and uniformity between the findings according to the first perspectives, a common trait with the other Paragraphs, will be explored and discussed.

6.4.3.1 Personal Attitudes

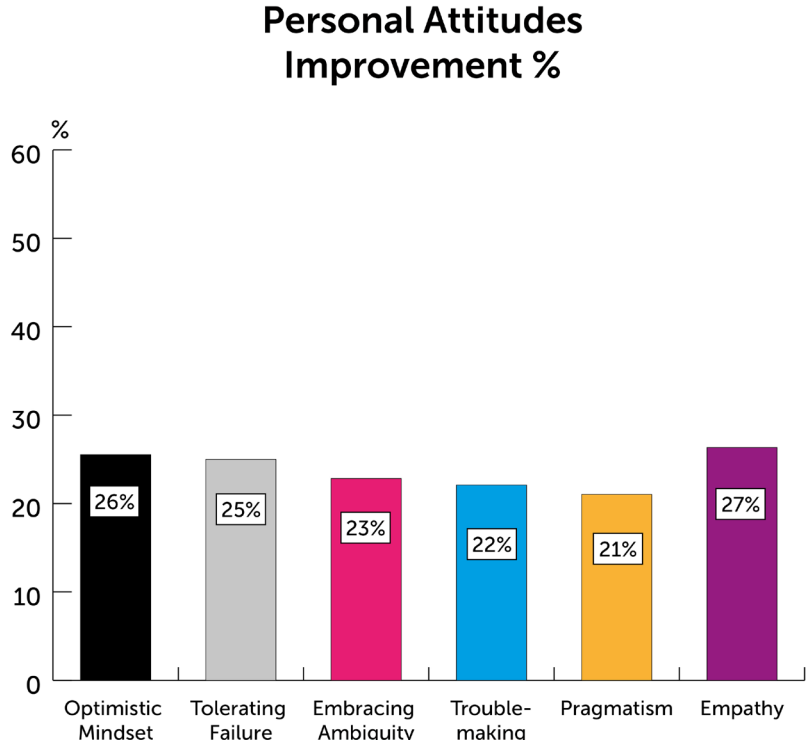

Figure 6.10: *Personal attitudes expected improvement, with average percentage occurrence.*

The personal attitudes section of survey findings is the first one in which the capability that is thought to be the most improvable through Design Thinking was also the most recurrent in Chapter 5. Needless to say, it is *empathy* that is being addressed at. Even though the difference with the other variables, especially with *optimistic mindset* (which in Chapter 5 was the least recurrent one) is minimum, *empathy* is confirmed to be, in particular in an individual perspective, the attitude that respondents believe would benefit the most from the adoption of Design Think-

ing, with an average share of interest of 27%.

Besides being a founding pillar of Design Thinking, which might be believed to be a Design-related mainly property, *empathy* was also defined as one of the 10 must-have skills companies will seek for in candidates by 2020[2], thus reinforcing the idea that empathy is a particularly felt attitude at individual level.

Following *empathy* is *optimistic mindset*, which, as already said, ranked quite poorly in Chapter 5, with a 26% average. It is significant, and probably psychological, the fact that *optimistic mindset* received higher scores than both *tolerating failure* and *embracing ambiguity*. In a sense, it could be argued that the capacity of both *tolerating failure* and *embracing ambiguity* might be seen as a *consequence* of an optimistic mindset: if a person is capable of maintaining a good morale even during adversities, he/she will be definitely more likely to endure failures and accept the fact that not everything can always be under control.

Finally, *pragmatism* is the competence that, at personal level, respondents feel would be the least improved: this may be due to the diffused idea, in particular in non-Design Thinking-mature contexts, that Design Thinking itself is an extremely powerful tool that has little to do with being practical and efficient.

6.4.3.2 Team Attitudes

Passing from personal to team perspective about attitudes still implies a certain homogeneity of values across the six sampled variables, with *empathy* and *optimistic mindset* keeping their average % shares of interest almost intact with respect to the previous situation.

The chart in Figure 6.11 testifies how *tolerating failure* and *ambiguity*, the former of which is actually now second in ranking, are definitely held as important elements to improve through Design Thinking adoption. The fact that these two variables emerge especially in a team perspective could be explained thinking about how, on average, the Italian business context is *risk adverse* and still struggles in accepting a diffused presence of criticism, as shown by the ranking of *troublemaking*.

Troublemaking appears to be at an at least 5 percentage point distance from all the other variables except *pragmatism*, which, with a 22% average share of interest, does not really shine as an attitude that Design Thinking would significantly contribute to grow.

As already mentioned, this behavior could be explained by acknowledging how, in Design Thinking-receptive but non-mature contexts, Design Thinking itself is immediately associated to creative and somehow unstructured problem solving techniques, rather than to practicality and ef-

2 *Future of Jobs* Report, World Economic Forum (2016). http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf.

ficiency making. A perspective that Knapp *et al.* (2016) revert completely.

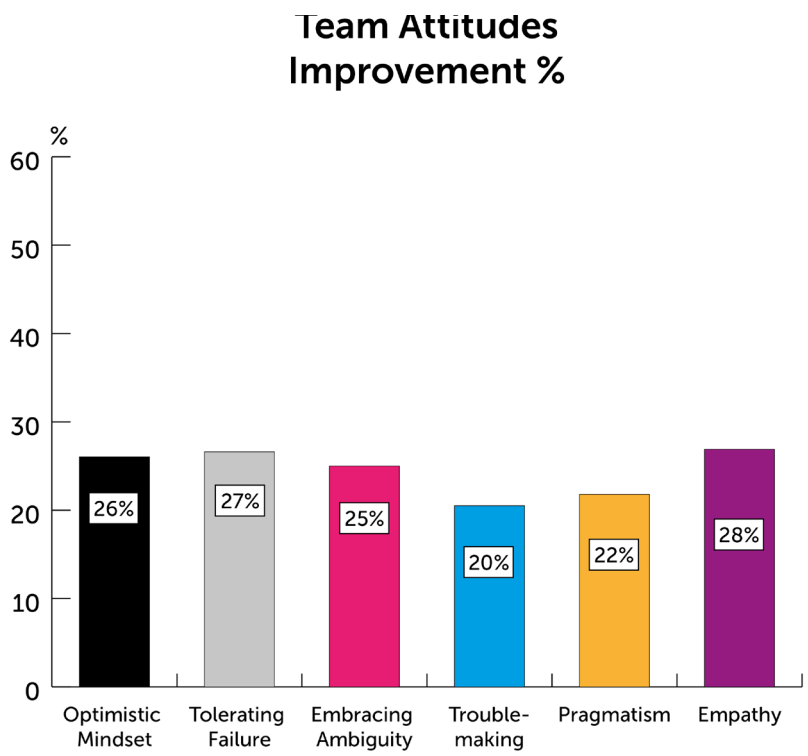

Figure 6.11: *Team attitudes expected improvement, with average percentage occurrence.*

6.5 Project Performances

This paragraph is named after the last section of the survey. The aim of this section was to discover which Design Thinking stream is the one that is expected to be pursued the most through the adoption of Design Thinking. As explained in Chapter 4, the question asked in this context referred to the expected performance improvements in future innovation and transformation projects that contemplated the adoption of Design Thinking. The twelve given options were, in groups of three, related to the four Design Thinking streams already dealt with. This section is thus an attempt to understand which project performances – so, by extension, which Design Thinking streams - are felt to potentially be the most improvable through the Design Thinking paradigm.

6.5.1 *Creative Problem Solving*-related Performances

The *Creative Problem Solving*-related performances selected for the survey were:

- *Fit with Market Needs;*

- *Generation of Creative Ideas;*
- *Team Alignment Around Effective Prototypes.*

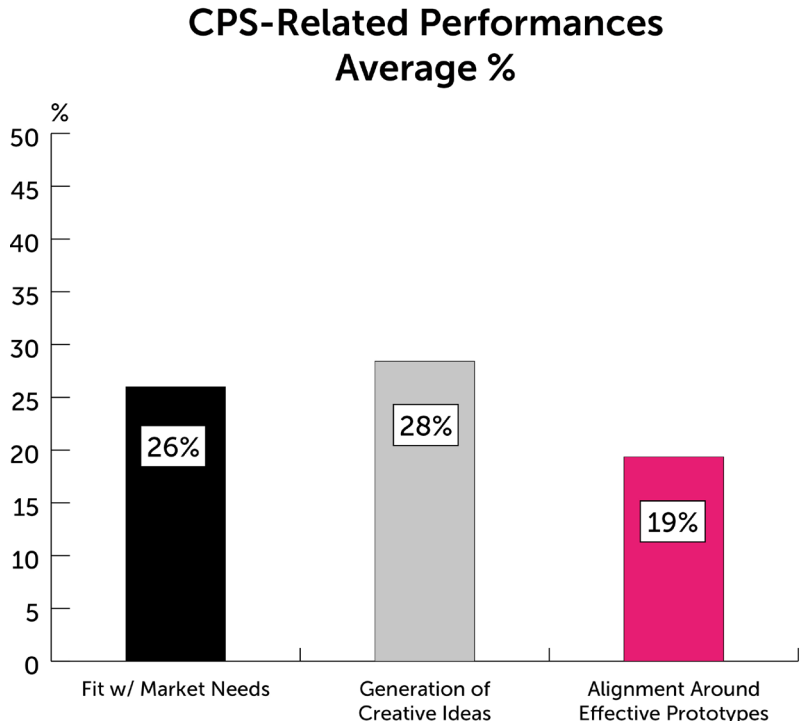

Figure 6.12: *CPS-related performances expected improvements, with average percentage occurrence.*

In the chart displayed in Figure 6.12, it is clear to understand how *alignment around effective prototypes* is less favored as a likely improvable performance thanks to Design Thinking: its 19% average share of interest testify a 10 percentage point gap between it and the other two variables of the chart, *fit with market needs* and *generation of creative ideas*, which both touch the 30% threshold, with similar figures. This could be due to both a lower comprehension of what the third ranking variable meant in practice, which could have prevented respondents from assigning it higher scores, and to the fact that it is probably not immediate to associate Design Thinking to a matter like *alignment*, as discussed in the previous paragraphs.

Generation of Creative Ideas, instead, with a 28% average result, is easily the first ranking due to the reason Design Thinking-devoid companies resort to this paradigm: they need to develop fresh and creative ideas, often even strategic ones, to recover from their struggles. Alongside with idea generation also comes *fit with market needs*, which, in the business world, is likely to be seen as a consequence of the generation of ideas that are more capable of addressing previously untouched needs. This would explain why *fit with market needs* follows *generation of creative ideas*

so closely, at a point that they look almost equal.

6.5.2 *Sprint Execution*-related Performances

The *Sprint Execution*-related performances selected for the survey were:

- *Efficiency of the Development Process;*
- *Acceleration of Creative Sessions;*
- *Learning from Market Tests.*

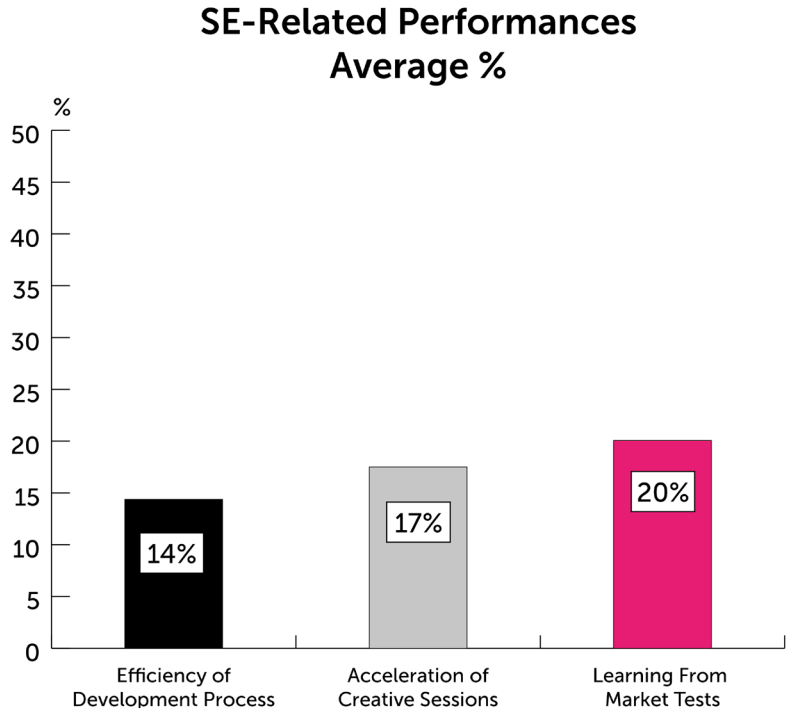

Figure 6.13: *SE-related performances expected improvements, with average percentage occurrence.*

Looking at Figure 6.13, it is immediately possible to detect a growing slope, if moving from left to right. The three variables under scrutiny look perfectly ordered, each one at a distance of three percentage points from the adjacent one. The lowest average share of interest is reported by *efficiency of the development* process, with 14%, overcome by *acceleration of creative sessions*, totalizing 17% on average, to conclude with *learning from market tests*, looking as the preferred performance respondents believe Design Thinking adoption would improve.

The scarcity of "perceived improvability" attributed to *efficiency of development process* could be in the first place attributed to similar reasons with respect to what was already mentioned speaking

of Design Thinking-unaware companies: Design Thinking is not normally coupled with efficiency, in particular in traditionally-minded contexts. It might be worth remembering how efficiency found legitimacy in the Design Thinking discourse only a couple of years back (*Design Sprint* was published in 2016), and this phenomenon started in the US, traditionally a ground-breaking market.

Acceleration of creative sessions is a variable that encounters a warmer welcoming in respondents for reasons that were often clarified during direct interviews: more specifically, the main reason that could justify an appreciation of the variable in question (and of an improvement of its) is the fact that traditionally-minded organizations feel threatened by creative paradigms/methodologies in general because they fear these methodologies are far more time-consuming than the usual business processes. From this, the understandable appeal *acceleration of creative sessions* might find in relationship with Design Thinking, currently looking as a creativity accelerating paradigm to many firms.

The aspect that by the way is prevalent regarding Figure 6.13 is the dominance of *learning from market test*, which has often been mentioned during interviews as well: for most traditionally-minded companies, finding an effective and relatively cost-saving way of conducting market tests and elaborate the subsequent feedback is hectic. Design Thinking is proven, through worldwide-known examples as the IDEO shopping cart redesign video[3], to be capable of enabling the conduction of relatively cost-effective market tests, with the maximization of the related learning. The reputation Design Thinking has gained over the years might thus be the first cause of the success *learning from market tests* had as an "improvement candidate" for Design Thinking.

6.5.3 *Innovation of Meaning*-related Performances

The *Innovation of Meaning*-related performances selected for the survey were:

- *Radicalness of New Strategy;*
- *Revitalization of Brand Awareness;*
- *Addressing New Markets.*

Even though a certain homogeneity was recorded across all the sections of the survey results explanation, in this case uniformity is even higher, with three different variables positioning themselves at almost no distance one from the other.

3 The video can be freely watched at https://www.youtube.com/watch?v=M66ZU2PCIcM in high quality.

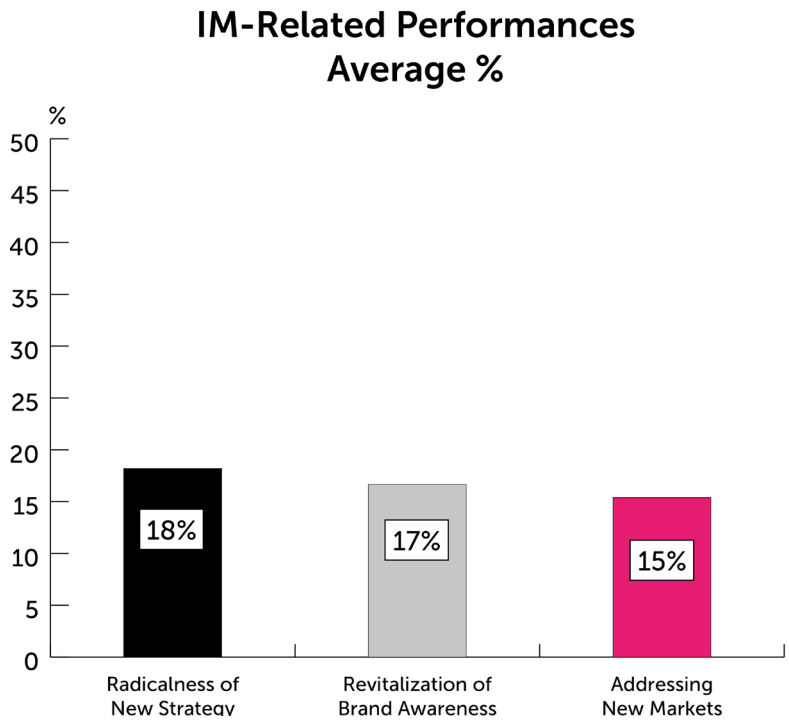

Figure 6.14: *IM-related performances expected improvements, with average percentage occurrence.*

Starting from *radicalness of new strategy*, which totalizes an 18% overall share of interest, it could be argued that radicalness comes as a result of a wave of creativity and the adoption of totally different problem solving methodologies. Since strategy deeply has to do with problem solving, having itself been defined as a *wicked problem* (Camillus, 2008), it seems sensible to presume this fact played a role in the preference expressed for the variable under scrutiny.

Revitalization of brand awareness comes second by an only percentage point, since brand awareness is another theme firms of a number of industries have grown particularly careful about, given the capacity brand awareness has of influencing business results. Given that Design Thinking is seen as particularly indicated for achieving human centricity, and since human centricity is a relevant element when it comes to brand building and awareness[4], Design Thinking is likely to be though as an improving lever for *revitalization of brand awareness*, making it reach the average 17% share of interest it reports.

6.5.4 *Creative Confidence*-related Performances

The *Creative Confidence*-related performances selected for the survey were:

4 http://www.targetmarketingmag.com/post/customer-centric-trust-based-relationships-humanity-emotion-profits/all/.

- *Alignment of Vision and Organizational Behavior;*
- *Organizational Climate;*
- *Entrepreneurial Attitude.*

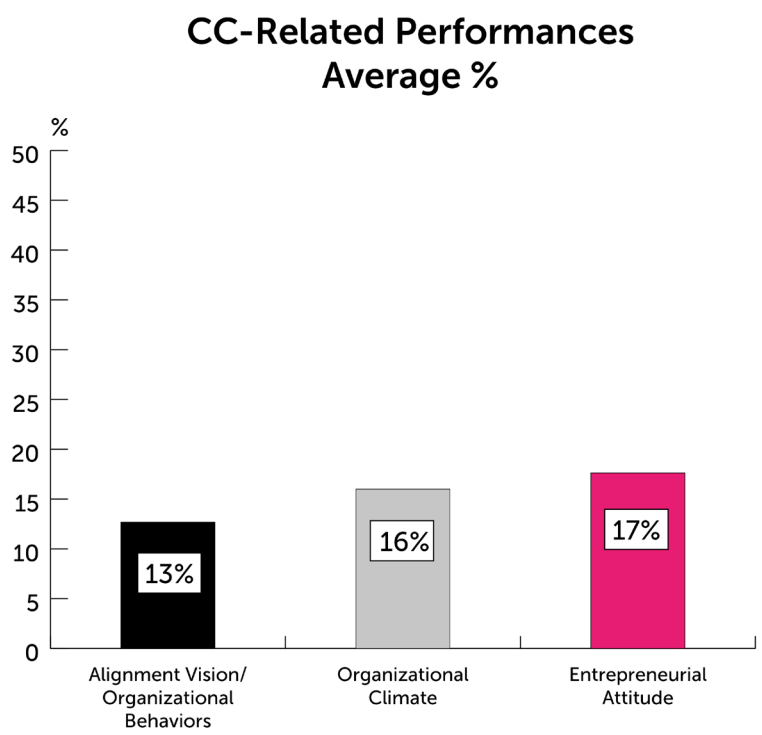

Figure 6.15: *CC-related performances expected improvements, with average percentage occurrence.*

The situation displayed in Figure 6.14 looks like a blending of Figures 6.13 and 6.14: the results have a growing slope if looking from left to right, but are again quite aligned. The "worst" performance is that of *alignment vision/organizational behaviors*, whose average 13% share of interest might be a symptom of the fact that, as already said, firms in Design Thinking non-mature contexts are still struggling in considering Design Thinking itself as an element enhancing alignment. *Organizational climate*, ranking second, is probably preferred given considerations recalling the experiences listened to during direct interviews, namely the discovery of an enjoyable side of productive working thanks to the adoption of creative methodologies. The atmosphere within an organization has long been declared to be an important element for organizational and business literature (Bartezzaghi *et al.*, 2010), for example, but has never been improved by "purely business" working schemes as it was dramatically boosted by Design Thinking.

Finally, *entrepreneurial attitude* seems to be the first *Creative Confidence*-related attitude respondents believe Design Thinking would be helpful in fostering, and this is probably linked to the

empowerment Design Thinking can bring to employees at any level (Juninger, 2006), which is an issue managers have long debated and tried to work on with little success.

6.5.5 Overall Comparison of Project Performances

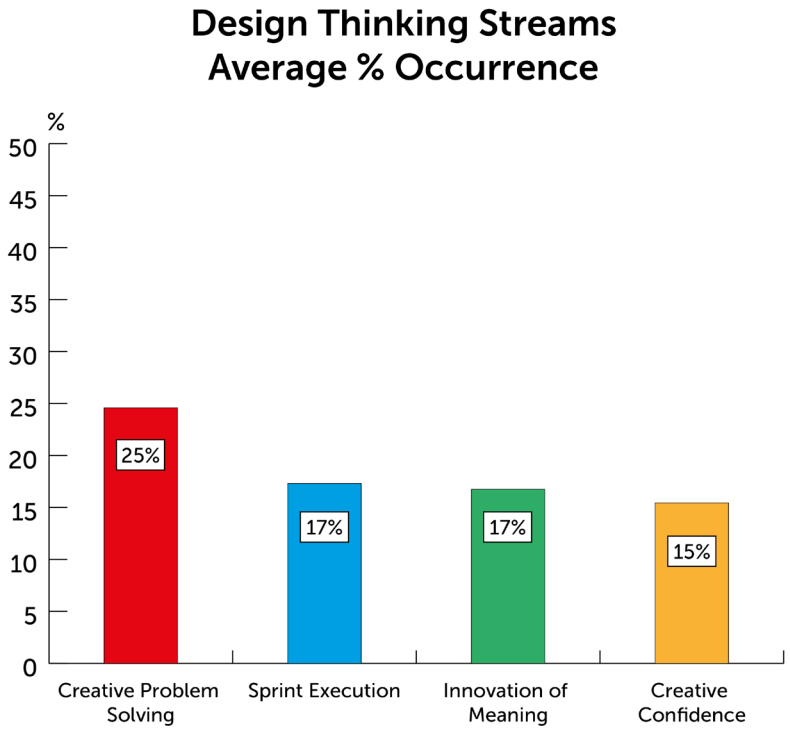

Figure 6.16: *Design Thinking Streams linked to expected improvements, with average percentage occurrence.*

Merging the data of the previous 4 subparagraphs by making an average of the percentage scores each project performance recorded, there was the intention to measure which Design Thinking stream could be the preferred one, the one respondents would indirectly refer to as most beneficial. The findings displayed in Figure 6.16 give back a picture that is actually quite dissimilar from the findings of Chapter 5. While this is partially due to the different modalities adopted to infer the prevalence of one specific Design Thinking stream, it is also interesting to note how *Creative Problem Solving* remains the most chosen stream overall, with an average 25% share of interest, but the other three are substantially almost equal, with both *Innovation of Meaning* and *Creative Confidence* significantly raising with respect to the last Chapter.

With an average of 17%, *Sprint Execution* lies in parity with *Innovation of Meaning*, which is likely to be due to the efficiency and brand/organizational themes raised in the former and the latter streams respectively. *Creative Confidence* is then likely to be able to reach a 15% average thanks to the explicit mentioning of issues like entrepreneurial skills and organizational climate, which

would otherwise not be directly associated to *Creative Confidence* itself.

7.

Conclusions

Hitherto, the analysis that were conducted – in particular the empirical ones, explained in Chapters 5 and 6 – returned composite results that it is necessary to synthesize in an overall fashion. The Italian context, in particular concerning large organizations – the focus of this thesis, appears to possess an awareness level about the matter that stands between "poor" and "fair", to recall the categories adopted in the narration of Chapter 6. The degree of adoption, instead, looks even more context-dependent and has an overall more irregular pattern, with a large discrepancy between personal level and company level of adoption. Finally, the results of the survey concerning Design Thinking capabilities just partially overlap with those coming from direct interviews, meaning that each case probably presents its peculiarities that cannot find entire confirmation in broader investigations.

The aim of this Chapter is to make a wrap up of the whole argument brought forward through this thesis, namely the fact that Italian large organizations have certainly become far more responsive to Design Thinking in the last years than they used to be, but that this responsiveness primarily falls into interpretations that refer to Design Thinking approaches privileging problem solving rapidity and effectiveness. The scope of the overall analysis was to provide a picture – with all the quantitative limitations entailed by this study – of the relationship between Design Thinking, its different interpretations (previously defined "streams") and the Italian important business realities, which are historically more conservative than those in other European or American countries in particular.

The analysis carried out in this closing Chapter will follow the same logical flow adopted in Chapter 6, beginning with Design Thinking Awareness, to then proceed with Design Thinking-related capabilities, concluding with an overall reasoning about Design Thinking stream. Each macro-area will be dealt with comparing the personal and team dimensions of inquiry, to show the contrasts separating them. Furthermore, the different kind of ideas expressed between Chapter 5 and 6 will be discussed, in particular for the more debated subjects. The Chapter will be closed by the implications the current analysis might have for further research on the subject, and

7.1 Design Thinking Awareness

Paragraph 7.1 will provide an overview about how Design Thinking awareness appears to be distributed over the analyzed samples, and will attempt at discovering patterns and trends linking the different three levels of awareness – personal, function and company – already presented in Chapters 5 and 6, besides suggesting comparisons between the three levels of awareness just mentioned, both vertically within Chapters and also across them. The narration about awareness

will begin with a comparison of the interviews and the survey findings, to then compare the personal and team levels figures.

7.1.1 Personal Awareness: Interviews/Survey Comparison

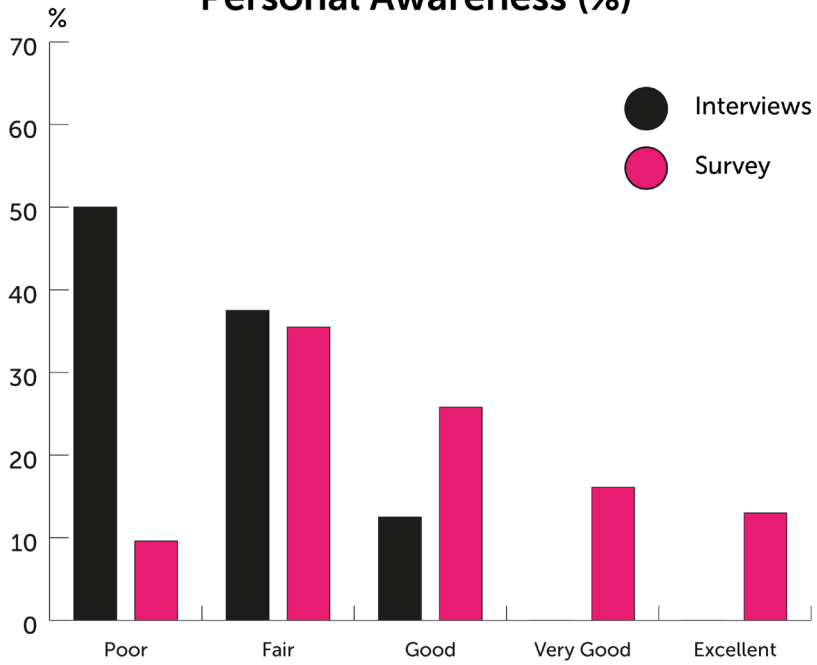

Figure 7.1: *Comparison between percentage rates of Personal Awareness in Interviews and Survey.*

The first juxtaposition to be presented is the one putting in contrast the Personal Awareness level discovered through the interviews and the one that was drawn from survey data. This variable was studied separately for a simple reason: being the one entailed by the higher degree of subjectivity, it seemed better to deal with it autonomously, and to then aggregate function and company awareness in the subsequent narration.

The chart displayed in Figure 7.1 illustrates first of all how interviewees were harsher – and probably less daring – in assessing or giving an idea about their personal level of awareness. The trends collected from interviews reveal that half of the sample – that was quite small, it is appropriate to recall this aspect – feel they do not really know Design Thinking, or that they know it fairly well. What is surprising to acknowledge is that, differently from the survey, there are no "very good" nor "excellent" responses, which might be a symptom of the more direct way of asking interviews are, or also due to the insecurity coming from the fact that it is extremely complicated to feel confident in defining Design Thinking (Hassi *et al.*, 2011). In the case of the interviews results, almost

90% of the overall responses falls between the "poor" and the "fair" category, while the survey returns more well-distributed results, with the "fair" peak described in Chapter 6 as well, and a significant share of responses (almost 30%) covering the "very good" and "excellent" sections.

7.1.2 Survey Personal and Function Awareness

This paragraph takes into consideration the contrast between personal and function awareness, where, following the reading key of Figure 7.2, personal is represented in cyan and function in ochre. This comparison was held as interesting because it juxtaposes a completely subjective dimension, and another dimension that is not subjective, but is seen through the eyes of individual (thus, in the logical sense, subjective) respondents.

The clearest and most marked gap emerging is the one contained by the "poor" variable: while personal awareness records a low average percentage score, right below 10%, function awareness has its highest peak, reaching over 50% on average: this means several respondents assigned function awareness scores not too far from 100%. This first, remarkable manifestation seems to uphold an idea that was already expressed in Chapter 6: Design Thinking entered the majority of large Italian organizations through the figure of individual "evangelists", professionals who are very skilled on Design Thinking, and whose role is to diffuse the paradigm within their companies. Between the average of individual awareness, that is driven upwards by the presence of extremely high-skilled professionals, and function awareness should thus exist a relevant hiatus, reproduced in the chart displayed in Figure 7.2.

Another aspect to signal is that, in practically all the variables, except for the "poor" and "very good" one, personal awareness remains higher than function one. The difference, not considering the "poor" label, is especially accentuated in the "fair" parameter: function awareness is almost half of the personal one. Maintaining the same relationship, this gap narrows down significantly in the "good" label, to remain stable with the "very good" one and grow again with the "excellent" variable. This kind of pattern reveals how the harsher differences crowd upon "extreme" variables, those that leave much less space for doubts or uncertainty. This might be a reflection of the fact that there is a much more defined idea about Design Thinking awareness at extreme levels, either really poor or very good. This phenomenon contrasts with a substantial homogeneity recorded by the "good" and "very good" variables.

A final remark that it might be interesting to make concerns the overall trend the two levels of awareness record: while function awareness has a mono-directional decrease, which is actually quite sharp in the left half of the chart (its peak is in the "poor" variable), personal awareness peaks within the "fair" label, and its decrease starts only at that point, besides being less sudden than that

of function awareness. This might be a symptom of the significantly higher unbalance that exists between Design Thinking-skilled and unskilled functions, while, at a personal level, the unbalances between single professionals are probably more blunt.

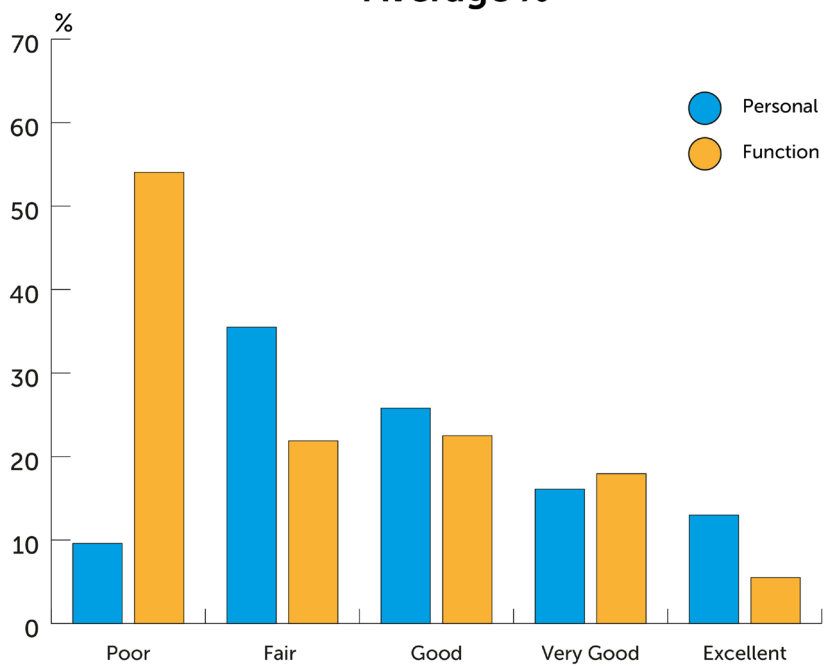

Figure 7.2: *Comparison between percentage rates of personal and function awareness (survey data).*

7.1.3 Survey Function and Company Awareness

The comparison between function and company awareness seems to exacerbate the inequalities and discrepancies highlighted in Figure 7.2. Looking at Figure 7.3 instead, what emerges - and had emerged in the previous Chapter - is an absolute prevalence of the "poor" variable on the other ones, in average percentages that, in the case of company awareness, get close to 70%. This is likely to be signaling that the average situation described in direct interviews, with Design Thinking-aware resources scattered here and there, in any way dispersed within their companies, finds correspondence in a larger sample. This idea could find a partial confirmation in the figures recorded by the "excellent" variable: they are higher than zero, first of all, and their relationship is reverted with respect to the "poor" parameter, since now function awareness is higher than company one. Higher levels of average awareness are thus recorded more at functions than at company level.

In terms of *middle range variables* (namely the "fair", "good" and "very good" ones), the constance

of function awareness is to notice: a minimum variation happens only at the transition from "good" to "very good", while the "fair" and "good" parameters are practically equal. This phenomenon might be a sign of the fact that, in particular at function level (but this occurs, in a less evident way, also for company awareness) there are no many perceived middle ways: awareness is very scarce, average or excellent, with no other nuances.

A final note concerns the relationship between function and company awareness, and its constance from the "fair" to the "excellent" label: proportions are maintained practically intact, probably meaning that, if the "poor" threshold is overcome, the proportion of function/company awareness remains unvaried with the growing level of awareness.

As it could be widely foreseen, Figure 7.3 gives back the idea that, on average, function awareness can certainly be said to be superior to company one.

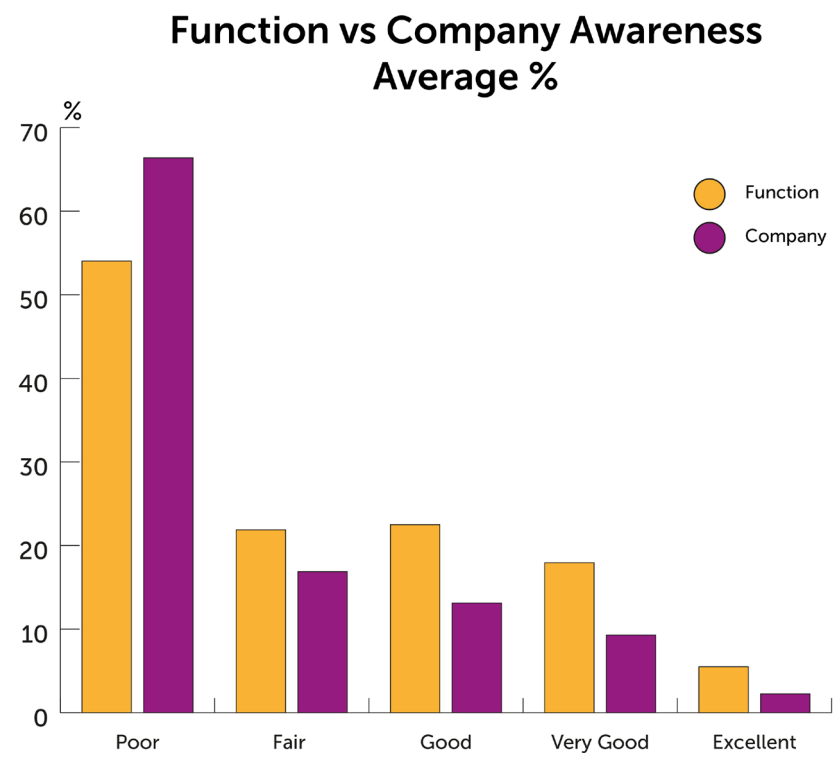

Figure 7.3: *Comparison between percentage rates of function and company awareness.*

7.2 Design Thinking Capabilities

This Paragraph will be devoted to the illustration of the comparison and analysis results referring to those skills, competences and attitudes widely dealt with in Chapters 5 and 6. In this part of the argument, there was an attempt to generate a fresh point of view with respect to the plain expla-

nation of extracted data that happened previously. As far as skills are concerned, there will be an analysis of how the most recurrent skills appeared during the course of interviews are placed in the survey data, comparing the personal and the team perspectives. Each category of capabilities will then present a general comparison of the personal and team expected improvements, to detect whether or not there are connections worth analyzing.

7.2.1 Interview 3 Most Rated Skills: Personal/Team Perspective Comparison

As illustrated in Chapter 5, the three skills that seemed to show up the most were *prototyping*, with 62.5% occurrence, together with *user analysis* and *visualization*, both at 50% rate of occurrence. For this motive, it seemed sensible to make a comparison that was not explored in Chapter 6, and to juxtapose the survey data personal and team perspectives about capabilities – another missing kind of analysis in the previous Chapter.

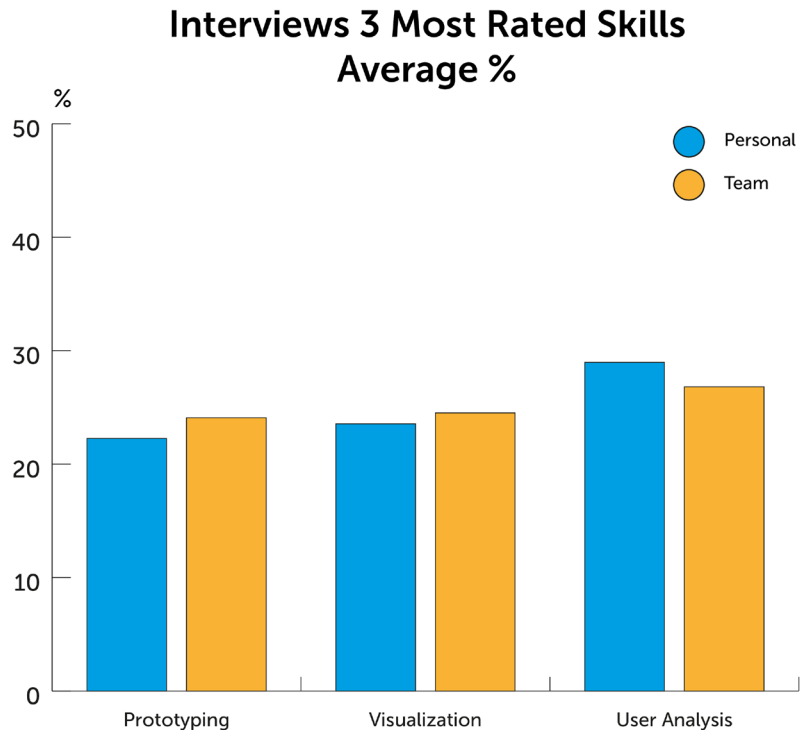

Figure 7.4: *Comparison between percentage rates of prototyping, visualization and user analysis "improvability" at personal and team level.*

Figure 7.4 displays a different situation with respect to the one encountered previously. *Prototyping* was, in Chapter 5, the most recurring skills of all: in this context, it appears dominated by both *visualization* and *user analysis,* even though the distance is not enormous.

The survey findings witness that the sampled respondents feel *user analysis* would be the most improved and improvable skill through the adoption of Design Thinking: what emerges is a less

efficiency-driven, more human centricity-focused perspective, in particular for what concerns the individual dimension. Remaining on *user analysis,* it can be acknowledged how the personal perspective is felt as the one that would benefit the most from Design Thinking introduction. In the case of both *visualization* and *prototyping*, instead, the greater improvements are expected for what concerns the team dimension. As already stated in Chapter 6, this last consideration comes quite naturally from the idea that *user analysis* is a comprehension capacity that on average is thought to have to be nurtured individually first, while *visualization* and *prototyping* are considered inherently team activities in the first place.

A final consideration is about the very reduced gap existing between the values totalized by *visualization* and *prototyping:* it might seem that, given the higher proximity existing between these two variables than what occurs with *user analysis*, these two variables are somehow linked. A justification to the phenomenon could be found in what Liedtka *et al.* (2010) described to be the underlying nature of *visualization*, which is a basic tool for any Design Thinking-related activity.

7.2.2 Skills: Personal/Team Perspective Comparison

Taking a step back with respect to Figure 7.4 and considering all the range of skills analyzed through the survey, it emerges how *business modeling* is, on average, the skill that respondents expect to improve the most through the introduction of Design Thinking, at both personal and team level. This result actually positions itself in the business context it is drawn from: *business modeling i*s probably one of the hardest skills to define and master, and, it might be interesting to recall this, the main one involved in *Innovation of Meaning*. The second ranking skill is *user analysis*, followed by an almost perfect parity of *cultural insights, visualization* and *prototyping*. The ranking is closed by *testing,* which had a poor positioning in the interviews too: a thing to remark is that, in this context again, *testing* is seen as more improvable at a team than at a personal level, given that, in the great majority of cases, it is felt as a skill to be deployed during team work.

As it occurred in Figure 7.4, the only skill that is estimated as more improvable at a personal than at a team level is *user analysis*, and the motivations are alike the ones already discussed. The only variable that was not really talked about is *cultural insights,* which came last in the ranking made in Chapter 5. What is to notice here is that, besides a certain leveling that had already been pointed out in the previous Chapter, *cultural insights, visualization* and *prototyping* are essentially in a position of parity, and present very similar performances in terms of personal and team perspective. The parity between *visualization* and *prototyping* was to some extent already explained and discussed about, but the presence of *cultural insights* in the picture might suggest that being capable of sensing emerging trends is something that could really benefit from a synergy with

Design Thinking, much more than a smaller sample would drive one to believe.

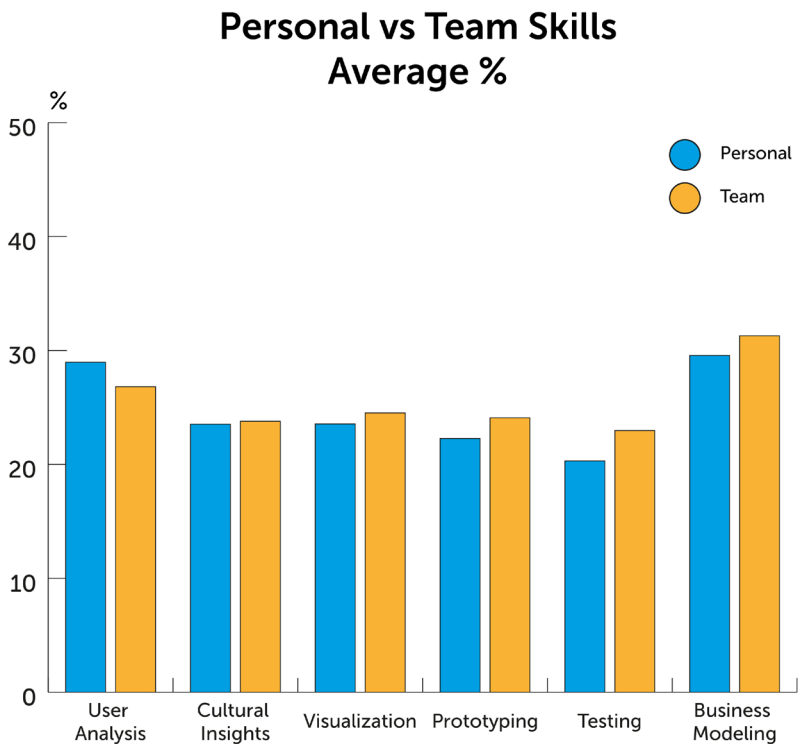

Figure 7.5: *Comparison between percentage rates of the six considered skills "improvability" at personal and team level.*

7.2.3 Three Controversial Competences: *Creativity, Criticism* and *Storytelling*

The title of this paragraph is of course provocative and wishes to stimulate the reader to reflection. The reflection implied here is mostly referred to the fact that *creativity, criticism* and *storytelling* are probably the analyzed competences that are having the higher resonance in business in particular. *Creativity*, especially at a personal level, was the core subject of the *Creative Confidence* book (Kelley, 2013) and its utility in business has widely been debated. *Criticism* finds a very important place in *Design Sprint* instead (Knapp *et al.*, 2016), and is in general a competence that is praised in Design theory and management one (e.g. Conklin *et al.*, 2007). *Storytelling*, finally, has lately become a widespread technique companies use to revitalize their brand awareness and recognition, not to mention the fact that *storytelling* is a formidable tool to build and strengthen company culture (Maydoney *et al.*, 2003). Besides the results *creativity, criticism* and *storytelling* had achieved in Chapter 5 – they had ranked fourth, second and last respectively – it seemed interesting to investigate the relationship linking such basic elements composing the Design Thinking ecosystem.

The results coming out from the plotting of the average percentage scores of these three widely debated competences, displayed in Figure 7.6, place *creativity* first: with around 30% on average

in both personal and team perspective, it is the competence that records the higher appreciation, followed by *storytelling* and *criticism* at short distance. *Creativity* brings a predominance of the team perspective over the personal one, which is actually well aligned with the assertions brought forward in the already mentioned *Creative Confidence* (Kelley, 2013): since people usually feel they are not particularly creative, they tend to believe creativity is only limited to team work and born out of brainstorming exclusively, which would explain the team perspective greater result.

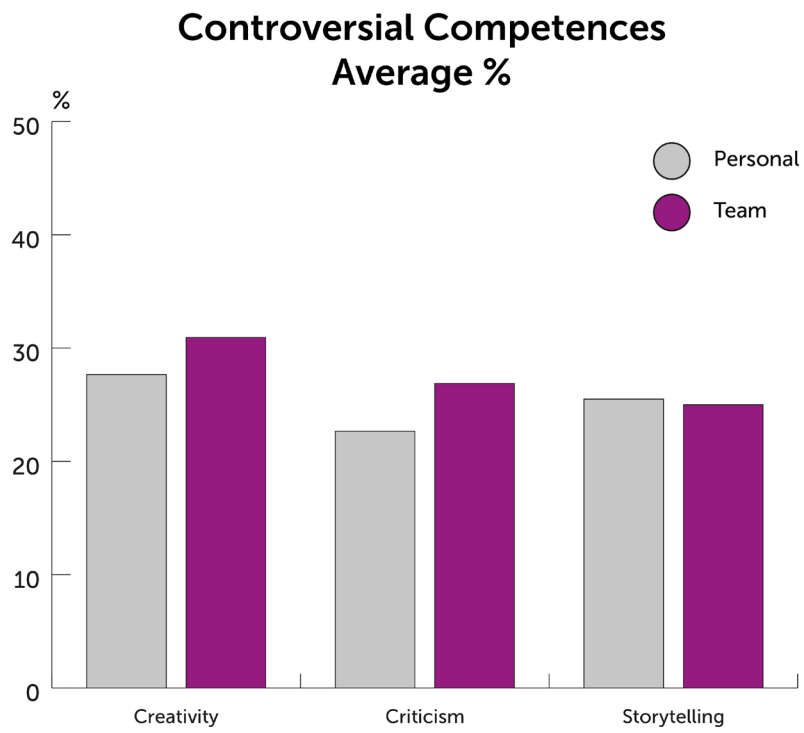

Figure 7.6: *Comparison between personal and team rates of occurrence of creativity, criticism and storytelling.*

Storytelling is the competence that, in Figure 7.6, has the shortest percentage point distance between the personal and team perspective: it is probably a sign of the fact that the competence in question, more than the others, is perceived to be improvable through Design Thinking at both levels without significant differences. Which, in turn, might hide the idea that storytelling is precious at both personal and team level, given that conveying ideas through captivating narration definitely brings good fruits in both cases.

7.2.4 Competences: Personal/Team Perspective Comparison

Looking at all the sampled companies, and comparing the personal and team perspective, the first remark to make concerns *creativity*, and the fact that it appears the most rated competence

Design Thinking and its adoption could foster within a firm. After reading *Creative Confidence* (Kelley, 2013), this result might not come out of the blue; what actually changes with respect to

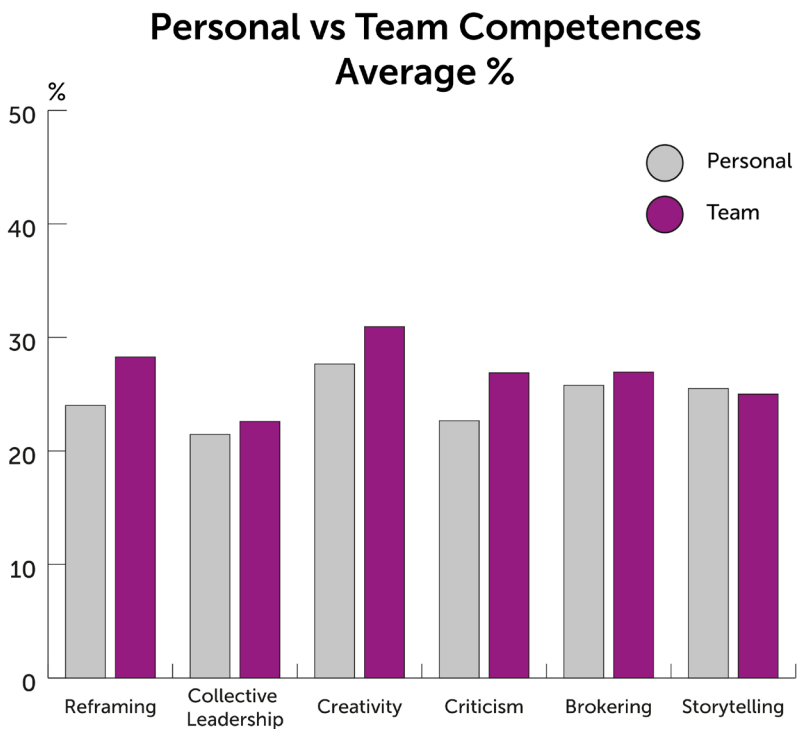

Figure 7.7: *Comparison between percentage rates of the six considered competences "improvability" at personal and team level.*

the focus of Kelley's book is the fact that, in the sample, team perspective records, with the exception of *storytelling*, higher average percentage shares of interest than the personal perspective, and this aspect is particularly marked with *creativity* itself, *criticism* and *framing/reframing*. In the case of *criticism*, this phenomenon is rapidly explained through considerations that were already made in Chapter 6: given that it is quite rare to consider *criticism* in a personal dimension, that is normally a competence that is associated with team work. For *reframing*, it is likely to have the same thing occurring: providing an original reinterpretation of an issue is probably something that is felt to have to be performed in groups, rather than on one's own.

Considering both the personal and team level, the three variables that appear to be dominating the chart displayed in Figure 7.7 are, in order of importance, *creativity, brokering* and *storytelling. Brokering* was actually not appearing as one of the top rated competences, but its inherent nature might have captured all those respondents that feel the need to have a more connected and flexible approach to work relationships and interactions. In many cases, during direct interviews as well, the importance attributed to and the desire to improve cross-functionality and multidis-

ciplinarity strongly emerged, meaning the need for enlarging the potential range of idea sources while crossing them is a desired condition for many.

Finally, the already discussed importance of *storytelling* reveals how Design Thinking finds a tight mental connection - not to mention the bond in tangible terms - to issues as brand awareness and customer experience, and that this is a dimension many Design Thinking-devoid or Design Thinking-improving companies wish to work upon.

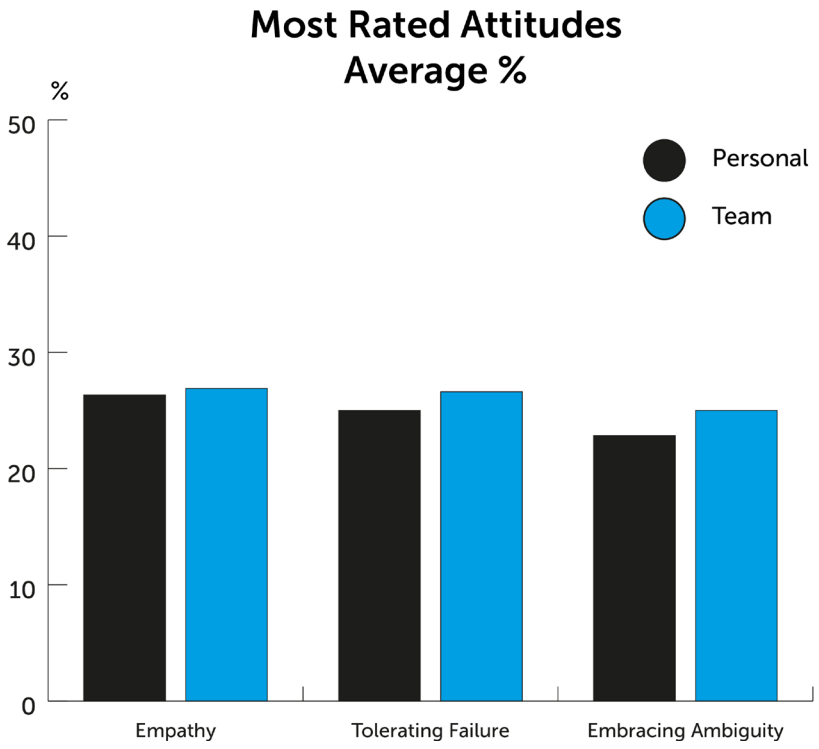

Figure 7.8: *Comparison between percentage rates of occurrence of empathy, tolerating failure and embracing ambiguity.*

7.2.5 Three Popular Attitudes: *Empathy, Tolerating Failure* and *Embracing Ambiguity*

The three attitudes it might be mainly interesting to monitor are the ones displayed in Figure 7.8, namely *empathy, tolerating failure* and *embracing ambiguity.* They were selected since they are the most recurring ones in Chapter 5, with a particularly diffused – and not surprising – presence of *empathy. Empathy* itself was diffusely said to be at the core of that human-centered paradigm at the basis of *Creative Problem Solving*, besides being an attitude that Design Thinking as a whole is particularly linked to. What can be seen in Figure 7.8 is a picture that brings a fresh point of view with respect to what was illustrated in Chapter 5, where *empathy* was clearly overcoming al the rest of attitudes, and *embracing ambiguity* was trespassing *tolerating failure*. The chart here displayed tells a different story: there is almost perfect parity between *empathy* and *tolerating*

failure, both reaching average values around 25%, with *embracing ambiguity* following at a hardly perceptible distance. As it happened in the very large majority of cases, team variables record a slightly higher average score than personal ones.

The first ranking parameter, in this case, is anyway *empathy*, which could be largely foreseen given two factors: the distance of traditionally-minded contexts from a human-centered and external-focused logic, and the relevance empathy finds across three of the four Design Thinking streams (it is less strong with *Innovation of Meaning*, even thought that stream is not completely devoid of human considerations either). The prevalence of the team dimension might be explained through the importance new product development processes, typically team-led, placed on customer centricity in the business world since the beginning of the 1990s (Deserti *et al.*, 2013); on the other hand, this phenomenon could hinder quite a diffused tendency, in traditionally-minded contexts, to believe *empathy* is an attitude whose acquisition starts at team level, maybe by contamination by those professionals who already possess it.

Tolerating failure and embracing ambiguity, nonetheless, are held as quite important as well: the nearly-parity displayed in Figure 7.8 could also mean that the importance of these three attitudes is somehow binding them together: *embracing ambiguity* could actually be seen as a pre-condition to *tolerating failure*, since when one accepts things are likely to unfold differently from expected, that same person is also accepting the idea of failure over success. *Empathy*, in the end, could be seen as the underlying connection: if one is ready to take into consideration the standpoint of others, that person will likely be able to develop the idea that things do not only occur as he/she pictures them.

7.2.6 Attitudes: Personal/Team Perspective Comparison

When looking at the chart that presents all the sampled attitudes together in Figure 7.9, one realizes the dominance of empathy was not only coming from the popularity it was attributed in Chapter 5: its recognition was definitely perpetuated in Chapter 6 as well, making it the most likely improvable attitude in case Design Thinking was introduced in a firm. *Tolerating failure* and *embracing ambiguity* have good rankings, but are overcome by *optimistic mindset*, which is actually not absurd, given the logical link existing between *optimistic mindset, tolerating failure* and *embracing ambiguity*.

The two attitudes having the mildest scores are *troublemaking* and *pragmatism*, in particular: in the case of *troublemaking*, it might be due to the tendency to think that Design Thinking is not likely to make people able to question others' ideas, and the prevalence of the personal dimension over the team one could mean *troublemaking* is held as an individual attitude first of

all; in the case of *pragmatism*, the explanation might be definitely simpler, given that, as already mentioned in Chapter 6, Design Thinking is, at least in traditionally-minded contexts, not exactly associated with practicality and efficiency, at least at a superficial glance.

The last notice about the overall personal/team level attitudes comparison regards the fact that troublemaking is the only attitude for which the personal dimension is preponderant with respect the team one.

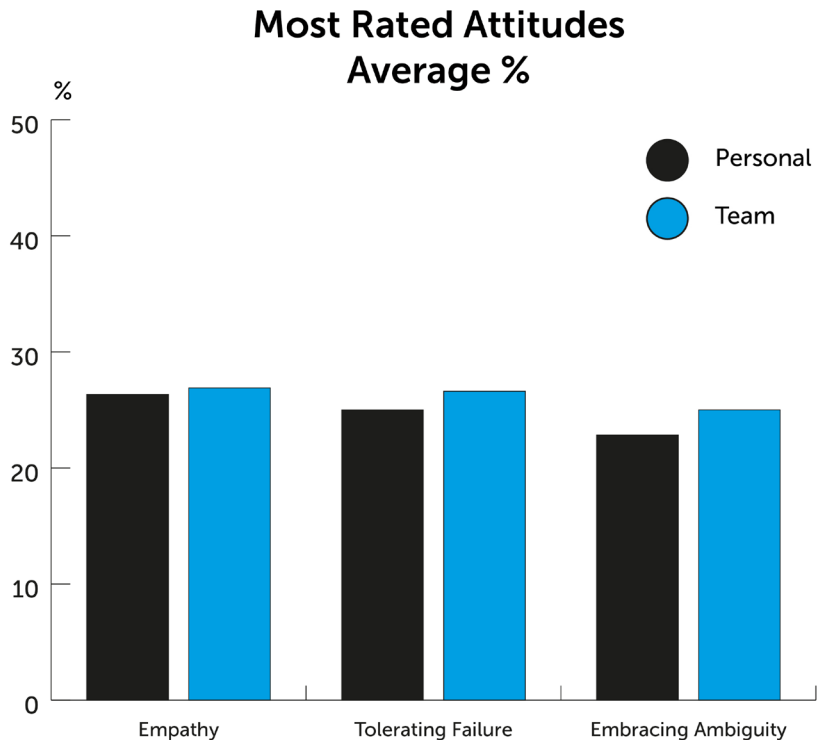

Figure 7.9: *Comparison between percentage rates of the six considered attitudes "improvability" at personal and team level.*

7.2.7 The Most Rated Capabilities Overall: a Comparison

After discussing separately the findings that concern the three different categories of Design Thinking capabilities, it seemed appropriate to make a closing, aggregated discussion of the six most rated capabilities, two per each category. The selected capabilities were:

- *Business Modeling;*
- *User Analysis;*
- *Creativity;*
- *Brokering;*
- *Empathy;*
- *Optimistic Mindset;*

Figure 7.10 displays how, in an overall, comprehensive perspective, the two main capabilities that are thought to be the ones that would benefit the most from Design Thinking and its introduction

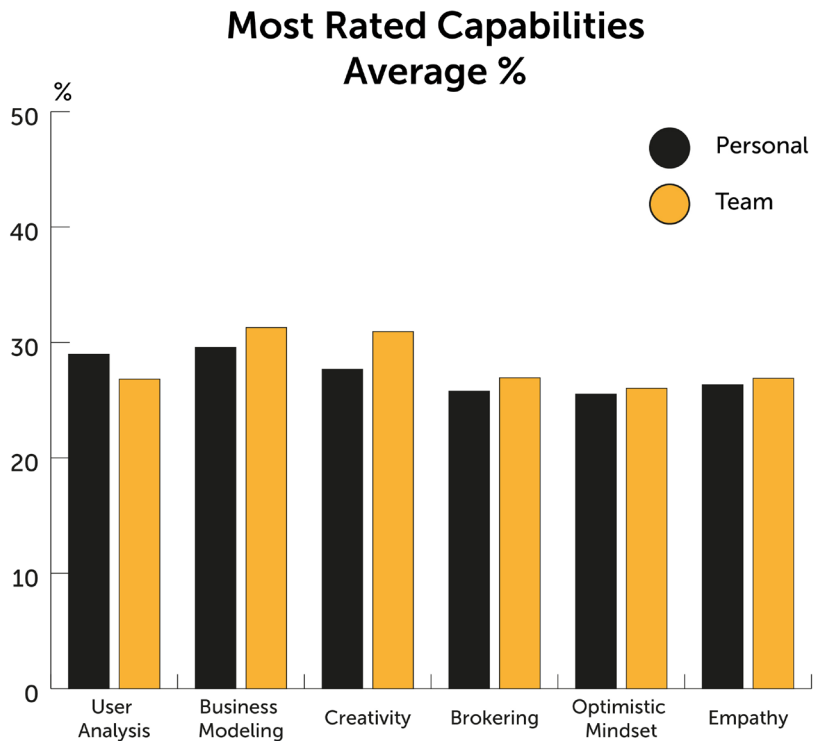

Figure 7.10: *Comparison between percentage rates of occurrence of the six most rated capabilities*.

are *business modeling* and *creativity*, directly followed by *user analysis*. What distinguishes the three is first of all the fact that *user analysis* is the only one for which the personal level has a higher score than the team one. As already stated, both *business modeling* and *creativity* are capabilities that are likely to be felt as improvable at a team level first, because business-minded firms delegate these two capabilities to team activities mainly. One might also notice how the personal/team percentage gap of these three capabilities is a bit higher looking at *creativity*, which brings back all the explanations and theories about the personal consideration of *creativity* itself Kelley made (Kelley, 2013).

The other three considered capabilities, *brokering*, *optimistic mindset* and *empathy*, are all aligned on the same percentages (at about 26%), with similar personal/team level gaps. The overall trend, in any case, is a marked uniformity throughout the sampled variable, whose variance is really reduced (in the order of 10 percentage points maximum). This leads to believe that, in particular concerning the most credited Design Thinking-related capabilities, the improvability levels are all psychologically placed in the same range because these six capabilities are felt as equally import-

ant to grow and foster. Another relevant consideration concerns the tendency, really clear in Figure 7.10 as it happened throughout Chapter 6 and Chapter 7, of the team perspective to dominate over the personal one in the great majority of cases. This phenomenon might be due to the inherently team nature that Design Thinking has historically been attributed until this moment: since the worldwide success gained by IDEO through showing mainly team initiatives involving Design Thinking, and strengthening the general idea that effective consultancy comes from composite, multidisciplinary groups, Design Thinking has tended to be perceived as a team-based paradigm, and this idea seems to find confirmation in the displayed data.

Summarizing the collected information, it can be said that the Italian context holds, for what concerns Design Thinking-related capabilities, the belief that Design Thinking as an overall paradigm is something that is substantially team-based, and that could bring the highest benefits in a team perspective first of all. The reflections seem to go more in this direction than focusing on the personal dimension, which would explain the still lagging behind performances of the *Creative Confidence* stream. The three capabilities that Italian large organizations believe would receive the highest benefit in case of Design Thinking introduction are, in order of attributed importance, *business modeling, creativity* and *user analysis*. The overall prevalence of *business modeling* is revealing of how the Italian context would predominantly think of employing Design Thinking: probably, to tackle those business issues that made it resort to Design Thinking itself, to then have positive, serendipitous reflection on the other aspects of organizational life and work as well.

Finally, the overall uniformity across the results recorded by the eighteen different capabilities might be a sign of the *in fieri* Design Thinking maturity of large Italian organizations: not having such a defined idea of it yet, on average, they tend to attribute similar values to all the capabilities, given that their relatively unexperienced look prevents them from establishing clear-cut preferences.

7.3 Design Thinking Streams

The same kind of synthesizing comparison of the four Design Thinking streams was proposed in both Chapter 5 and Chapter 6. What emerged was a dominance of *Creative Problem Solving*, definitely overcoming the other three streams, followed by *Sprint Execution* as the second ranked. Given the different nature of the data extraction modalities between the direct interviews and the survey, it was esteemed interesting to synthesize the two different kinds of information. The results of this synthesis is displayed in Figure 7.11: *Creative Problem Solving* is certainly the stream recording the highest occurrence, reaching almost 44% on average: this means almost

one interviewee or respondent out of two tended to attribute the largest share of importance to the one that could be considered as the "first" stream, at least in a historical sense.

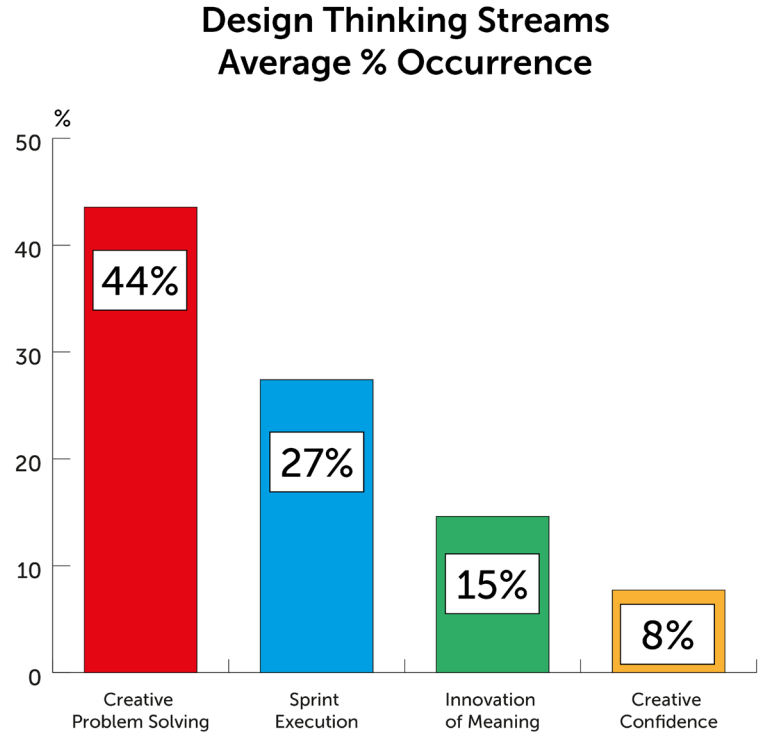

Figure 7.11: *Comparison between percentage rates of occurrence of the Design Thinking Streams.*

This result could be explained through the relatively low maturity the Italian context seem to have showed with respect to Design Thinking: *Creative Problem Solving,* beginning from its name, conveys the idea that the primary focus of Design Thinking in this context is to creatively address existing issues, which is quite typical of the business context. Recalling the characteristics of *Creative Problem Solving* illustrated in Chapter 2 and those inferred through the related project performances in Chapter 6, one important aspect of this stream is the attention devoted to the fit between the artefacts proposed by the needs of the market: this aspect is certainly important to firms that could be said to be traditionally-minded, and is one of the main reasons why Design Thinking-deprived companies resort to Design Thinking itself. Other aspects Design Thinking-deprived companies feel they would benefit from are the human-centeredness and user analysis sides, that are both present in *Creative Problem Solving.* All this said, it is relevant to also note how *Sprint Execution* is the second ranking stream: given all the focus this stream places on development speed and efficiency, somehow, the arguments just exposed about *Creative Problem Solving* seem to find an implicit confirmation. Looking at Figure 7.11, the Italian context concerning large organizations seems to be focused on Design Thinking interpretations that are

closer to the business-only side. It is interesting to note, in this sense, how *Innovation of Meaning* records an average score of 15%, which is not extremely low. This phenomenon, joint to the fact that *business modeling* was proven to be the most appreciated and improvable Design Thinking capability, besides being one of the mainly capabilities involved in *Innovation of Meaning*, might give the measure of how the Italian context is surely receptive and open to Design Thinking, but somehow still quite business-focused. Beyond some very localized clusters of Design-related and Design-oriented excellence, like the Milan and Brianza areas in Northern Italy (Verganti, 2006), the Italian context appears to still have several steps forward to take before being able to fully receive the organizational potential of streams like *Creative Confidence,* which, as it had already occurred in the previous paragraphs, comes last in the ranking, with an overall average share of interest that does not reach 10%. The instances brought forward by *Creative Confidence* refer, in many cases, to *soft* aspects that the average Italian large organization is not much focused upon yet. In spite of all the arguments explained, which seem to depict a totally negative image of the relationship between Italian large organizations and Design Thinking, what can be said as a closing statement is that the Italian context is not proving dumb at all to the call of Design Thinking: there is much curiosity, a diffused willingness to experiment and a certain awareness about which Design Thinking references could be useful to improve. In sum, Italy is looking, for what concerns the already mentioned "Demand" segment (the subject of this study), as a fertile ground that might offer fruitful developments.

7.4 Implications for Future Research

The picture that is outlined by the current study about large Italian organizations belonging to what was already defined as "Demand" segment returns the idea of a Design Thinking ready-to-be context, that still necessitates more direct, practical experience with Design Thinking itself. Of course, and this aspect was hinted at several times throughout the entire narration, the study currently under scrutiny is definitely perfectible, and does not aim at becoming the reference point for studying the Italian context and its responsiveness to Design Thinking. The inherent and underlying goal of this research was to provide a framework to better define both Design Thinking and its specific or localized manifestations, to then establish which could be the level of awareness and adoption of Design Thinking in general, and of its four streams.

The probably main lack of the study presented through this thesis is the reduced sample dimension, which might have made the final picture a bit blurred and unclear. A very first suggestion to any kind of subsequent research could be to conduct even more extensive field research, so that

more detailed Design Thinking patterns can be detected and realities that have remained hidden can be unveiled. This study was intended to attempt at starting a path of analysis concerning traditionally business-conservative countries, as Italy could likely be said to be. Another possibly challenging future deployment of this kind of study might be to take into account the whole European context, scaling this kind of investigation to the international level, so that similarities and discrepancies between different countries of the "Old World" can be compared. The great majority of studies concerning Design Thinking are anglo-saxon, and typically American-based: it might be interesting to change that, since Europe plays a certainly different role than America in innovation, but it does play a role.

The very last suggestion concerns models refinement: the overall classification proposed within this study is of course structured, but it appears like a large-mesh web whose wires might be made even closer and tighter, so that categorization and study of any Design Thinking-possessing reality can be studied effectively.

8.

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